

DATALOGIC™

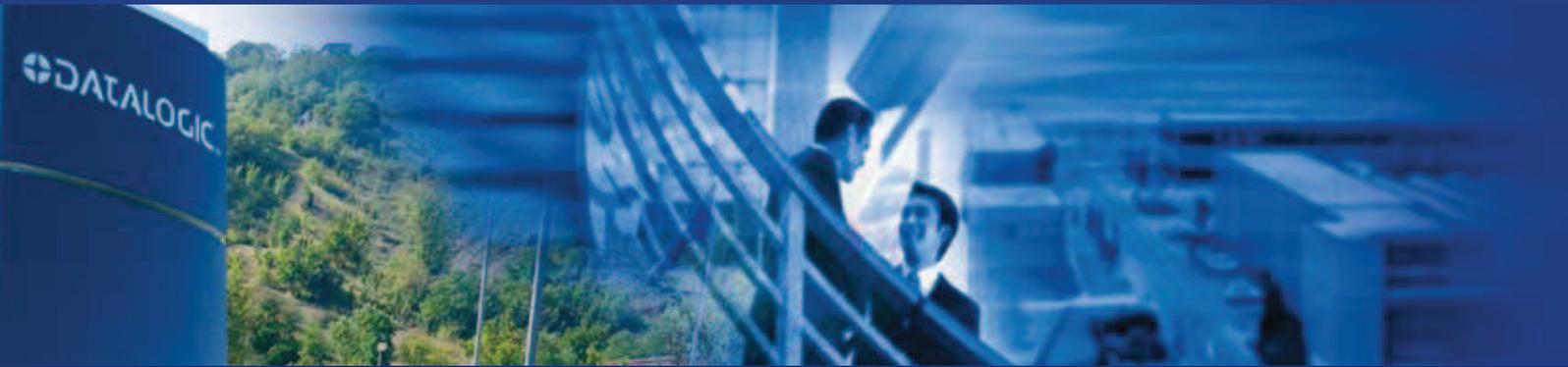
DATALOGIC AUTOMATION

SENSORS
VISION SENSORS
SAFETY
MEASUREMENT



GENERAL CATALOGUE

Photoelectric Sensors
Vision Sensors
Safety & Measurement Devices



DATALOGIC AUTOMATION FOR FACTORY AUTOMATION

Datalogic Automation is one of the worldwide leading producers of automatic identification, detection and marking solutions for industrial automation. The ideal partner for companies that aim at developing a real competitive advantage through product traceability and automation of manufacturing processes in industrial and logistics fields. Its portfolio includes:

- IDENTIFICATION (LASER, IMAGERS)
- SENSORS (PHOTOELECTRIC SENSORS, PROXIMITY SWITCHES, MEASUREMENT DEVICES)
- SAFETY
- VISION
- LASER MARKING (FIBER, CO2, DPSSL)

that guarantee product focalization aimed at satisfying specific customer applications as well as offering a very wide and complete product range for Factory Automation, particularly in the following sectors:

- AUTOMOTIVE
- HEALTHCARE - PHARMACEUTICAL
- FOOD - BEVERAGE - TOBACCO
- ELECTRONICS & SOLAR
- GENERAL MANUFACTURING
- TRANSPORTATION & LOGISTICS

Identification

The automatic identification products have been developed in order to supply compact and extremely functional solutions. Datalogic Automation offers all the technologies available today: state-of-the-art laser scanners and imagers for bar code reading (traditional and 2D). The wide range of accessories available together with the particular attention placed on connectivity in industrial environments (Fieldbus), increases the ease and flexibility of use of the Bar Code readers.

Sensor

Datalogic Automation is specialized in the development and manufacturing of photoelectric, luminescence and contrast sensors, slot sensors for label detection, fiber optic amplifiers, area sensors, inductive sensors and temperature controllers. Datalogic Automation also supplies a wide range of measurement sensors, commonly used in level and position control, as well as in the precise and accurate detection of the material dimensions during working.

Safety

Datalogic Automation offers a complete range of safety light curtains. Extremely reliable and flexible, these light curtains protect operators that pass, stay near or operate directly with dangerous automatic machines.

Vision

The Vision Product Group includes vision sensors for inspection and 2D readers for identification based on the state-of-the-art technology, that however remain easy to use.

Laser Marking

Datalogic Automation supplies a wide array of solutions able to suit all marking needs: CO2, Fiber and DPSS laser technology. The DPSS technology is available in two different versions (infra-red laser), with harmonic duplication (green laser) and harmonic triplication (UV laser). The complete range of technologies available satisfy all laser marking applications on a wide spectrum of materials: metal alloys – such as steel, titanium and aluminum – plastic materials, as well as organic materials such as paper, cardboard or fabric, leather, wood, glass, silicon and rare earth elements.

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UNIVERSAL PHOTOELECTRIC SENSORS

Tubular



		S5	S10	
OPERATING DISTANCES	SERIES			
	Through beam	0...12 m	0...18 m	
	Retroreflex (on R2 reflector)	0.1...4 m	0.1...4 m	
	Polarised retroreflex (on R2 reflector)	0.1...3 m	0.1...3 m	
	Retroreflex for transparents (on R2 reflector)	0.1...0.8 m	0.1...0.8 m	
	Diffuse proximity	1...10 cm 1...35 cm	1...10 cm 1...35 cm	
	Fixed focus proximity	0...60 cm 15 mm 50 mm	0...60 cm 14 mm	
	Background suppression			
	Foreground suppression			
	Distance sensor			
	Through beam with fibre optic	0...85 mm		
Diffuse proximity with fibre optic	0...22 mm			
TECHNICAL DATA	Power supply	Vdc 10...30 Vac 15...264	10...30 II3	
	Output	Vac/dc		
		PNP	•	•
		NPN	•	•
		NPN/PNP	•	
		relay (SCR)	(•)	
	Connection	other		
		cable	•	
		connector pig-tail	•	•
	Approximate dimensions (mm)	M18 x 55/68	M18 x 55/67	
Housing material	ABS	NI plated brass AISI-316L stainless steel		
Mechanical protection	IP67	IP69K		



S15
0...20 m
0.1...4 m
0.1...3 m
1...10 cm 1...35 cm
12...30 II3
•
•
•
•
M18 x 40
ABS
IP69K

UNIVERSAL PHOTOELECTRIC SENSORS

Tubular



		SERIES		
		S50	S51	
OPERATING DISTANCES	Through beam	0...20 m 0...60 m	0...20 m	
	Retroreflex (on R2 reflector)	0.1...4 m	0.1...4 m	
	Polarised retroreflex (on R2 reflector)	0.1...4 m 0.1...16 m	0.1...3 m	
	Retroreflex for transparents (on R2 reflector)	0.1...1.3 m		
	Diffuse proximity	0...10 cm 0...40 cm 0...70 cm 0...35 cm	0...10 cm 1...45 cm	
	Fixed focus proximity	10 cm		
	Background suppression	5...10 cm		
	Foreground suppression			
	Distance sensor			
	Through beam with fibre optic	0...100 mm		
	Diffuse proximity with fibre optic	0...30 mm		
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	10...30 II3DG	
	Output	PNP	•	•
		NPN	•	•
		NPN/PNP relay (SCR)		
		other	0...10 V	
		Connection	cable connector terminal block	• •
	Approximate dimensions (mm)		M18 x 55/68	M18 x 55/68
	Housing material		PBT NI plated brass	PBT NI plated brass
	Mechanical protection		IP67	IP67



SDS	SL5
	0...60 m  cl.1
	0.03...12 m  cl.1
	0...35 cm  cl.1
2...10 cm 4...12 cm	
10...30  	10...30  
.	.
.	.
.	.
.	.
M18 x 100 (SDS5) M18 x 80 (SDS10)	M18 x 66
ABS (SDS5) NI plated brass (SDS10) IP67	ABS IP67

UNIVERSAL PHOTOELECTRIC SENSORS

Miniature and fiber optic



		SERIES	SM123	SMall
OPERATING DISTANCES	Through beam		0...1.2 m	0...2 m
	Retroreflex (on R2 reflector)			5...150 cm
	Polarised retroreflex (on R2 reflector)		0...50 m (on R20)	10...100 cm
	Retroreflex for transparents (on R2 reflector)			
	Diffuse proximity		3...170 mm	
	Fixed focus proximity		3...20 mm	3...15 mm 3...20 mm 3...30 mm 3...50 mm
	Background suppression			
	Foreground suppression			
	Distance sensor			
	Through beam with fibre optic			
	Diffuse proximity with fibre optic			
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	10...30	10...30
	Output	PNP NPN NPN/PNP relay other	• •	• •
	Connection	cable connector terminal block	•	•
	Approximate dimensions (mm)		SM1: 8X26X12 SM2: 12X25X4 SM3: 9X26X15	8 x 23 x 12
	Housing material		ABS	polycarbonate
	Mechanical protection		IP67	IP67



S40	S41
0.1...6 m	0.1...6 m
0.1...3 m	
0.1...2.5 m  0.1...6 m	0.1...2.5 m
0.1...0.7 m	0.1...0.7 m
0.5...30 cm  cl.2 4...15 cm	0.2...35 cm
	110 mm
1.5...10 cm  2...6 cm	
10...30  	10...30  
.	.
.	.
.	.
.	.
12 x 32 x 20	12 x 32 x 20
ABS	ABS
IP67	IP67

UNIVERSAL PHOTOELECTRIC SENSORS

Miniature and fiber optic



		SERIES	S3Z	S3
OPERATING DISTANCES		Through beam 	0...15 m	0...5 m
		Retroreflex (on R2 reflector) 		0.1...2.5 m
		Polarised retroreflex (on R2 reflector) 	0.05...4 m	0.1...2 m
		Retroreflex for transparents (on R2 reflector) 	0...2 m	0.2...0.8 m
		Diffuse proximity 	0...70 cm 5...15 cm	0...10 cm 0...50 cm
		Fixed focus proximity 		12 mm
		Background suppression 	5...25 cm	
		Foreground suppression 		
		Distance sensor 		
		Through beam with fibre optic 		0...110 mm
		Diffuse proximity with fibre optic 		0...33 mm
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	10...30 	10...30 
	Output	PNP NPN NPN/PNP relay other	• •	• •
	Connection	cable connector terminal block	• •	• •
	Approximate dimensions (mm)		11 x 31 x 19	13 x 42 x 29
	Housing material		PC/PBT	ABS
	Mechanical protection		IP67	IP66



S8	S7
0...10 m  0.1...5 m	
0...0.8 m 0...2 m	
0...50 cm	
2...20 cm  5...30 cm	
	0...300 mm 0...150 mm 0...75 mm 0...100 mm 0...50 mm 0...25 mm
12...30    II3DG	12...24  
.	.
.	.
.	.
.	.
14 x 42 x 25	10 x 40 x 65
ABS	ABS
IP67	IP65 IP50 (trimmer vers.)

UNIVERSAL PHOTOELECTRIC SENSORS

Compact



		S6	S60	
OPERATING DISTANCES	SERIES			
	Through beam	0...20 m	0...20 m 0...60 m 	
	Retroreflex (on R2 reflector)	0.1...6 m		
	Polarised retroreflex (on R2 reflector)	0.1...5 m	0...3.2 m (coaxial) 0.1...6.5 m 0.1...20 m 	
	Retroreflex for transparents (on R2 reflector)	0.1...1 m	0...1.7 m (coaxial)	
	Diffuse proximity	1...90 cm 5...200 cm	1...100 cm 5...200 cm 0...60 cm 	
	Fixed focus proximity			
	Background suppression	0.1...10 cm 3...25 cm 10...50 cm	7...20 cm 5...10 cm 	
	Foreground suppression			
	Distance sensor		5...15 cm	
	Through beam with fibre optic			
	Diffuse proximity with fibre optic			
TECHNICAL DATA	Power supply	Vdc Vac	10...30  	
	Output	Vac/dc	15...264 cm	
		PNP	•	•
		NPN	•	•
		NPN/PNP	•	
		relay	•	
	Connection	other		0...10 V
		cable	•	•
		connector	•	•
	terminal block			
Approximate dimensions (mm)		18 x 50 x 50	15 x 50 x 50	
Housing material		ABS	ABS	
Mechanical protection		IP65	IP67	



S62	S90
	0...20 m  0...60 m
0.5...8.5 m  0.3...20 m	0...3.2 m (coaxial) 0.1...6.5 m  0.1...20 m 0...1.7 m (coaxial)
	1...100 cm 5...200 cm  0...60 cm
30...300 mm 60...600 mm 60...1200 mm 200...2000 mm 30...150 mm  50...350 mm 	7...20 cm  5...10 cm
	7...20 cm
10...30  	10...30  
.	.
.	.
.	.
18 x 50 x 50	15 x 50 x 41
ABS	zama
IP67	IP67

UNIVERSAL PHOTOELECTRIC SENSORS

Maxi



OPERATING DISTANCES

SERIES		S2	S20	
OPERATING DISTANCES	Through beam 	0...10 m 0...50 m	0.1...50 m	
	Retroreflex (on R2 reflector) 	0.1...5 m		
	Polarised retroreflex (on R2 reflector) 	0.1...3 m	0.1...8 m	
	Retroreflex for transparents (on R2 reflector) 			
	Diffuse proximity 	1...90 cm 1...200 cm	0.1...2 m	
	Fixed focus proximity 			
	Background suppression 		10...50 cm	
	Foreground suppression 			
	Distance sensor 			
	Through beam with fibre optic 			
Diffuse proximity with fibre optic 				
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	10...30  	
	Output	PNP	15...264	.
		NPN		.
		NPN/PNP	.	
		relay	.	
		other		
	Connection	cable		
		connector		.
		terminal block	.	
	Approximate dimensions (mm)		26 x 58 x 85	26 x 65 x 55
Housing material		PBT	ABS	
Mechanical protection		IP66	IP66	



S300
0...60 m
0.1...22 m
0...5 m
40...250 cm
10...30 (UL) (CE) (Ex) II3DG
24 ... 240 / 12...240
.
.
.
.
28 x 85 x 70
polycarbonate
IP67

APPLICATION PHOTOELECTRIC SENSORS

Slot sensors



OPERATING DISTANCES

SERIES		SR21	SR22
Slot width		2 mm	2 mm
Slot depth		50 mm	40 mm
Switching frequency		25 kHz	10 kHz
Light emission		IR LED red / green LED	IR LED
Setting		AUTO-SET push-button	trimmer

TECHNICAL DATA

Power supply	Vdc	10...30 	24 ± 15% 
	Vac		
Output	Vac/dc		
	PNP	•	•
	NPN	•	•
	NPN/PNP		
	relay		
Connection	other		
	cable		
	connector	•	•
	terminal block		
Approximate dimensions (mm)		20 x 90 x 26	14 x 68 x 37
Housing material		zama	aluminium
Mechanical protection		IP65	IP60



SR31
30 mm
42 mm
10 kHz
IR LED
Multi-turn sensitivity trimmer
10...30
•
•
•
•
•
13 x 50 x 70
zama
IP60

APPLICATION PHOTOELECTRIC SENSORS

Slot sensors



		SRF-30	SRF-50	
OPERATING DISTANCES	SERIES			
	Slot width	30 mm	50 mm	
	Slot depth	34 mm	54 mm	
	Switching frequency	1.5 kHz 3 kHz	1.5 kHz 3 kHz	
	Light emission	red LED red Laser	red LED red Laser	
	Setting	trimmer	trimmer	
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	10...30	
	Output	PNP	•	•
		NPN	•	•
		NPN/PNP		
		relay		
	Connection	other		
		cable		
		connector	•	•
	terminal block			
	Approximate dimensions (mm)		10 x 50 x 59	10 x 70 x 79
Housing material		aluminium	aluminium	
Mechanical protection		IP65	IP65	





SRF-80	SRF-120
80 mm	120 mm
54 mm	54 mm
1.5 kHz 3 kHz 	1.5 kHz 3 kHz 
red LED red Laser 	red LED red Laser 
trimmer	trimmer
10...30 	10...30 
.	.
.	.
.	.
10 x 100 x 79	10 x 140 x 84
aluminium	aluminium
IP65	IP65

APPLICATION PHOTOELECTRIC SENSORS

Contrast and colour sensors



OPERATING DISTANCES

SERIES		TLμ	TL46
Contrast sensor		6...60 mm	6...60 mm
Contrast sensor with fibre optic		0...3 mm 0...10 mm	
Colour sensor			
Switching frequency		10 kHz 20 kHz	15 kHz 20 kHz 30 kHz
Light emission		red / green LED white LED	RGB LED
Serial interface			+/- SET push-buttons
Setting		MARK and BACKGROUND push-buttons	

TECHNICAL DATA

Power supply	Vdc	10...30	10...30 II3DG
	Vac		
Output	Vac/dc		
	PNP	•	
	NPN	•	
	NPN/PNP		•
	relay		
Connection	other	0...5 V	0...5 V
	cable	•	•
	connector	•	•
	pig-tail		
Approximate dimensions (mm)		31 x 81 x 58	31 x 81 x 58
Housing material		zama	aluminium
Mechanical protection		IP67	IP67



TL50	S65-W	S8-W	S65-V
9 mm	12...20 mm	10 mm	
			5...45 mm
15 kHz	30 kHz	10 kHz	1.5 kHz (V09 vers.) 500 Hz (V19 vers.)
RGB LED	white LED	RGB LED	white LED
	RS485		RS485
MARK/BKGD push-buttons	+/- SET push-buttons	Teach-in	SET and SEL push-buttons
10...30 II3DG	10...30	12...30	10...30
	.	.	.
.	.	.	.
	0...5 V		
.	.	.	.
31 x 81 x 53	50 x 50 x 25	14 x 42 x 25	50 x 50 x 25
ABS	ABS	ABS	ABS
IP67	IP67	IP67	IP67

APPLICATION PHOTOELECTRIC SENSORS

Luminescence sensors



OPERATING DISTANCES

SERIES		LD μ	LD46
Luminescence sensor		10...100 mm	10...100 mm
Luminescence sensor with fibre optic		0...30 mm	0...30 mm
Switching frequency		2 kHz	2 kHz
Light emission		UV LED	UV-HP LED
Setting		MARK and BACKGROUND push-buttons	+/- SET push-buttons

TECHNICAL DATA

Power supply	Vdc	10...30 	15...30    II3DG
	Vac		
Output	Vac/dc		
	PNP	•	
	NPN	•	
	NPN/PNP		•
	relay		
Connection	other	0...7 V	0...5 V
	cable	•	•
	connector	•	•
	terminal block		
Approximate dimensions (mm)		31 x 81 x 58	31 x 81 x 58
Housing material		zama	aluminium
Mechanical protection		IP67	IP67



S90-U	S60-U	S50-U
0...40 mm	0...40 mm	8...20 mm
2 kHz	2 kHz	1 kHz
UV LED	UV LED	UV LED
SET push-button	SET push-button	SET push-button
10...30  	10...30  	10...30  
:	:	:
:	:	:
.	.	.
15 x 50 x 41	15 x 50 x 50	M18 x 55/68
zama	ABS	PBT NI plated brass
IP67	IP67	IP67

APPLICATION PHOTOELECTRIC SENSORS

Area sensors



OPERATING DISTANCES

SERIES	AS1-HR	AS1-SR
Area sensor 	100 mm	100 mm
Line sensor 		
Precision		
Resolution	0.2 x 75 mm Ø 6 mm	0.2 x 200 mm Ø18 mm
Switching frequency	500 Hz	500 Hz
Light emission	IR LED	IR LED
Serial interface		
Operating distance	0.3...1.9 m 0.8...3 m	0.3...1.9 m 0.8...3 m

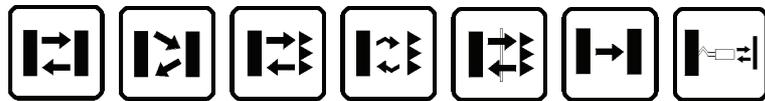
TECHNICAL DATA

Power supply	Vdc	10...30  	10...30 
	Vac		
Output	Vac/dc		
	PNP	•	•
	NPN		
	NPN/PNP		
	relay		
Connection	other		
	cable		
	connector	•	•
	terminal block		
Approximate dimensions (mm)		20 x 41 x 150	20 x 41 x 150
Housing material		aluminium	aluminium
Mechanical protection		IP67	IP67



S5 SERIES

The **S5** series offers a range of plastic tubular M18 photoelectric sensors. The most varied optic functions can be chosen amongst the fixed focus or diffuse proximity models with short, medium or long operating distances reaching 60 cm; the 4 m retroreflex, 3 m polarised retroreflex and 1 m for detection of transparent materials; the 12 m through beam and models with fibre-optic connection. Different versions with either axial or radial optics are available. The series offers connector or cable connection, 3 wire Vac versions or 4 wire Vdc versions with complete configuration of the NPN/ PNP output and dark/light mode. A red LED indicating the output status is visible on the bottom side of the sensor. The versions with trimmer adjustment present also a green LED signalling the switching stability according to the received signal's intensity. The rugged ABS housing always guarantees IP67 protection.

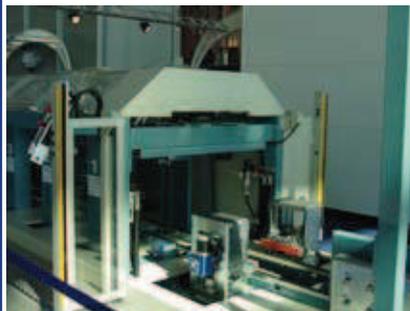


HIGHLIGHTS

- Wide versatility of optic functions and connections
- High operating distances for all functions
- Models with trimmer adjustment and stability LED
- Rugged and impermeable plastic housing

APPLICATIONS

Ceramics



Transportation lines



Beverage & Bottling



Packaging lines



TECHNICAL DATA

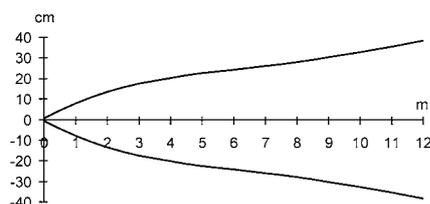
Power supply:	10 ... 30 VDC (D.C. VERS.), REVERSE POLARITY PROTECTION 15 ... 264 Vac (a.c. vers.)
Consumption:	30 mA max. (d.c. vers.) 10 mA max. (a.c. vers.)
Light emission:	infrared LED 880 nm red LED 660 nm (B, E1 vers.)
Diffuse proximity operating distance:	1 ... 10 cm (C10 vers.), 1 ... 8 cm (C8 vers.) 1 ... 35 cm (C35 vers.), 1 ... 30 cm (C30 vers.) 1 ... 60 cm (C60 vers.)
Fixed focus operating distance:	15 mm with 1 mm spot (D15 vers.) 50 mm with 2 mm spot (D50 vers.)
Retroreflex operating distance:	0.1 ... 4 m (on R2)
Polarised retroreflex operating distance:	0.1 ... 3 m (on R2)
Retroreflex for transparents op. distance:	0.1 ... 0.8 m (on R2)
Through beam operating distance:	0 ... 12 m (F/G12 vers.), 0 ... 8 cm (F/G8 vers.)
Operating distance with fibre-optics:	22 mm proximity (with OF-18-ST) 85 mm through beam (with OF-19-ST) refer to OF series for other fibres
Setting:	sensitivity trimmer (A4, C8, C10, D15, D50, G vers. excluded)
Indicators:	red OUTPUT LED green STABILITY LED (d.c. vers.) red POWER LED (G vers.)
Output type:	NPN or PNP configurable (d.c. vers.) SCR + bridge rectifier (a.c. vers.)
Saturation voltage:	2.5 V max. (vers. d.c.)
Output current:	150 mA max.(vers. d.c.), short-circuit prot. 100 mA max.(vers. a.c.)
Response time:	500 µs (D50 vers.) 1 ms max. 2 ms (F vers. in d.c.) 20 ms max. (a.c. vers.)
Switching frequency:	1KHz (D50 vers.) 500 Hz max. 250 Hz max. (F vers. in d.c.) 25 Hz max. (a.c. vers.)
Operating mode:	dark/light (configurable in 4 wires d.c. vers.)
Auxiliary functions:	'test +' and 'test -' inputs (G vers. in d.c.)
Connection:	4-pole M12 connector or 2 m Ø 5 mm cable
Electrical protection:	class 1 (a.c. vers.); class 2 (d.c. vers.)
Mechanical protection:	IP67
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	25 g max. (connector vers.); 100 g max. (cable vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	(  vers.d.c.)

The operating distances indicate the detection distance with excess gain 2.

S5-5-D50-92

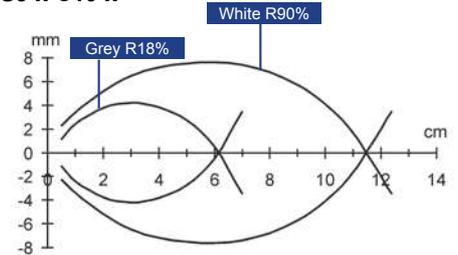


S5-x-F/G-x

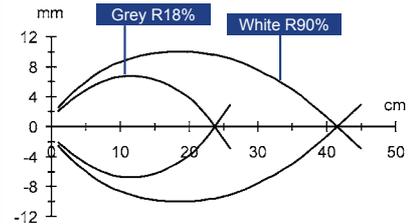


DETECTION DIAGRAMS

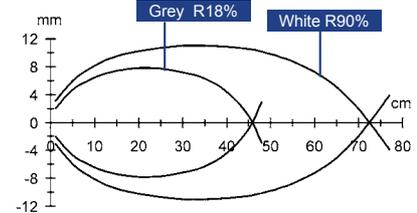
S5-x-C10-x



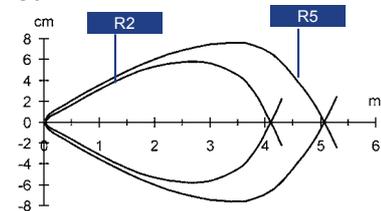
S5-x-C35-x



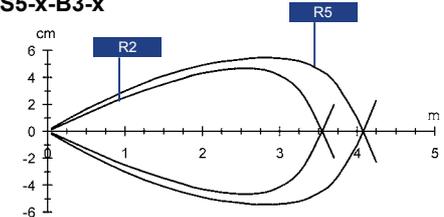
S5-x-C60-x



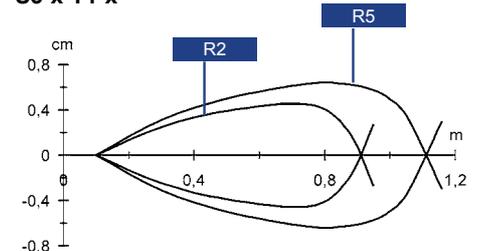
S5-x-A4-x



S5-x-B3-x

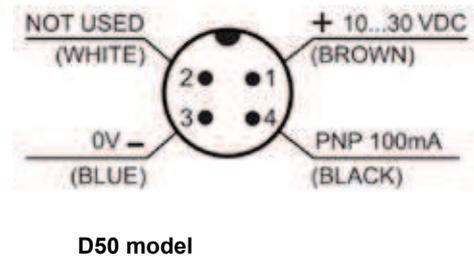
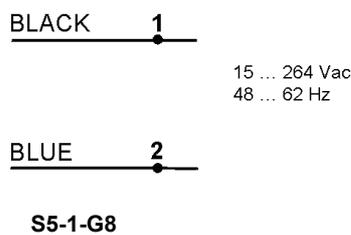
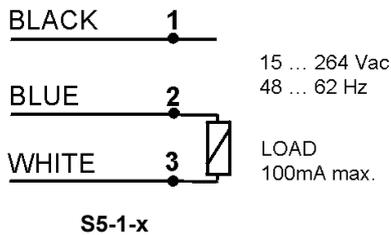
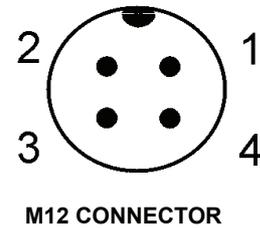
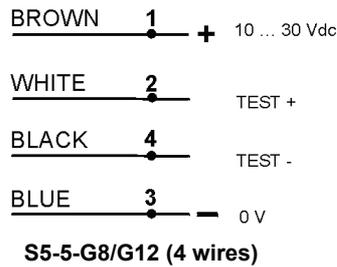
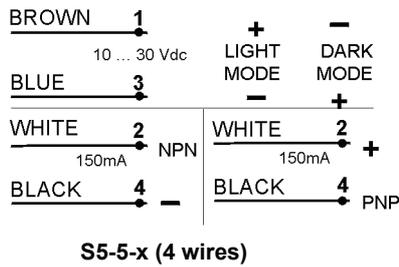


S5-x-T1-x



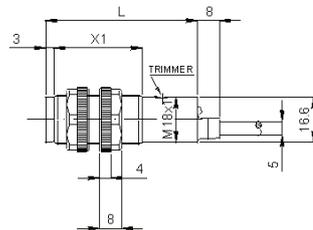
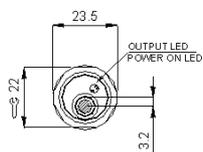
The detection diagrams indicate the typical operating distance with excess gain 1.

CONNECTIONS



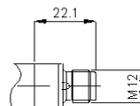
DIMENSIONS

AC AXIAL VERSION

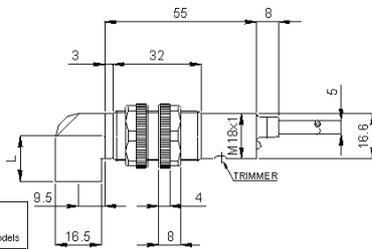
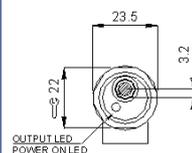


MODELS		
	with trimmer	without trimmer
X1	52	42
L	75	65

M12 CONNECTOR

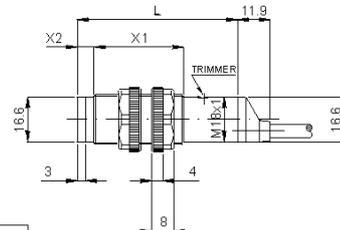
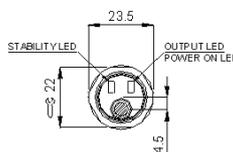


RADIAL VERSION



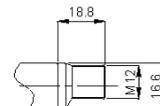
MODELS			
	mod. B	mod. FIG	other models
L	19.5	20.5	16.5

DC AXIAL VERSION

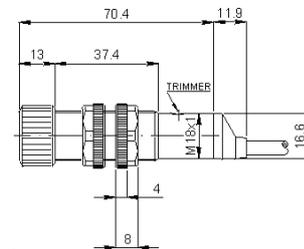
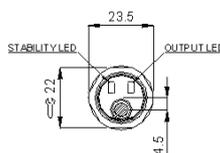


MODELS			
	without trimmer	with trimmer (except mod. B)	mod. B
L	55	65	68
X1	32	42	42
X2	3	3	6

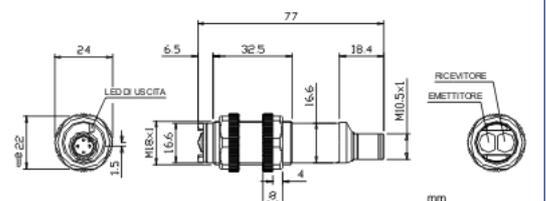
M12 CONNECTOR



FIBRE OPTIC VERSION



D50 Model



MODEL SELECTION AND ORDER INFORMATION

	AXIAL OPTIC VERSIONS		RADIAL OPTIC VERSIONS	
4 WIRE CONNECTION 10-30Vdc	4 POLE CABLE	M12 CONN.	4 POLE CABLE	M12 CONN.
Short distance diffuse proximity	S5-5-C10-30 (G5210530)	S5-5-C10-32 (G5210532)	S5-5-C10-35 (G5210535)	S5-5-C10-37 (G5210537)
Medium distance diffuse proximity	S5-5-C35-30 (G5210630)	S5-5-C35-32 (G5210632)	S5-5-C35-35 (G5210635)	S5-5-C35-37 (G5210637)
Long distance diffuse proximity	S5-5-C60-30 (952051640)	S5-5-C60-32 (952051650)	--	--
Fixed focus proximity	S5-5-D15-30 (G5210430)	S5-5-D15-32 (G5210432)	S5-5-D15-35 (G5210435)	S5-5-D15-37 (G5210437)
Retroreflex	S5-5-A4-30 (G5210230)	S5-5-A4-32 (G5210232)	--	--
Polarised retroreflex	S5-5-B3-30 (G5210730)	S5-5-B3-32 (G5210732)	S5-5-B3-35 (G5210735)	S5-5-B3-37 (G5210737)
Retroreflex for transparents	S5-5-T1-30 (952051680)	S5-5-T1-32 (952051690)	--	--
Through beam receiver	S5-5-F12-30 (G5210130)	S5-5-F12-32 (G5210132)	S5-5-F8-35 (G5210135)	S5-5-F8-37 (G5210137)
Through beam emitter	S5-5-G12-00 (G5210000)	S5-5-G12-02 (G5210002)	S5-5-G8-05 (G5210005)	S5-5-G8-07 (G5210007)
Fibre-optic amplifier	S5-5-E1-30 (G5210830)	S5-5-E1-32 (G5210832)	--	--
3 WIRE CONNECTION 10-30Vdc	4 POLE CABLE	M12 CONN.	4 POLE CABLE	M12 CONN.
Fixed focus proximity	--	S5-5-D50-92 (952051940)	--	--
3 WIRE CONNECTION 15 - 264 Vac	CABLE - dark mode	CABLE - light mode	CABLE - dark mode	CABLE - light mode
Short distance diffuse proximity	S5-1-C8-10 (G5110510)	S5-1-C8-20 (G5110520)	S5-1-C8-15 (G5110515)	S5-1-C8-25 (G5110525)
Medium distance diffuse proximity	S5-1-C30-10 (G5110610)	S5-1-C30-20 (G5110620)	S5-1-C30-15 (G5110615)	S5-1-C30-25 (G5110625)
Fixed focus proximity	S5-1-D15-10 (G5110410)	S5-1-D15-20 (G5110420)	--	--
Retroreflex	S5-1-A2-10 (G5110210)	S5-1-A2-20 (G5110220)	S5-1-A2-15 (G5110215)	S5-1-A2-25 (G5110225)
Through beam receiver	S5-1-F8-10 (G5110110)	S5-1-F8-20 (G5110120)	--	--
Through beam emitter	S5-1-G8-00 (G5110000)		S5-1-G8-05 (G5110005)	

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SP-40	fixed support for tubular M18 sensors	95ACC1370
SWING-18	adjustable support for plastic tubular M18 sensors	895000006

Please refer also to **Sensor Accessories**



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S10 SERIES

The **S10** series, in a practical and sturdy tubular M18 metal housing, suits the more difficult applications in the mechanical or food industries.

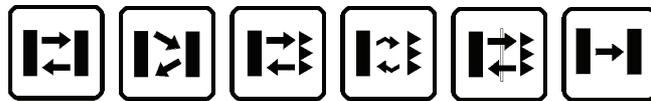
The IP69K mechanical protection guarantees resistance to washdown with water jets at high temperatures reaching 80°C and pressure reaching 100 bar.

Moreover, AISI-316L stainless steel versions are available for a major resistance towards chemical agents and aggressive detergents as well as to acid corrosion.

The lens in PMMA plastic offers the possibility of mounting a glass MEK-proof protection. A reflector with IP69K mechanical protection is available for the retroreflex versions.

The **S10** series includes adjustable proximity versions reaching 10, 35 or 60 cm and 14 mm fixed focus proximity, 4 m retroreflex and 3 m polarised retroreflex, 0.8 m retroreflex for transparents as well as 18 m through beam models.

The M12 connection requires only 3 wires for power supply and NPN or PNP output.

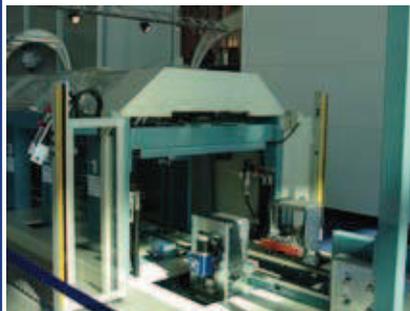


HIGHLIGHTS

- High excess-gain and operating distances
- IP69K mechanical protection
- AISI-316L stainless steel versions
- Standard 3 wire configuration output

APPLICATIONS

Ceramics



Transportation lines

Beverage & Bottling



Packaging lines for Food & Pharma

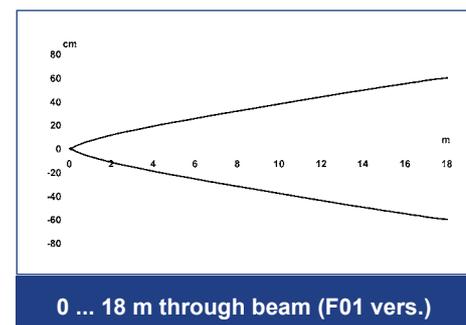
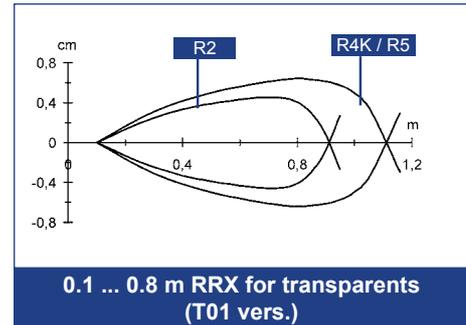
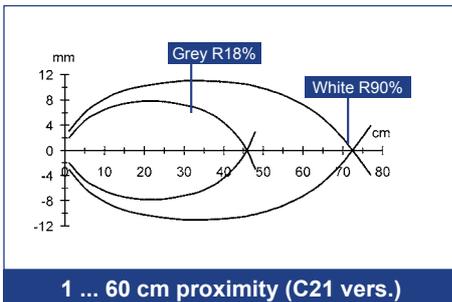
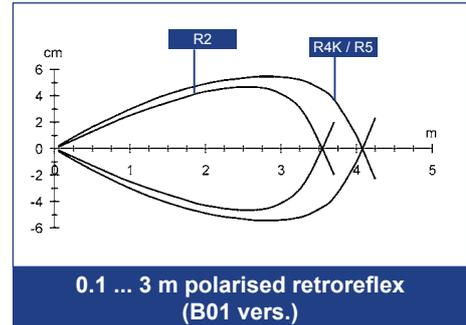
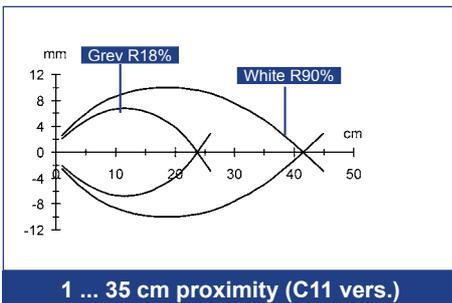
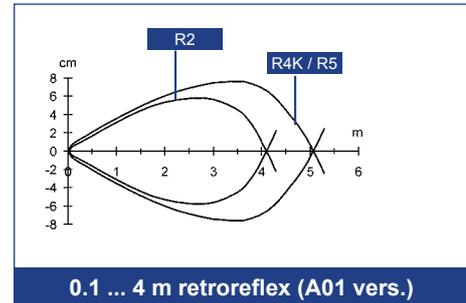
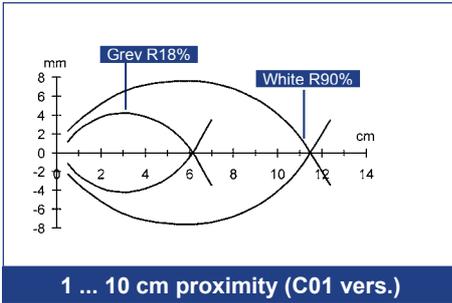


TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	30 mA max.
Light emission:	infrared LED 880 nm red LED 660 nm (B, D, T vers.)
Diffuse proximity operating distance:	1 ... 10 cm (C01), 1 ... 35 cm (C11), 1 ... 60 cm (C21)
Fixed focus operating distance:	14 mm with 1.5 mm spot
Retroreflex operating distance:	0.1 ... 4 m (on R2)
Polarised retroreflex operating distance:	0.1 ... 3 m (on R2)
RRX for transparents operating distance:	0.1 ... 0.8 m (on R2)
Through beam operating distance:	0 ... 18 m
Setting:	sensitivity trimmer
Indicators:	yellow OUTPUT LED green STABILITY LED green POWER LED (G vers.)
Output type:	NPN or PNP, open collector
Saturation voltage:	1 V max.
Output current:	150 mA max., short-circuit protection
Response time:	1 ms max. 2 ms max. (F vers.)
Switching frequency:	500 Hz max. 250 Hz max. (F vers.)
Emitter Test input:	Test + (XE vers.) Test - (XF vers.)
Connection:	M12 4-pole connector
Electrical protection:	class 1
Mechanical protection:	IP69K
Housing material:	nickel-plated brass (S10-MA vers.) AISI 316L stainless steel (S10-NA vers.)
Lens material:	PMMA plastic
Weight:	50 g max.
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	    I13DG

The operating distances indicate the detection distance with excess gain 2.

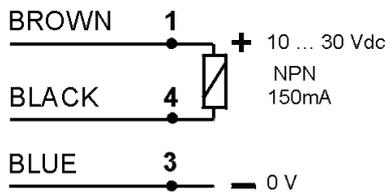
DETECTION DIAGRAMS



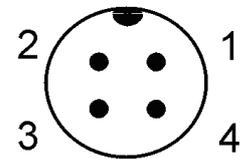
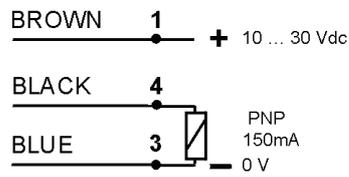
The detection diagrams indicate the typical operating distance with excess gain 1..

CONNECTIONS

NPN OUTPUT



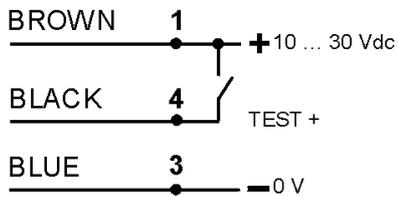
PNP OUTPUT



M12 CONNECTOR

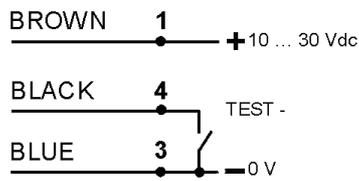
S10-XX-5-A/B/C/D/F/T

TEST +



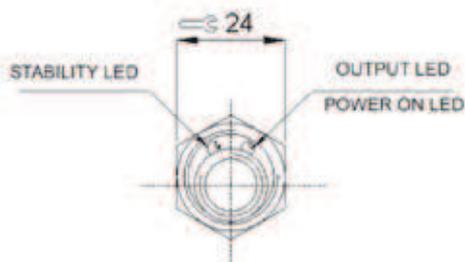
S10-XX-5-G00-XE

TEST -



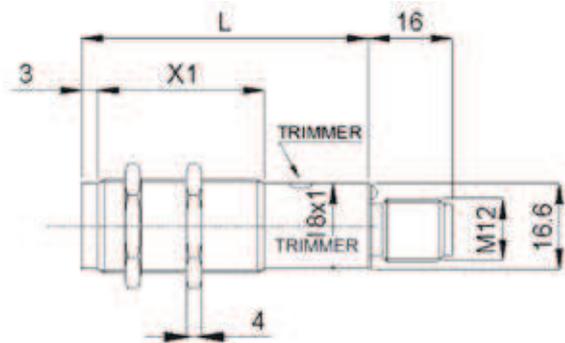
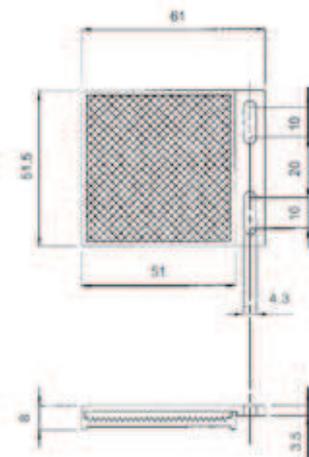
S10-XX-5-G00-XF

DIMENSIONS

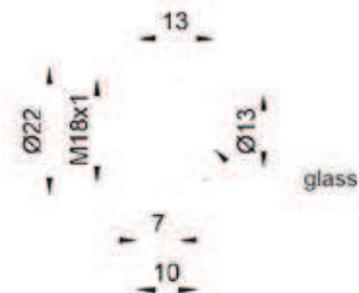


MODELS			
	A01/C01/C11/C21/D14/F01/T01	B01	G00
L	65.1	67.4	55.1
X1	41.3	43.6	31.3

R4K REFLECTOR



MEK PROOF



mm

MODEL SELECTION AND ORDER INFORMATION

Model	Optic Function	Housing	Out (In)	Order N°
S10-MA-5-A01-ND	retroreflex	nickel plated brass	NPN, dark	952101100
S10-MA-5-A01-NL	retroreflex	nickel plated brass	NPN, light	952101110
S10-MA-5-A01-PD	retroreflex	nickel plated brass	PNP, dark	952101120
S10-MA-5-A01-PL	retroreflex	nickel plated brass	PNP, light	952101130
S10-NA-5-A01-ND	retroreflex	AISI 316L stainless steel	NPN, dark	952101420
S10-NA-5-A01-PD	retroreflex	AISI 316L stainless steel	PNP, dark	952101440
S10-MA-5-B01-ND	polarised retroreflex	nickel plated brass	NPN, dark	952101140
S10-MA-5-B01-NL	polarised retroreflex	nickel plated brass	NPN, light	952101150
S10-MA-5-B01-PD	polarised retroreflex	nickel plated brass	PNP, dark	952101160
S10-MA-5-B01-PL	polarised retroreflex	nickel plated brass	PNP, light	952101170
S10-NA-5-B01-ND	polarised retroreflex	AISI 316L stainless steel	NPN, dark	952101460
S10-NA-5-B01-PD	polarised retroreflex	AISI 316L stainless steel	PNP, dark	952101480
S10-MA-5-T01-ND	retroreflex for transparents	nickel plated brass	NPN, dark	952101180
S10-MA-5-T01-NL	retroreflex for transparents	nickel plated brass	NPN, light	952101190
S10-MA-5-T01-PD	retroreflex for transparents	nickel plated brass	PNP, dark	952101200
S10-MA-5-T01-PL	retroreflex for transparents	nickel plated brass	PNP, light	952101210
S10-NA-5-T01-ND	retroreflex for transparents	AISI 316L stainless steel	NPN, dark	952101500
S10-NA-5-T01-PD	retroreflex for transparents	AISI 316L stainless steel	PNP, dark	952101520
S10-MA-5-C01-PD	short distance proximity	nickel plated brass	PNP, dark	952101240
S10-MA-5-C01-PL	short distance proximity	nickel plated brass	PNP, light	952101250
S10-MA-5-C01-ND	short distance proximity	nickel plated brass	NPN, dark	952101220
S10-MA-5-C01-NL	short distance proximity	nickel plated brass	NPN, light	952101230
S10-NA-5-C01-NL	short distance proximity	AISI 316L stainless steel	NPN, light	952101550
S10-NA-5-C01-PL	short distance proximity	AISI 316L stainless steel	PNP, light	952101570
S10-MA-5-C11-ND	medium distance proximity	nickel plated brass	NPN, dark	952101260
S10-MA-5-C11-NL	medium distance proximity	nickel plated brass	NPN, light	952101270

MODEL SELECTION AND ORDER INFORMATION

Model	Optic Function	Housing	Out (In)	Order N°
S10-MA-5-C11-PD	medium distance proximity	nickel plated brass	PNP, dark	952101280
S10-MA-5-C11-PL	medium distance proximity	nickel plated brass	PNP, light	952101290
S10-NA-5-C11-NL	medium distance proximity	AISI 316L stainless steel	NPN, light	952101590
S10-NA-5-C11-PL	medium distance proximity	AISI 316L stainless steel	PNP, light	952101610
S10-MA-5-C21-NL	long distance proximity	nickel plated brass	NPN, light	952101310
S10-MA-5-C21-PL	long distance proximity	nickel plated brass	PNP, light	952101330
S10-NA-5-C21-NL	long distance proximity	AISI 316L stainless steel	NPN, light	952101630
S10-NA-5-C21-PL	long distance proximity	AISI 316L stainless steel	PNP, light	952101650
S10-MA-5-D01-NL	fixed focus proximity	nickel plated brass	NPN, dark	952101340
S10-MA-5-D01-PL	fixed focus proximity	nickel plated brass	PNP, light	952101350
S10-NA-5-D01-NL	fixed focus proximity	AISI 316L stainless steel	NPN, light	952101660
S10-NA-5-D01-PL	fixed focus proximity	AISI 316L stainless steel	PNP, light	952101670
S10-MA-5-F01-ND	receiver	nickel plated brass	NPN, dark	952101360
S10-MA-5-F01-NL	receiver	nickel plated brass	NPN, light	952101370
S10-MA-5-F01-PD	receiver	nickel plated brass	PNP, dark	952101380
S10-MA-5-F01-PL	receiver	nickel plated brass	PNP, light	952101390
S10-NA-5-F01-ND	receiver	AISI 316L stainless steel	NPN, dark	952101680
S10-NA-5-F01-PD	receiver	AISI 316L stainless steel	PNP, dark	952101700
S10-MA-5-G00-XF	emitter	nickel plated brass	(Test -)	952101400
S10-MA-5-G00-XE	emitter	nickel plated brass	(Test +)	952101410
S10-NA-5-G00-XF	emitter	AISI 316L stainless steel	(Test -)	952101720
S10-NA-5-G00-XE	emitter	AISI 316L stainless steel	(Test +)	952101730

ACCESSORY SELECTION AND ORDER INFORMATION

Model	Description	Code N°
R4K	IP69K plastic reflector 51 x 61 mm	95A151220
MEK-proof	front protection	G5000001
SP-40	fixed support for tubular M18 sensors	95ACC1370

Please refer also to **Sensor Accessories**.



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S15 SERIES

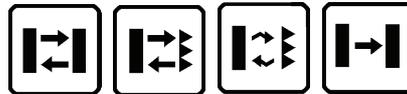
The main characteristic of the M18 tubular **S15** sensors is the housing length of only 40 mm, especially suitable for applications with reduced space.

The **S15** series is available with cable output, in order to maximise the concept of 'reduced dimensions' as well as to offer contemporaneously the best installation flexibility.

The **S15** series is supplied without the sensitivity adjustment trimmer to ease and speedup installation. This feature drastically reduces the possibility of allowing the operator to modify the sensor's performances and so guaranteeing major reliability and productivity.

The main optic functions used in the industrial market are available, polarised retroreflex, non-polarised retroreflex, diffuse proximity and through beam.

These sensors are ideal for the most critical applications with harsh environmental conditions thanks to the IP69K mechanical protection.

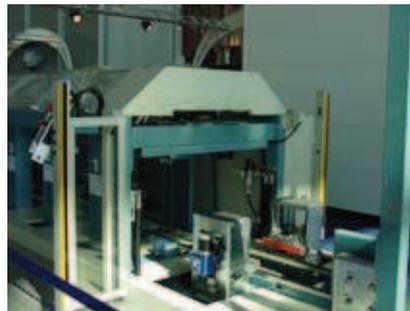


HIGHLIGHTS

- Small housing of only 40 mm
- Cable or pig-tail versions
- No sensitivity adjustment trimmer
- IP69K mechanical protection

APPLICATIONS

Ceramics



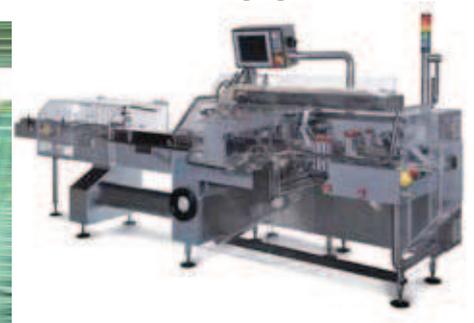
Transportation lines



Beverage & Bottling



Packaging lines



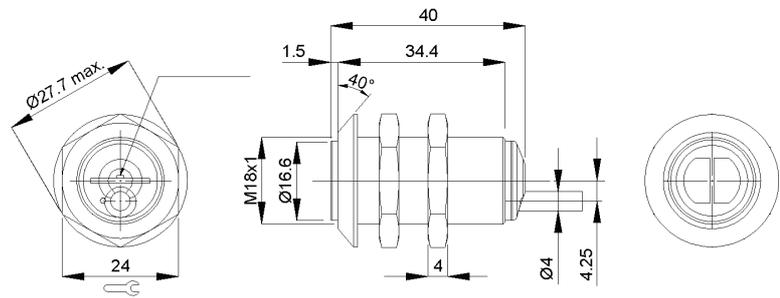
INSTALLATION

The sensor can be fixed by means of the M18x1 threaded body using CH.24 nuts (1.5 Nm maximum tightening torque) or low-profile flared nut provided specifically supplied for. Various orientable fixing brackets are available to ease sensor positioning (please refer to the accessories listed in the general catalogue). The operating distance is measured from the front surface of the sensor lens. C models: the object has to be moved closer or further away from the front surface of the sensor lens to improve detection. In case of lateral translation, the object must move as indicated in the figure.

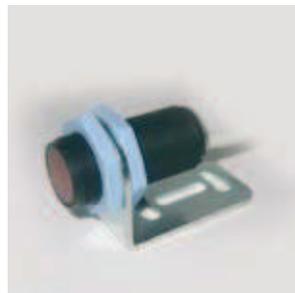
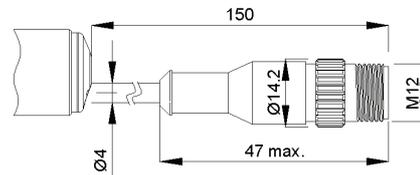


DIMENSIONS

CABLE VERSION



PIG-TAIL VERSION



ACCESSORIES

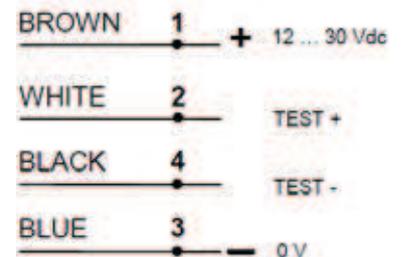
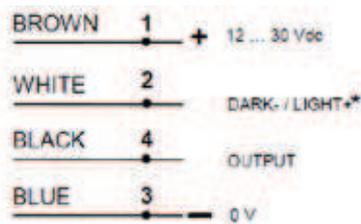
For dedicated accessories refer to the **ACCESSORIES** section.

Refer also to **Connectors** and **Reflectors** of the **General Catalogue**.

CONNECTIONS

S15-...A00/B00/C00/C10/F00

S15-...G00



TECHNICAL DATA

		S15-PA-X-A00	S15-PA-X-B00	S15-PA-X-C00	S15-PA-X-C10	S15-PA-X-F00	S15-PA-X-G00
Long diffuse proximity operating distance:	1 ... 35 cm			•			
Short diffuse proximity operating distance:	1 ... 10 cm				•		
Retroreflex operating distance:	0,1...4 m on R2	•					
Polarised retroreflex operating distance:	0,1...3 m on R2		•				
Through beam operating distance:	0...20 m					•	•
Power supply:	12 ... 30 Vdc ¹	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•
Consumption:	≤ 30 mA	•	•	•	•	•	•
Light emission ² :	infrared LED 880 nm	•		•	•	•	•
	red LED 660 nm		•				
Indicators:	yellow OUTPUT LED	•	•	•	•	•	
	green POWER LED						•
Output type:	PNP(-PP suffix)	•	•	•	•	•	•
	NPN (-NN suffix)	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•
Response time:	1 ms	•	•	•	•		
	4 ms					•	
Switching frequency:	≤ 500 Hz	•	•	•	•		
	≤ 120 Hz					•	
Operating mode:	selectable dark/light ³	•	•	•	•	•	•
Auxiliary functions:	Test + and Test -						•
Electrical protection:	class 2	•	•	•	•	•	•
Mechanical protection:	IP69K	•	•	•	•	•	•
Protection devices:	A, B ⁴	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•
Lens material:	plastic PMMA	•	•	•	•	•	•
Weight:	75 g max.	•	•	•	•	•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•
Reference:	EN 60947-5-2, UL 508	•	•	•	•	•	•

TECHNICAL NOTE

¹Limit values

²Average life of 100.000 h with TA = +25 °C

³With L/D input not connected the proximity models function in the light mode and the retroreflex and through beam models in the dark mode; the light mode can be selected connecting the L/D input to +Vdc, the dark mode connecting it to 0Vdc

⁴A - reverse polarity protection

B - overload and short-circuit protection

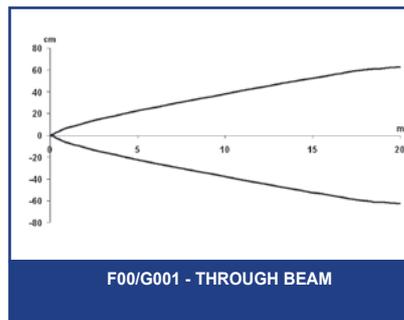
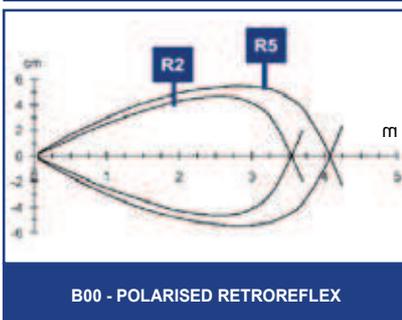
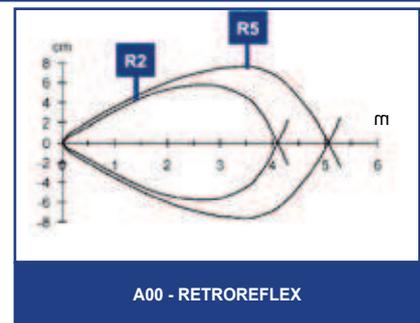
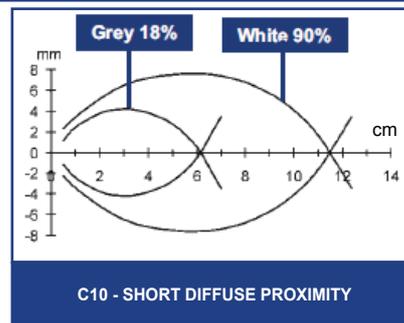
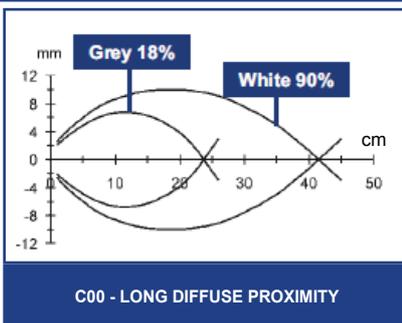
X = 2, 2 m Ø 4 mm cable version

(PVC, 4 x 0,14 mm²)

X = 3, pig-tail version (150 mm cable + M12 4-pole connector)



DETECTION DIAGRAM



MODEL SELECTION AND ORDER INFORMATION

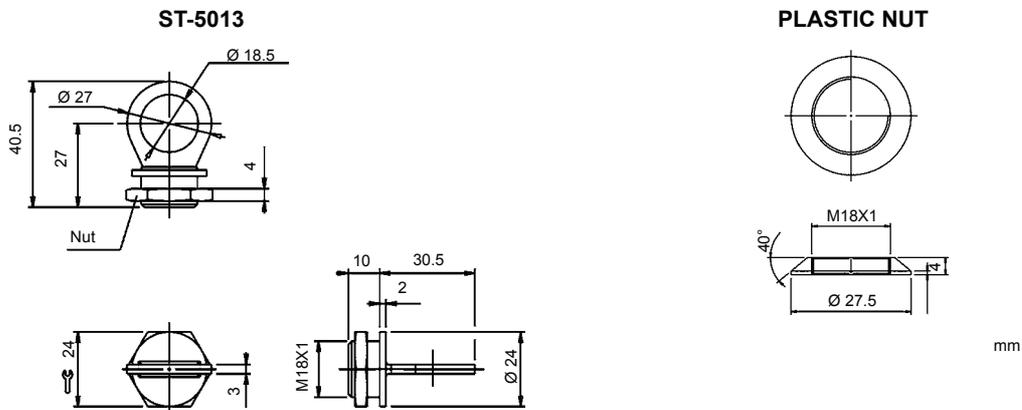
MODEL	OPTIC FUNCTION	CONNECTION	OUTPUT	ORDER N°.
S15-PA-2-A00-PK	retroreflex	2 m cable	PNP	952301000
S15-PA-2-B00-PK	polarised retroreflex	2 m cable	PNP	952301010
S15-PA-2-C10-PK	short diffuse proximity	2 m cable	PNP	952301020
S15-PA-2-C00-PK	long diffuse proximity	2 m cable	PNP	952301030
S15-PA-2-F00-PK	receiver	2 m cable	PNP	952301040
S15-PA-2-A00-NK	retroreflex	2 m cable	NPN	952301050
S15-PA-2-B00-NK	polarised retroreflex	2 m cable	NPN	952301060
S15-PA-2-C10-NK	short diffuse proximity	2 m cable	NPN	952301070
S15-PA-2-C00-NK	long diffuse proximity	2 m cable	NPN	952301080
S15-PA-2-F00-NK	receiver	2 m cable	NPN	952301090
S15-PA-2-G00-XG	emitter	2 m cable	-	952301100
S15-PA-3-A00-PK	retroreflex	pig-tail *	PNP	952301110
S15-PA-3-B00-PK	polarised retroreflex	pig-tail *	PNP	952301120
S15-PA-3-C10-PK	short diffuse proximity	pig-tail *	PNP	952301130
S15-PA-3-C00-PK	long diffuse proximity	pig-tail *	PNP	952301140
S15-PA-3-F00-PK	receiver	pig-tail *	PNP	952301150
S15-PA-3-A00-NK	retroreflex	pig-tail *	NPN	952301160
S15-PA-3-B00-NK	polarised retroreflex	pig-tail *	NPN	952301170
S15-PA-3-C10-NK	short diffuse proximity	pig-tail *	NPN	952301180
S15-PA-3-C00-NK	long diffuse proximity	pig-tail *	NPN	952301190
S15-PA-3-F00-NK	receiver	pig-tail *	NPN	952301200
S15-PA-3-G00-XG	emitter	pig-tail *	-	952301210

* Pig-tails versions (150 mm cable + 4-pole M12 connector)

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
PLASTIC NUTS	flared fixing nut	95ACC2630
ST-5011	M18 fixing bracket	95ACC5240
ST-5012	M18 fixing bracket	95ACC5250
ST-5013	round-18	95ACC5260
ST-5017	M18 fixing bracket	95ACC5270
MICRO-18	support with micrometric regulation for tubular M18 sensors	95ACC1380
SP-40	fixed support for tubular M18 sensors	95ACC1370

ACCESSORY

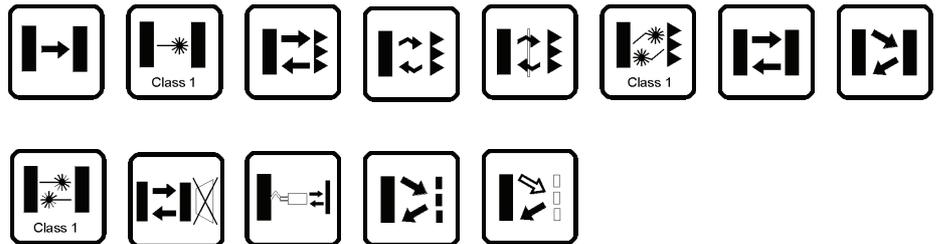


The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.



S50 SERIES

The **S50** series offers all optical functions within a M18 housing. With the universal sensing functions of proximity, polarised retroreflex and through beam, which are also available with class 1 laser emission, as well as the more advanced functions of background suppression, contrast and luminescence, the S50 really is one housing for all applications. The S50 setting is carried out by either by potentiometer, which is sealed to IP67, or using the patented EASYtouch™ push-button teach system, which gives rapid and precise automatic setting of the switching points. The S50 series is available both in flat plastic format ideal for M18 nut or screw mounting through the sensor body, as well as a cylindrical metal housing. Axial or radial optics are available in both housings with integral cable or M12 connection conforming to EN 60947-5-2, the European wiring standard. The performance, versatility and extensive optical sensing options, positions the S50 series as the new benchmark for customers focused on the evolution of technology and development of standards.

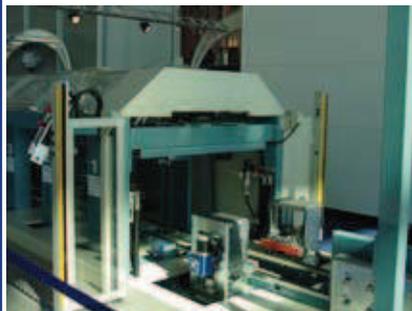


HIGHLIGHTS

- Complete range of optic functions, universal, application and laser class 1
- Flat plastic tubular housing for improved versatility or metal cylindrical housing
- Versions with axial or radial optics, with fixed, trimmer or EASYtouch™ teach-in adjustment
- Cable or M12 connection with EN standard NPN or PNP NO-NC configuration

APPLICATIONS

Ceramics



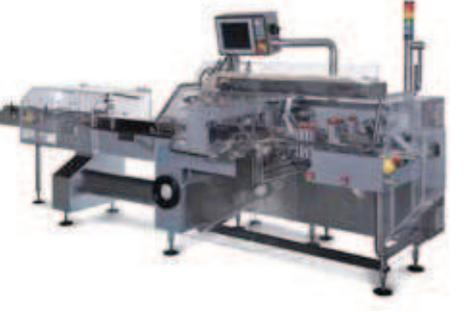
Transportation lines



Beverage & Bottling



Packaging lines



G/F INFRARED EMISSION

Longer operating distances can be obtained utilising separate emitter and receiver units. The infrared emission is modulated to avoid interference with other light sources and the emitter is fitted with test inputs for remote system interrogation.



RADIAL OPTICS

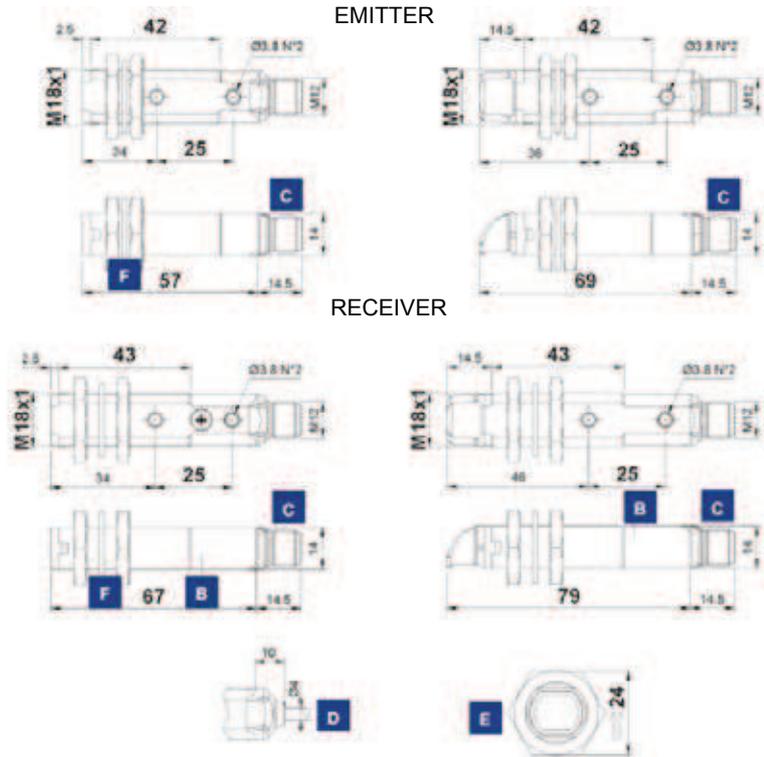


ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

DIMENSIONS



INDICATORS AND SETTINGS



- A** OUTPUT status and stability LEDs (receiver); power on LED (emitter)
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

CONNECTIONS



S50-PA/PR-2

BROWN	1	+	10 ... 30 Vdc
WHITE	2		TEST +
BLACK	4		TEST -
BLUE	3	-	0 V

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



S50-PA/PR-5

TEST + (WHITE)	2	+	10 ... 30 Vdc (BROWN)
0 V - (BLUE)	3		
	1		
	4		TEST - (BLACK)

EMITTER

RECEIVER

NC OUTPUT (WHITE)	2	+	10 ... 30 Vdc (BROWN)
0 V - (BLUE)	3		
	1		
	4		NO OUTPUT (BLACK)

Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES		S50-PA-2-F01-NN	S50-PA-2-F01-PP	S50-PA-2-G00-XG	S50-PR-2-F01-NN	S50-PR-2-F01-PP	S50-PR-2-G00-XG	S50-PA-5-F01-NN	S50-PA-5-F01-PP	S50-PA-5-G00-XG	S50-PR-5-F01-NN	S50-PR-5-F01-PP	S50-PR-5-G00-XG
Operating distance:													
axial optics	0 ... 30 m	•	•	•				•	•	•			
radial optics	0 ... 25 m				•	•	•				•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:													
emitter	≤ 35 mA			•			•			•			•
receiver	≤ 30 mA	•	•		•	•		•	•		•	•	
Light emission:	infrared LED 880 nm ²			•			•			•			•
Spot dimension:													
axial optics	approx. 500 mm at 15 m			•						•			
radial optics	approx. 470 mm at 10 m				•	•	•						•
Setting:	sensitivity trimmer ³	•	•		•	•		•	•		•	•	
Indicators:	yellow OUTPUT LED	•	•		•	•		•	•		•	•	
	green STABILITY LED	•	•		•	•		•	•		•	•	
	green POWER ON LED			•			•			•			•
Output type:	PNP, NO and NC		•		•			•			•		•
	NPN, NO and NC	•			•			•			•		•
Output current:	≤ 100 mA	•	•		•	•		•	•		•	•	
Saturation voltage:	≤ 2 V	•	•		•	•		•	•		•	•	
Response time:	2 ms	•	•		•	•		•	•		•	•	
Switching frequency:	250 Hz	•	•		•	•		•	•		•	•	
Operating mode:	dark on NO / light on NC	•	•		•	•		•	•		•	•	
Auxiliary functions:	Test + and Test - ⁴			•			•			•			•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•	•	•		•	•		•	•	
	M12 4-pole connector ⁶							•	•		•	•	
Electrical protection:	class 2	•	•	•	•	•		•	•		•	•	
Mechanical protection:	IP67	•	•	•	•	•		•	•		•	•	
Protection devices:	A, B ⁷	•	•	•	•	•		•	•		•	•	
Housing material:	PBT	•	•	•	•	•		•	•		•	•	
Lens material:	PMMA	•	•	•	•	•		•	•		•	•	
Weight:	75 g max.	•	•	•	•	•		•	•		•	•	
	25 g max.							•	•		•	•	
Operating temperature:	-25 ... +55°C	•	•	•	•	•		•	•		•	•	
Storage temperature:	-25 ... +70°C	•	•	•	•	•		•	•		•	•	
Reference standard:	EN 60947-5-2	•	•	•	•	•		•	•		•	•	

SELECTION TABLE

receiver - axial optics - 2 m cable		
S50-PA-2-F01-NN	952001660	NPN
S50-PA-2-F01-PP	952001150	PNP

emitter - axial optics - 2 m cable		
S50-PA-2-G00-XG	952001190	

receiver - radial optics - 2 m cable		
S50-PR-2-F01-NN	952001820	NPN
S50-PR-2-F01-PP	952001170	PNP

emitter - radial optics - 2 m cable		
S50-PR-2-G00-XG	952001210	

receiver - axial optics - M12 connector		
S50-PA-5-F01-NN	952001550	NPN
S50-PA-5-F01-PP	952001160	PNP

emitter - axial optics - M12 connector		
S50-PA-5-G00-XG	952001200	

receiver - radial optics - M12 connector		
S50-PR-5-F01-NN	952001760	NPN
S50-PR-5-F01-PP	952001180	PNP

emitter - radial optics - M12 connector		
S50-PR-5-G00-XG	952001220	

All the ordering codes and information are summarised in the last pages of this catalogue.

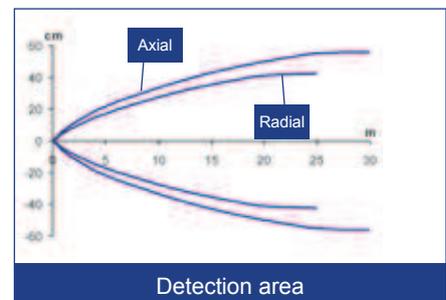
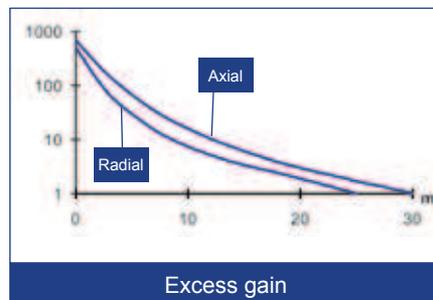


*Only on axial optic models

DETECTION DIAGRAMS

	axial	radial
Recommended operating distance (m)	25	20
Maximum operating distance (m)	30	25

■ Recommended operating distance
 ■ Maximum operating distance



G/F INFRARED EMISSION

Longer operating distances can be obtained utilising separate emitter and receiver units. The infrared emission is modulated to avoid interference with other light sources and the emitter is fitted with test inputs for remote system interrogation.

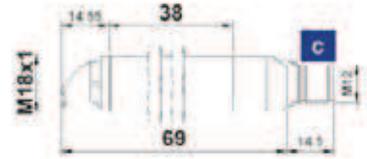


RADIAL OPTICS

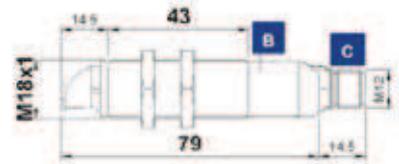
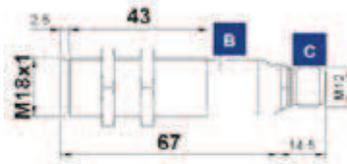


DIMENSIONS

EMITTER



RECEIVER



INDICATORS AND SETTINGS



- A** OUTPUT status and stability LEDs (receiver); power on LED (emitter)
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output
- E** Fixing nuts

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

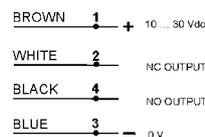
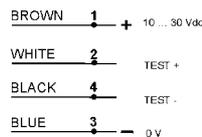
Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



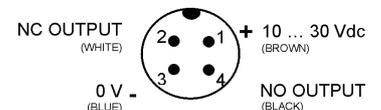
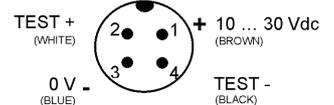
EMITTER

S50-MA/MR-2



RECEIVER

S50-MA/MR-5



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES		S50-MA-2-F01-NN	S50-MA-2-F01-PP	S50-MA-2-G00-XG	S50-MR-2-F01-NN	S50-MR-2-F01-PP	S50-MR-2-G00-XG	S50-MA-5-F01-NN	S50-MA-5-F01-PP	S50-MA-5-G00-XG	S50-MR-5-F01-NN	S50-MR-5-F01-PP	S50-MR-5-G00-XG
Operating distance:													
axial optics	0 ... 20 m	•	•	•				•	•	•			
radial optics	0 ... 15 m				•	•	•				•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:													
emitter	≤ 35 mA			•			•			•			•
receiver	≤ 30 mA	•	•		•	•		•	•		•	•	
Light emission:	infrared LED 880 nm ²			•			•			•			•
Spot dimension:													
axial optics	approx. 500 mm at 15 m			•						•			
radial optics	approx. 470 mm at 10 m						•						•
Setting:	sensitivity trimmer ³	•	•		•	•		•	•		•	•	
Indicators:	yellow OUTPUT LED	•	•		•	•		•	•		•	•	
	green STABILITY LED	•	•		•	•		•	•		•	•	
	green POWER ON LED			•			•			•			•
Output type:	PNP, NO and NC		•				•			•			•
	NPN, NO and NC	•			•		•			•			•
Output current:	≤ 100 mA	•	•		•	•		•	•		•	•	
Saturation voltage:	≤ 2 V	•	•		•	•		•	•		•	•	
Response time:	2 ms	•	•		•	•		•	•		•	•	
Switching frequency:	250 Hz	•	•		•	•		•	•		•	•	
Operating mode:	dark on NO / light on NC	•	•		•	•		•	•		•	•	
Auxiliary functions:	Test + and Test - ⁴			•			•			•			•
Connection:	2 m Ø 4 mm cable ⁵	•	•		•	•		•	•		•	•	
	M12 4-pole connector ⁶							•	•		•	•	
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	nickel plated brass	•	•	•	•	•	•	•	•	•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	110 g max.	•	•	•	•	•	•	•	•	•	•	•	•
	60 g max.							•	•		•	•	
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•

¹Limit values
²Average life of 100.000 h with TA = +25 °C
³270° single-turn trimmer
⁴Emitter off with Test+ on Vdc and Test- on 0 V
⁵PVC, 4 x 0.14 mm²
⁶Compatible with quick connection systems
⁷A - reverse polarity protection
 B - overload and short-circuit protection on receiver outputs

SELECTION TABLE

receiver - axial optics - 2 m cable		
S50-MA-2-F01-NN	952021700	NPN
S50-MA-2-F01-PP	952021250	PNP

emitter - axial optics - 2 m cable		
S50-MA-2-G00-XG	952021060	

receiver - radial optics - 2 m cable		
S50-MR-2-F01-NN	952021640	NPN
S50-MR-2-F01-PP	952021170	PNP

emitter - radial optics - 2 m cable		
S50-MR-2-G00-XG	952021180	

receiver - axial optics - M12 connector		
S50-MA-5-F01-NN	952021700	NPN
S50-MA-5-F01-PP	952021250	PNP

emitter - axial optics - M12 connector		
S50-MA-5-G00-XG	952021260	

receiver - radial optics - M12 connector		
S50-MR-5-F01-NN	952021800	NPN
S50-MR-5-F01-PP	952021370	PNP

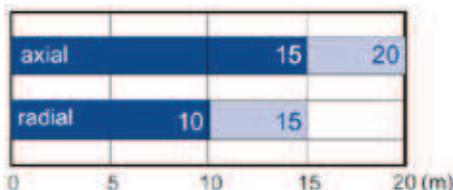
emitter - radial optics - M12 connector		
S50-MR-5-G00-XG	952021380	

All the ordering codes and information are summarised in the last pages of this catalogue.

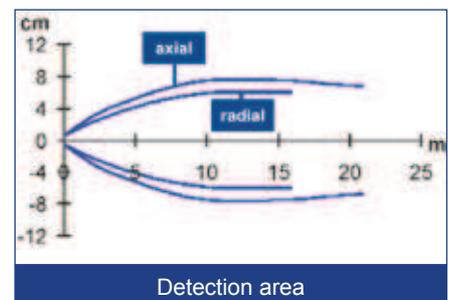
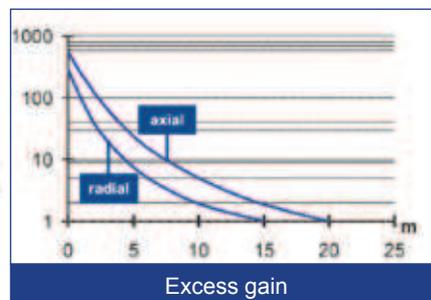


*Only on axial optic models

DETECTION DIAGRAMS



■ Recommended operating distance
 ■ Maximum operating distance



G/F LASER RED EMISSION

The high operating distance typical of emitter and receiver pairs is notably increased thanks to the use of visible red laser emission. The laser beam can be easily aligned and offers excellent detection resolution of even small objects. The class 1 laser emission guarantees maximum safety for the operators in all applications.



RADIAL OPTICS

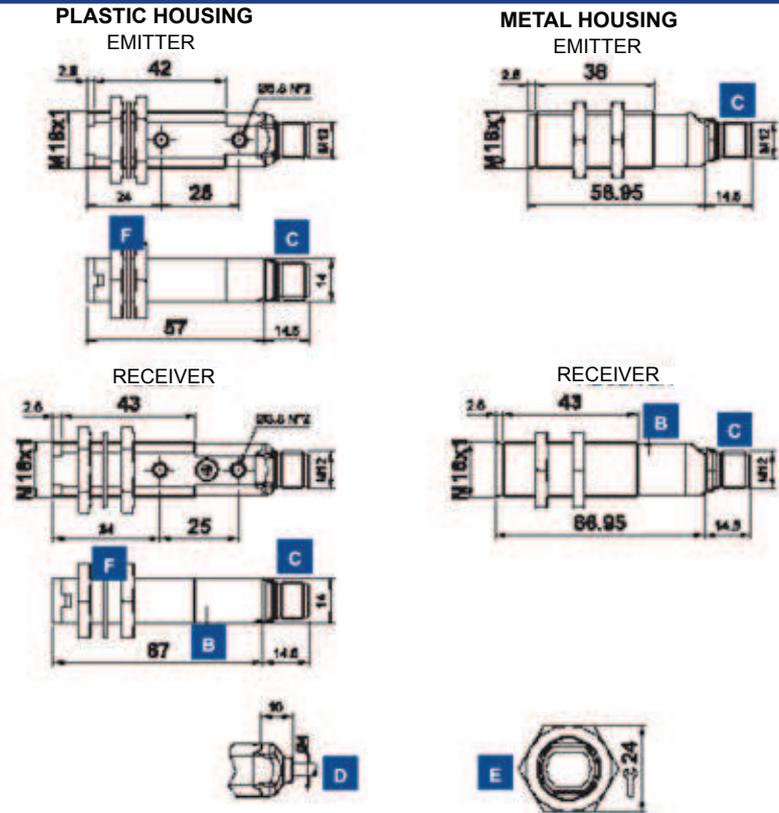


ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

DIMENSIONS



INDICATORS AND SETTINGS



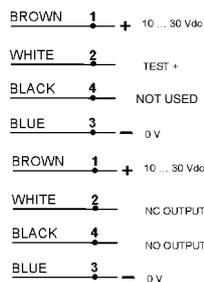
- A** OUTPUT status and stability LEDs (receiver); power on LED (emitter)
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance. Decrease sensitivity to increase resolution.

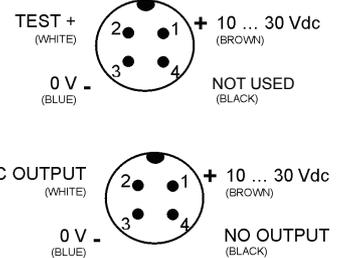
CONNECTIONS



S50-PL/PH-2



S50-PL/PH-5



EMITTER

RECEIVER

Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴Emitter off with Test+ connected to +Vcc; Emitter on with Test+ not connected or connected to 0V
- ⁵PVC, 4 x 0.14 mm²
- ⁶Compatible with quick connection systems
- ⁷A - reverse polarity protection
B - overload and short-circuit protection on receiver outputs

		S50-PL-2-G00-XG	S50-PL-2-F01-NN	S50-PL-2-F01-PP	S50-PL-5-G00-XG	S50-PL-5-F01-NN	S50-PL-5-F01-PP	S50-PH-2-G00-XG	S50-PH-2-F01-NN	S50-PH-2-F01-PP	S50-PH-5-G00-XG	S50-PH-5-F01-NN	S50-PH-5-F01-PP
Operating distance:													
axial optics	0 ... 60 m	•	•	•	•	•	•	•	•	•	•	•	•
radial optics	0 ... 50 m						•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:													
emitter	≤ 35 mA	•			•		•		•		•		•
receiver	≤ 30 mA		•	•		•		•	•		•	•	•
Light emission:	red Laser 650 nm ²	•			•		•		•		•		•
	class 1 EN 60825-1												
	class II CDRH21 CFR .104010												
Resolution:	approx. 2.5 mm at 5 m		•	•		•		•	•		•		•
	approx. 5 mm at 10 m		•	•		•		•	•		•		•
	approx. 10 mm over 20 m		•	•		•		•	•		•		•
Setting:	sensitivity trimmer ³		•	•		•		•	•		•		•
Indicators:	yellow OUTPUT LED		•	•		•		•	•		•		•
	green POWER ON LED	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC			•		•		•		•		•	•
	NPN, NO and NC		•		•		•		•		•		•
Output current:	≤ 100 mA		•	•		•		•	•		•		•
Saturation voltage:	≤ 2 V		•	•		•		•	•		•		•
Response time:	333 μs		•	•		•		•	•		•		•
Switching frequency:	1.5 kHz		•	•		•		•	•		•		•
Operating mode:	dark on NO / light on NC		•	•		•		•	•		•		•
Auxiliary functions:	Test + ⁴	•			•		•		•		•		•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•		•		•	•		•		•
	M12 4-pole connector ⁶				•	•	•		•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•
	Nickel plated brass						•	•	•	•	•	•	•
Lens material:	PMMA / glass	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•	•		•		•	•		•		•
	25 g max.				•	•		•	•		•	•	•
Operating temperature:	-10 ... +50 °C	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•	•	•	•	•	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•			•		•		•		•		•

SELECTION TABLE

emitter - axial optics - 2 m cable

S50-PL-2-G00-XG	952001420	
-----------------	-----------	--

receiver - axial optics - 2 m cable

S50-PL-2-F01-NN	952021890	NPN
S50-PL-2-F01-PP	952021400	PNP

emitter - radial optics - 2 m cable

S50-ML-2-G00-XG	952002060	
-----------------	-----------	--

receiver - axial optics - 2 m cable

S50-ML-2-F01-NN	952002030	NPN
S50-ML-2-F01-PP	952002020	PNP

emitter -axial optics - M12 connector

S50-PL-5-G00-XG	952001430	
-----------------	-----------	--

receiver - axial optics - M12 connector

S50-PL-5-F01-NN	952001860	NPN
S50-PL-5-F01-PP	952001410	PNP

emitter - radial optics - M12 connector

S50-ML-5-G00-XG	952022070	
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receiver - axial optics - M12 connector

S50-ML-5-F01-NN	952002050	NPN
S50-ML-5-F01-PP	952002040	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

The use of the MICRO-18 fixing bracket (cod. 95ACC1380) is recommended for the correct optic axis alignment of the laser emission.

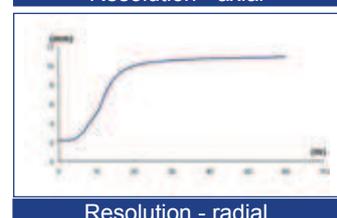
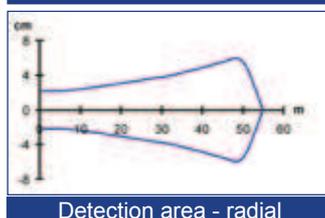
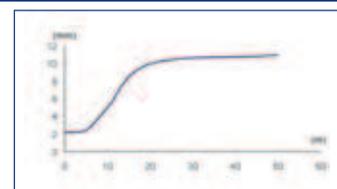
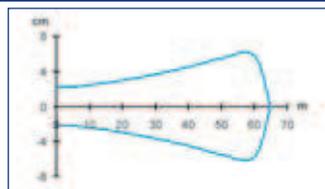


*Only on axial optic models

DETECTION DIAGRAMS



■ Operating distance



G/F LASER RED EMISSION

The high operating distance typical of emitter and receiver pairs is notably increased thanks to the use of visible red laser emission. The laser beam can be easily aligned and offers excellent detection resolution of even small objects. The class 1 laser emission guarantees maximum safety for the operators in all applications.

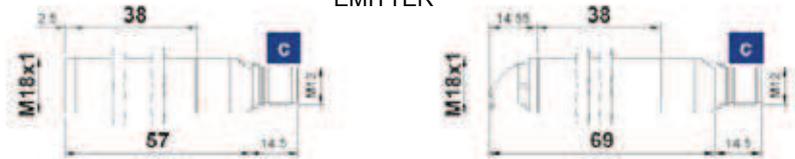


RADIAL OPTICS

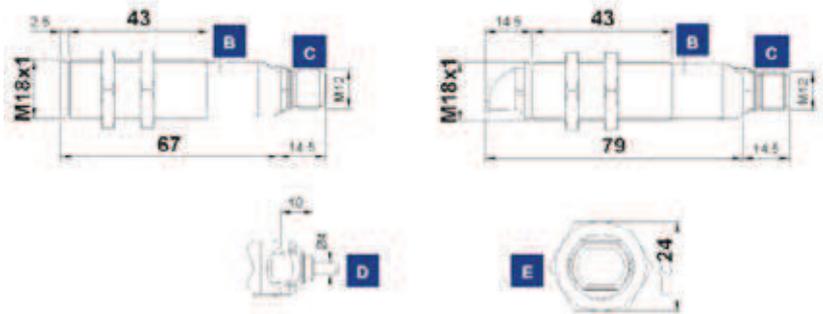


DIMENSIONS

EMITTER



RECEIVER



INDICATORS AND SETTINGS



- A** OUTPUT status and power on LED
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

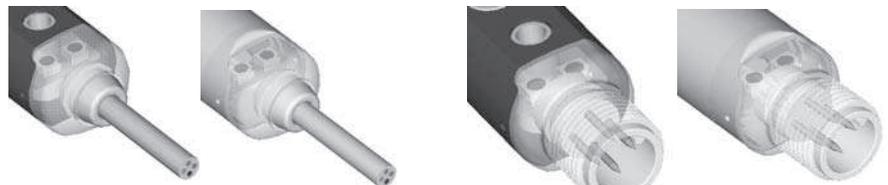
Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance. Decrease sensitivity to increase resolution.

ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

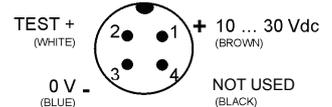


S50-ML/MH-2

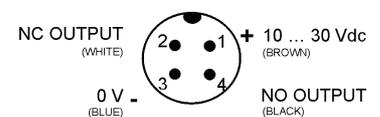
BROWN	1	+	10 ... 30 Vdc
WHITE	2	TEST +	
BLACK	4	NOT USED	
BLUE	3	-	0 V

EMITTER

S50-ML/MH-5



RECEIVER



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 50.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴Emitter off with Test+ connected to +Vcc; Emitter on with Test+ not connected or connected to 0V
- ⁵PVC, 4 x 0.14 mm²
- ⁶Compatible with quick connection systems
- ⁷A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-ML-2-G00-XG	S50-ML-2-F01-NN	S50-ML-2-F01-PP	S50-ML-5-G00-XG	S50-ML-5-F01-NN	S50-ML-5-F01-PP	S50-MH-2-G00-XG	S50-MH-2-F01-NN	S50-MH-2-F01-PP	S50-MH-5-G00-XG	S50-MH-5-F01-NN	S50-MH-5-F01-PP
Operating distance:													
axial optics	0 ... 60 m	•	•	•	•	•	•	•	•	•	•	•	•
radial optics	0 ... 50 m						•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:													
emitter	≤ 35 mA	•			•		•		•		•		•
receiver	≤ 30 mA		•	•		•		•	•		•		•
Light emission:	red Laser 650 nm ²	•			•		•		•		•		•
	class 1 EN 60825-1												
	class II CDRH21 CFR .1040.10												
Resolution:	approx. 2.5 mm at 5 m		•	•		•		•	•		•		•
	approx. 5 mm at 10 m		•	•		•		•	•		•		•
	approx. 10 mm over 20 m		•	•		•		•	•		•		•
Setting:	sensitivity trimmer ³		•	•		•		•	•		•		•
Indicators:	yellow OUTPUT LED		•	•		•		•	•		•		•
	green POWER ON LED	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC			•		•		•		•		•	•
	NPN, NO and NC		•		•		•		•		•		•
Output current:	≤ 100 mA		•	•		•		•	•		•		•
Saturation voltage:	≤ 2 V		•	•		•		•	•		•		•
Response time:	333 μs		•	•		•		•	•		•		•
Switching frequency:	1.5 kHz		•	•		•		•	•		•		•
Operating mode:	dark on NO / light on NC		•	•		•		•	•		•		•
Auxiliary functions:	Test + ⁴	•			•		•		•		•		•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•			•	•	•		•		•
	M12 4-pole connector ⁶				•	•	•		•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	Nichel plated brass	•	•	•	•	•	•	•	•	•	•	•	•
Lens material:	PMMA / glass	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•	•			•	•	•		•		•
	25 g max.				•	•		•	•		•	•	•
Operating temperature:	-10 ... +50°C	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•	•	•	•	•	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•			•		•		•		•		•

SELECTION TABLE

emitter - axial optics - 2 m cable		
S50-ML-2-G00-XG	952021430	

receiver - axial optics - 2 m cable		
S50-ML-2-F01-NN	952021840	NPN
S50-ML-2-F01-PP	952021420	PNP

emitter - radial optics - 2 m cable		
S50-MH-2-G00-XG	952022060	

receiver - radial optics - 2 m cable		
S50-MH-2-F01-NN	952022030	NPN
S50-MH-2-F01-PP	952022020	PNP

emitter - axial optics - M12 connector		
S50-ML-5-G00-XG	952021470	

receiver - axial optics - M12 connector		
S50-ML-5-F01-NN	952021870	NPN
S50-ML-5-F01-PP	952021460	PNP

emitter - radial optics - M12 connector		
S50-MH-5-G00-XG	952022070	

receiver - radial optics - M12 connector		
S50-MH-5-F01-NN	952022050	NPN
S50-MH-5-F01-PP	952022040	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

The use of the MICRO-18 fixing bracket (cod. 95ACC1380) is recommended for the correct optic axis alignment of the laser emission.

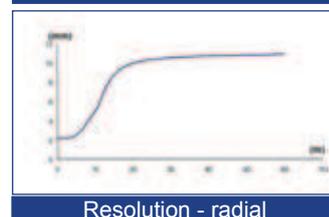
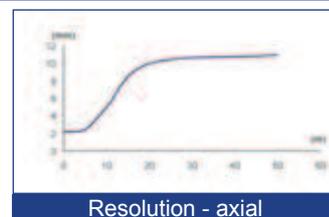
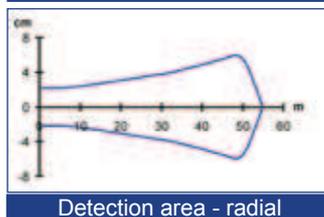
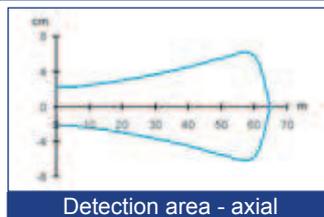


*Only on axial optic models

DETECTION DIAGRAMS



■ Operating distance



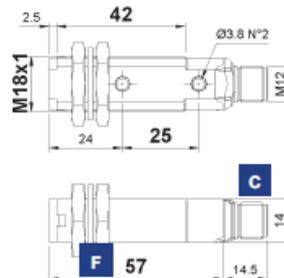
A INFRARED EMISSION

With retroreflex sensors the object is detected when it interrupts the light beam generated between the sensor and its associated prismatic reflector. This retroreflex system, created between the sensor and the reflector, offers the advantage of electrically connecting one single unit instead of two, as in the emitter-receiver system.

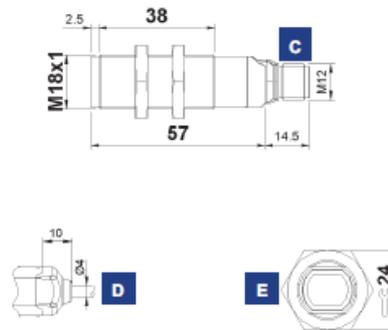


DIMENSIONS

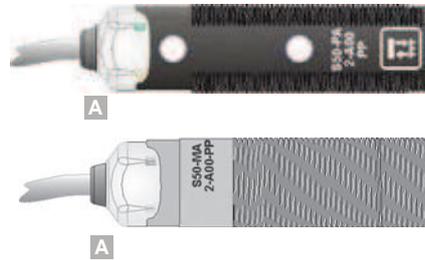
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



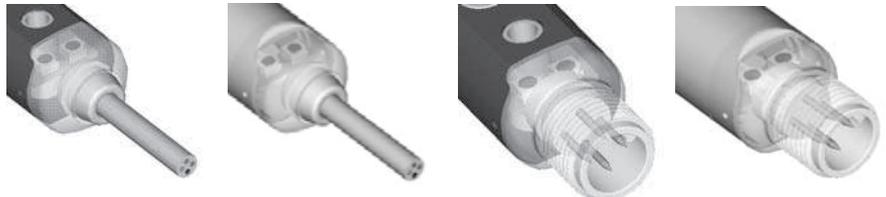
- A** OUTPUT status LED
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

ACCESSORIES

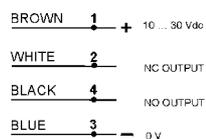
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

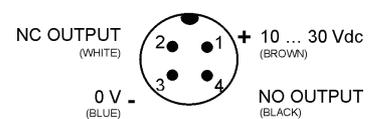
CONNECTIONS



S50-XX-2



S50-XX-5



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³PVC, 4 x 0.14 mm²
- ⁴Compatible with quick connection systems
- ⁵A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-A00-NN	S50-PA-2-A00-PP	S50-PA-5-A00-NN	S50-PA-5-A00-PP	S50-MA-2-A00-NN	S50-MA-2-A00-PP	S50-MA-5-A00-NN	S50-MA-5-A00-PP
Operating distance:	0.1 ... 5 m	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•
Light emission:	infrared LED 880 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	approx. 100 mm at 2 m	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•	•	•	•	•
	NPN, NO and NC	•	•	•	•	•	•	•	•
Output current:	≤100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤2 V	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ³	•	•			•	•		
	M12 4-pole connector ⁴			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•				
	nickel plated brass					•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•						
	25 g max.			•	•				
	110 g max.					•	•		
	60 g max.							•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-A00-NN	952002090	NPN
S50-PA-2-A00-PP	952002080	PNP

metal - axial optics - 2 m cable		
S50-MA-2-A00-NN	952022090	NPN
S50-MA-2-A00-PP	952022080	PNP

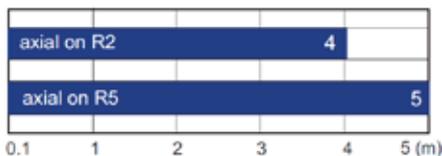
plastic - axial optics - M12 connector		
S50-PA-5-A00-NN	952002110	NPN
S50-PA-5-A00-PP	952002100	PNP

metal - axial optics - M12 connector		
S50-MA-5-A00-NN	952022110	NPN
S50-MA-5-A00-PP	952022100	PNP

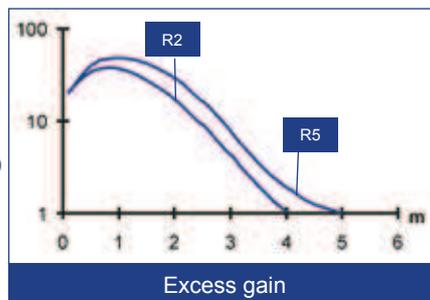
All the ordering codes and information are summarised in the last pages of this catalogue.



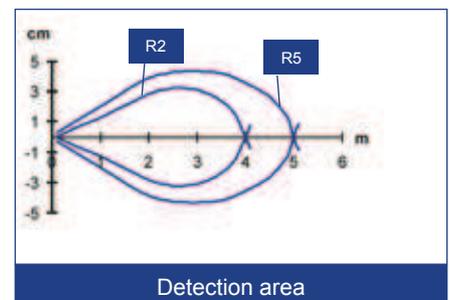
DETECTION DIAGRAMS



■ Operating distance



Excess gain



Detection area

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_a = +25 °C
- ³270° single-turn trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Compatible with quick connection systems
- ⁶A - reverse polarity protection
B - overload and short-circuit protection on receiver outputs

		S50-PA-2-B01-NN	S50-PA-2-B01-PP	S50-PA-5-B01-NN	S50-PA-5-B01-PP	S50-PR-2-B01-NN	S50-PR-2-B01-PP	S50-PR-5-B01-NN	S50-PR-5-B01-PP	S50-MA-2-B01-NN	S50-MA-2-B01-PP	S50-MA-5-B01-NN	S50-MA-5-B01-PP	S50-MR-2-B01-NN	S50-MR-2-B01-PP	S50-MR-5-B01-NN	S50-MR-5-B01-PP
Operating distance:																	
axial optics	0.1 ... 4.5 m	•	•	•	•					•	•	•	•				
radial optics	0.1 ... 3 m					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Spot dimension:																	
axial optics	approx. 45 mm at 1 m	•	•	•	•					•	•	•	•				
radial optics	approx. 60 mm at 2 m					•	•	•	•					•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC					•	•	•	•					•	•	•	•
	NPN, NO and NC	•	•	•	•					•	•	•	•				
Output current:	≤100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•	•			•	•			•	•		
	M12 4-pole connector ⁵			•	•			•	•			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•				
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•			•	•										
	25 g max.			•	•			•	•								
	110 g max.									•	•			•	•		
	60 g max.											•	•			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-B01-NN	952001610	NPN
S50-PA-2-B01-PP	952001010	PNP

metal - axial optics - 2 m cable		
S50-MA-2-B01-NN	952021500	NPN
S50-MA-2-B01-PP	952021000	PNP

plastic - axial optics - M12 connector		
S50-PA-5-B01-NN	952001500	NPN
S50-PA-5-B01-PP	952001020	PNP

metal - axial optics - M12 connector		
S50-MA-5-B01-NN	952021660	NPN
S50-MA-5-B01-PP	952021200	PNP

plastic - radial optics - 2 m cable		
S50-PR-2-B01-NN	952001780	NPN
S50-PR-2-B01-PP	952001030	PNP

metal - radial optics - 2 m cable		
S50-MR-2-B01-NN	952021600	NPN
S50-MR-2-B01-PP	952021140	PNP

plastic - radial optics - M12 connector		
S50-PR-5-B01-NN	952001720	NPN
S50-PR-5-B01-PP	952001040	PNP

metal - radial optics - M12 connector		
S50-MR-5-B01-NN	952021760	NPN
S50-MR-5-B01-PP	952021340	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.



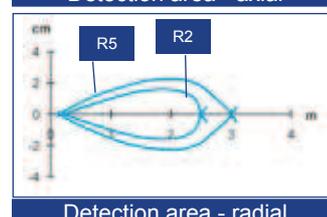
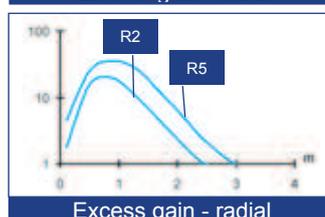
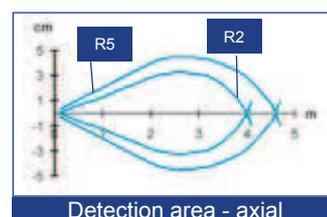
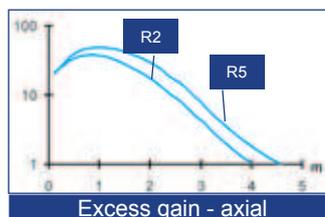
*Only on axial optic models

DETECTION DIAGRAMS

axial on R5	4	4.5
axial on R2	3.5	4
radial on R5	2.5	3
radial on R2	2	2.5

- Recommended operating distance
- Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.

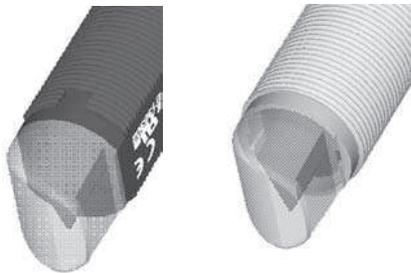


B LASER RED EMISSION

The visible red laser emission increases the operating distance and resolution of the polarised retroreflex sensor. Specific R7 or R8 reflectors with 0.8 mm microprisms are available for high-resolution detection of small objects. The class 1 laser emission guarantees maximum safety for the operators in all applications.



RADIAL OPTICS



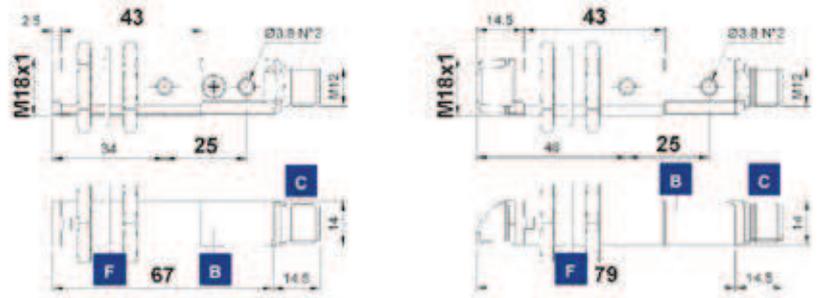
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

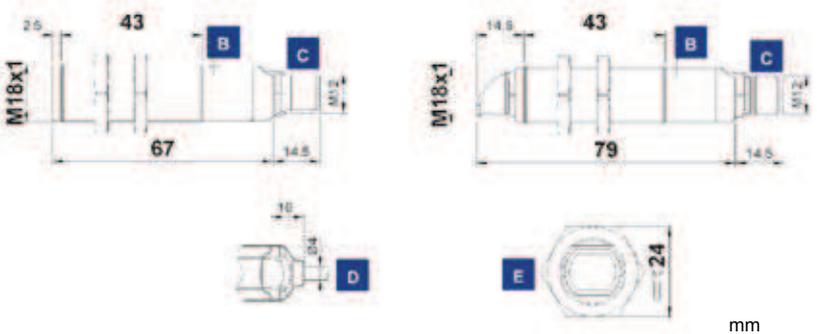
Refer also to **Reflectors (A.01)**, **Connectors (A.03)** and **Fixing brackets (A.04)** of the General Catalogue.

DIMENSIONS

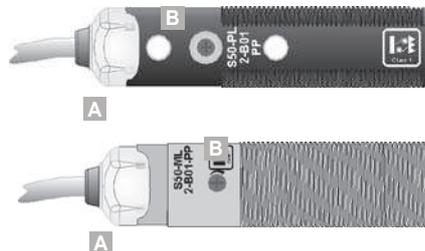
PLASTIC HOUSING



METAL HOUSING



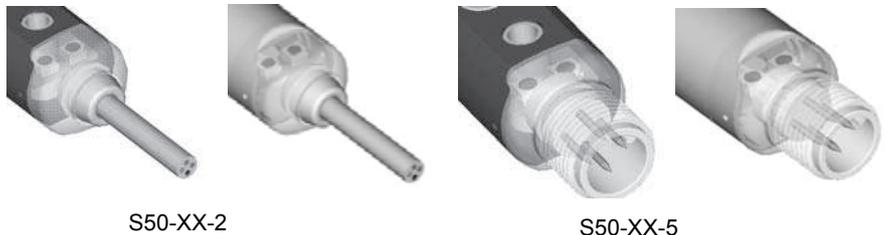
INDICATORS AND SETTINGS



- A** OUTPUT status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

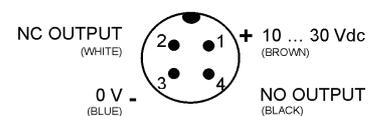
CONNECTIONS



S50-XX-2

S50-XX-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Compatible with quick connection systems
- ⁶A - reverse polarity protection
B - overload and short-circuit protection on receiver outputs

		S50-PA-2-B01-NN	S50-PA-2-B01-PP	S50-PA-5-B01-NN	S50-PA-5-B01-PP	S50-PR-2-B01-NN	S50-PR-2-B01-PP	S50-PR-5-B01-NN	S50-PR-5-B01-PP	S50-MA-2-B01-NN	S50-MA-2-B01-PP	S50-MA-5-B01-NN	S50-MA-5-B01-PP	S50-MR-2-B01-NN	S50-MR-2-B01-PP	S50-MR-5-B01-NN	S50-MR-5-B01-PP
Operating distance:																	
axial optics	0.1 ... 16 m	•	•	•	•					•	•	•	•				
radial optics	0.1 ... 9 m					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red Laser 650 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	class 1 EN 60825-1																
	class II CDRH21 CFR 1040.10																
Resolution:	2 mm max. at 3 m (on R7)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	5 mm max. over 7 m (on R2)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•		•		•		•		•
	NPN, NO and NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	333 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1.5 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•				•				•			
	M12 4-pole connector ⁵			•	•			•						•		•	
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•				
Lens material:	PMMA / glass	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•	•	•					•	•	•	•				
	25 g max.					•	•	•	•					•	•	•	•
	110 g max.									•	•	•	•				
	60 g max.													•	•	•	•
Operating temperature:	-10 ... +50°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2, EN 60825-1,	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	CDRH21 CFR 1040.10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PL-2-B01-NN	952001870	NPN
S50-PL-2-B01-PP	952001360	PNP
plastic - radial optics - 2 m cable		
S50-PH-2-B01-NN	952001950	NPN
S50-PH-2-B01-PP	952001940	PNP
metal - axial optics - 2 m cable		
S50-ML-2-B01-NN	952021820	NPN
S50-ML-2-B01-PP	952021400	PNP
metal - radial optics - 2 m cable		
S50-MH-2-B01-NN	952021950	NPN
S50-MH-2-B01-PP	952021940	PNP
plastic - axial optics - M12 connector		
S50-PL-5-B01-NN	952001840	NPN
S50-PL-5-B01-PP	952001370	PNP
plastic - radial optics - M12 connector		
S50-PH-5-B01-NN	952001970	NPN
S50-PH-5-B01-PP	952001960	PNP
metal - axial optics - M12 connector		
S50-ML-5-B01-NN	952021850	NPN
S50-ML-5-B01-PP	952021440	PNP
metal - radial optics - M12 connector		
S50-MH-5-B01-NN	952021970	NPN
S50-MH-5-B01-PP	952021960	PNP

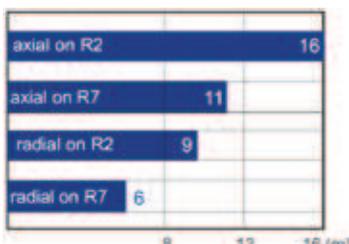
All the ordering codes and information are summarised in the last pages of this catalogue.

The use of the MICRO-18 fixing bracket (cod. 95ACC1380) is recommended for the correct optic axis alignment of the laser emission.



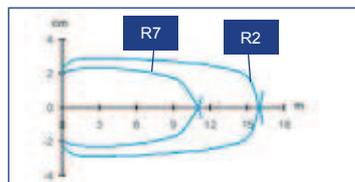
*Only on axial optic models

DETECTION DIAGRAMS

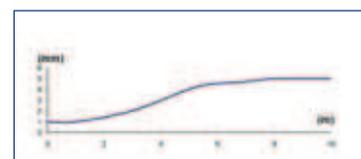


Operating distance

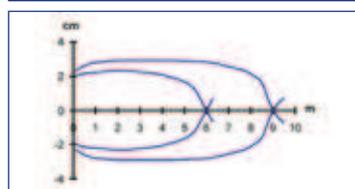
High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.



Detection area - axial



Resolution on R7 reflector - axial



Detection area - radial



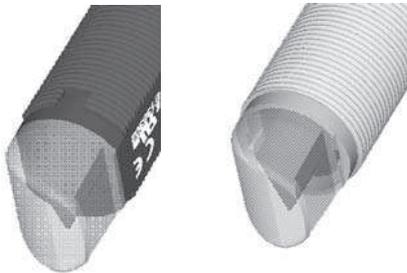
Resolution on R7 reflector - radial

T RED EMISSION

With high sensitivity and reduced hysteresis this retroreflex sensor allows the detection of even a small variation of the light emission received by the sensor, typically created by the presence of transparent objects such as glass or PET containers or plastic film sheets for packaging. The presence of polarising filters avoids false switching on shiny surfaces.



RADIAL OPTICS



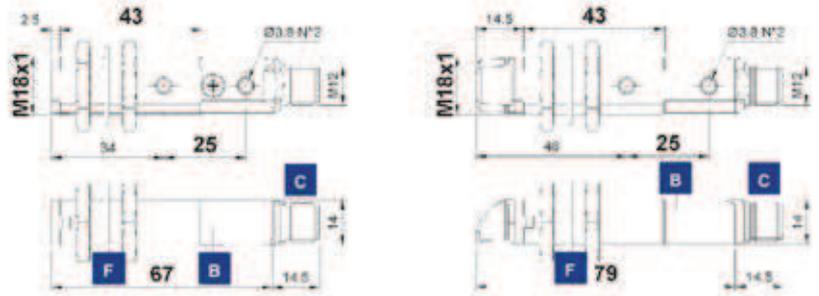
ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

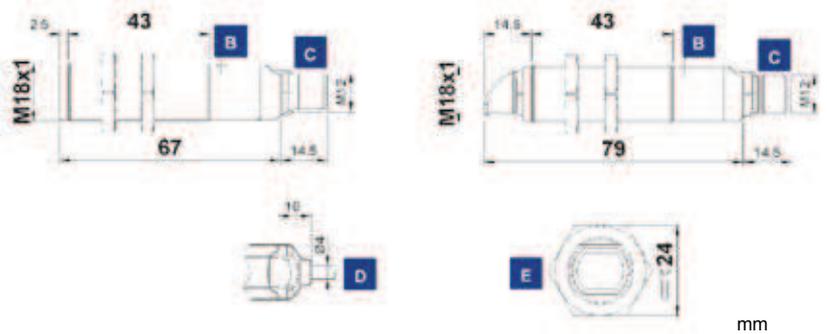
Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

DIMENSIONS

PLASTIC HOUSING

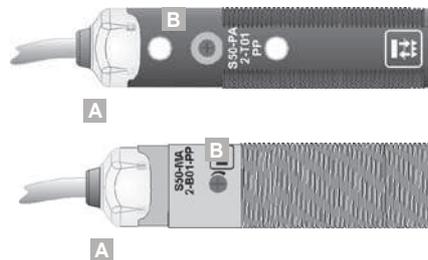


METAL HOUSING



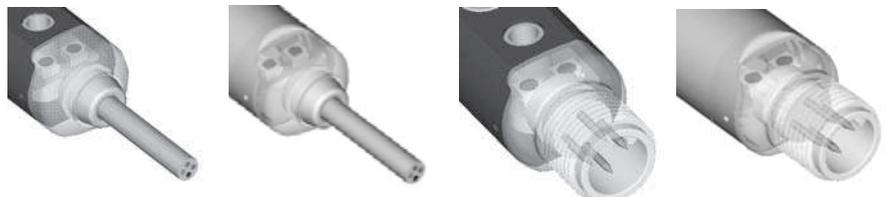
mm

INDICATORS AND SETTINGS



- A** OUTPUT status LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

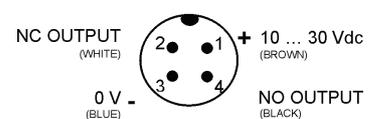
CONNECTIONS



S50-XX-2

S50-XX-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴ PVC, 4 x 0,14 mm²
- ⁵ Compatible with quick connection systems
- ⁶ A - reverse polarity protection
B - overload and short-circuit protection on receiver outputs

		S50-PA-2-T01-NN	S50-PA-2-T01-PP	S50-PA-5-T01-NN	S50-PA-5-T01-PP	S50-PR-2-T01-NN	S50-PR-2-T01-PP	S50-PR-5-T01-NN	S50-PR-5-T01-PP	S50-MA-2-T01-NN	S50-MA-2-T01-PP	S50-MA-5-T01-NN	S50-MA-5-T01-PP	S50-MR-2-T01-NN	S50-MR-2-T01-PP	S50-MR-5-T01-NN	S50-MR-5-T01-PP
Operating distance:																	
axial optics	0.1 ... 1.7 m	•	•	•	•					•	•	•	•				
radial optics	0.1 ... 1.7 m					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Spot dimension:																	
axial optics	approx. 45 mm at 1 m	•	•	•	•					•	•	•	•				
radial optics	approx. 60 mm at 1 m					•	•	•	•					•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•		•		•		•		•
	NPN, NO and NC	•		•		•		•		•		•		•		•	
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•	•			•	•			•	•		
	M12 4-pole connector ⁵			•	•			•	•			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•				
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•			•	•										
	25 g max.			•	•			•	•								
	110 g max.									•	•			•	•		
	60 g max.											•	•			•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

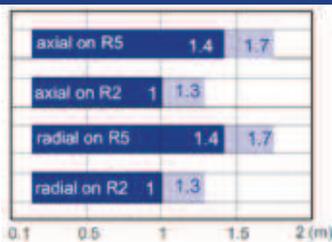
plastic - axial optics - 2 m cable		
S50-PA-2-T01-NN	952001690	NPN
S50-PA-2-T01-PP	952001260	PNP
metal - axial optics - 2 m cable		
S50-MA-2-T01-NN	952021570	NPN
S50-MA-2-T01-PP	952021090	PNP
plastic - axial optics - M12 connector		
S50-PA-5-T01-NN	952001580	NPN
S50-PA-5-T01-PP	952001270	PNP
metal - axial optics - M12 connector		
S50-MA-5-T01-NN	952021730	NPN
S50-MA-5-T01-PP	952021290	PNP
plastic - radial optics - 2 m cable		
S50-PR-2-T01-NN	952001830	NPN
S50-PR-2-T01-PP	952001280	PNP
metal - radial optics - 2 m cable		
S50-MR-2-T01-NN	952021650	NPN
S50-MR-2-T01-PP	952021190	PNP
plastic - radial optics - M12 connector		
S50-PR-5-T01-NN	952001770	NPN
S50-PR-5-T01-PP	952001290	PNP
metal - radial optics - M12 connector		
S50-MR-5-T01-NN	952021810	NPN
S50-MR-5-T01-PP	952021390	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.



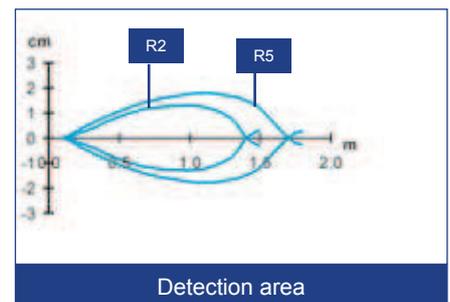
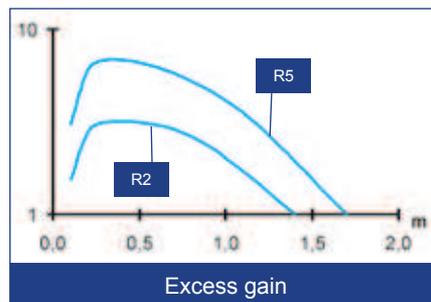
*Only on axial optic models

DETECTION DIAGRAMS



■ Recommended operating distance
■ Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors** of the **General Catalogue**.



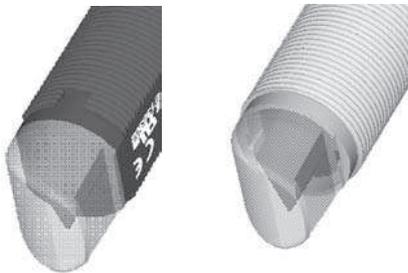
C SHORT INFRARED EMISSION

This diffuse proximity sensor represents a reliable, simple and cost-effective solution for the direct detection of any object inside the fixed operating distance.

Its particularly compact dimensions permit the installation in very small spaces.



RADIAL OPTICS



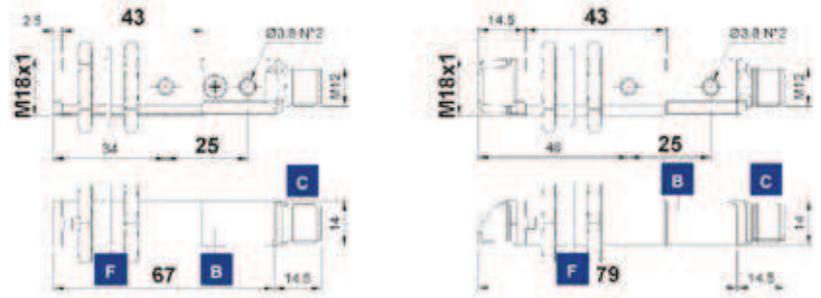
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

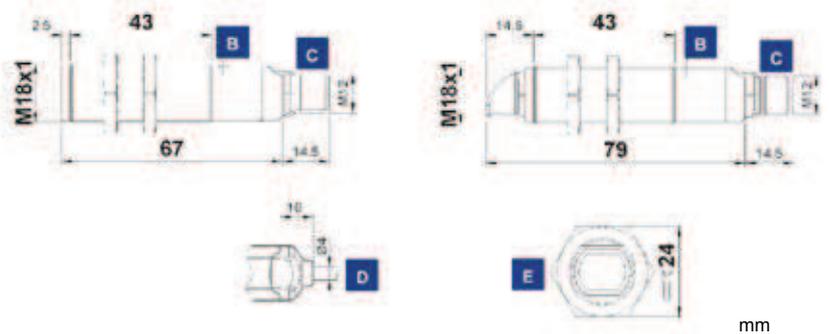
Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

DIMENSIONS

PLASTIC HOUSING

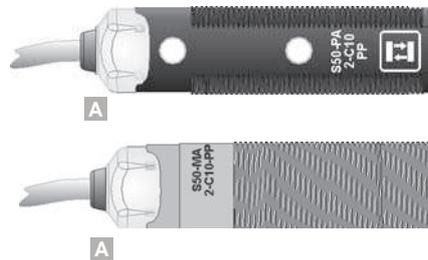


METAL HOUSING



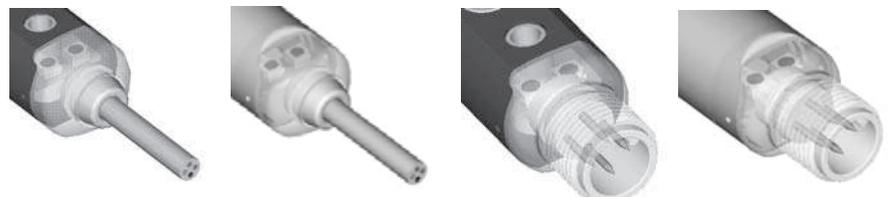
mm

INDICATORS AND SETTINGS



- A** OUTPUT status LEDs
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

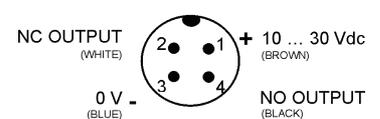
CONNECTIONS



S50-XX-2

S50-XX-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³PVC, 4 x 0.14 mm²
- ⁴Compatible with quick connection systems
- ⁵A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-C10-NN	S50-PA-2-C10-PP	S50-PA-5-C10-NN	S50-PA-5-C10-PP	S50-PR-2-C10-NN	S50-PR-2-C10-PP	S50-PR-5-C10-NN	S50-PR-5-C10-PP	S50-MA-2-C10-NN	S50-MA-2-C10-PP	S50-MA-5-C10-NN	S50-MA-5-C10-PP	S50-MR-2-C10-NN	S50-MR-2-C10-PP	S50-MR-5-C10-NN	S50-MR-5-C10-PPx
Operating distance:																	
axial optics	0 ... 10 cm	•	•	•	•					•	•	•	•				
radial optics	0 ... 8 cm					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	infrared LED 880 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Spot dimension:																	
axial optics	approx. 80 mm at 10 cm	•	•	•	•					•	•	•	•				
radial optics	approx. 55 mm at 10 cm					•	•	•	•					•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•		•		•		•		•
	NPN, NO and NC	•		•		•		•		•		•		•		•	
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ³	•	•		•	•				•	•						
	M12 4-pole connector ⁴			•	•			•	•			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•	•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•		•	•				•	•	•	•				
	25 g max.			•	•			•	•								
	110 g max.									•	•			•	•		
	60 g max.											•	•			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

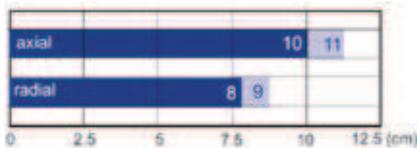
plastic - axial optics - 2 m cable		
S50-PA-2-C10-NN	952001630	NPN
S50-PA-2-C10-PP	952001240	PNP
metal - axial optics - 2 m cable		
S50-MA-2-C10-NN	952021520	NPN
S50-MA-2-C10-PP	952021020	PNP
plastic - axial optics - M12 connector		
S50-PA-5-C10-NN	952001520	NPN
S50-PA-5-C10-PP	952001250	PNP
metal - axial optics - M12 connector		
S50-MA-5-C10-NN	952021680	NPN
S50-MA-5-C10-PP	952021220	PNP
plastic - radial optics - 2 m cable		
S50-PR-2-C10-NN	952001800	NPN
S50-PR-2-C10-PP	952001490	PNP
metal - radial optics - 2 m cable		
S50-MR-2-C10-NN	952021620	NPN
S50-MR-2-C10-PP	952021490	PNP
plastic - radial optics - M12 connector		
S50-PR-5-C10-NN	952001740	NPN
S50-PR-5-C10-PP	952001480	PNP
metal - radial optics - M12 connector		
S50-MR-5-C10-NN	952021780	NPN
S50-MR-5-C10-PP	952021480	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

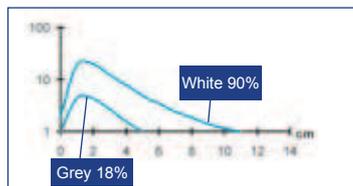


*Only on axial optic models

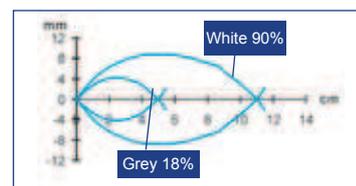
DETECTION DIAGRAMS



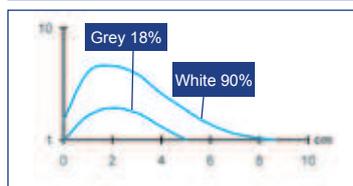
■ Recommended operating distance
 ■ Maximum operating distance



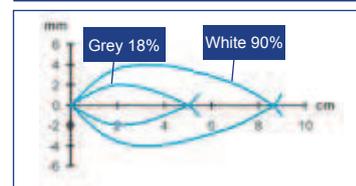
Excess gain - axial



Detection area - axial



Excess gain - radial



Detection area - radial

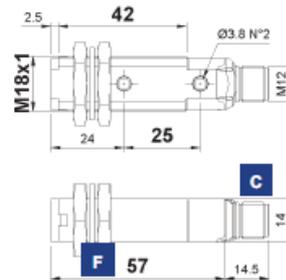
C MID INFRARED EMISSION

This version of diffuse proximity sensor has a detection distance that can be set using the sensitivity adjustment trimmer. The green stability LED indicates whether the received signal is above to the minimum signal for stable output switching.

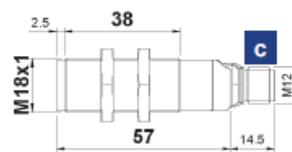


DIMENSIONS

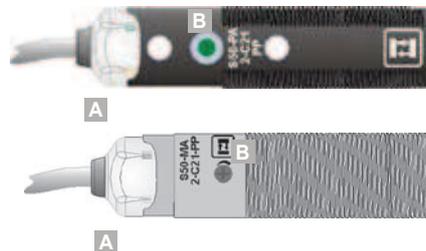
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

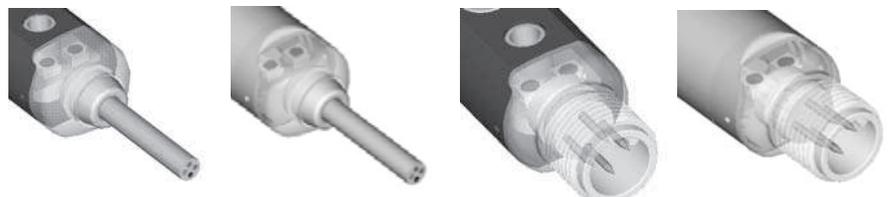
Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S50-XX-2

S50-XX-5

BROWN 1 + 10 ... 30 Vdc
 WHITE 2 NC OUTPUT
 BLACK 4 NO OUTPUT
 BLUE 3 0 V

NC OUTPUT (WHITE) 2 1 + 10 ... 30 Vdc (BROWN)
 0 V (BLUE) 3 4 NO OUTPUT (BLACK)

Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° single-turn trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Compatible with quick connection systems
- ⁶A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-C21-NN	S50-PA-2-C21-PP	S50-PA-5-C21-NN	S50-PA-5-C21-PP	S50-MA-2-C21-NN	S50-MA-2-C21-PP	S50-MA-5-C21-NN	S50-MA-5-C21-PP
Operating distance:	0 ... 40 cm	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•
Light emission:	infrared LED 880 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	approx. 100 mm at 300 cm	•	•	•	•	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•	•	•		•		•
	NPN, NO and NC	•		•		•		•	
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•
Operating mode:	light on NO / dark on NC	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•	•		
	M12 4-pole connector ⁵			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•				
	nickel plated brass					•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•						
	25 g max.			•	•				
	110 g max.					•	•		
	60 g max.							•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-C21-NN	952002170	NPN
S50-PA-2-C21-PP	952002160	PNP

metal - axial optics - 2 m cable		
S50-MA-2-C21-NN	952022130	NPN
S50-MA-2-C21-PP	952022120	PNP

plastic - axial optics - M12 connector		
S50-PA-5-C21-NN	952002190	NPN
S50-PA-5-C21-PP	952002180	PNP

metal - axial optics - M12 connector		
S50-MA-5-C21-NN	952022150	NPN
S50-MA-5-C21-PP	952022140	PNP

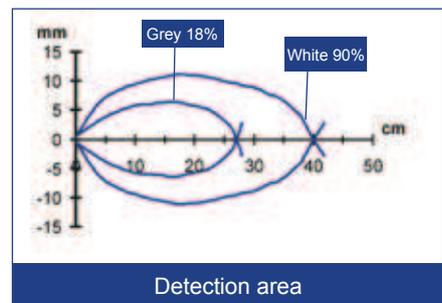
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



- Recommended operating distance
- Maximum operating distance

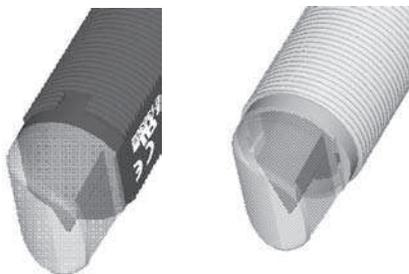


C LONG INFRARED EMISSION

This version of diffuse proximity sensor has a detection distance that can be set using the sensitivity adjustment trimmer. The green stability LED indicates whether the received signal is above to the minimum signal for stable output switching.



RADIAL OPTICS



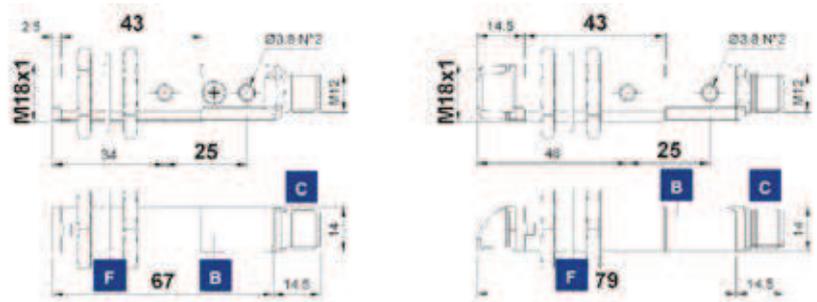
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

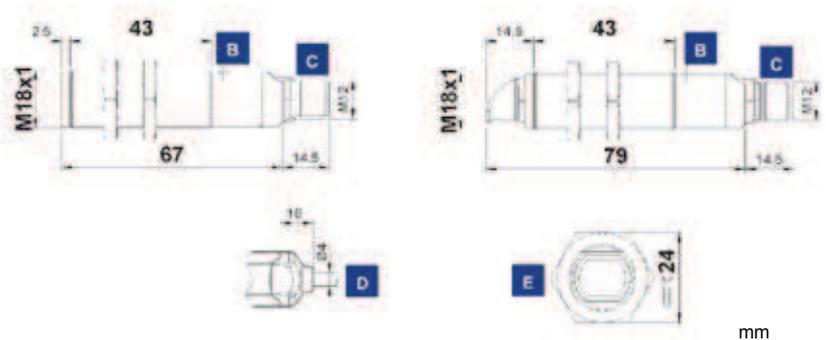
Refer also to **Connectors and Fixing brackets of the General Catalogue**.

DIMENSIONS

PLASTIC HOUSING

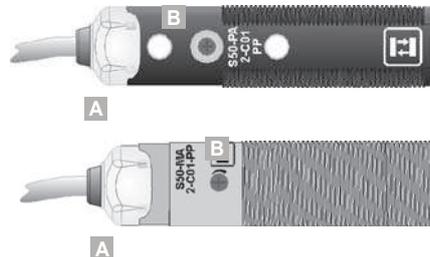


METAL HOUSING



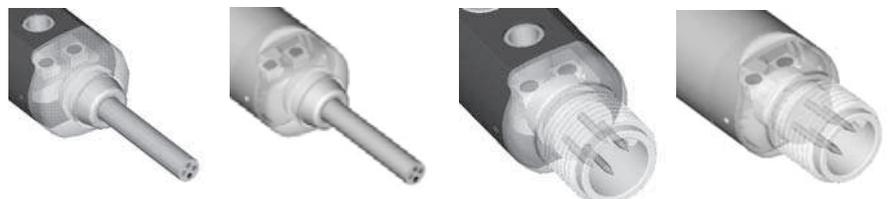
mm

INDICATORS AND SETTINGS



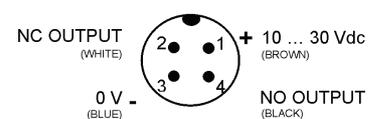
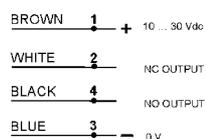
- A** OUTPUT status and STABILITY LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

CONNECTIONS



S50-XX-2

S50-XX-5



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Compatible with quick connection systems
- ⁶A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-C01-NN	S50-PA-2-C01-PP	S50-PA-5-C01-NN	S50-PA-5-C01-PP	S50-PR-2-C01-NN	S50-PR-2-C01-PP	S50-PR-5-C01-NN	S50-PR-5-C01-PP	S50-MA-2-C01-NN	S50-MA-2-C01-PP	S50-MA-5-C01-NN	S50-MA-5-C01-PP	S50-MR-2-C01-NN	S50-MR-2-C01-PP	S50-MR-5-C01-NN	S50-MR-5-C01-PP
Operating distance:																	
axial optics	0 ... 70 cm	•	•	•	•					•	•	•	•				
radial optics	0 ... 40 cm					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	infrared LED 880 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Spot dimension:																	
axial optics	approx.200 mm at 60 cm	•	•	•	•					•	•	•	•				
radial optics	approx.35 mm at 40 cm					•	•	•	•					•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•		•		•		•		•
	NPN, NO and NC	•		•		•		•		•		•		•		•	
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•	•			•	•			•	•		
	M12 4-pole connector ⁵			•				•				•				•	
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•				
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•			•	•										
	25 g max.			•	•			•	•								
	110 g max.									•	•			•	•		
	60 g max.											•	•				
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

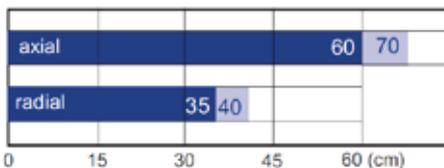
plastic - axial optics - 2 m cable		
S50-PA-2-C01-NN	952001620	NPN
S50-PA-2-C01-PP	952001050	PNP
metal - axial optics - 2 m cable		
S50-MA-2-C01-NN	952021510	NPN
S50-MA-2-C01-PP	952021010	PNP
plastic - axial optics - M12 connector		
S50-PA-5-C01-NN	952001510	NPN
S50-PA-5-C01-PP	952001060	PNP
metal - axial optics - M12 connector		
S50-MA-5-C01-NN	952021670	NPN
S50-MA-5-C01-PP	952021210	PNP
plastic - radial optics - 2 m cable		
S50-PR-2-C01-NN	952001790	NPN
S50-PR-2-C01-PP	952001070	PNP
metal - radial optics - 2 m cable		
S50-MR-2-C01-NN	952021610	NPN
S50-MR-2-C01-PP	952021150	PNP
plastic - radial optics - M12 connector		
S50-PR-5-C01-NN	952001730	NPN
S50-PR-5-C01-PP	952001080	PNP
metal - radial optics - M12 connector		
S50-MR-5-C01-NN	952021770	NPN
S50-MR-5-C01-PP	952021350	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

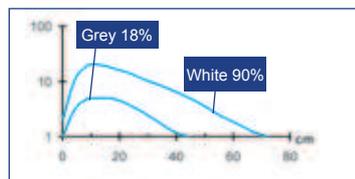


*Only on axial optic models

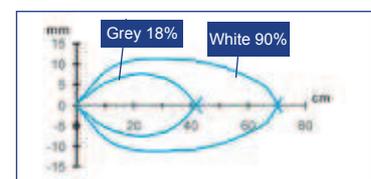
DETECTION DIAGRAMS



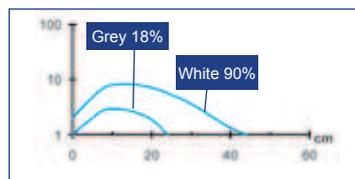
- Recommended operating distance
- Maximum operating distance



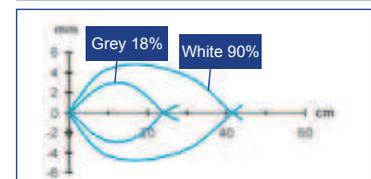
Excess gain - axial



Detection area - axial



Excess gain - radial



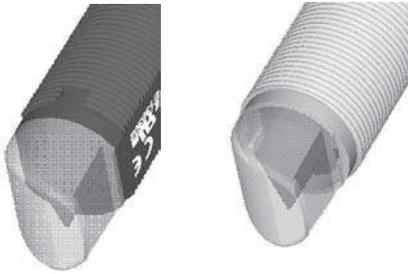
Detection area - radial

D RED EMISSION

The fixed focus proximity sensor offers a simple fixed background suppression distance beyond which no object is detected. The fixed triangulation of the optics greatly reduces the detection distance of reflective objects. The visible red emission facilitates sensor installation.



RADIAL OPTICS



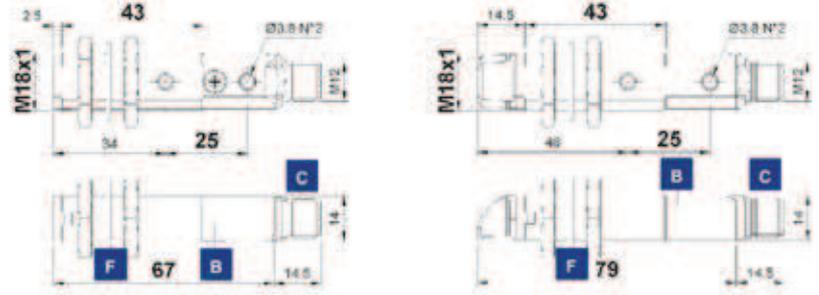
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

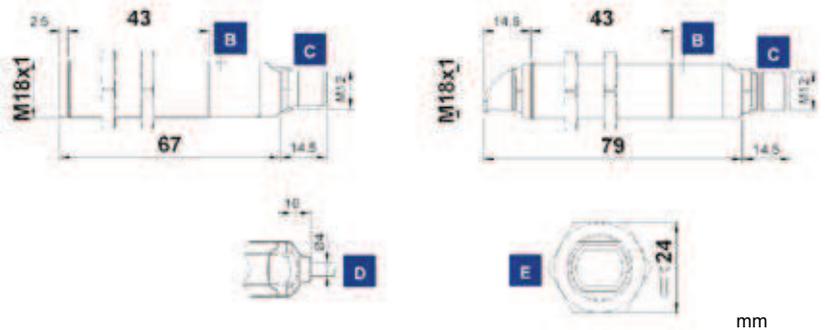
Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

DIMENSIONS

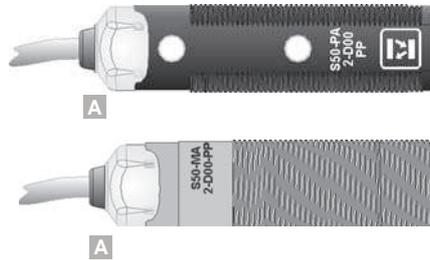
PLASTIC HOUSING



METAL HOUSING

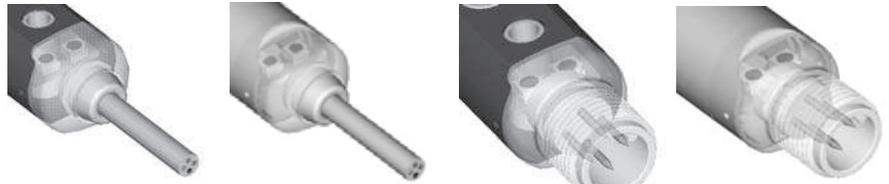


INDICATORS AND SETTINGS



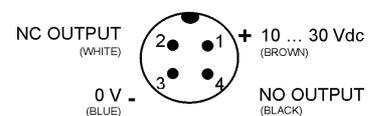
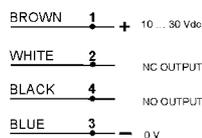
- A** OUTPUT status LED
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

CONNECTIONS



S50-XX-2

S50-XX-5



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_a = +25 °C
- ³PVC, 4 x 0.14 mm²
- ⁴Compatible with quick connection systems
- ⁵A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-D00-NN	S50-PA-2-D00-PP	S50-PA-5-D00-NN	S50-PA-5-D00-PP	S50-PR-2-D00-NN	S50-PR-2-D00-PP	S50-PR-5-D00-NN	S50-PR-5-D00-PP	S50-MA-2-D00-NN	S50-MA-2-D00-PP	S50-MA-5-D00-NN	S50-MA-5-D00-PP	S50-MR-2-D00-NN	S50-MR-2-D00-PP	S50-MR-5-D00-NN	S50-MR-5-D00-PP
Operating distance:																	
axial optics	0.5 ... 10 cm	•	•	•	•					•	•	•	•				
radial optics	0 ... 8 cm					•	•	•	•					•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red LED 630 nm ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Spot dimension:																	
axial optics	approx. 20 mm at 10 cm	•	•	•	•					•	•	•	•				
radial optics	approx. 25 mm at 8 cm					•	•	•	•					•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•		•		•		•		•
	NPN, NO and NC	•		•		•		•		•		•		•		•	
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable	•	•			•	•			•	•			•	•		
	M12 4-pole connector			•	•			•	•			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•			•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•			•	•										
	25 g max.			•	•			•	•								
	110 g max.									•	•			•	•		
	60 g max.											•	•			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-D00-NN	952001640	NPN
S50-PA-2-D00-PP	952001090	PNP
metal - axial optics - 2 m cable		
S50-MA-2-D00-NN	952021530	NPN
S50-MA-2-D00-PP	952021030	PNP
plastic - axial optics - M12 connector		
S50-PA-5-D00-NN	952001530	NPN
S50-PA-5-D00-PP	952001100	PNP
metal - axial optics - M12 connector		
S50-MA-5-D00-NN	952021690	NPN
S50-MA-5-D00-PP	952021230	PNP
plastic - radial optics - 2 m cable		
S50-PR-2-D00-NN	952001810	NPN
S50-PR-2-D00-PP	952001110	PNP
metal - radial optics - 2 m cable		
S50-MR-2-D00-NN	952021630	NPN
S50-MR-2-D00-PP	952021160	PNP
plastic - radial optics - M12 connector		
S50-PR-5-D00-NN	952001750	NPN
S50-PR-5-D00-PP	952001120	PNP
metal - radial optics - M12 connector		
S50-MR-5-D00-NN	952021790	NPN
S50-MR-5-D00-PP	952021360	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

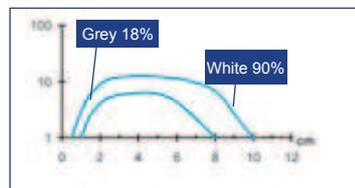


*Only on axial optic models

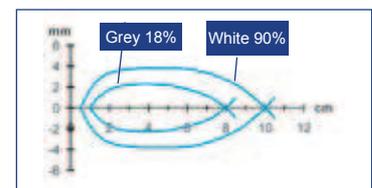
DETECTION DIAGRAMS



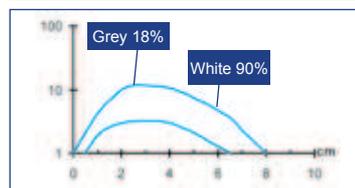
■ Operating distance



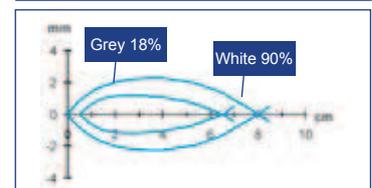
Excess gain - axial



Detection area - axial



Excess gain - radial



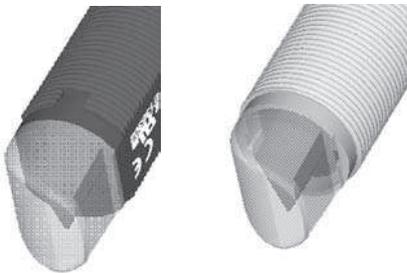
Detection area - radial

C LASER RED EMISSION

The visible red laser emission allows the accurate detection of very small objects. The sensors operate as a proximity device up to 35 cm and can be used as a contrast sensor for high contrast mark detection. The class 1 laser emission guarantees maximum safety for the operators in all applications.



RADIAL OPTICS



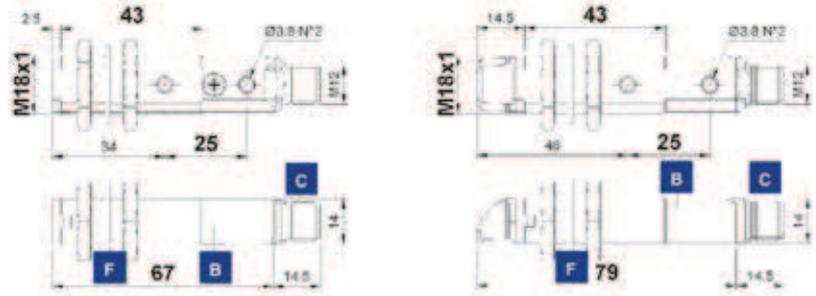
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

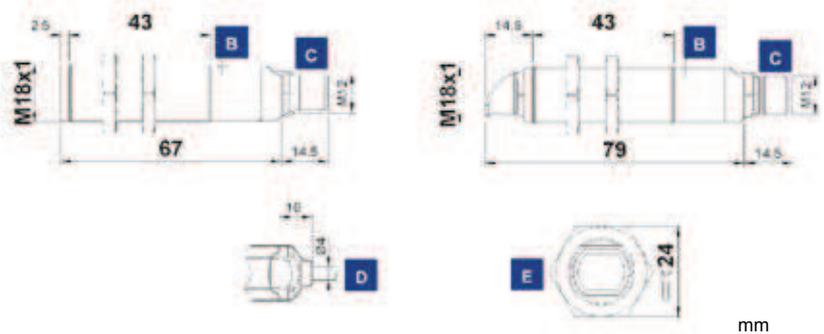
Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

DIMENSIONS

PLASTIC HOUSING

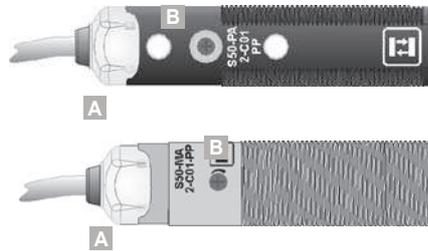


METAL HOUSING



mm

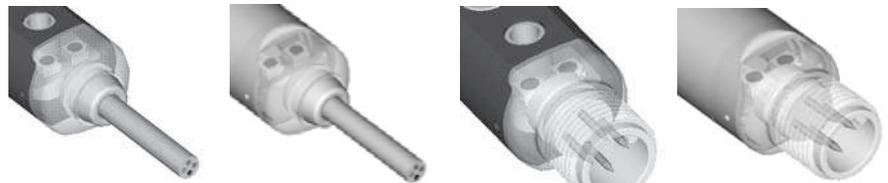
INDICATORS AND SETTINGS



- A** OUTPUT status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

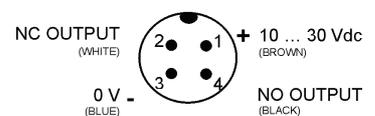
CONNECTIONS



S50-XX-2

S50-XX-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³270° single-turn trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Compatible with quick connection systems
- ⁶A - reverse polarity protection
B - overload and short-circuit protection on receiver outputs

		S50-PL-2-C01-NN	S50-PL-2-C01-PP	S50-PH-2-C01-NN	S50-PH-2-C01-PP	S50-PL-5-C01-NN	S50-PL-5-C01-PP	S50-PH-5-C01-NN	S50-PH-5-C01-PP	S50-ML-2-C01-NN	S50-ML-2-C01-PP	S50-MH-2-C01-NN	S50-MH-2-C01-PP	S50-ML-5-C01-NN	S50-ML-5-C01-PP	S50-MH-5-C01-NN	S50-MH-5-C01-PP
Operating distance:																	
axial optics	0 ... 35 cm	•	•			•	•			•	•			•	•		
radial optics	0 ... 25 cm			•	•			•	•			•	•			•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤35 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red Laser 650 nm ² class 1 EN 60825-1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	class II CDRH21 CFR 1040.10																
Resolution:	approx. 0.3 mm at 5 cm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	approx. 0.3 mm at 10 cm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	approx. 0.5 mm at 20 cm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	approx. 2 mm at 30 cm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Setting:	sensitivity trimmer	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	NPN, NO and NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	333 ms	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Switching frequency:	1.5 kHz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	light on NO / dark on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	M12 4-pole connector ⁵			•	•			•	•			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	nickel plated brass									•	•	•	•	•	•	•	•
Lens material:	PMMA / glass	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•	•	•												
	25 g max.					•	•	•	•								
	110 g max.									•	•	•	•				
	60 g max.													•	•	•	•
Operating temperature:	-10 ... +50°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2, EN 60825-1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	CDRH21 CFR 1040.10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PL-2-C01-NN	952001880	NPN
S50-PL-2-C01-PP	952001380	PNP

plastic - radial optics - 2 m cable		
S50-PH-2-C01-NN	952001990	NPN
S50-PH-2-C01-PP	952001980	PNP

metal - axial optics - 2 m cable		
S50-ML-2-C01-NN	952021830	NPN
S50-ML-2-C01-PP	952021410	PNP

metal - radial optics - 2 m cable		
S50-MH-2-C01-NN	952021990	NPN
S50-MH-2-C01-PP	952021980	PNP

plastic - axial optics - M12 connector		
S50-PL-5-C01-NN	952001850	NPN
S50-PL-5-C01-PP	952001390	PNP

plastic - radial optics - M12 connector		
S50-PH-5-C01-NN	952002010	NPN
S50-PH-5-C01-PP	952002000	PNP

metal - axial optics - M12 connector		
S50-ML-5-C01-NN	952021860	NPN
S50-ML-5-C01-PP	952021450	PNP

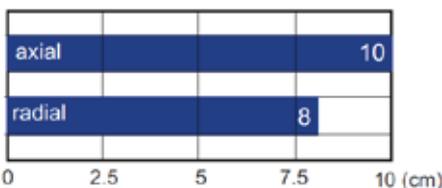
metal - radial optics - M12 connector		
S50-MH-5-C01-NN	952022010	NPN
S50-MH-5-C01-PP	952022000	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.
The use of the MICRO-18 fixing bracket (cod. 95ACC1380) is recommended for the correct optic axis alignment of the laser emission.

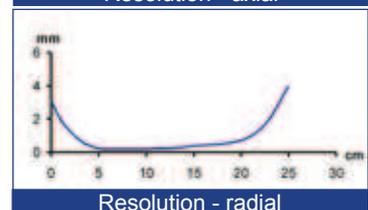
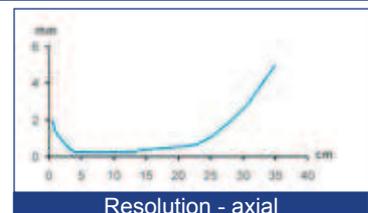
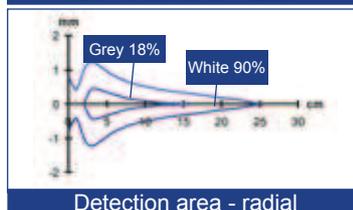
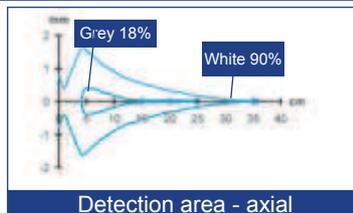


*Only on axial optic models

DETECTION DIAGRAMS



■ Operating distance



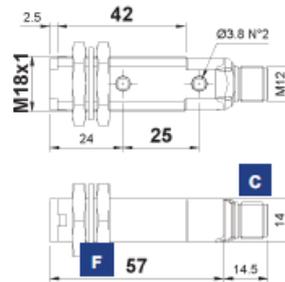
M AXIAL RED EMISSION

Background suppression proximity allows to precisely adjust the distance over which the object is not detected, with the minimum difference between reflective objects. The EASYtouch™ setting procedure fixes automatically the best detection conditions, simply pressing once the teach-in push-button, in presence of the reference to detect.

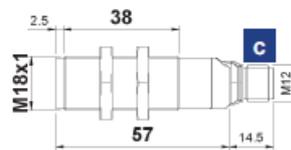


DIMENSIONS

PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and READY/ ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Teach-in button for setting.

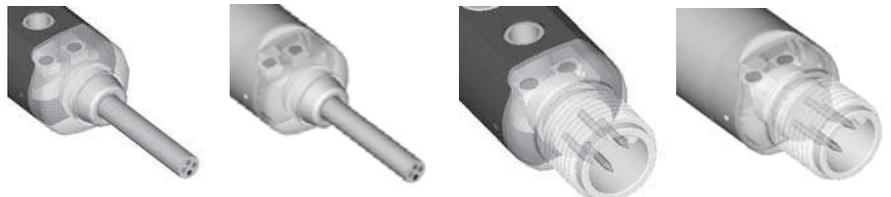
EASYtouch™ provides two setting modes: standard or fine, both obtained by pressing the push-button only once. Please refer to instructions manual for operating details.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

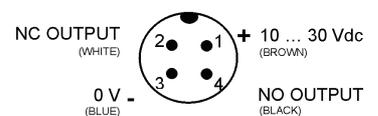
CONNECTIONS



S50-XX-2

S50-XX-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³PVC, 4 x 0.14 mm²
- ⁴Compatible with quick connection systems
- ⁵A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PA-2-M03-NN	S50-PA-2-M03-PP	S50-PA-5-M03-NN	S50-PA-5-M03-PP	S50-MA-2-M03-NN	S50-MA-2-M03-PP	S50-MA-5-M03-NN	S50-MA-5-M03-PP
Operating distance:	5 ... 10 cm	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤30 mA	•	•	•	•	•	•	•	•
Light emission:	red LED 630 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	teach-in push-button	•	•	•	•	•	•	•	•
Setting:	teach-in EASYtouch™	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green / red READY / ERROR LED	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC		•		•		•		•
	NPN, NO and NC	•		•		•		•	
Output current:	≤100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	1 ms	•	•	•	•	•	•	•	•
Switching frequency:	500 Hz	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ³	•	•			•	•		
	M12 4-pole connector ⁴			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•
Housing material:	PBT / PVC	•	•	•	•				
	nickel plated brass					•	•	•	•
Lens material:	glass	•	•	•	•	•	•	•	•
Weight:	90 g max.	•	•						
	40 g max.			•	•				
	125 g max.					•	•		
	75 g max.							•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-M03-NN	952001670	NPN
S50-PA-2-M03-PP	952001230	PNP

metal - axial optics - 2 m cable		
S50-MA-2-M03-NN	952021550	NPN
S50-MA-2-M03-PP	952021070	PNP

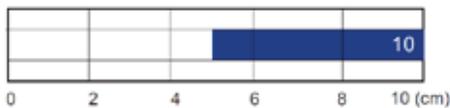
plastic - axial optics - M12 connector		
S50-PA-5-M03-NN	952001560	NPN
S50-PA-5-M03-PP	952001000	PNP

metal - axial optics - M12 connector		
S50-MA-5-M03-NN	952021710	NPN
S50-MA-5-M03-PP	952021270	PNP

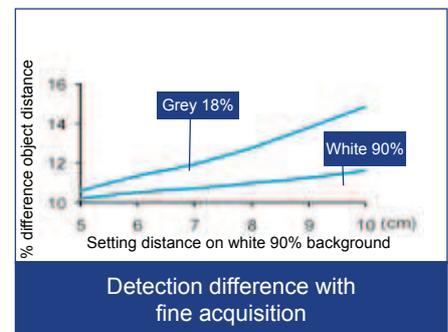
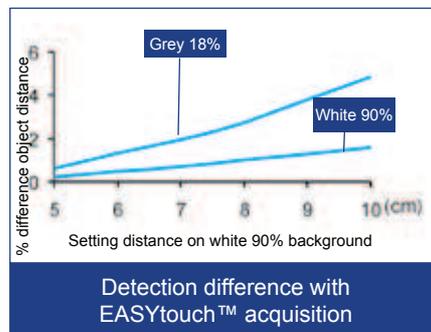
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance



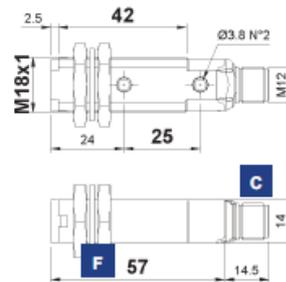
M RADIAL RED EMISSION

This version of diffuse proximity sensor has a detection distance that can be set using the sensitivity adjustment trimmer. The green stability LED indicates whether the received signal is above to the minimum signal for stable output switching.

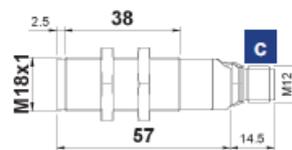


DIMENSIONS

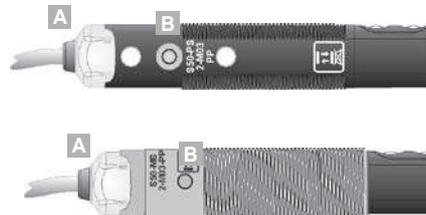
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and READY/ ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

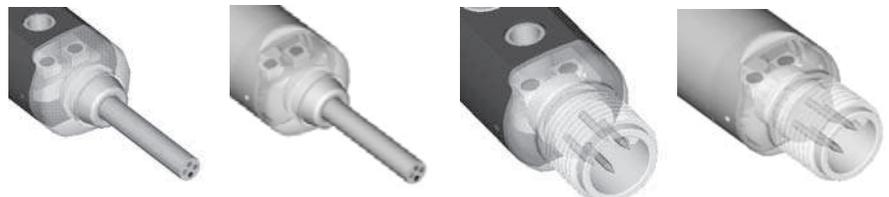
Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine, both obtained by pressing the push-button only once. Please refer to instructions manual for operating details.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

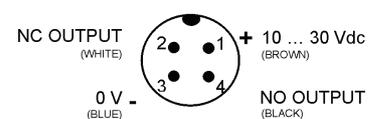
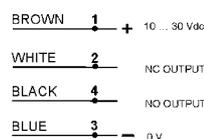
Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S50-XX-2

S50-XX-5



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³PVC, 4 x 0.14 mm²
- ⁴Compatible with quick connection systems
- ⁵A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs

		S50-PS-2-M03-NN	S50-PS-2-M03-PP	S50-PS-5-M03-NN	S50-PS-5-M03-PP	S50-MS-2-M03-NN	S50-MS-2-M03-PP	S50-MS-5-M03-NN	S50-MS-5-M03-PP
Operating distance:	5 ... 10 cm	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤30 mA	•	•	•	•	•	•	•	•
Light emission:	red LED 630 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	approx. 10 mm at 10 cm	•	•	•	•	•	•	•	•
Setting:	teach-in push-button	•	•	•	•	•	•	•	•
Setting procedure:	teach-in EASYtouch™	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green / red READY / ERROR LED	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•	•	•	•	•
	NPN, NO and NC	•	•	•	•	•	•	•	•
Output current:	≤100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	1 ms	•	•	•	•	•	•	•	•
Switching frequency:	500 Hz	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ³	•	•	•	•	•	•	•	•
	M12 4-pole connector ⁴	•	•	•	•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•
Housing material:	PBT / PVC	•	•	•	•	•	•	•	•
	nickel plated brass	•	•	•	•	•	•	•	•
Lens material:	glass	•	•	•	•	•	•	•	•
Weight:	90 g max.	•	•	•	•	•	•	•	•
	40 g max.	•	•	•	•	•	•	•	•
	125 g max.	•	•	•	•	•	•	•	•
	75 g max.	•	•	•	•	•	•	•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - 2 m cable		
S50-PS-2-M03-NN	952001900	NPN
S50-PS-2-M03-PP	952001910	PNP

metal - 2 m cable		
S50-MS-2-M03-NN	952021900	NPN
S50-MS-2-M03-PP	952021910	PNP

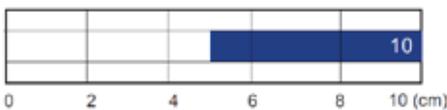
plastic - M12 connector		
S50-PS-5-M03-NN	952001920	NPN
S50-PS-5-M03-PP	952001930	PNP

metal - M12 connector		
S50-MS-5-M03-NN	952021920	NPN
S50-MS-5-M03-PP	952021930	PNP

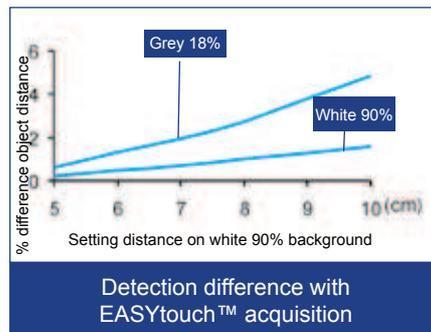
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance



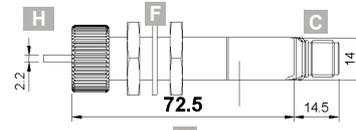
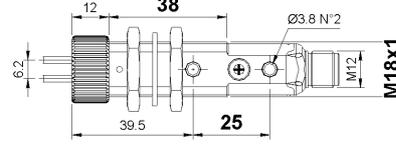
E RED EMISSION

The amplifier is built to accept any standard 2.2 mm Ø fibre-optic which can be for either diffused or through beam operation. A locking ring when tightened holds the fibres firmly in position. The sensitivity is adjusted by an IP67 rated trimmer. The proximity or through beam fibres are mainly used in applications where space is of a premium and for detection of small objects. Special fibres are also available for high temperature and high wear applications. For further information on the extensive range of fibre-optic accessories please see the OF datasheet.

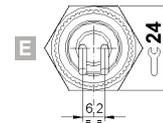
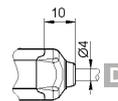
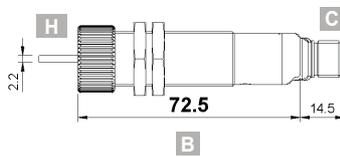
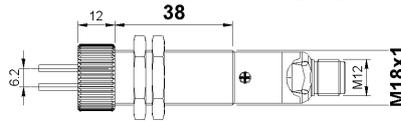


DIMENSIONS

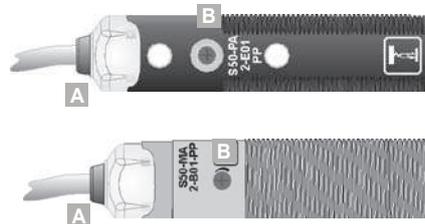
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and STABILITY LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket
- H** Fibre fixing nut

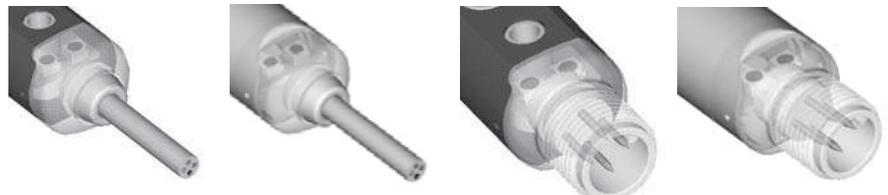
Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S50-XX-2

S50-XX-5

BROWN 1 + 10 ... 30 Vdc
 WHITE 2 NC OUTPUT
 BLACK 4 NO OUTPUT
 BLUE 3 0 V

NC OUTPUT (WHITE) 2 + 10 ... 30 Vdc (BROWN)
 0 V (BLUE) 3 NO OUTPUT (BLACK) 4

Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES		S50-PA-2-E01-NN	S50-PA-2-E01-PP	S50-PA-5-E01-NN	S50-PA-5-E01-PP	S50-MA-2-E01-NN	S50-MA-2-E01-PP	S50-MA-5-E01-NN	S50-MA-5-E01-PP
Operating distance:									
proximity	3 cm (OF-42-ST-20 standard fibres)	•	•	•	•	•	•	•	•
through beam	10 cm (OF-43-ST-20 standard fibres)	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green STABILITY	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•	•	•	•	•
	NPN, NO and NC	•	•	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	0.5 ms	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•			•	•		
	M12 4-pole connector ⁵			•	•			•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•				
	nickel plated brass					•	•	•	•
Fibre fixing nut material:	ABS	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•						
	25 g max.			•	•				
	110 g max.					•	•		
	60 g max.							•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-E01-NN	952001650	NPN
S50-PA-2-E01-PP	952001130	PNP

metal - axial optics - 2 m cable		
S50-MA-2-E01-NN	952021880	NPN
S50-MA-2-E01-PP	952021040	PNP

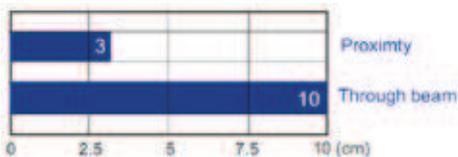
plastic - axial optics - M12 connector		
S50-PA-5-E01-NN	952001540	NPN
S50-PA-5-E01-PP	952001140	PNP

metal - axial optics - M12 connector		
S50-MA-5-E01-NN	952021890	NPN
S50-MA-5-E01-PP	952021240	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.



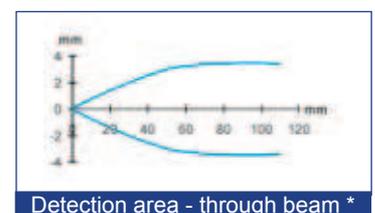
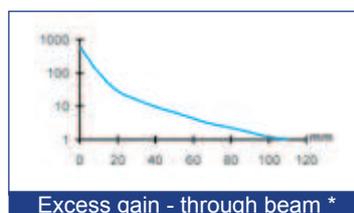
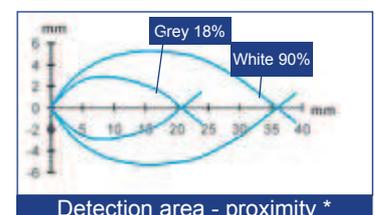
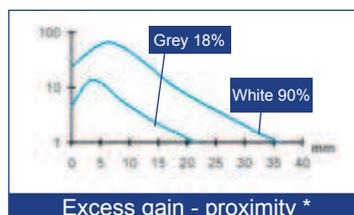
DETECTION DIAGRAMS



■ Operating distance with standard fibres

Standard fibre-optics:
OF-42-ST-20 proximity
OF-43-ST-20 through beam

High efficiency fibre-optics or accessory lenses can be used to obtain larger operating distances. Refer to **Fibre-optics** of the **General Catalogue**



* standard fibre-optics

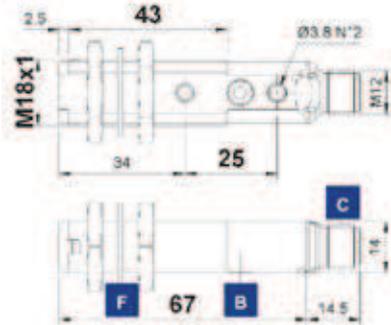
W WHITE EMISSION

The white light LED emission is designed for the detection of a large number of coloured or grey-scale contrasts, in order to detect print registration marks or similar. The EASYtouch™ setting procedures automatically selects the best detection conditions, simply by pressing the teach-in push-button once, in the presence of a reference mark. By pressing the teach-in push-button and holding it down until the green light on the rear of the sensor flashes, in the presence of the reference mark and then pressing the button again in the presence of the contrast you wish to ignore, a higher level of accuracy is obtained.

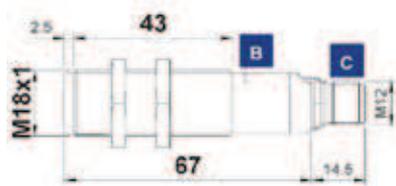


DIMENSIONS

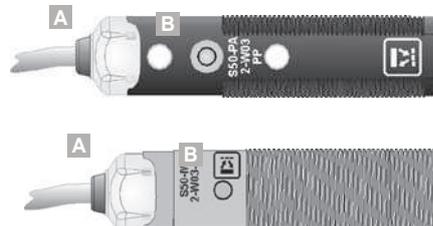
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and READY/ ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Teach-in button for setting.

EASYtouch™ provides two setting modes: standard or fine, both obtained by pressing the push-button only once. Please refer to instructions manual for operating details.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



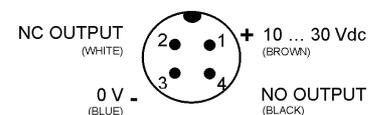
S50-XX-2



S50-XX-5



BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES		S50-PA-2-W03-NN	S50-PA-2-W03-PP	S50-PA-5-W03-NN	S50-PA-5-W03-PP	S50-MA-2-W03-NN	S50-MA-2-W03-PP	S50-MA-5-W03-NN	S50-MA-5-W03-PP
Operating distance:		10 mm	•	•	•	•	•	•	•
Depth of field (max.):		± 2 mm	•	•	•	•	•	•	•
Power supply:		10 ... 30 Vdc ¹	•	•	•	•	•	•	•
Ripple:		≤ 2 Vpp	•	•	•	•	•	•	•
Consumption:		≤ 25 mA	•	•	•	•	•	•	•
Light emission:		white LED 400 - 700 nm ²	•	•	•	•	•	•	•
Spot dimension:		approx. 4.5 mm at 10 mm	•	•	•	•	•	•	•
Minimum detectable object:		0.5 mm	•	•	•	•	•	•	•
Setting:		teach-in push-button	•	•	•	•	•	•	•
Setting procedure:		teach-in EASYtouch™	•	•	•	•	•	•	•
Indicators:		yellow OUTPUT LED	•	•	•	•	•	•	•
Output type:		green / red READY / ERROR LED	•	•	•	•	•	•	•
		PNP, NO and NC	•	•	•	•	•	•	•
		NPN, NO and NC	•	•	•	•	•	•	•
Output current:		≤ 100 mA	•	•	•	•	•	•	•
Saturation voltage:		≤ 2 V	•	•	•	•	•	•	•
Response time:		100 ms	•	•	•	•	•	•	•
Switching frequency:		5 kHz	•	•	•	•	•	•	•
Operating mode:		dark with EASYtouch™	•	•	•	•	•	•	•
		automatic dark / light with fine acq.	•	•	•	•	•	•	•
Connection:		2 m Ø 4 mm cable ³	•	•	•	•	•	•	•
		M12 4-pole connector ⁴	•	•	•	•	•	•	•
Electrical protection:		class 2	•	•	•	•	•	•	•
Mechanical protection:		IP67	•	•	•	•	•	•	•
Protection devices:		A, B	•	•	•	•	•	•	•
Housing material:		PBT	•	•	•	•	•	•	•
		nickel plated brass	•	•	•	•	•	•	•
Lens material:		PMMA	•	•	•	•	•	•	•
Weight:		75 g max.	•	•	•	•	•	•	•
		25 g max.			•	•			
		110 g max.				•	•		
		60 g max.					•	•	
Operating temperature:		-25 ... +55°C	•	•	•	•	•	•	•
Storage temperature:		-25 ... +70°C	•	•	•	•	•	•	•
Reference standard:		EN 60947-5-2	•	•	•	•	•	•	•

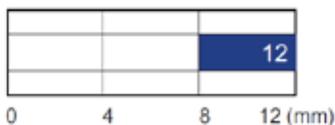
SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-W03-NN	952001710	NPN
S50-PA-2-W03-PP	952001320	PNP
metal - axial optics - 2 m cable		
S50-MA-2-W03-NN	952021590	NPN
S50-MA-2-W03-PP	952021110	PNP
plastic - axial optics - M12 connector		
S50-PA-5-W03-NN	952001600	NPN
S50-PA-5-W03-PP	952001330	PNP
metal - axial optics - M12 connector		
S50-MA-5-W03-NN	952021750	NPN
S50-MA-5-W03-PP	952021310	PNP

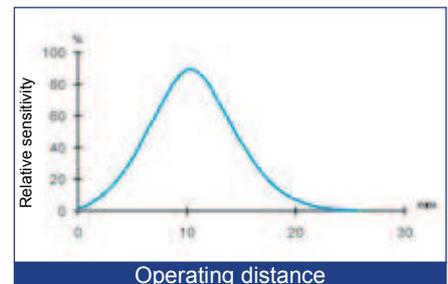
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance



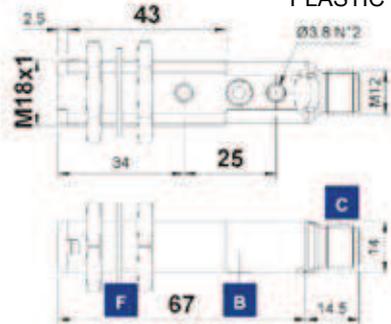
U UV EMISSION

The UV light LED emission detects any luminescent reference, even on very reflective surfaces, such as ceramics, metal or mirrored glass. The EASYtouch™ setting procedures fixes automatically the best detection conditions, simply by pressing the teach-in push-button once, with the luminescent object present. By pressing the teach-in push-button and holding it down until the green light on the rear of the sensor flashes, with the luminescent object present and then pressing the button again in the presence of a luminescent reference you wish to ignore, a higher level of accuracy is obtained.

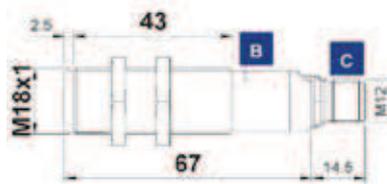


DIMENSIONS

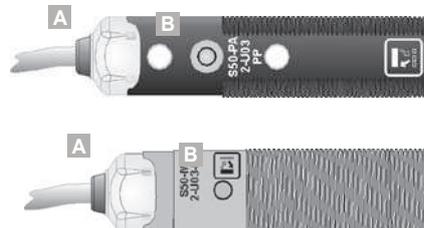
PLASTIC HOUSING



METAL HOUSING



INDICATORS AND SETTINGS



- A** OUTPUT status and READY/ ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output
- E** Fixing nuts
- F** Fixing gasket

Teach-in button for setting.

EASYtouch™ provides two setting modes: standard or fine, both obtained by pressing the push-button only once. Please refer to instructions manual for operating details.

ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets** of the General Catalogue.

CONNECTIONS



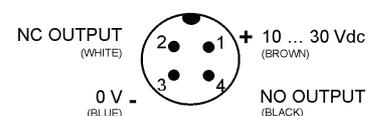
S50-XX-2



S50-XX-5



BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



Versions and options: refer to **MODEL ALPHABETICAL INDEX** of this catalogue.

TECHNICAL DATA

TECHNICAL NOTES		S50-PA-2-U03-NN	S50-PA-2-U03-PP	S50-PA-5-U03-NN	S50-PA-5-U03-PP	S50-MA-2-U03-NN	S50-MA-2-U03-PP	S50-MA-5-U03-NN	S50-MA-5-U03-PP
TECHNICAL NOTES									
¹ Limit values									
² Average life of 100.000 h with TA = +25 °C									
³ PVC, 4 x 0.14 mm ²									
⁴ Compatible with quick connection systems									
⁵ A - reverse polarity protection									
B - overload and short-circuit protection on receiver outputs									
Operating distance:	8 ... 20 mm	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•
Consumption:	≤ 25 mA	•	•	•	•	•	•	•	•
Light emission:	UV LED 370 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	approx. 3 mm at 20 mm	•	•	•	•	•	•	•	•
Minimum detectable object:	0.5 mm	•	•	•	•	•	•	•	•
Setting:	teach-in push-button	•	•	•	•	•	•	•	•
Setting procedure:	teach-in EASYtouch™	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green / red READY / ERROR LED	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•	•	•	•	•
	NPN, NO and NC	•	•	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	500 ms	•	•	•	•	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•	•	•	•	•
Operating mode:	dark with EASYtouch™	•	•	•	•	•	•	•	•
	automatic dark / light with fine acq.	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable ³	•	•	•	•	•	•	•	•
	M12 4-pole connector ⁴	•	•	•	•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•	•	•
	nickel plated brass	•	•	•	•	•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•
Weight:	75 g max.	•	•	•	•	•	•	•	•
	25 g max.			•	•				
	110 g max.					•	•		
	60 g max.							•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

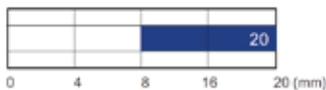
SELECTION TABLE

plastic - axial optics - 2 m cable		
S50-PA-2-U03-NN	952001700	NPN
S50-PA-2-U03-PP	952001300	PNP
metal - axial optics - 2 m cable		
S50-MA-2-U03-NN	952021580	NPN
S50-MA-2-U03-PP	952021100	PNP
plastic - axial optics - M12 connector		
S50-PA-5-U03-NN	952001590	NPN
S50-PA-5-U03-PP	952001310	PNP
metal - axial optics - M12 connector		
S50-MA-5-U03-NN	952021740	NPN
S50-MA-5-U03-PP	952021300	PNP

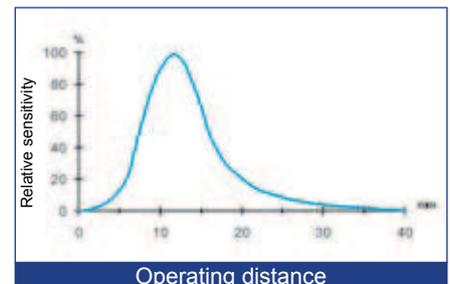
All the ordering codes and information are summarised in the last pages of this catalogue.



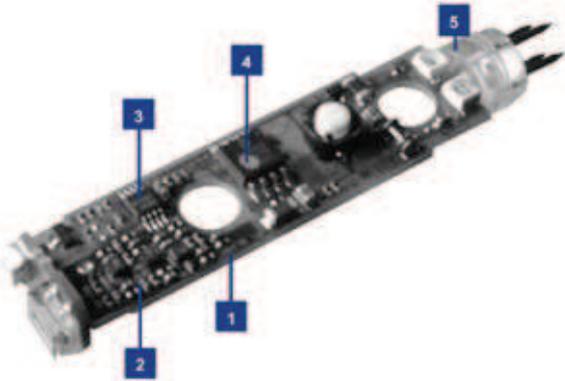
DETECTION DIAGRAMS



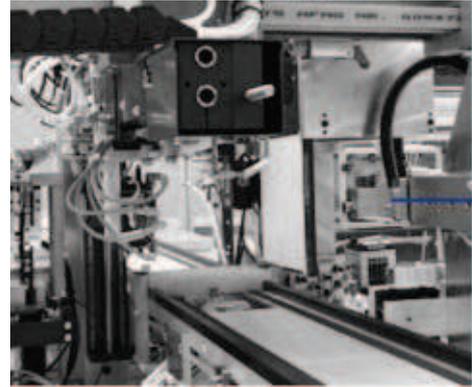
■ Operating distance



TECHNOLOGY



- 1 Multi-layer fine-line PCB
- 2 Chip-size components, integrated circuits in 8 bumps flip-chip
- 3 Analogue digital ASIC
- 4 Power ASIC for antivalent outputs
- 5 M12 custom connector compatible with quick connection systems. The four terminals are cone-shaped to facilitate the direct insertion in the cable conductors (4 x 0,5 mm²)



- 6 Housing and fixing nuts in indeformable plastic providing excellent resistance against hostile environments. Indelible laser marking
- 7 A modular product developed for the automation of the assembling and testing process necessary to guarantee intrinsic quality, repeatability and reliability. One-piece-flow management for improved service



EASYtouch™ is a Datasensor patent-covered technology that allows a rapid and safe setting of micro-controlled sensors equipped with a teach-in push-button. A pressure longer than two seconds of the push-button allows a good adjustment of the sensitivity threshold. EASYtouch™ is the easiest and fastest calibration procedure available on the market. The instructions on how to best use EASYtouch™ are given in the product's instruction manual.

ACCESSORIES

The series is compatible with all the **Datalogic Automation** accessories already developed for tubular sensors. In the **General Catalogue** refer to:

- **CS** connectors
- **R** reflectors
- **OF** fibre-optics
- **ST** fixing brackets

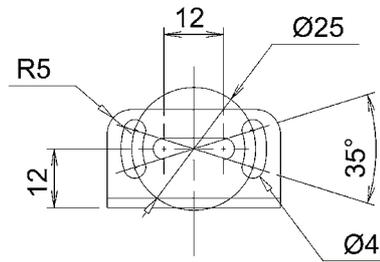
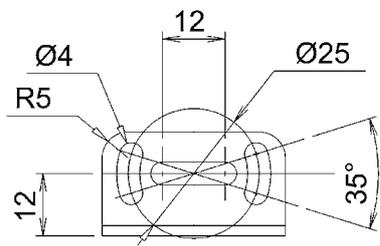
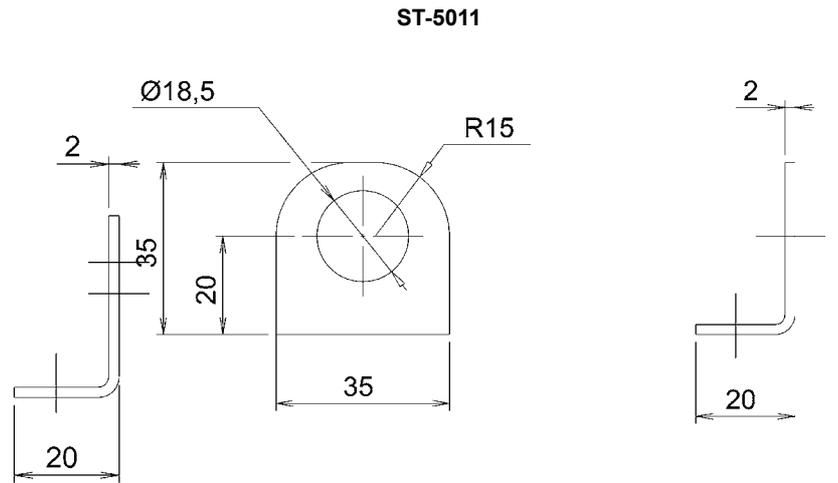
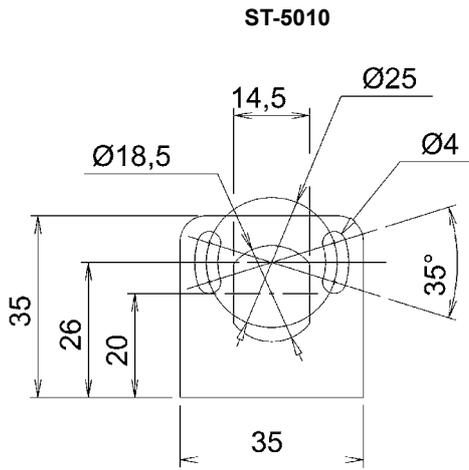
New accessories dedicated to the **S50** series have been developed to cover all the fixing requirements and to improve the functioning. In particular **EASYin™** is an innovative fixing system that can be used only for the plastic flat version, that allows a fast and safe positioning of the sensor, facilitating the adjustment as well as the locking and unlocking.



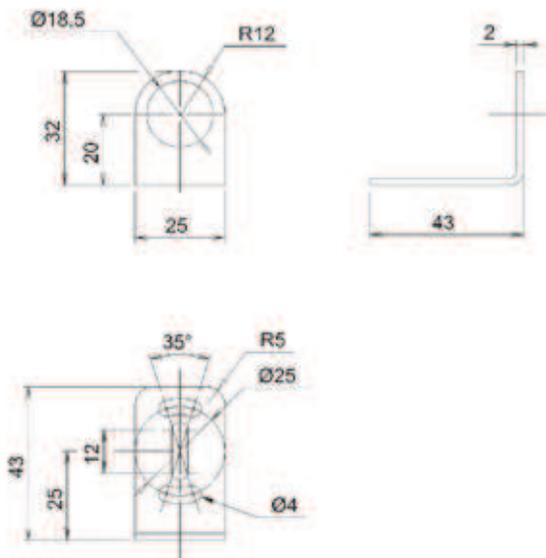
ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5010	M18/14 fixing bracket	95ACC5230
ST-5011	M18 fixing bracket	95ACC5240
ST-5012	M18 fixing bracket	95ACC5250
ST-5017	M18 fixing bracket	95ACC5270
S50 EASY-IN	M18/14 EASYin™ adjustable fixing support	95ACC5300
JOINT-18	M18 jointed support	95ACC5220
SWING-18	adjustable support for plastic tubular M18 sensors	895000006
MICRO-18	support with micrometric regulation for tubular M18 sensors	95ACC1380
SP-40	fixed support for tubular M18 sensors	95ACC1370
MEK-PROOF	front protection	G5000001

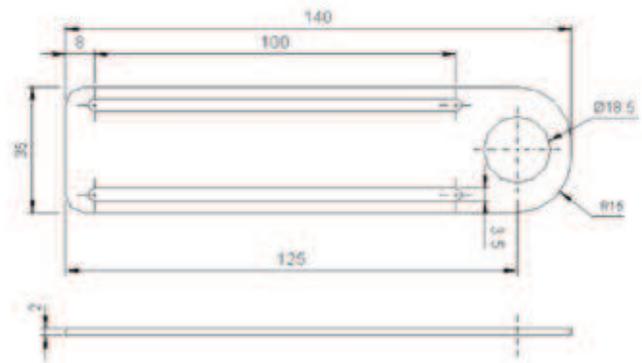
Refer also to **Accessories** for Sensors of the **General Catalogue**



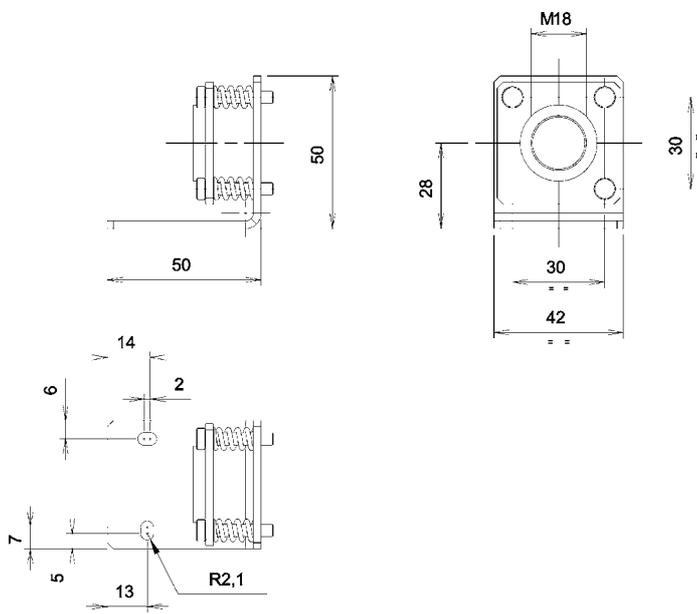
ST-5012



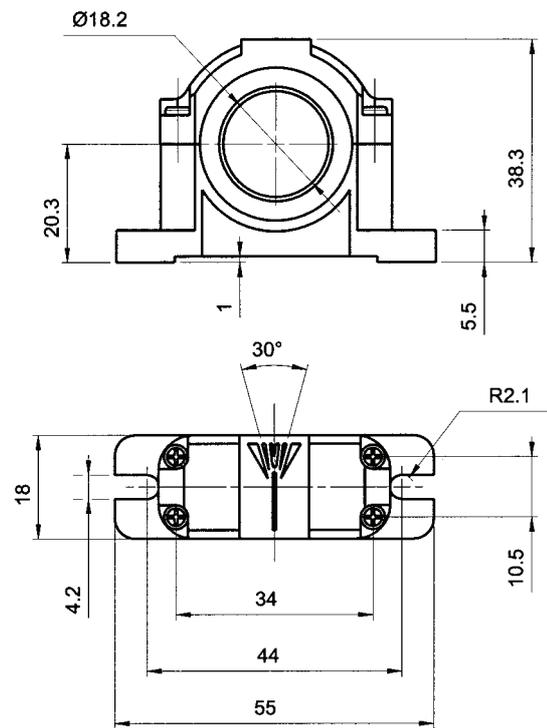
ST-5017



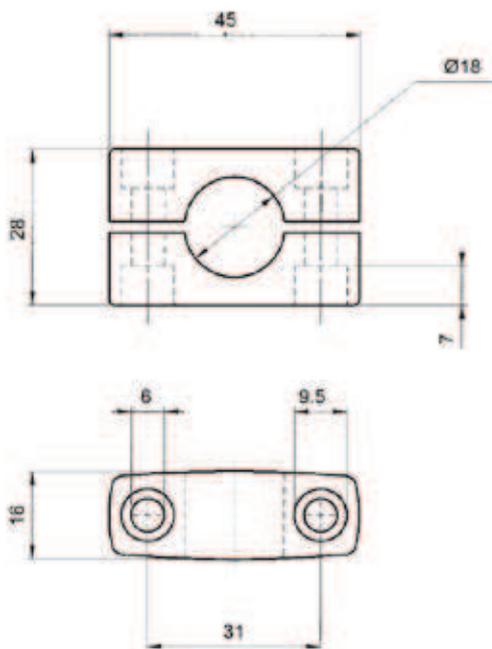
MICRO-18



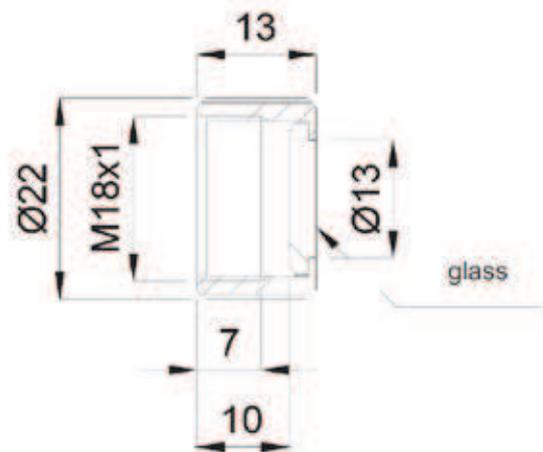
SWING-18



SP-40



MEK PROOF



MODEL SELECTION AND ORDER INFORMATION

PLASTIC FLAT HOUSING WITH AXIAL OPTICS

MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PA-2-A00-NN	952002090	retroreflex	10
S50-PA-2-A00-PP	952002080	retroreflex	10
S50-PA-2-B01-NN	952001610	polarised retroreflex	12
S50-PA-2-B01-PP	952001010	polarised retroreflex	12
S50-PA-2-C01-NN	952001620	long diffuse proximity	22
S50-PA-2-C01-PP	952001050	long diffuse proximity	22
S50-PA-2-C10-NN	952001630	short diffuse proximity	18
S50-PA-2-C10-PP	952001240	short diffuse proximity	18
S50-PA-2-C21-NN	952002170	midi diffuse proximity	20
S50-PA-2-C21-PP	952002160	midi diffuse proximity	20
S50-PA-2-D00-NN	952001640	fixed focus proximity	24
S50-PA-2-D00-PP	952001090	fixed focus proximity	24
S50-PA-2-E01-NN	952001650	fibre-optic amplifier	34
S50-PA-2-E01-PP	952001130	fibre-optic amplifier	34
S50-PA-2-F01-NN	952001660	receiver	2
S50-PA-2-F01-PP	952001150	receiver	2
S50-PA-2-G00-XG	952001190	emitter	2
S50-PA-2-M03-NN	952001670	background suppression	28
S50-PA-2-M03-PP	952001230	background suppression	28
S50-PA-2-T01-NN	952001690	retroreflex for transparents	16
S50-PA-2-T01-PP	952001260	retroreflex for transparents	16
S50-PA-2-U03-NN	952001700	luminescence sensor	38
S50-PA-2-U03-PP	952001300	luminescence sensor	38
S50-PA-2-W03-NN	952001710	contrast sensor	36
S50-PA-2-W03-PP	952001320	contrast sensor	36
S50-PA-5-A00-NN	952002110	retroreflex	10
S50-PA-5-A00-PP	952002100	retroreflex	10
S50-PA-5-B01-NN	952001500	polarised retroreflex	12
S50-PA-5-B01-PP	952001020	polarised retroreflex	12
S50-PA-5-C01-NN	952001510	long diffuse proximity	22
S50-PA-5-C01-PP	952001060	long diffuse proximity	22
S50-PA-5-C10-NN	952001520	short diffuse proximity	18
S50-PA-5-C10-PP	952001250	short diffuse proximity	18
S50-PA-5-C21-NN	952002190	midi diffuse proximity	20
S50-PA-5-C21-PP	952002180	midi diffuse proximity	20
S50-PA-5-D00-NN	952001530	fixed focus proximity	24
S50-PA-5-D00-PP	952001100	fixed focus proximity	24
S50-PA-5-E01-NN	952001540	fibre-optic amplifier	34
S50-PA-5-E01-PP	952001140	fibre-optic amplifier	34
S50-PA-5-F01-NN	952001550	receiver	2
S50-PA-5-F01-PP	952001160	receiver	2
S50-PA-5-G00-XG	952001200	emitter	2
S50-PA-5-M03-NN	952001560	background suppression	28
S50-PA-5-M03-PP	952001000	background suppression	28
S50-PA-5-T01-NN	952001580	retroreflex for transparents	16
S50-PA-5-T01-PP	952001270	retroreflex for transparents	16
S50-PA-5-U03-NN	952001590	luminescence sensor	38

PLASTIC FLAT HOUSING WITH AXIAL OPTICS

MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PA-5-U03-PP	952001310	luminescence sensor	38
S50-PA-5-W03-NN	952001600	contrast sensor	36
S50-PA-5-W03-PP	952001330	contrast sensor	36

PLASTIC FLAT HOUSING WITH RADIAL OPTICS

MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PR-2-B01-NN	952001780	polarised retroreflex	12
S50-PR-2-B01-PP	952001030	polarised retroreflex	12
S50-PR-2-C01-NN	952001790	long diffuse proximity	22
S50-PR-2-C01-PP	952001070	long diffuse proximity	22
S50-PR-2-C10-NN	952001800	short diffuse proximity	18
S50-PR-2-C10-PP	952001490	short diffuse proximity	18
S50-PR-2-D00-NN	952001810	fixed focus proximity	24
S50-PR-2-D00-PP	952001110	fixed focus proximity	24
S50-PR-2-F01-NN	952001820	receiver	2
S50-PR-2-F01-PP	952001170	receiver	2
S50-PR-2-G00-XG	952001210	emitter	2
S50-PR-2-T01-NN	952001830	retroreflex for transparents	16
S50-PR-2-T01-PP	952001280	retroreflex for transparents	16
S50-PR-5-B01-NN	952001720	polarised retroreflex	12
S50-PR-5-B01-PP	952001040	polarised retroreflex	12
S50-PR-5-C01-NN	952001730	long diffuse proximity	22
S50-PR-5-C01-PP	952001080	long diffuse proximity	22
S50-PR-5-C10-NN	952001740	short diffuse proximity	18
S50-PR-5-C10-PP	952001480	short diffuse proximity	18
S50-PR-5-D00-NN	952001750	fixed focus proximity	24
S50-PR-5-D00-PP	952001120	fixed focus proximity	24
S50-PR-5-F01-NN	952001760	receiver	2
S50-PR-5-F01-PP	952001180	receiver	2
S50-PR-5-G00-XG	952001220	emitter	2
S50-PR-5-T01-NN	952001770	retroreflex for transparents	16
S50-PR-5-T01-PP	952001290	retroreflex for transparents	16

PLASTIC FLAT HOUSING WITH LATERAL OPTICS

MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PS-2-M03-NN	952001900	background suppression	30
S50-PS-2-M03-PP	952001910	background suppression	30
S50-PS-5-M03-NN	952001920	background suppression	30
S50-PS-5-M03-PP	952001930	background suppression	30

PLASTIC FLAT HOUSING WITH LASER AXIAL OPTICS

MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PL-2-B01-NN	952001870	laser retroreflex	14
S50-PL-2-B01-PP	952001360	laser retroreflex	14
S50-PL-2-C01-NN	952001880	laser proximity	26
S50-PL-2-C01-PP	952001380	laser proximity	26
S50-PL-2-F01-NN	952001890	laser receiver	6
S50-PL-2-F01-PP	952001400	laser receiver	6
S50-PL-2-G00-XG	952001420	laser emitter	6
S50-PL-5-B01-NN	952001840	laser retroreflex	14
S50-PL-5-B01-PP	952001370	laser retroreflex	14
S50-PL-5-C01-NN	952001850	laser proximity	26
S50-PL-5-C01-PP	952001390	laser proximity	26
S50-PL-5-F01-NN	952001860	laser receiver	6
S50-PL-5-F01-PP	952001410	laser receiver	6
S50-PL-5-G00-XG	952001430	laser emitter	6

MODEL SELECTION AND ORDER INFORMATION

PLASTIC FLAT HOUSING WITH LASER RADIAL OPTICS			
MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-PH-2-B01-NN	952001950	laser retroreflex	14
S50-PH-2-B01-PP	952001940	laser retroreflex	14
S50-PH-2-C01-NN	952001990	laser proximity	26
S50-PH-2-C01-PP	952001980	laser proximity	26
S50-PH-2-F01-NN	952002030	laser receiver	6
S50-PH-2-F01-PP	952002020	laser receiver	6
S50-PH-2-G00-XG	952002060	laser emitter	6
S50-PH-5-B01-NN	952001970	laser retroreflex	14
S50-PH-5-B01-PP	952001960	laser retroreflex	14
S50-PH-5-C01-NN	952002010	laser proximity	26
S50-PH-5-C01-PP	952002000	laser proximity	26
S50-PH-5-F01-NN	952002050	laser receiver	6
S50-PH-5-F01-PP	952002040	laser receiver	6
S50-PH-5-G00-XG	952002070	laser emitter	6

METAL CYLINDRICAL HOUSING WITH AXIAL OPTICS			
S50-MA-2-A00-NN	952022090	retroreflex	10
S50-MA-2-A00-PP	952022080	retroreflex	10
S50-MA-2-B01-NN	952021500	polarised retroreflex	12
S50-MA-2-B01-PP	952021000	polarised retroreflex	12
S50-MA-2-C01-NN	952021510	long diffuse proximity	22
S50-MA-2-C01-PP	952021010	long diffuse proximity	22
S50-MA-2-C10-NN	952021520	short diffuse proximity	18
S50-MA-2-C10-PP	952021020	short diffuse proximity	18
S50-MA-2-C21-NN	952022130	midi diffuse proximity	20
S50-MA-2-C21-PP	952022120	midi diffuse proximity	20
S50-MA-2-D00-NN	952021530	fixed focus proximity	24
S50-MA-2-D00-PP	952021030	fixed focus proximity	24
S50-MA-2-E01-NN	952021880	fibre-optic amplifier	34
S50-MA-2-E01-PP	952021040	fibre-optic amplifier	34
S50-MA-2-F01-NN	952021540	receiver	4
S50-MA-2-F01-PP	952021050	receiver	4
S50-MA-2-G00-XG	952021060	emitter	4
S50-MA-2-M03-NN	952021550	background suppression	28
S50-MA-2-M03-PP	952021070	background suppression	28
S50-MA-2-T01-NN	952021570	retroreflex for transparents	16
S50-MA-2-T01-PP	952021090	retroreflex for transparents	16
S50-MA-2-U03-NN	952021580	luminescence sensor	38
S50-MA-2-U03-PP	952021100	luminescence sensor	38
S50-MA-2-W03-NN	952021590	contrast sensor	36
S50-MA-2-W03-PP	952021110	contrast sensor	36
S50-MA-5-A00-NN	952022110	retroreflex	10
S50-MA-5-A00-PP	952022100	retroreflex	10
S50-MA-5-B01-NN	952021660	polarised retroreflex	12
S50-MA-5-B01-PP	952021200	polarised retroreflex	12
S50-MA-5-C01-NN	952021670	long diffuse proximity	22
S50-MA-5-C01-PP	952021210	long diffuse proximity	22
S50-MA-5-C10-NN	952021680	short diffuse proximity	18
S50-MA-5-C10-PP	952021220	short diffuse proximity	18

METAL CYLINDRICAL HOUSING WITH AXIAL OPTICS			
MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-MA-5-C21-NN	952022150	midi diffuse proximity	20
S50-MA-5-C21-PP	952022140	midi diffuse proximity	20
S50-MA-5-D00-NN	952021690	fixed focus proximity	24
S50-MA-5-D00-PP	952021230	fixed focus proximity	24
S50-MA-5-E01-NN	952021890	fibre-optic amplifier	34
S50-MA-5-E01-PP	952021240	fibre-optic amplifier	34
S50-MA-5-F01-NN	952021700	receiver	4
S50-MA-5-F01-PP	952021250	receiver	4
S50-MA-5-G00-XG	952021260	emitter	4
S50-MA-5-M03-NN	952021710	background suppression	28
S50-MA-5-M03-PP	952021270	background suppression	28
S50-MA-5-T01-NN	952021730	retroreflex for transparents	16
S50-MA-5-T01-PP	952021290	retroreflex for transparents	16
S50-MA-5-U03-NN	952021740	luminescence sensor	38
S50-MA-5-U03-PP	952021300	luminescence sensor	38
S50-MA-5-W03-NN	952021750	contrast sensor	36
S50-MA-5-W03-PP	952021310	contrast sensor	36

METAL CYLINDRICAL HOUSING WITH RADIAL OPTICS			
S50-MR-2-B01-NN	952021600	polarised retroreflex	12
S50-MR-2-B01-PP	952021140	polarised retroreflex	12
S50-MR-2-C01-NN	952021610	long diffuse proximity	22
S50-MR-2-C01-PP	952021150	long diffuse proximity	22
S50-MR-2-C10-NN	952021620	short diffuse proximity	18
S50-MR-2-C10-PP	952021490	short diffuse proximity	18
S50-MR-2-D00-NN	952021630	fixed focus proximity	24
S50-MR-2-D00-PP	952021160	fixed focus proximity	24
S50-MR-2-F01-NN	952021640	receiver	4
S50-MR-2-F01-PP	952021170	receiver	4
S50-MR-2-G00-XG	952021180	emitter	4
S50-MR-2-T01-NN	952021650	retroreflex for transparents	16
S50-MR-2-T01-PP	952021190	retroreflex for transparents	16
S50-MR-5-B01-NN	952021760	polarised retroreflex	12
S50-MR-5-B01-PP	952021340	polarised retroreflex	12
S50-MR-5-C01-NN	952021770	long diffuse proximity	22
S50-MR-5-C01-PP	952021350	long diffuse proximity	22
S50-MR-5-C10-NN	952021780	short diffuse proximity	18
S50-MR-5-C10-PP	952021480	short diffuse proximity	18
S50-MR-5-D00-NN	952021790	fixed focus proximity	24
S50-MR-5-D00-PP	952021360	fixed focus proximity	24
S50-MR-5-F01-NN	952021800	receiver	4
S50-MR-5-F01-PP	952021370	receiver	4
S50-MR-5-G00-XG	952021380	emitter	4
S50-MR-5-T01-NN	952021810	retroreflex for transparents	16
S50-MR-5-T01-PP	952021390	retroreflex for transparents	16

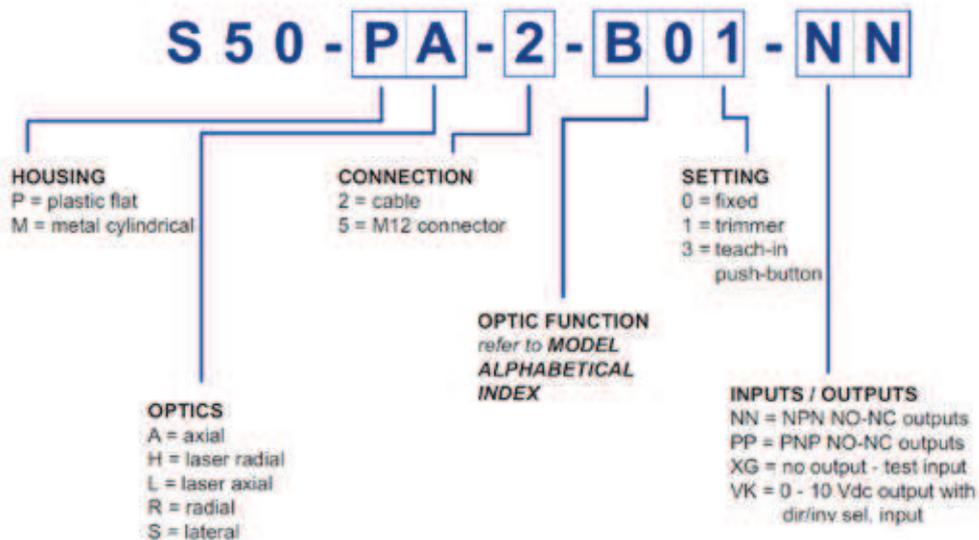
MODEL SELECTION AND ORDER INFORMATION

METAL CYLINDRICAL HOUSING WITH LATERAL OPTICS			
MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-MS-2-M03-NN	952021900	background suppression	30
S50-MS-2-M03-PP	952021910	background suppression	30
S50-MS-5-M03-NN	952021920	background suppression	30
S50-MS-5-M03-PP	952021930	background suppression	30

METAL CYLINDRICAL HOUSING WITH LASER AXIAL OPTICS			
MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-ML-2-B01-NN	952021820	laser retroreflex	14
S50-ML-2-B01-PP	952021400	laser retroreflex	14
S50-ML-2-C01-NN	952021830	laser proximity	26
S50-ML-2-C01-PP	952021410	laser proximity	26
S50-ML-2-F01-NN	952021840	laser receiver	8
S50-ML-2-F01-PP	952021420	laser receiver	8
S50-ML-2-G00-XG	952021430	laser emitter	8
S50-ML-5-B01-NN	952021850	laser retroreflex	14
S50-ML-5-B01-PP	952021440	laser retroreflex	14
S50-ML-5-C01-NN	952021860	laser proximity	26
S50-ML-5-C01-PP	952021450	laser proximity	26
S50-ML-5-F01-NN	952021870	laser receiver	8
S50-ML-5-F01-PP	952021460	laser receiver	8
S50-ML-5-G00-XG	952021470	laser emitter	8

METAL CYLINDRICAL HOUSING WITH LASER RADIAL OPTICS			
MODEL	CODE N°	OPTIC FUNCTION	PAGE
S50-MH-2-B01-NN	952021940	laser retroreflex	14
S50-MH-2-B01-PP	952021950	laser retroreflex	14
S50-MH-2-C01-NN	952021990	laser proximity	26
S50-MH-2-C01-PP	952021980	laser proximity	26
S50-MH-2-F01-NN	952022030	laser receiver	8
S50-MH-2-F01-PP	952022020	laser receiver	8
S50-MH-2-G00-XG	952022060	laser emitter	8
S50-MH-5-B01-NN	952021970	laser retroreflex	14
S50-MH-5-B01-PP	952021960	laser retroreflex	14
S50-MH-5-C01-NN	952022010	laser proximity	26
S50-MH-5-C01-PP	952022000	laser proximity	26
S50-MH-5-F01-NN	952022050	laser receiver	8
S50-MH-5-F01-PP	952022040	laser receiver	8
S50-MH-5-G00-XG	952022070	laser emitter	8

MODEL CODING TABLE



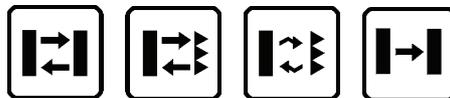
Note: Not all code combinations are available. Please refer to alphabetical model index for the list of available models.



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

S51 SERIES

The **S51** series offers the most cost-effective solution in M18 photoelectric sensors which is today improved thanks to the increase of the operating distances. The range includes the tubular metal housing as well as a brand news flat plastic housing which make installation. The tubular plastic and metal models are both available with either axial or radial optics; in both cases the optic head and lenses do not protrude beyond the external 18 mm diameter of the sensor housing. The diffuse proximity model presents a 10 cm fixed operating distance with wide emission spectrum and the another model with 1 - 40 cm trimmer-adjustable operating distance. Standard retroreflective models have an operating distance up to 4 m whilst the polarised retroreflective models used for reliable detection of reflective objects are fitted with sensitivity adjustment and have a 3.5 m operating distance. The emitter and receiver models, used for longer operating distances, reach 18 meters. The sensors of the **S51** series, with cable or M12 connector and PNP or NPN output, provide a 3 wire connection configuration in compliance with the EN60947-5-2 standard.

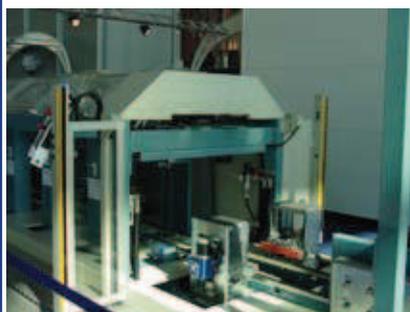


HIGHLIGHTS

- Flat plastic or cylindrical metal housing
- Versions with axial or radial optics
- Cable or M12 connection with NPN or PNP output
- Standard 3 wire connection configuration
- Selectable dark or light output

APPLICATIONS

Ceramics



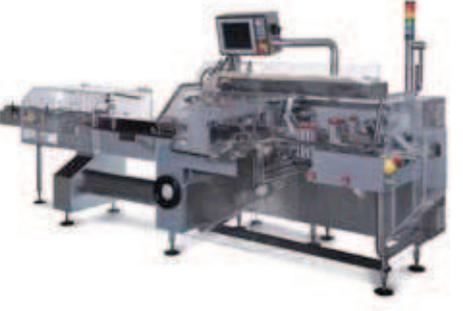
Transportation lines



Beverage & Bottling



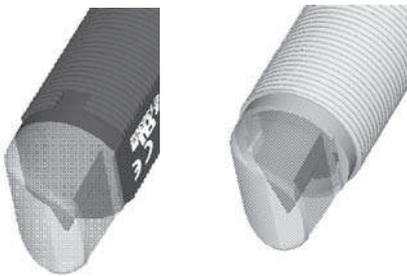
Packaging lines



M18 STANDARD



RADIAL OPTICS

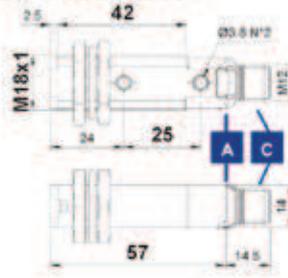


ACCESSORIES

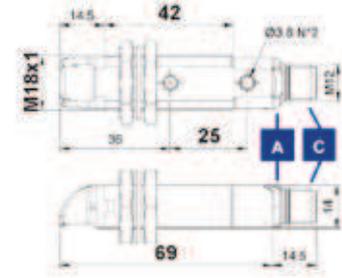
Refer also to **Reflector, Connectors and Fixing brackets** of the **General Catalogue**.

DIMENSIONS

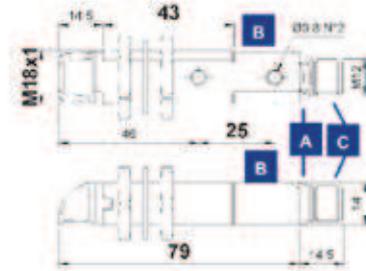
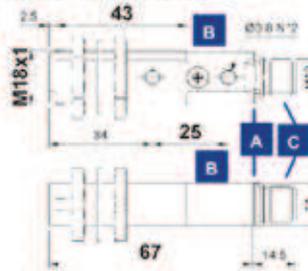
A00/C10/G00 MODELS



PLASTIC HOUSING

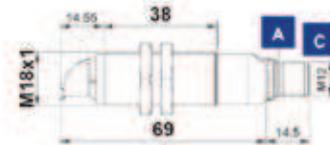


B01/C01/F00 MODELS

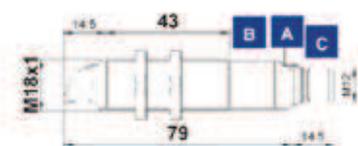


METAL HOUSING

A00/C10/C20/G00 MODELS



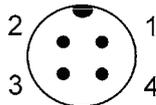
B01/C01/F00 MODELS



CONNECTIONS

G00 MODEL

BROWN	1	+	10 ... 30 Vdc
WHITE	2		TEST +
BLACK	4		TEST -
BLUE	3	-	0 V

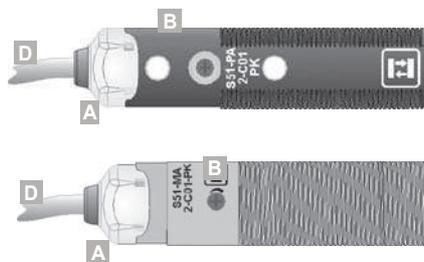


A00/B01/C01/C10/C20/F00 MODELS

BROWN	1	+	10 ... 30 Vdc
WHITE	2		LIGHT/DARK
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



INDICATORS AND SETTINGS



- A** OUTPUT status LED; POWER ON LED on G00 model
- B** Adjustment trimmer (B01, C01 models)
- C** M12 connector
- D** Cable connection

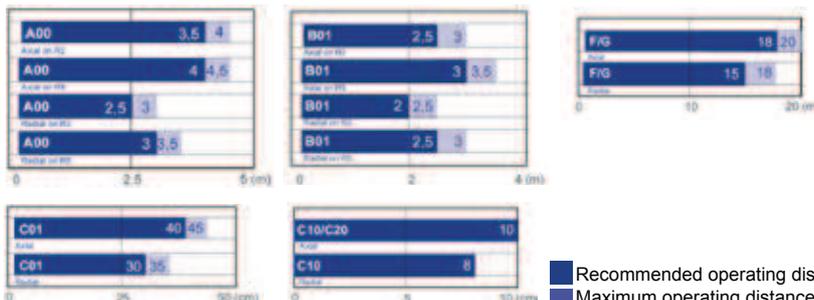
Trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

TECHNICAL DATA

Long diffuse proximity operating dist.:	1 ... 40 cm (radial version 30 cm)
Short diffuse proximity operating dist.:	0 ... 10 cm (radial version 8 cm)
Narrow beam proximity operating dist.:	0.2...10 cm
Retroreflex operating distance:	0.1...4 m (radial version 3 m) on R5
Polarised retroreflex operating distance:	0.1...3 m (radial version 2.5 m) on R5
Through beam operating distance:	0...20 m (radial version 18 m)
Power supply:	10 ... 30 Vdc ¹
Ripple:	≤2 Vpp
Consumption:	≤35 mA
Light emission² :	infrared LED 880 nm red LED 650 nm (B01 mod.)
Setting:	sensitivity trimmer (B01, C01 mod.) ³
Indicators:	yellow OUTPUT LED (excl. G00 mod.) green POWER LED (G00 mod.)
Output type:	NPN vers. or PNP vers.
Output current:	≤100 mA
Saturation voltage:	≤2 V
Response time:	1 ms 4 ms (F00 mod.)
Switching frequency:	≤500 Hz ≤120 Hz (F00 mod.)
Operating mode:	dark/light selectable ⁴
Auxiliary functions:	Test + and Test - (G00 mod.) ⁵
Connection:	2 m Ø 4 mm cable ⁶ M12 4-pole connector ⁷
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B ⁸
Housing material:	PBT (S51-P vers.) nickel-plated brass (S51-M vers.)
Lens material:	PMMA
Weight:	25 g max. (S51-PA/PR-5 vers.) 75 g max. (S51-PA-/PR-2 vers.) 60 g max. (S51-MA/MR-5 vers.) 100 g max. (S51-MA/MR-2 vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2, UL 508

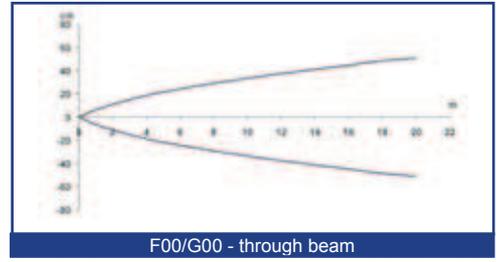
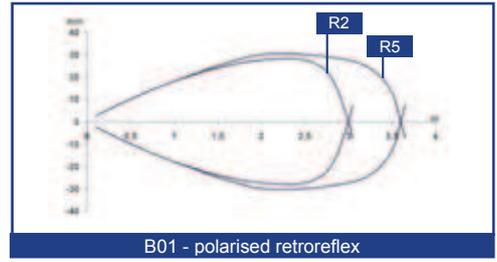
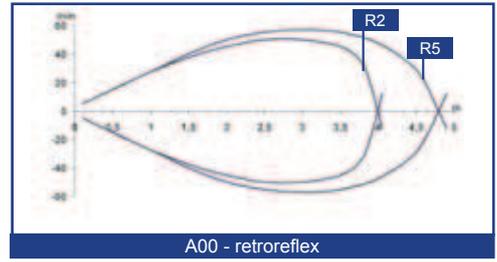
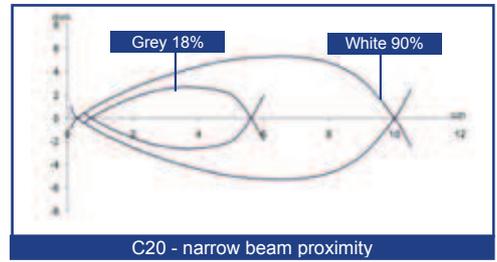
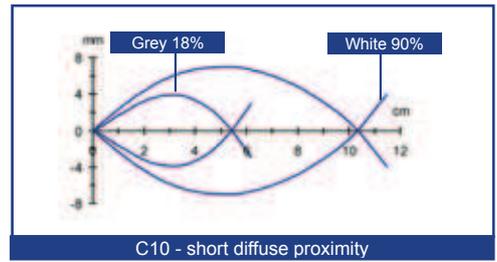
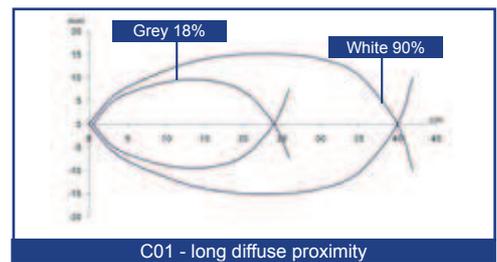
TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° single-turn trimmer
- ⁴With L/D input not connected the proximity models function in the light mode and the retroreflex and through beam models in the dark mode; the light mode can be selected connecting the L/D input to +Vdc, the dark mode connecting it to 0Vdc
- ⁵Emitter off with Test+ connected to +Vdc and Test- to 0 Vdc
- ⁶PVC, 4 x 0.14 mm²
- ⁷M12 connector compatible with quick connection systems
- ⁸A - reverse polarity protection
B - overload and short-circuit protection



■ Recommended operating distance
■ Maximum operating distance

DETECTION DIAGRAMS



Note: the diagrams indicate the detection area typical of the axial optic versions; the maximum operating distance of the radial optic versions decreases as indicated in the tables given below



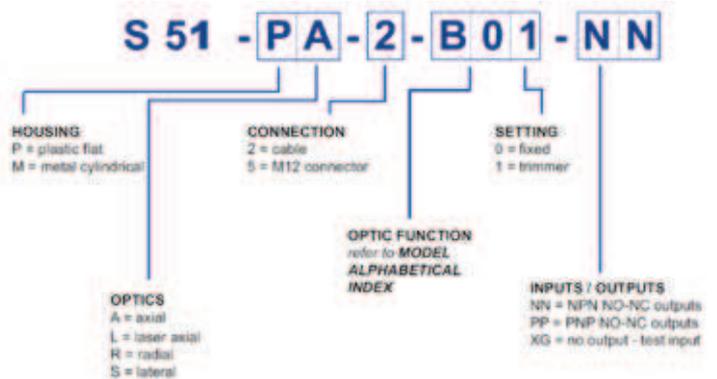
*Only on axial optic models

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	ORDER N°
S51-PA-2-A00-PK	retroreflex	952701001
S51-PA-2-A00-NK	retroreflex	952701071
S51-PA-5-A00-PK	retroreflex	952701261
S51-PA-5-A00-NK	retroreflex	952701331
S51-PA-2-B01-PK	polarised retroreflex	952701011
S51-PA-2-B01-NK	polarised retroreflex	952701081
S51-PA-5-B01-PK	polarised retroreflex	952701271
S51-PA-5-B01-NK	polarised retroreflex	952701341
S51-PA-2-C01-PK	long diffuse proximity	952701021
S51-PA-2-C01-NK	long diffuse proximity	952701091
S51-PA-5-C01-PK	long diffuse proximity	952701281
S51-PA-5-C01-NK	long diffuse proximity	952701351
S51-PA-2-C10-PK	short diffuse proximity	952701031
S51-PA-2-C10-NK	short diffuse proximity	952701101
S51-PA-5-C10-PK	short diffuse proximity	952701291
S51-PA-5-C10-NK	short diffuse proximity	952701361
S51-PA-2-F00-PK	receiver	952701051
S51-PA-2-F00-NK	receiver	952701121
S51-PA-5-F00-PK	receiver	952701311
S51-PA-5-F00-NK	receiver	952701381
S51-PA-2-G00-XG	emitter	952701061
S51-PA-5-G00-XG	emitter	952701321
S51-PR-2-A00-PK	retroreflex	952701131
S51-PR-2-A00-NK	retroreflex	952701201
S51-PR-5-A00-PK	retroreflex	952701391
S51-PR-5-A00-NK	retroreflex	952701461
S51-PR-2-B01-PK	polarised retroreflex	952701141
S51-PR-2-B01-NK	polarised retroreflex	952701211
S51-PR-5-B01-PK	polarised retroreflex	952701401
S51-PR-5-B01-NK	polarised retroreflex	952701471
S51-PR-2-C01-PK	long diffuse proximity	952701151
S51-PR-2-C01-NK	long diffuse proximity	952701221
S51-PR-5-C01-PK	long diffuse proximity	952701411
S51-PR-5-C01-NK	long diffuse proximity	952701481
S51-PR-2-C10-PK	short diffuse proximity	952701161
S51-PR-2-C10-NK	short diffuse proximity	952701231
S51-PR-5-C10-PK	short diffuse proximity	952701421
S51-PR-5-C10-NK	short diffuse proximity	952701491
S51-PR-2-F00-PK	receiver	952701181
S51-PR-2-F00-NK	receiver	952701251
S51-PR-5-F00-PK	receiver	952701441
S51-PR-5-F00-NK	receiver	952701511
S51-PR-2-G00-XG	emitter	952701191
S51-PR-5-G00-XG	emitter	952701451
S51-MA-2-A00-PK	retroreflex	952701541
S51-MA-2-A00-NK	retroreflex	952701601
S51-MA-5-A00-PK	retroreflex	952701531
S51-MA-5-A00-NK	retroreflex	952701801
S51-MA-2-B01-PK	polarised retroreflex	952701551
S51-MA-2-B01-NK	polarised retroreflex	952701611
S51-MA-5-B01-PK	polarised retroreflex	952701761
S51-MA-5-B01-NK	polarised retroreflex	952701811

MODEL	OPTIC FUNCTION	ORDER N°
S51-MA-2-C01-PK	long diffuse proximity	952701561
S51-MA-2-C01-NK	long diffuse proximity	952701621
S51-MA-5-C01-PK	long diffuse proximity	952701771
S51-MA-5-C01-NK	long diffuse proximity	952701821
S51-MA-2-C10-PK	short diffuse proximity	952701571
S51-MA-2-C10-NK	short diffuse proximity	952701631
S51-MA-5-C10-PK	short diffuse proximity	952701521
S51-MA-5-C10-NK	short diffuse proximity	952701831
S51-MA-5-C20-PK	narrow beam proximity	952701961
S51-MA-2-F00-PK	receiver	952701581
S51-MA-2-F00-NK	receiver	952701641
S51-MA-5-F00-PK	receiver	952701781
S51-MA-5-F00-NK	receiver	952701841
S51-MA-2-G00-XG	emitter	952701591
S51-MA-5-G00-XG	emitter	952701791
S51-MR-2-A00-PK	retroreflex	952701651
S51-MR-2-A00-NK	retroreflex	952701711
S51-MR-5-A00-PK	retroreflex	952701851
S51-MR-5-A00-NK	retroreflex	952701911
S51-MR-2-B01-PK	polarised retroreflex	952701661
S51-MR-2-B01-NK	polarised retroreflex	952701721
S51-MR-5-B01-PK	polarised retroreflex	952701861
S51-MR-5-B01-NK	polarised retroreflex	952701921
S51-MR-2-C01-PK	long diffuse proximity	952701671
S51-MR-2-C01-NK	long diffuse proximity	952701731
S51-MR-5-C01-PK	long diffuse proximity	952701871
S51-MR-5-C01-NK	long diffuse proximity	952701931
S51-MR-2-C10-PK	short diffuse proximity	952701681
S51-MR-2-C10-NK	short diffuse proximity	952701741
S51-MR-5-C10-PK	short diffuse proximity	952701881
S51-MR-5-C10-NK	short diffuse proximity	952701941
S51-MR-2-F00-PK	receiver	952701691
S51-MR-2-F00-NK	receiver	952701751
S51-MR-5-F00-PK	receiver	952701891
S51-MR-5-F00-NK	receiver	952701951
S51-MR-2-G00-XG	emitter	952701701
S51-MR-5-G00-XG	emitter	952701901

MODEL CODING TABLE



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

SDS SERIES

The M18 tubular sensors of the **SDS** series, thanks to the background suppression proximity optic system, precisely detect all objects inside the set operating distance, independently from colour and rear fixed or moving objects. The photoemitter is a red light LED that generates a visible circular spot; the receiver is a PSD (Position Sensitive Device) photoelement sensitive to the incident light's position. A good vibration immunity and a low detection difference between lighter or darker objects are obtained as there are no moving parts for the optic triangulation. The background suppression distance setting is precisely obtained by means of a multi-turn trimmer. Normally open and normally closed outputs are both present with standard configuration.

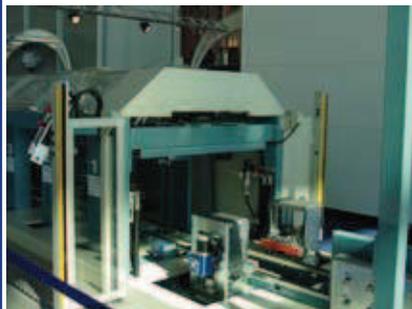


HIGHLIGHTS

- Adjustable background suppression reaching 12 cm
- Axial or radial optics
- Plastic or metal M18x1 housing
- Double NO-NC standard output

APPLICATIONS

Ceramics



Transportation lines



Beverage & Bottling



Packaging lines

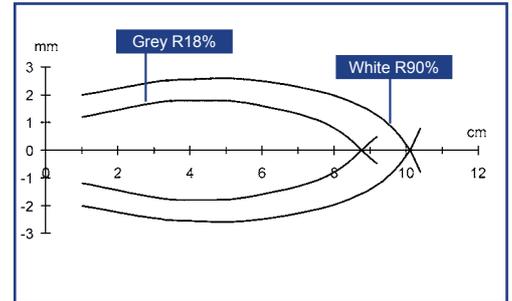


TECHNICAL DATA

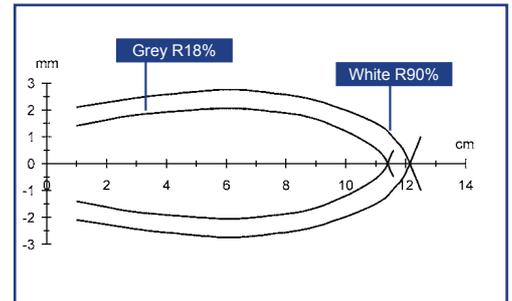
Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	30 mA max.
Light emission:	red LED 660 nm
Spot dimension:	Ø 10 mm at 100 mm Ø 15 mm at 100 mm (SDS5 radial vers.)
Background suppression operating distance:	2 ... 10 cm (SDS5 vers.) 4 ... 12 cm (SDS10 vers.)
Setting:	multi-turn trimmer
Indicators:	yellow OUTPUT LED green STABILITY LED (SDS5 vers.)
Output type:	NO-NC PNP or NPN, open collector
Saturation voltage:	2 V max. (SDS5 PNP vers.) 1 V max. (SDS5 NPN vers.) 2.4 V max. (SDS10 vers.)
Output current:	100 mA max. (SDS5 vers.) 200 mA max. (SDS10 vers.) short-circuit protection
Response time:	2.5 ms max. (SDS5 vers.) 1 ms max. (SDS10 vers.)
Switching frequency:	200 Hz max. (SDS5 vers.) 600 Hz max. (SDS10 vers.)
Operating mode:	light (NO) dark (NC)
Connection:	M12 4-pole connector 3 m Ø 5 mm cable (SDS10 vers.)
Electrical protection:	class 2
Mechanical protection:	IP67
Housing material:	ABS (SDS5 vers.) nickel-plated brass (SDS10 vers.)
Lens material:	glass
Weight:	30 g max. (SDS5 vers.) 100 g max. (SDS10 cable vers.) 30 g max. (SDS10 connector vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference normative:	EN 60947-5-2
Certifications:	CE 

DETECTION DIAGRAMS

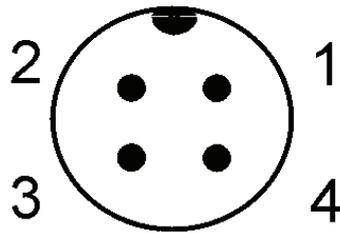
SDS5-x-M



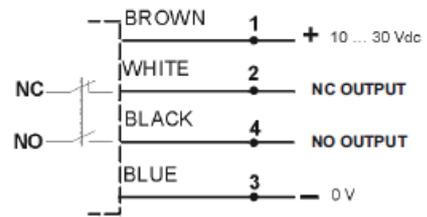
SDS10-x-M



CONNECTIONS

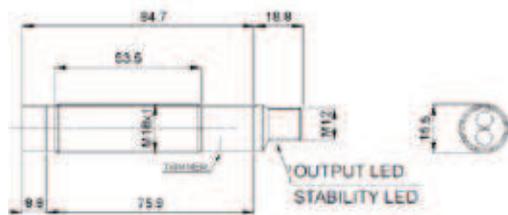


M12 CONNECTOR

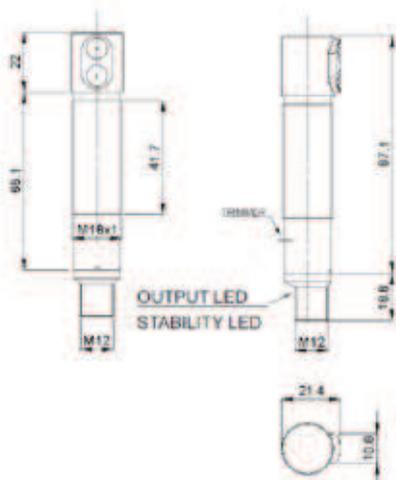


DIMENSIONS

SDS5 VERSIONS

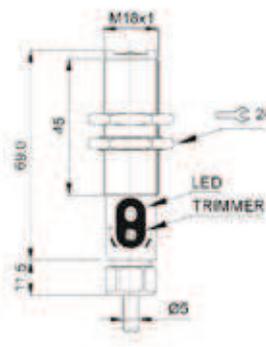


AXIAL

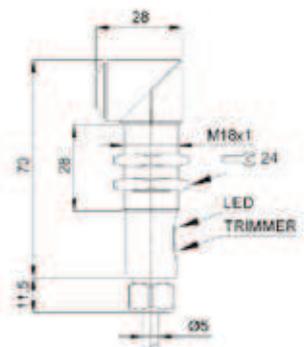


RADIAL

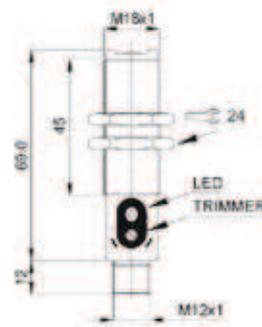
SDS10 VERSIONS



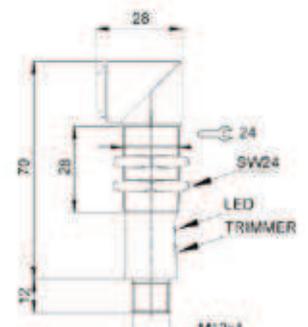
SDS10-5-M12-30



SDS10-5-M12-35



SDS10-5-M12-32



SDS10-5-M12-37

mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	HOUSING	OPTICS	CONNECTION	OUTPUT	ORDER N°
SDS5-5-M10-77	plastic	radial	M12 connector	NPN	952201420
SDS5-5-M10-97	plastic	radial	M12 connector	PNP	952201430
SDS5-5-M10-72	plastic	axial	M12 connector	NPN	952201460
SDS5-5-M10-92	plastic	axial	M12 connector	PNP	952201470
SDS10-5-M12-30	metal	axial	2 m cable	PNP	962411000
SDS10-5-M12-32	metal	axial	M12 connector	PNP	962411010
SDS10-5-M12-35	metal	radial	2 m cable	PNP	962411020
SDS10-5-M12-37	metal	radial	M12 connector	PNP	962411030

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
SP-40	fixed support for tubular M18 sensors	95ACC1370
SWING-18	adjustable support for tubular M18 sensors	895000006

Please refer also to **Sensor Accessories**.



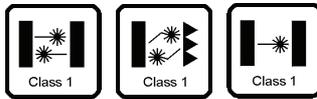
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SL5 SERIES

The **SL5** sensors, thanks to the laser emission concentrated in a thin light beam, represent the ideal solution for the detection of very small objects or to reach very long operating distances. Precise detections with decimillimetre resolutions can be obtained with the proximity model at an operating distance ranging from 0 to 35 cm. High operating distances can be reached with the 12 m polarised retroreflex model, or with the 60 m through beam model; high-resolution detections at shorter distances can be effected also.

The visible red emission is generated by a Class 1 laser according to the EN 60825-1, guaranteeing the maximum safety in all applications.

The sensitivity adjustment trimmer and the LEDs indicating the output status and switching stability are positioned on the sturdy ABS tubular M18 housing with IP67 protection.

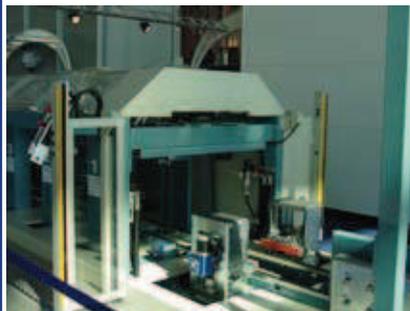


HIGHLIGHTS

- Visible red class 1 laser emission
- Proximity models for high-resolution detections
- Retroreflex and through beam versions for long operating distances
- Trimmer sensitivity adjustment and stability LED

APPLICATIONS

Ceramics



Transportation lines



Beverage & Bottling



Packaging lines

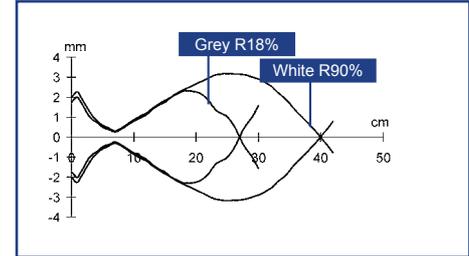


TECHNICAL DATA

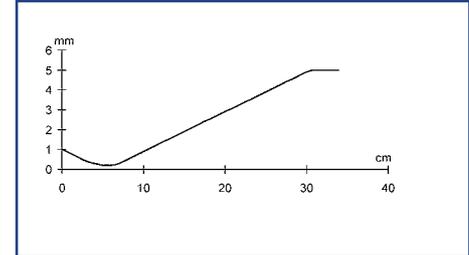
Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	35 mA max.
Light emission:	red laser 650 nm safety class 1 according to EN 60825-1
Diffuse proximity operating distance:	0 ... 35 cm
Diffuse proximity resolution:	0.2 mm at a distance of 5 cm 1 mm at a distance of 10 cm 3 mm at a distance of 20 cm 5 mm at distances over 30 cm
Polarised retroreflex operating distance:	0.03 ... 12 m (on R2) 0.3 ... 7 m (on R7)
Polarised retroreflex resolution:	1 mm at a distance of 1 m (on R7/r8) 2 mm at a distance of 3 m (on R7/r8) 4 mm at a distance of 5 m (on R7) 5 mm at distances over 7 m (on R2)
Through beam operating distance:	0 ... 60 m
Through beam resolution:	2.5 mm at a distance of 5 m 5 mm at a distance of 10 m 10 mm at distances over 20 m
Setting:	sensitivity trimmer
Indicators:	yellow OUTPUT LED green POWER LED (G. vers.) green STABILITY LED
Output type:	PNP, open collector
Saturation voltage:	2 V max.
Output current:	100 mA max., short-circuit protection
Response time:	333 ms max.
Switching frequency:	1.5 kHz max
Operating mode:	light or dark
Auxiliary functions:	'test +' input (G vers.)
Connection:	4-pole M12 connector
Electrical protection:	class 2
Mechanical protection:	IP67
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	30 g max.
Operating temperature:	-10 ... +50°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2, EN 60825-1
Certifications:	 

DETECTION DIAGRAMS

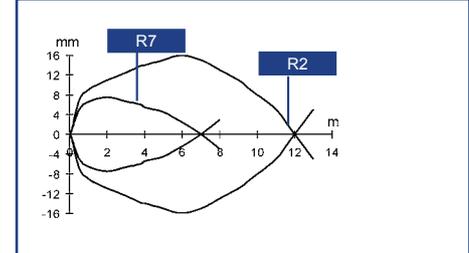
SL5-5-C



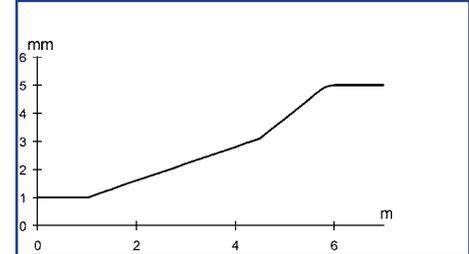
SL5-5-C resolution



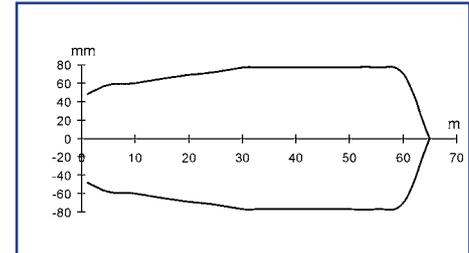
SL5-5-B



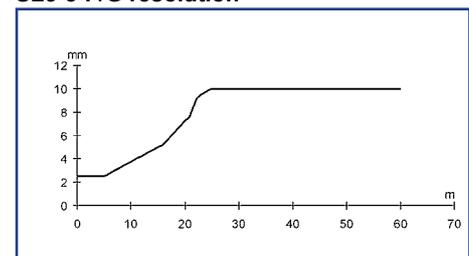
SL5-5-B resolution on R7



SL5-5-F/G

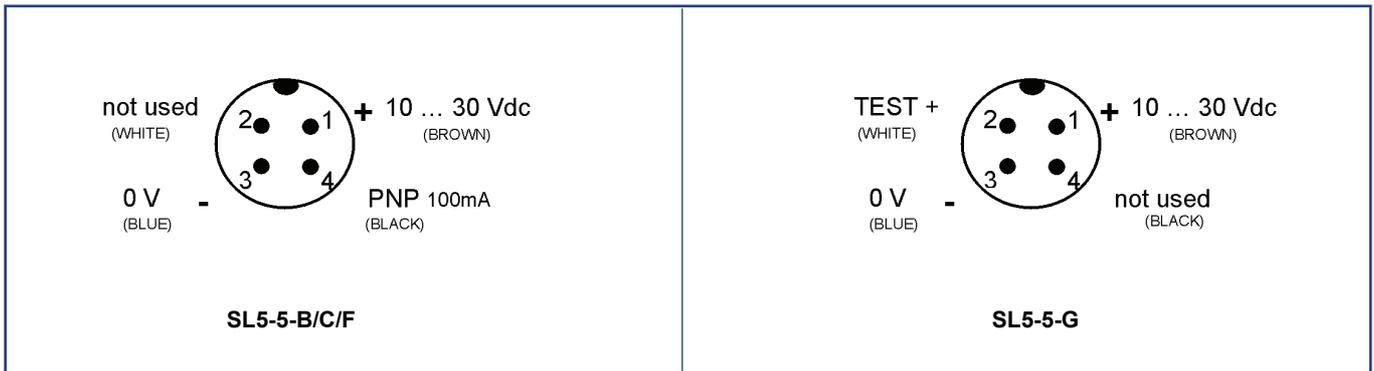


SL5-5-F/G resolution

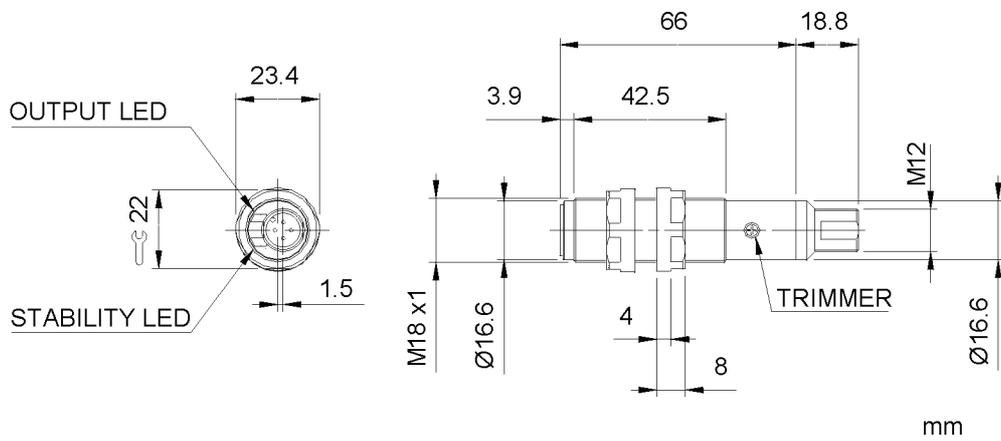


The detection diagrams indicate the typical operating distance with excess gain 1. The operating distances indicate the detection distance with excess gain 2.

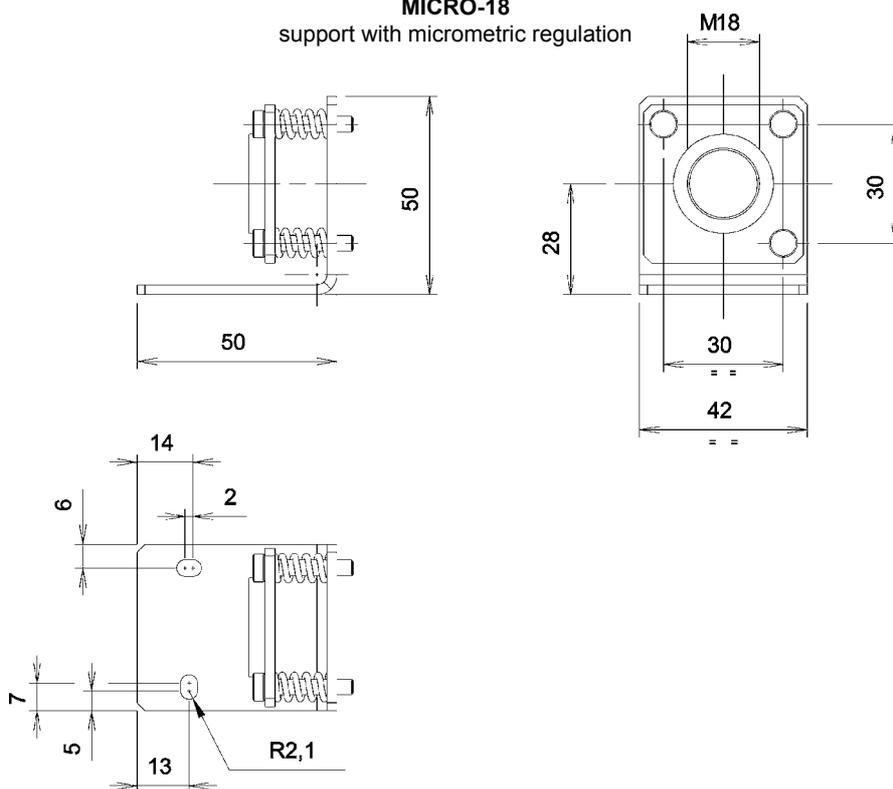
CONNECTIONS



DIMENSIONS



MICRO-18
support with micrometric regulation



MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	CONNECTION	OUTPUT	CODE N°
SL5-5-B-82	polarised retroreflex	M12 connector	PNP-dark	952501010
SL5-5-B-92	polarised retroreflex	M12 connector	PNP-light	952501080
SL5-5-C-82	diffuse proximity	M12 connector	PNP-dark	952501090
SL5-5-C-92	diffuse proximity	M12 connector	PNP-light	952501000
SL5-5-F-82	receiver	M12 connector	PNP-dark	952501020
SL5-5-F-92	receiver	M12 connector	PNP-light	952501050
SL5-5-G-82	emitter	M12 connector	-	952501030

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
R1	Ø 23 mm prismatic reflector with Ø 31 mm support	S940700023
R2	Ø 48 mm prismatic reflector with Ø 63 mm support	S940700048
R3	18 x 54 mm prismatic reflector with 22 x 82 mm support	S940700972
R4	47 x 47 mm prismatic reflector with 51.5 x 61 mm support	95A151010
R5	Ø 75 mm prismatic reflector with Ø 82 mm support	S940700075
R6	36 x 55 mm prismatic reflector with 40.5 x 60 mm support	95A151020
R7	38 x 40 mm microprism reflector with 51 x 60.7 mm support	95A151050
R8	9.7 x 19 mm microprism reflector with 13.8 x 23 mm support	95A151060
S12	Ø 48 mm prismatic reflector with CH.52 mm hexagon support	S940710048
SP-40	fixed support for tubular M18 sensors	95ACC1370
SWING-18	adjustable support for tubular M18 sensors	895000006
MICRO-18	support with micrometric regulation for tubular M18 sensors	95ACC1380

Please refer also to **Sensor Accessories**.



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SM123 SERIES

The new **SM123** series offers a complete line of subminiature amplified photoelectric sensors, ideal for mounting in reduced spaces or in presence of particular mechanical obstacles. The extremely compact dimensions do not limit the detection performances, that suit most of the applications on automatic machinery for packaging, assembling, printing and so on, such as in automatic distribution and vending machines. The **SM1** models are 20 mm fixed focus proximity that, thanks to the thin housing with side optics, represent a valid alternative to fibre-optic systems. The **SM2** models present instead an ultra-flat format with a thickness inferior to 5 mm and offer a 170 mm diffuse proximity, as well as a through beam with an operating distance reaching 1.2 m. The **SM3** models also present a thin housing with lateral optics, but offer a 50 cm coaxial polarised retroreflex or a 1.2 m through beam optic function. All the subminiature sensors of the **SM123** series have visible red emission and are available in the NPN or PNP versions, both with 3 wires 2 m cable connection. The plastic ABS housing guarantees an IP67 protection degree.



SENSORS



HIGHLIGHTS

- 20 and 170 mm proximity, 50 cm polarised retroreflex and 1.2 m through beam
- Thin housing with side optics or ultra-flat format
- Visible red emission on all models for easy alignment
- Amplified NPN or PNP output with 3-wire connection

APPLICATIONS

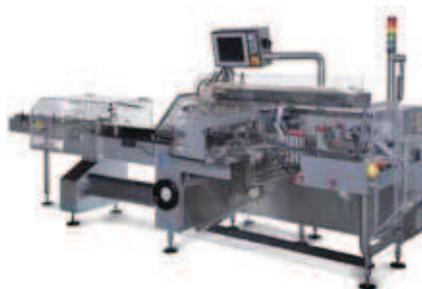
Automotive



Beverage & Bottling



Packaging lines





SM1: a complete sensor with fibre-optic dimensions

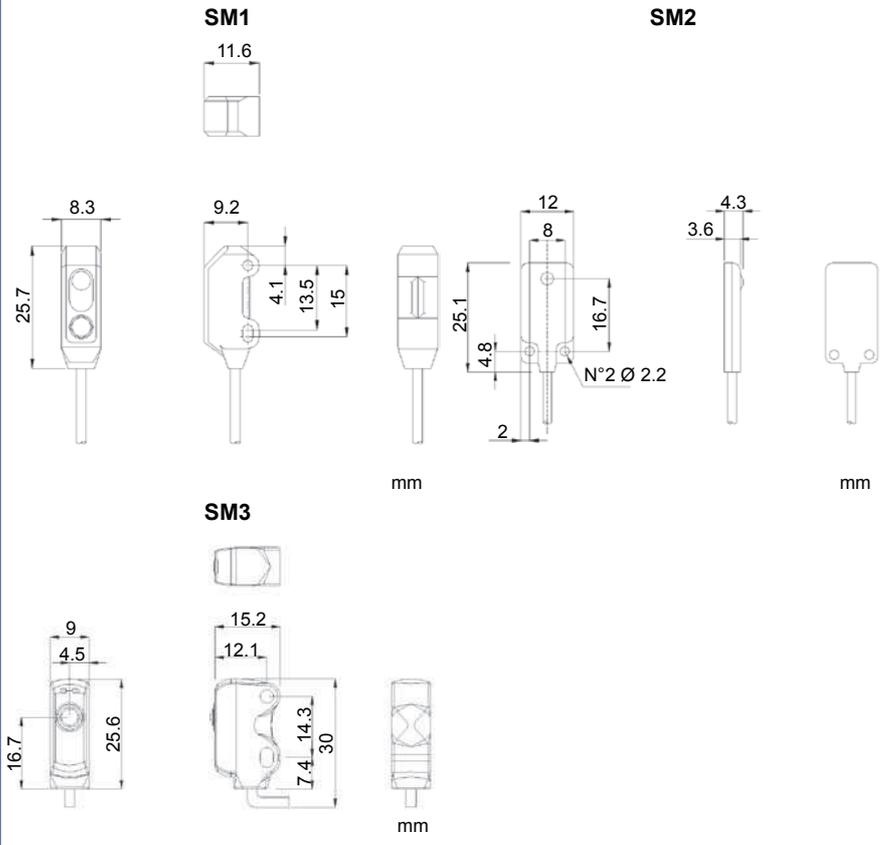


SM2: a complete sensor with stamp dimensions



SM3: coaxial polarised retroreflex and through beam sensors in a subminiature format for high-resolution detection

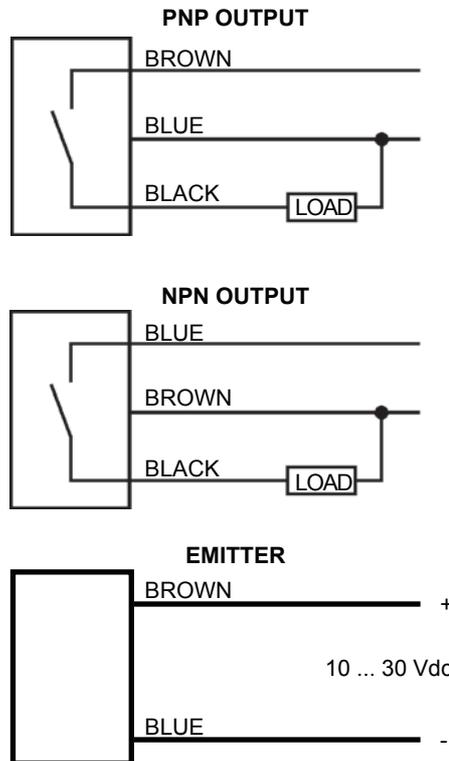
DIMENSIONS



ACCESSORIES

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

CONNECTIONS



Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

		SM1-PR-2-D00-PL	SM1-PR-2-D00-NL	SM2-PR-2-FG00-PD	SM2-PR-2-FG00-ND	SM2-PR-2-D00-PL	SM2-PR-2-D00-NL	SM3-PR-2-FG00-PD	SM3-PR-2-FG00-ND	SM3-PR-2-B00-PL	SM3-PR-2-B00-NL	SM3-PR-2-B00-PD	SM3-PR-2-B00-ND
Power supply:	10 ... 30 Vdc	●	●	●	●	●	●	●	●	●	●	●	●
Consumption:	25 mA max.	●	●	●	●	●	●	●	●	●	●	●	●
Light emission:	630 nm	●	●										
	660 nm			●	●	●	●	●	●				
	680 nm									●	●	●	●
Fixed focus proximity operating distance:	3 ... 20 mm	●	●										
Diffuse proximity operating distance:	3 ... 170 mm					●	●						
Polarised retroreflex operating distance:	0 ... 50 cm (on R20)									●	●	●	●
Through beam operating distance:	0 ... 1.2 m			●	●			●	●				
Indicators:	yellow OUTPUT LED	●	●	●	●	●	●	●	●	●	●	●	●
	yellow STABILITY LED	●	●	●				●	●				
	green POWER/ERROR LED	●	●	●	●	●	●	●	●	●	●	●	●
Output type:	PNP	●		●		●		●		●		●	
	NPN		●		●		●		●		●		●
Operating mode:	dark			●	●			●	●			●	●
	light	●	●			●	●			●	●		
Saturation voltage:	< 0.5 V at 50 mA	●	●	●	●	●	●	●	●	●	●	●	●
Output current:	50 mA max.	●	●	●	●	●	●	●	●	●	●	●	●
Response time:	1 ms	●	●	●	●	●	●	●	●	●	●	●	●
Switching frequency:	500 Hz	●	●	●	●	●	●	●	●	●	●	●	●
Connection:	2 m cable	●	●	●	●	●	●	●	●	●	●	●	●
Electrical protection:	class 2	●	●	●	●	●	●	●	●	●	●	●	●
Mechanical protection:	IP67	●	●	●	●	●	●	●	●	●	●	●	●
Protection devices:	A, B	●	●	●	●	●	●	●	●	●	●	●	●
Housing material:	ABS	●	●	●	●	●	●	●	●	●	●	●	●
Lens material:	PMMA	●	●	●	●	●	●	●	●				
	glass									●	●	●	●
Weight:	16 g	●	●			●	●						
	18 g									●	●	●	●
	33 g			●	●			●	●				
Operating temperature:	-20 ... +55°C	●	●	●	●	●	●	●	●	●	●	●	●
Storage temperature:	-25 ... +70°C	●	●	●	●	●	●	●	●	●	●	●	●
Reference standard:	EN 60947-5-2	●	●	●	●	●	●	●	●	●	●	●	●

SELECTION TABLE

fixed focus proximity		
SM1-PR-2-D00-PL	PNP - light	95B000100
SM1-PR-2-D00-NL	NPN - light	95B000110

diffuse proximity		
SM2-PR-2-D00-PL	PNP - light	95B000220
SM2-PR-2-D00-NL	NPN - light	95B000230

through beam		
SM2-PR-2-FG00-PD	PNP - dark	95B000200
SM2-PR-2-FG00-ND	NPN - dark	95B000210
SM3-PR-2-FG00-PD	PNP - dark	95B000300
SM3-PR-2-FG00-ND	NPN - dark	95B000310

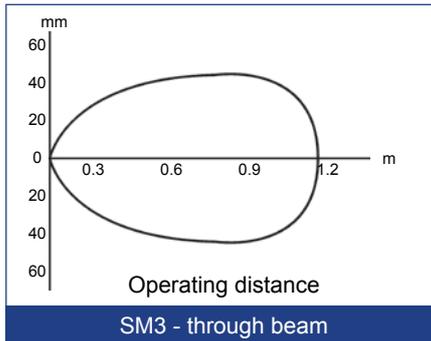
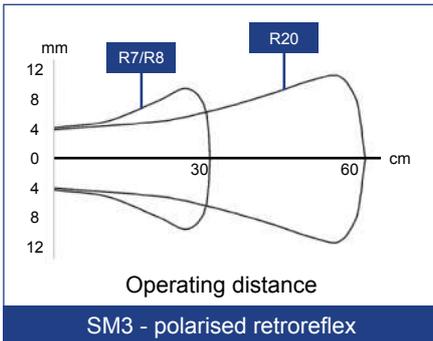
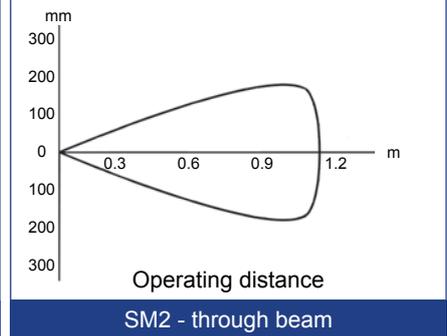
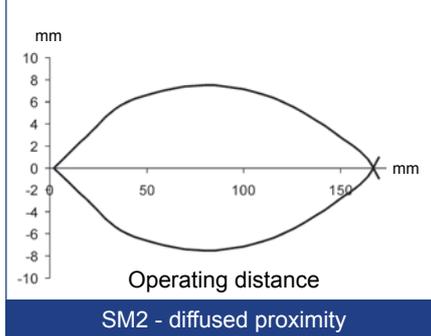
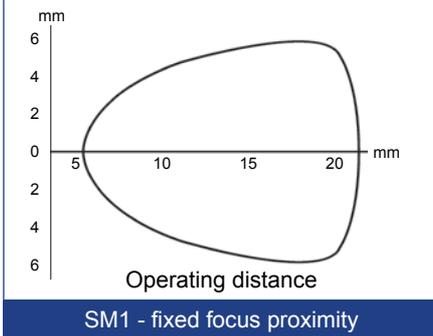
coaxial polarised retroreflex		
SM3-PR-2-B00-PL	PNP - light	95B000320
SM3-PR-2-B00-NL	NPN - light	95B000330
SM3-PR-2-B00-PD	PNP - dark	95B000340
SM3-PR-2-B00-ND	NPN - dark	95B000350

TECHNICAL NOTES

1. On white 90 % target
2. Limit value
3. Micro-prismatic reflectors have to be used with the polarised retroreflex with coaxial optics; the operating distance is reduced to 30 cm using R7 and R8 reflectors. The coaxial optics eliminates the 'blind' area at a close distance
4. A - reverse polarity protection
B - overload and short-circuit protection



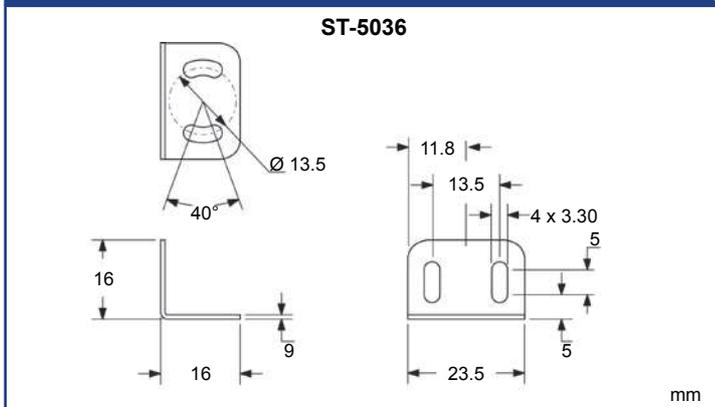
DETECTION DIAGRAMS



MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	OUTPUT	ORDER N°
SM1-PR-2-D00-PL	20 mm fixed focus proximity	PNP - light	95B000100
SM1-PR-2-D00-NL	20 mm fixed focus proximity	NPN - light	95B000110
SM2-PR-2-FG00-PD	1.2 m through beam	PNP - dark	95B000200
SM2-PR-2-FG00-ND	1.2 m through beam	NPN - dark	95B000210
SM2-PR-2-D00-PL	170 mm diffuse proximity	PNP - light	95B000220
SM2-PR-2-D00-NL	170 mm diffuse proximity	NPN - light	95B000230
SM3-PR-2-FG00-PD	1.2 m through beam	PNP - dark	95B000300
SM3-PR-2-FG00-ND	1.2 m through beam	NPN - dark	95B000310
SM3-PR-2-B00-PL	50 cm coaxial polarised retroreflex	PNP - light	95B000320
SM3-PR-2-B00-NL	50 cm coaxial polarised retroreflex	NPN - light	95B000330
SM3-PR-2-B00-PD	50 cm coaxial polarised retroreflex	PNP - dark	95B000340
SM3-PR-2-B00-ND	50 cm coaxial polarised retroreflex	NPN - dark	95B000350

DIMENSIONS



ACCESSORY SELECTION

MODEL	DESCRIPTION	ORDER N°
ST-5036	L-shaped fixing bracket for SM1 and SM3	95ACC5720



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

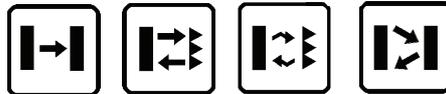
SMALL SERIES

The new **SMall** series offers a complete line of subminiature amplified photoelectric sensors, ideal for mounting in reduced spaces or in presence of particular mechanical obstacles.

The extremely compact dimensions and wide detection field of all modes suit most of the applications on automatic machinery for packaging, assembling, printing as well as in automatic distribution and vending machines.

The series offers many different optic functions including 1.5 m retroreflex, 1 m polarised retroreflex, and 2 m through beam. The 15 mm, 20 mm, 30 mm and 50 mm fixed focus proximity models represent a valid alternative to fibre-optic systems and can be used to detect objects with small profiles and poorly reflective materials.

All models of the subminiature **SMall** series have visible red emission facilitating alignment, cable connection and are available in the NPN or PNP versions with NO-NC double output. The plastic housing guarantees an IP67 protection degree.



HIGHLIGHTS

- 15 mm, 20 mm, 30 mm and 50 mm fixed focus proximity
- 1.5 m retroreflex and 1 m polarised retroreflex
- 2 m through beam models
- Amplified NPN or PNP output with NO-NC double output

APPLICATIONS

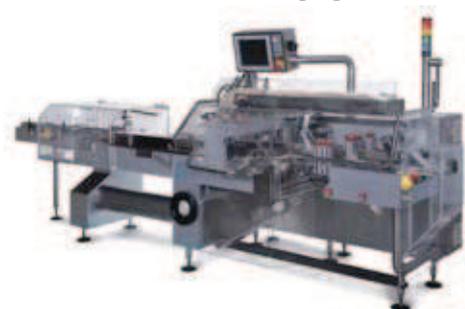
Automotive



Beverage & Bottling

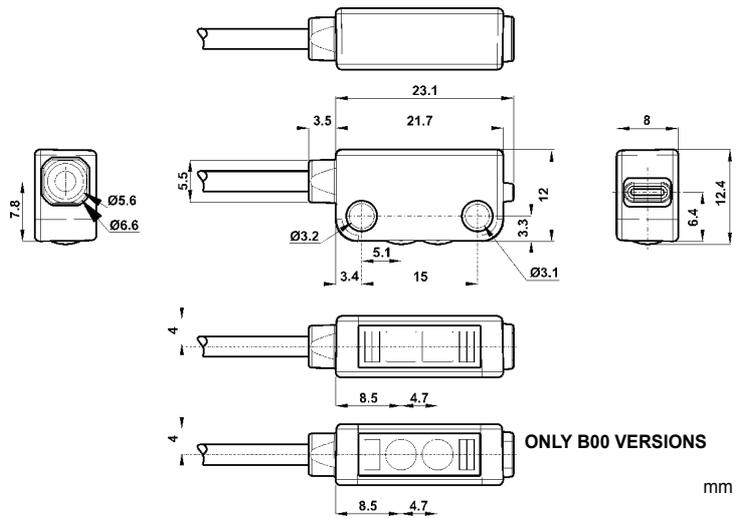


Packaging lines



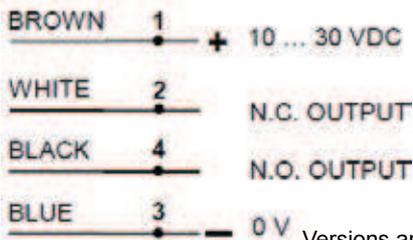
The range offers versions with PNP or NPN output and each are available with a normally open and normally closed output. The sensor functions in the light mode if the normally open output is used and is activated, like the output LED, in presence of light. The opposite effect is obtained when the sensor functions in dark mode and the normally closed output is used. In presence of short-circuit output, the green LED blinks signalling the fault.

DIMENSIONS

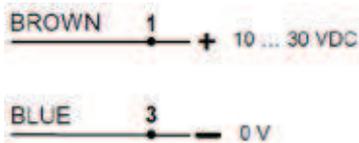


CONNECTIONS

SM-PR-2-F00/A00/B00/Dxx

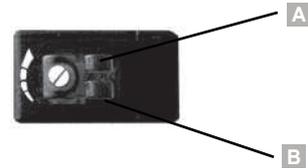


SM-PR-2-G00



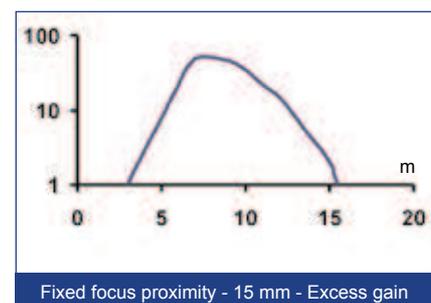
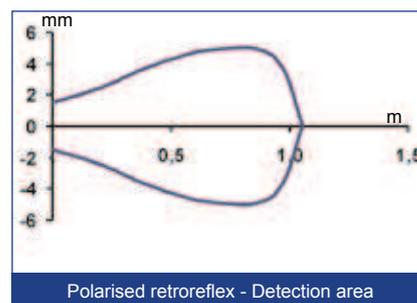
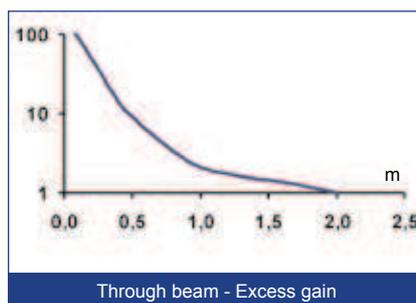
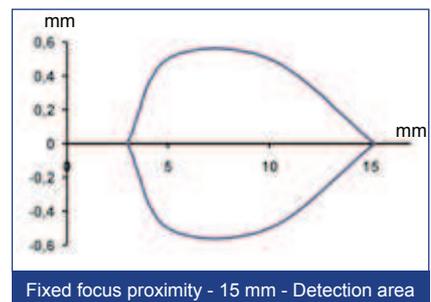
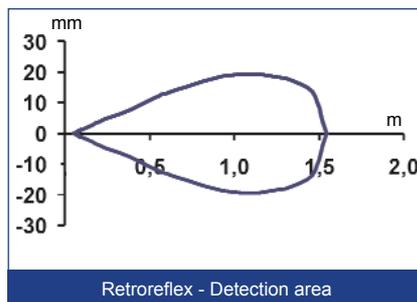
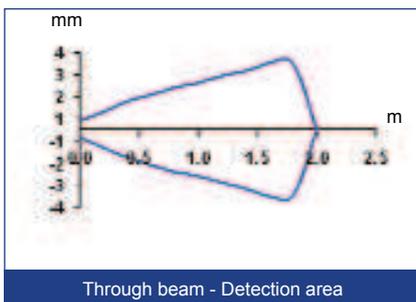
Versions and options: refer to MODEL SELECTION TABLE

INDICATORS AND SETTINGS



- A Output status LED
- B Power on LED

DETECTION DIAGRAMS



TECHNICAL DATA

SELECTION TABLE

TECHNICAL NOTES		SM-PR-2-G00-XG	SM-PR-2-F00-PP	SM-PR-2-F00-NN	SM-PR-2-A00-PP	SM-PR-2-A00-NN	SM-PR-2-B00-PP	SM-PR-2-B00-NN	SM-PR-2-D00-PP	SM-PR-2-D00-NN	SM-PR-2-D10-PP	SM-PR-2-D10-NN	SM-PR-2-D20-PP	SM-PR-2-D20-NN	SM-PR-2-D30-PP	SM-PR-2-D30-NN
		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
¹ On white 90 % target																
² Limit value																
³ A - reverse polarity protection																
B - overload and short-circuit protection																
Power supply:	10 ... 30 Vdc ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	20 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red LED 640 nm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Through beam operating distance:	0 ... 2 m	•	•	•												
Retroreflex operating distance:	5 ... 150 cm				•	•										
Polarised retroreflex operating distance:	10 ... 100 cm						•	•								
Fixed focus operating distance:	3 ... 15 mm ¹								•	•						
	3 ... 20 mm										•	•				
	3 ... 30 mm												•	•		
	3 ... 50 mm														•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green POWER LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO-NC		•	•	•	•	•	•	•	•	•	•	•	•	•	•
	NPN, NO-NC			•	•	•	•	•	•	•	•	•	•	•	•	•
Operating mode:	light on NO, dark on NC	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	1.45 V max. at 50 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	50 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	0.7 ms				•	•	•	•	•	•	•	•	•	•	•	•
	1.3 ms		•	•												
Switching frequency:	700 Hz				•	•	•	•	•	•	•	•	•	•	•	•
	385 Hz		•	•												
Connection:	2 m cable, Ø 2.5 mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ³	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	Polycarbonate	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lens material:	PMMA	•	•	•	•				•	•	•	•	•	•	•	•
	glass						•	•								
Weight:	22 g	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating temperature:	-20 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-30 ... +75°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

through beam		
SM-PR-2-G00-XG		95B000160
SM-PR-2-F00-PP	PNP	95B000120
SM-PR-2-F00-NN	NPN	95B000130

retroreflex		
SM-PR-2-A00-PP	PNP	95B000060
SM-PR-2-A00-NN	NPN	95B000070

polarised retroreflex		
SM-PR-2-B00-PP	PNP	95B000080
SM-PR-2-B00-NN	NPN	95B000090

fixed focus proximity - 15 mm		
SM-PR-2-D00-PP	PNP	95B000020
SM-PR-2-D00-NN	NPN	95B000030

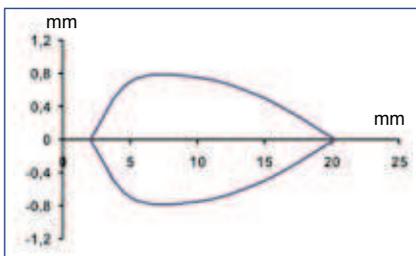
fixed focus proximity - 20 mm		
SM-PR-2-D10-PP	PNP	95B000140
SM-PR-2-D10-NN	NPN	95B000150

fixed focus proximity - 30 mm		
SM-PR-2-D20-PP	PNP	95B000040
SM-PR-2-D20-NN	NPN	95B000050

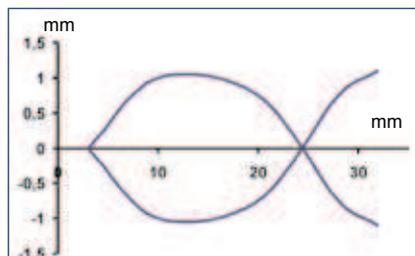
fixed focus proximity - 50 mm		
SM-PR-2-D30-PP	PNP	95B000000
SM-PR-2-D30-NN	NPN	95B000010



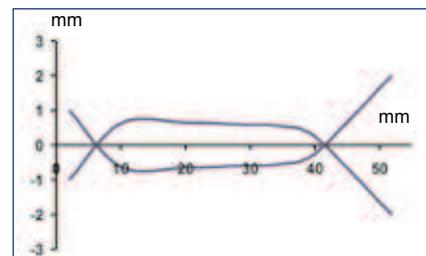
DETECTION DIAGRAMS



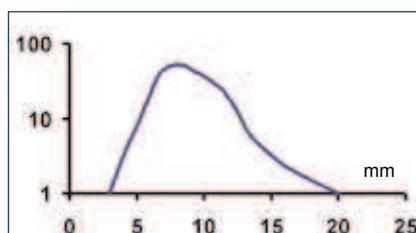
Fixed focus proximity - 20 mm - Detection area



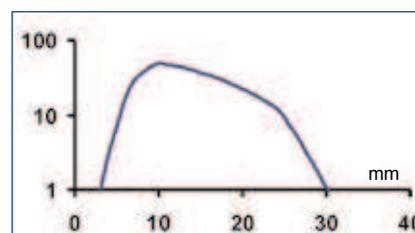
Fixed focus proximity - 30 mm - Detection area



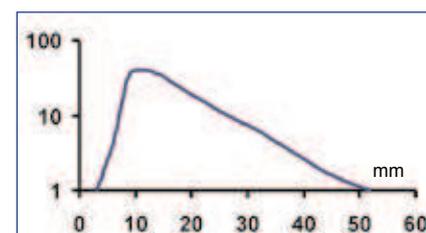
Fixed focus proximity - 50 mm - Detection area



Fixed focus proximity - 20 mm - Excess gain



Fixed focus proximity - 30 mm - Excess gain



Fixed focus proximity - 50 mm - Excess gain

MODEL SELECTION AND ORDER INFORMATION

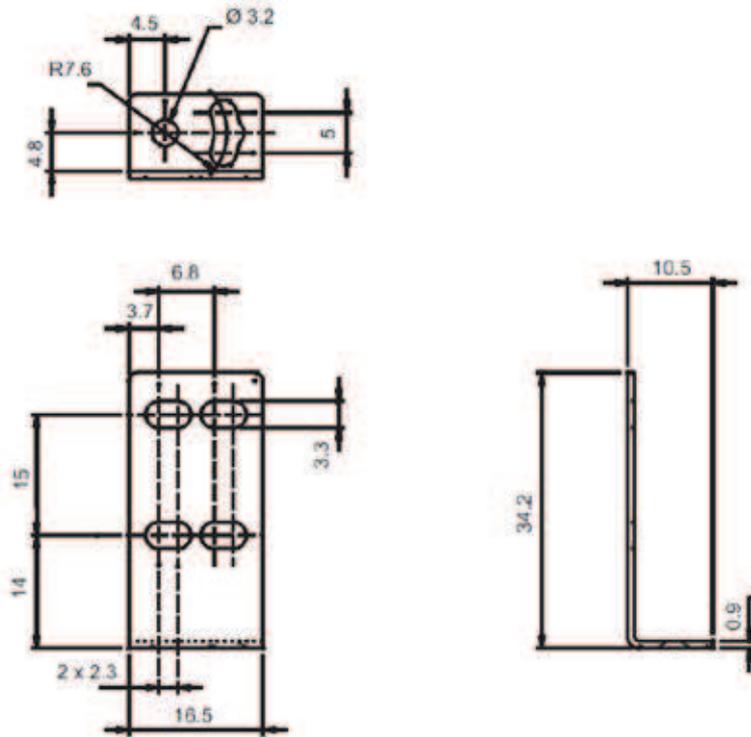
MODEL	FUNCTION	OUTPUT	ORDER N°
SM-PR-2-G00-XG	emitter	-	95B000160
SM-PR-2-F00-PP	receiver	PNP	95B000120
SM-PR-2-F00-NN	receiver	NPN	95B000130
SM-PR-2-A00-PP	retroreflex	PNP	95B000060
SM-PR-2-A00-NN	retroreflex	NPN	95B000070
SM-PR-2-B00-PP	polarised retroreflex	PNP	95B000080
SM-PR-2-B00-NN	polarised retroreflex	NPN	95B000090
SM-PR-2-D00-PP	15 mm fixed focus proximity	PNP	95B000020
SM-PR-2-D00-NN	15 mm fixed focus proximity	NPN	95B000030
SM-PR-2-D10-PP	20 mm fixed focus proximity	PNP	95B000140
SM-PR-2-D10-NN	20 mm fixed focus proximity	NPN	95B000150
SM-PR-2-D20-PP	30 mm fixed focus proximity	PNP	95B000040
SM-PR-2-D20-NN	30 mm fixed focus proximity	NPN	95B000050
SM-PR-2-D30-PP	50 mm fixed focus proximity	PNP	95B000000
SM-PR-2-D30-NN	50 mm fixed focus proximity	NPN	95B000010

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	ORDER N°
ST-5049	L-shaped fixing bracket	95ACC6650

ACCESSORY DIMENSIONS

ST-5049



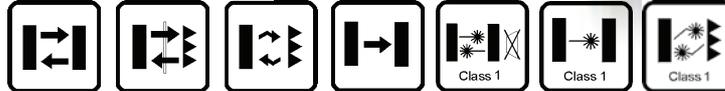
mm



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S3Z SERIES

The high operating distances and cost-effective price, makes the S3Z series in the miniature format with dimensions and standard fixing affirmed in the market, in particular in Far-East. Different models are available: 15m through beam, 4m polarised retroreflex, 2m polarized for transparent, 70 cm diffuse proximity, narrow beam from 50 to 150mm and 5 to 30cm background suppression model with multi-turn mechanical trimmer setting. Also available LASER models class I: 30m through beam, 10m polarised retroreflex and 40 to 300mm background suppression. Versions with NPN or PNP output, with dark or light operating mode and with cable or M8 connection are available. The plastic housing is completely overprinted, guaranteeing maximum mechanical protection also in presence of frequent washing.



HIGHLIGHTS

- Complete range of optic function LED or LASER emission
- 2m polarized for transparent detection
- 40-300 mm background suppression with both LASER or LED technology emission
- 1m long diffused, 15 cm diffused narrow beam
- 4 m polarised retroreflex or 10m LASER model
- 15 m through beam or 30m Laser model
- Standard 3 wire output configuration
- IP67 mechanical protection
- Interference prevention allows two units to be mounted side by side

APPLICATIONS

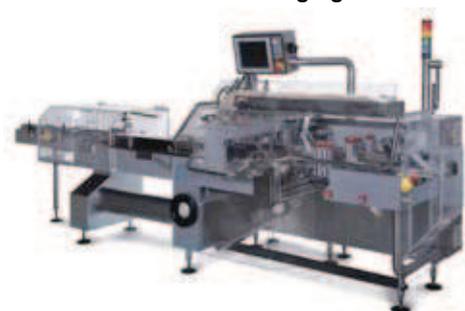
Automotive



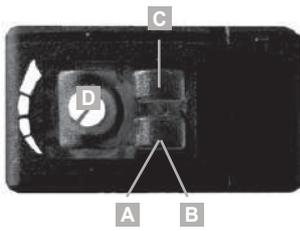
Beverage & Bottling



Packaging lines

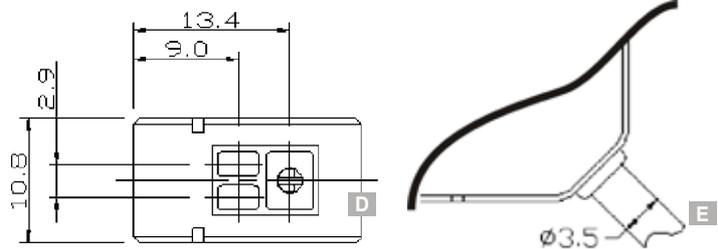
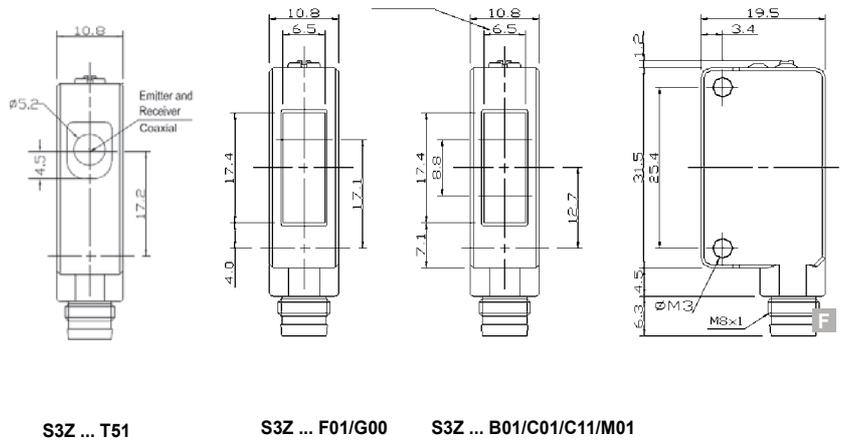


INDICATORS AND SETTING



- A** Output status LED
- B** Power on LED (S3Z ... G00)
- C** Stability LED
- D** Sensitivity trimmer
- E** Cable output
- F** M8 connector output

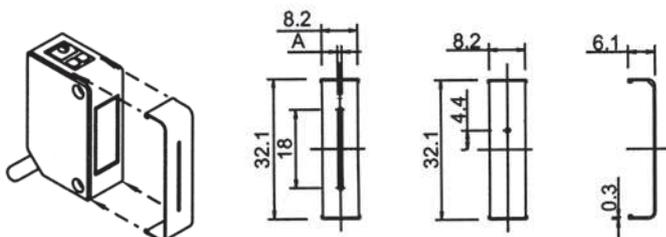
DIMENSIONS



SLIT

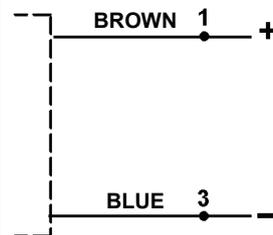
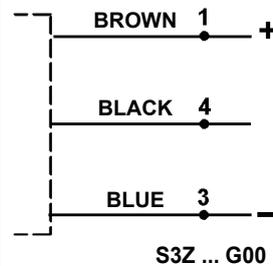
Two different slit models, with rectangular or circular slot, can be easily mounted on the front side of the through beam sensors to reduce the emission beam. The resolution and the minimum object detectable can be improved with the slit positioned on the receiver (S3Z...F01). The installation of the two aligned sensor couples is eased by mounting the slit also on the emitter (S3Z...G00), avoiding reciprocal interference. The slit reduces the operating distance as shown in the following table.

Slit		Operating distance		Minimum object detectable (mm)	
Model	Width (mm)	Used on F01	Used on F01 and G00	Used on F01	Used on F01 and G00
S3Z-SLIT1	∅ 0.5	0.8	0.08	5	0.3
S3Z-SLIT2	∅ 1	1.5	0.3	5	0.6
S3Z-SLIT3	∅ 2	2.5	1.2	5	1.5
S3Z-SLIT4	0.5x18	2.5	1	7	0.5
S3Z-SLIT5	1x18	3.5	1.5	7	1
S3Z-SLIT6	2x18	6	3.5	7	2

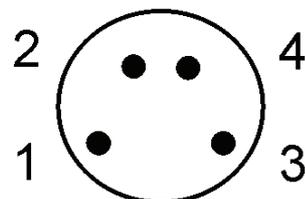


CONNECTIONS LED MODELS

S3Z ... B01/C01/C11/M01/T51



M8 CONNECTOR



TECHNICAL DATA - BASIC LINE

TECHNICAL NOTES

¹Limit values

²Average life of 100.000 h with T_A=+25°C

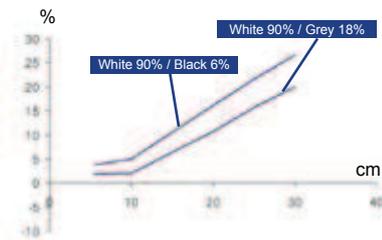
³A - reverse polarity protection

B - overload and short-circuit protection (B01/C01/C11/F01 VERS.)

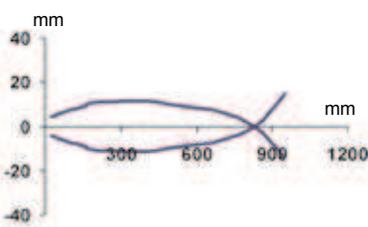
		S3Z-PR-2-B01	S3Z-PR-2-C01	S3Z-PR-2-C11	S3Z-PR-2-F01	S3Z-PR-2-G00	S3Z-PR-2-M01	S3Z-PR-2-T51	S3Z-PR-5-B01	S3Z-PR-5-C01	S3Z-PR-5-C11	S3Z-PR-5-F01	S3Z-PR-5-G00	S3Z-PR-5-M01	S3Z-PR-5-T51
Narrow beam proximity operating distance:	50 ... 150 mm		•							•					
Diffuse proximity operating distance:	0 ... 70 cm			•							•				
Polarized retroreflex operating distance:	0.05 ... 4 m (on R5)	•							•						
Polarized for transparent	0... 2 m (on R2)							•							•
Through beam operating distance:	0 ... 15 m				•	•							•	•	
Background suppression distance:	50 ... 300 mm						•								•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	30 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission²:	red LED 665 nm	•	•				•	•	•	•				•	•
	infrared LED 870 nm			•		•					•		•		•
Setting:	sensitivity trimmer	•	•	•	•		•	•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•		•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•		•	•	•	•	•	•	•	•	•
	green POWER ON LED					•							•		
Output type:	PNP or NPN (refer to table)	•	•	•	•		•	•	•	•	•	•	•	•	•
Operating mode:	dark or light (refer to table)	•	•	•	•		•	•	•	•	•	•	•	•	•
Saturation voltage:	≤2 V	•	•	•	•		•	•	•	•	•	•	•	•	•
Response time:	1 ms			•	•		•	•	•	•	•	•	•	•	•
Switching frequency:	500 Hz	•	•	•	•		•	•	•	•	•	•	•	•	•
Output current:	≤100 mA	•	•	•	•		•	•	•	•	•	•	•	•	•
Connection:	2 m cable, Ø 3.5 mm	•	•	•	•		•	•	•	•	•	•	•	•	•
	4-pole M8 connector								•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•		•	•	•	•	•	•	•	•	•
Protection devices:	A, B ³	•	•	•	•		•	•	•	•	•	•	•	•	•
Housing material:	PC / PBT	•	•	•	•		•	•	•	•	•	•	•	•	•
Lens material:	PMMA	•					•	•	•	•				•	•
	PC		•	•	•	•				•	•	•	•	•	•
Weight:	10 g								•	•	•	•	•	•	•
	50 g	•	•	•	•	•	•	•							
Operating temperature:	-25 ... +55°C	•	•	•	•		•	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•		•	•	•	•	•	•	•	•	•
Standard reference:	EN 60947-5-2	•	•	•	•		•	•	•	•	•	•	•	•	•

DIAGRAMS LED MODELS

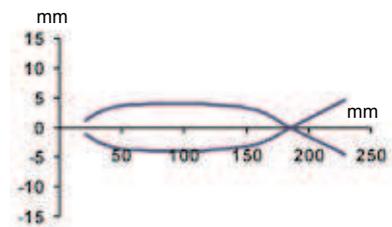
DETECTION AREA - BACKGROUND SUPPRESSION



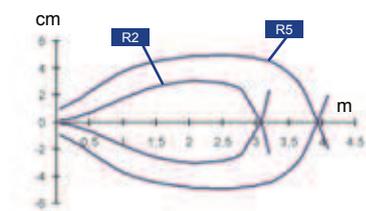
DETECTION AREA - DIFFUSE PROXIMITY



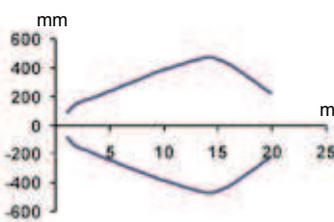
DETECTION AREA-NARROW BEAM PROXIMITY



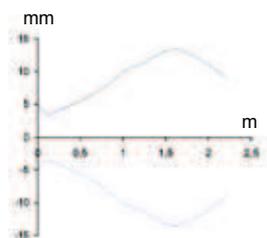
DETECTION AREA - POLARISED RETROREFLEX



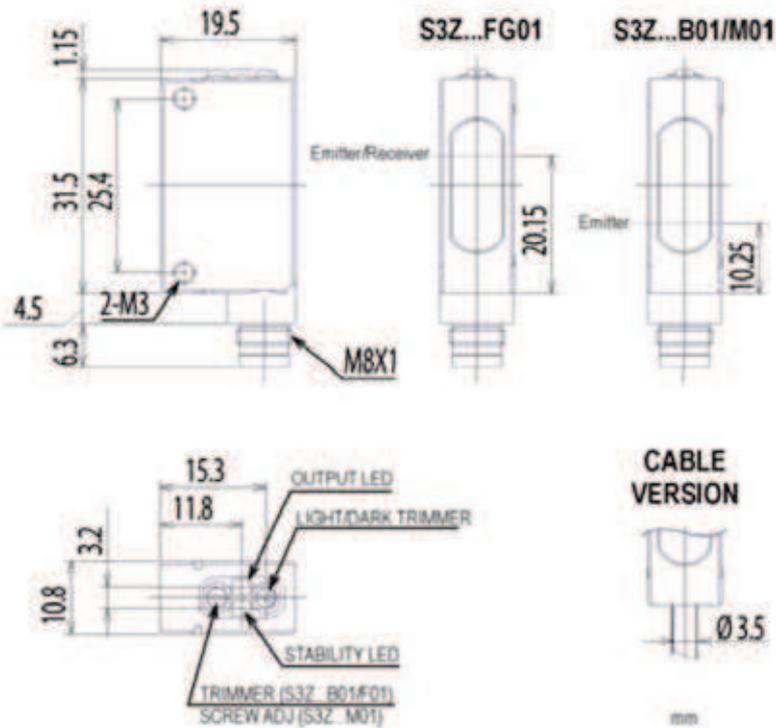
DETECTION AREA - THROUGH BEAM



DETECTION AREA - FOR TRANSPARENT

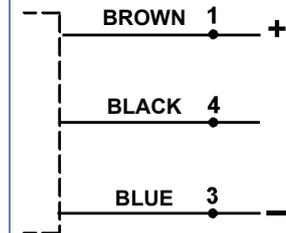


DIMENSION LASER MODELS

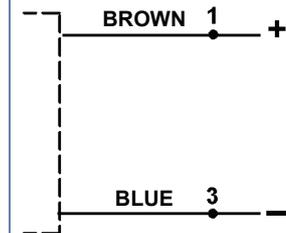


CONNECTIONS LASER MODELS

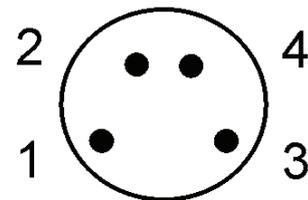
S3Z ... B01/M01/F01



S3Z ... G00

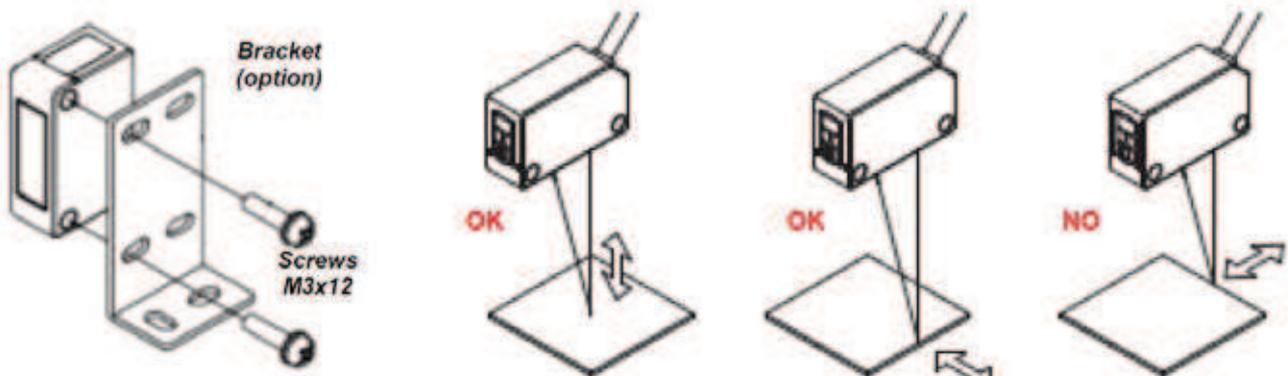


M8 CONNECTOR



INSTALLATION

- Do not apply excessive impact on the sensor during the installation process, so as to prevent damage or deterioration in the degree of protection.
- To install the sensor, tighten the mounting screws to a torque of 0.5 Nm or less.
- Install the Background suppression type sensor head perpendicular to the object transfer as shown below to minimize sensing errors.

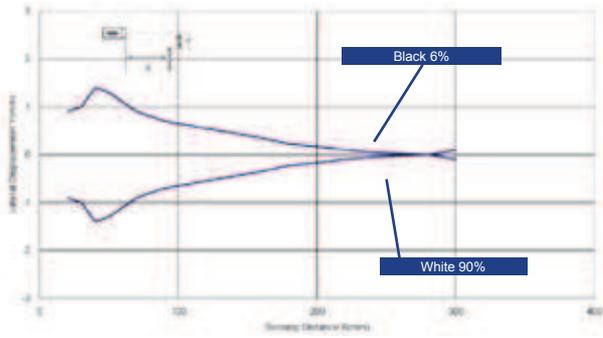


TECHNICAL DATA - LASER LINE

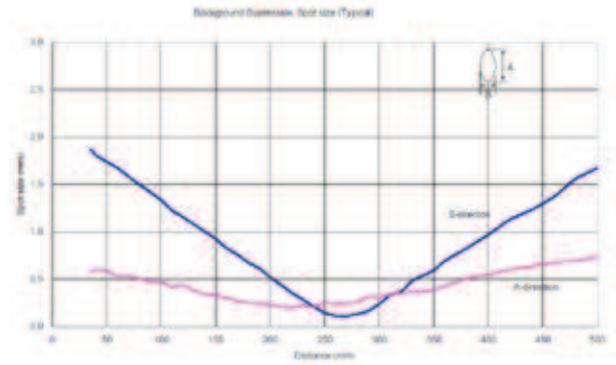
TECHNICAL NOTES		S3Z-PH-2-B01	S3Z-PH-2-F01	S3Z-PH-2-G00	S3Z-PH-2-M01	S3Z-PH-5-B01	S3Z-PH-5-F01	S3Z-PH-5-G00	S3Z-PH-5-M01
¹ Limit values									
² Class I CDRH 21 CFR PART 1040.10, max power ≤7 mW, 650 nm									
³ A - reverse polarity protection									
B - overload and short-circuit protection (B01/M01/F01 VERS.)									
Polarized retroreflex operating distance:	0.3 ... 10 m (on R2)	•				•			
Through beam operating distance:	0 ... 30 m		•	•			•	•	
Background suppression distance:	40 ... 300 mm				•				•
Background suppression grey/white difference:	10%				•				•
Spot dimension polarized:	Ø 5 mm, @ 3 m	•				•			
Spot dimension through beam:	Ø 5 mm, @ 3 m		•	•			•	•	
Spot dimension background:	Ø 0.5 mm, @ 170 mm				•				•
Power supply:	12 ... 24 Vdc ¹	•	•	•	•	•	•	•	•
Consumption:	35 mA max.	•	•	•	•	•	•	•	•
Light emission²:	red LASER class 1 EN 60825-1	•		•	•	•		•	•
Setting:	sensitivity trimmer	•	•		•	•	•		•
	D/L trimmer selection	•	•		•	•	•		•
Indicators:	yellow OUTPUT LED	•	•		•	•	•		•
	green STABILITY LED	•	•			•	•		
	green POWER ON LED			•				•	
Output type:	PNP or NPN (refer to table)	•	•	•	•	•	•	•	•
Operating mode:	dark or light (selectable by trimmer)	•	•	•	•	•	•	•	•
Saturation voltage:	≤1,5 V	•	•	•	•	•	•	•	•
Response time:	250 us	•	•	•	•	•	•	•	•
Switching frequency:	2 KHz	•	•	•	•	•	•	•	•
Output current:	≤100 mA	•	•	•	•	•	•	•	•
Connection:	2 m cable, Ø 3.5 mm	•	•	•	•				
	4-pole M8 connector					•	•	•	•
Mechnaical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ³	•	•	•	•	•	•	•	•
Housing material:	PC (cover) / PBT (body)	•	•	•	•	•	•	•	•
Lens material:	PMMA	•	•	•	•	•	•	•	•
Weight:	10 g					•	•	•	•
	50 g	•	•	•	•				
Operating temperature:	-10 ... +55°C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•
Standard reference:	EN 60947-5-2	•	•	•	•	•	•	•	•

DIAGRAMS LASER MODELS

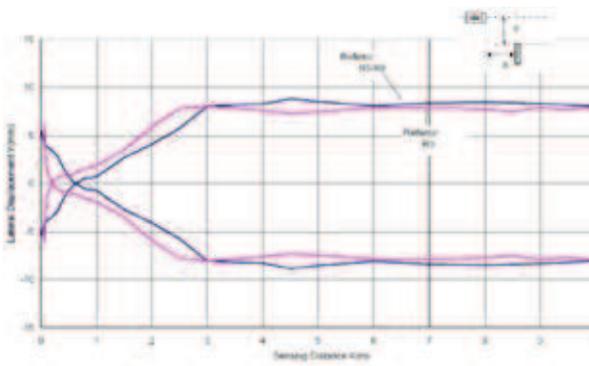
DETECTION AREA - BACKGROUND SUPPRESSION



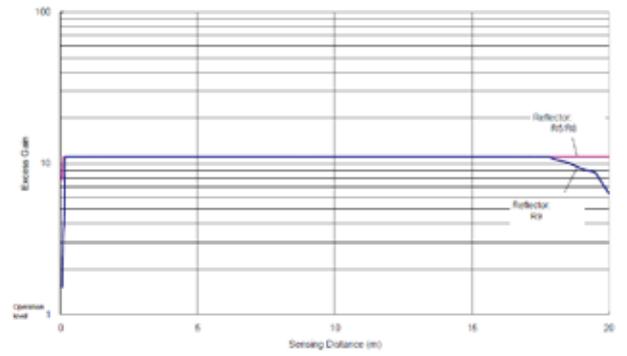
SPOT DIMENSION - BACKGROUND SUPPRESSION



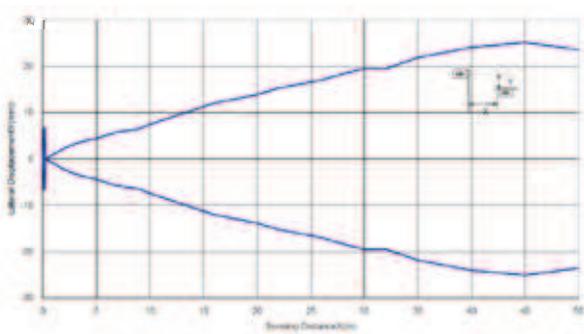
DETECTION AREA - POLARISED RETROREFLEX



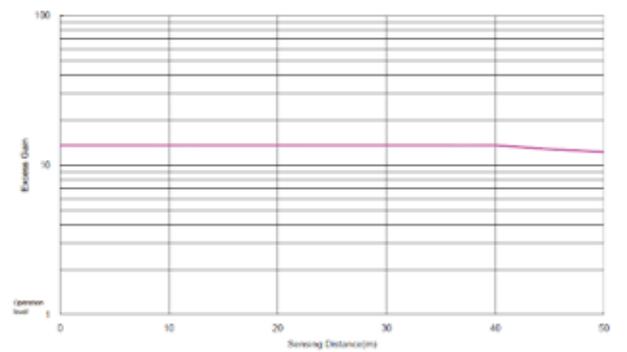
EXCESS GAIN - POLARISED RETROREFLEX



DETECTION AREA - THROUGH BEAM



EXCESS GAIN - THROUGH BEAM



MODEL SELECTION TABLE

MODEL	FUNCTION	CONNECTION	OUTPUT	ORDER NO.
S3Z-PR-2-C01-PL	narrow beam	cable	PNP - light	95B010040
S3Z-PR-5-C01-PL	narrow beam	M8 connector	PNP - light	95B010050
S3Z-PR-2-C01-PD	narrow beam	cable	PNP - dark	95B010060
S3Z-PR-5-C01-PD	narrow beam	M8 connector	PNP - dark	95B010070
S3Z-PR-2-C01-NL	narrow beam	cable	NPN - light	95B010200
S3Z-PR-5-C01-NL	narrow beam	M8 connector	NPN - light	95B010210
S3Z-PR-2-C01-ND	narrow beam	cable	NPN - dark	95B010220
S3Z-PR-5-C01-ND	narrow beam	M8 connector	NPN - dark	95B010230
S3Z-PR-2-C11-PL	diffuse	cable	PNP - light	95B010000
S3Z-PR-5-C11-PL	diffuse	M8 connector	PNP - light	95B010010
S3Z-PR-2-C11-PD	diffuse	cable	PNP - dark	95B010020
S3Z-PR-5-C11-PD	diffuse	M8 connector	PNP - dark	95B010030
S3Z-PR-2-C11-NL	diffuse	cable	NPN - light	95B010160
S3Z-PR-5-C11-NL	diffuse	M8 connector	NPN - light	95B010170
S3Z-PR-2-C11-ND	diffuse	cable	NPN - dark	95B010180
S3Z-PR-5-C11-ND	diffuse	M8 connector	NPN - dark	95B010190
S3Z-PR-2-B01-PL	polarized retroreflex	cable	PNP - light	95B010080
S3Z-PR-5-B01-PL	polarized retroreflex	M8 connector	PNP - light	95B010090
S3Z-PR-2-B01-PD	polarized retroreflex	cable	PNP - dark	95B010100
S3Z-PR-5-B01-PD	polarized retroreflex	M8 connector	PNP - dark	95B010110
S3Z-PR-2-B01-NL	polarized retroreflex	cable	NPN - light	95B010240
S3Z-PR-5-B01-NL	polarized retroreflex	M8 connector	NPN - light	95B010250
S3Z-PR-2-B01-ND	polarized retroreflex	cable	NPN - dark	95B010260
S3Z-PR-5-B01-ND	polarized retroreflex	M8 connector	NPN - dark	95B010270
S3Z-PR-2-FG01-PL	through beam	cable	PNP - light	95B010120
S3Z-PR-5-FG01-PL	through beam	M8 connector	PNP - light	95B010130
S3Z-PR-2-FG01-PD	through beam	cable	PNP - dark	95B010140
S3Z-PR-5-FG01-PD	through beam	M8 connector	PNP - dark	95B010150
S3Z-PR-2-FG01-NL	through beam	cable	NPN - light	95B010280
S3Z-PR-5-FG01-NL	through beam	M8 connector	NPN - light	95B010290
S3Z-PR-2-FG01-ND	through beam	cable	NPN - dark	95B010300
S3Z-PR-5-FG01-ND	through beam	M8 connector	NPN - dark	95B010310
S3Z-PR-2-M01-PL	background suppression	cable	PNP - light	95B010330
S3Z-PR-5-M01-PL	background suppression	M8 connector	PNP - light	95B010350
S3Z-PR-2-M01-NL	background suppression	cable	NPN - light	95B010320
S3Z-PR-5-M01-NL	background suppression	M8 connector	NPN - light	95B010340
S3Z-PR-2-T51-ND	transparent polarized	cable	NPN - dark	95B010390
S3Z-PR-2-T51-PD	transparent polarized	cable	PNP - dark	95B010380
S3Z-PR-5-T51-ND	transparent polarized	M8 connector	NPN - dark	95B010370
S3Z-PR-5-T51-PD	transparent polarized	M8 connector	PNP - dark	95B010360
S3Z-PH-2-B01-PP	polarized laser	cable	PNP - dark/light	95B010440
S3Z-PH-5-B01-PP	polarized laser	M8 connector	PNP - dark/light	95B010460
S3Z-PH-2-B01-NN	polarized laser	cable	NPN - dark/light	95B010450
S3Z-PH-5-B01-NN	polarized laser	M8 connector	NPN - dark/light	95B010470
S3Z-PH-2-M01-PP	background suppression laser	cable	PNP - dark/light	95B010480
S3Z-PH-5-M01-PP	background suppression laser	M8 connector	PNP - dark/light	95B010500
S3Z-PH-2-M01-NN	background suppression laser	cable	NPN - dark/light	95B010490
S3Z-PH-5-M01-NN	background suppression laser	M8 connector	NPN - dark/light	95B010510
S3Z-PH-2-FG01-PP	through beam laser	cable	PNP - dark/light	95B010520
S3Z-PH-5-FG01-PP	through beam laser	M8 connector	PNP - dark/light	95B010540
S3Z-PH-2-FG01-NN	through beam laser	cable	NPN - dark/light	95B010530
S3Z-PH-5-FG01-NN	through beam laser	M8 connector	NPN - dark/light	95B010550

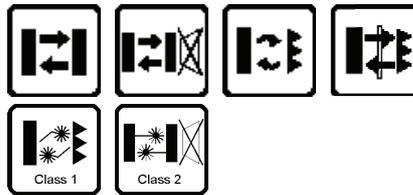
S40 SERIES

The photoelectric sensors of the **S40** series, in the innovative miniature housing, offer all the main optic functions with the advantages of microprocessor control and automatic Teach-in and Remote setting with EASYtouch™ procedure.

The series includes different models: 30 cm diffuse proximity and 10 cm background suppression, 4 m retroreflex, 3 m polarised retroreflex, or 0.7 m version for the detection of transparent glass or PET objects, 6 m through beam models, all with visible red emission.

The laser emission is available for retroreflex, proximity and background suppression, offering very high resolution detection.

The sensitivity and operating distance setting are obtained by simply pressing the button, or by cable to allow remote control and the mounting in small or difficult to reach areas.



HIGHLIGHTS

- EASYtouch™ microprocessor Teach-in and Remote setting
- Laser retroreflex, proximity and background suppression
- Cable or M8 connection, NPN or PNP
- ABS housing with IP67 protection

APPLICATIONS

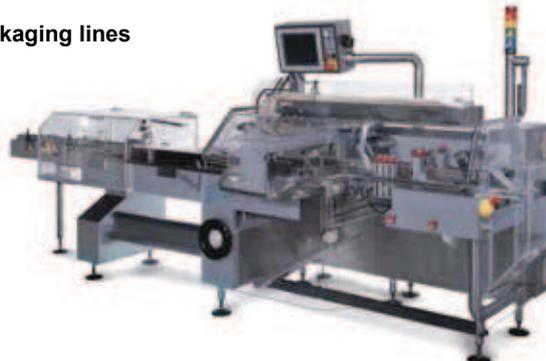
Automotive



Beverage & Bottling



Packaging lines

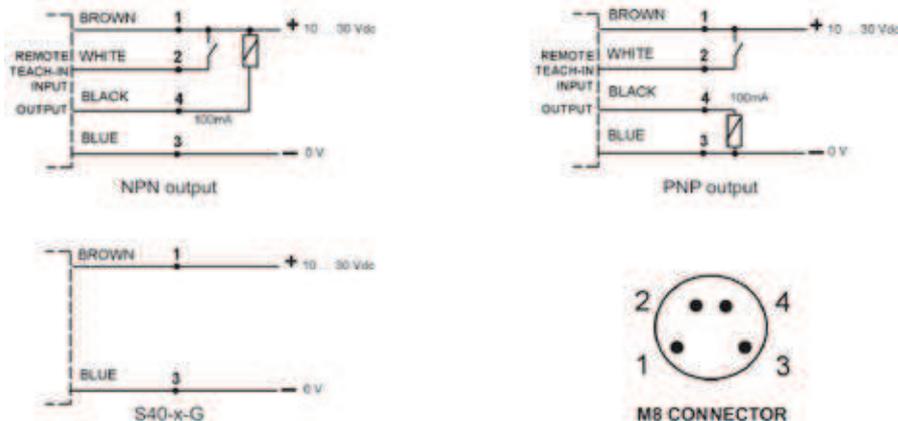


TECHNICAL DATA

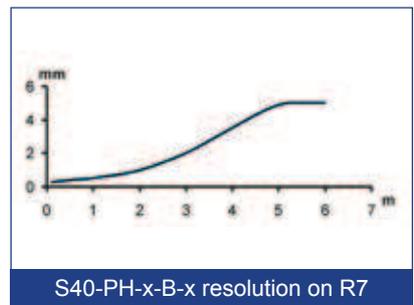
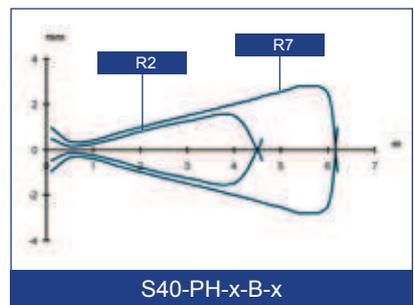
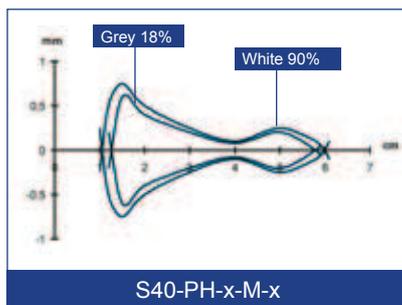
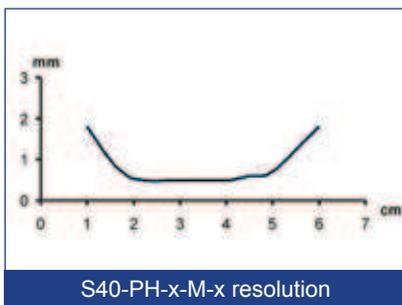
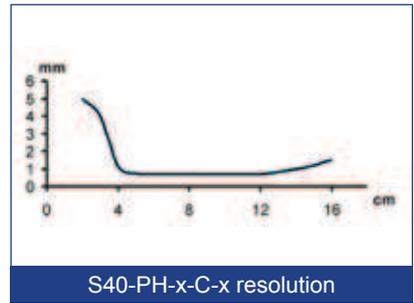
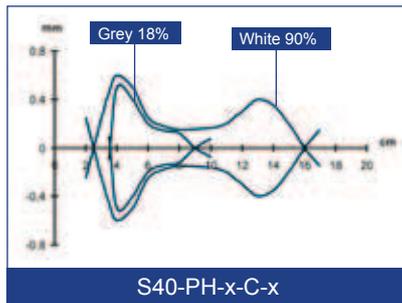
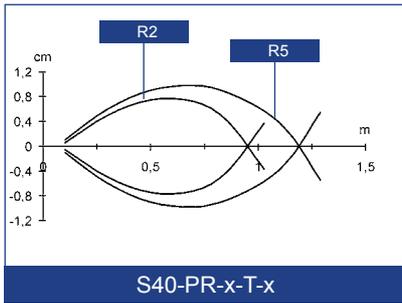
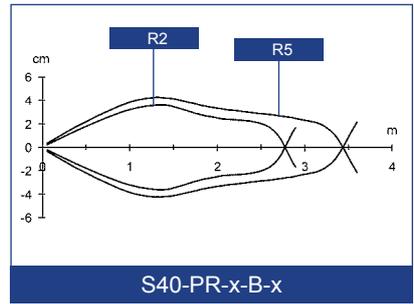
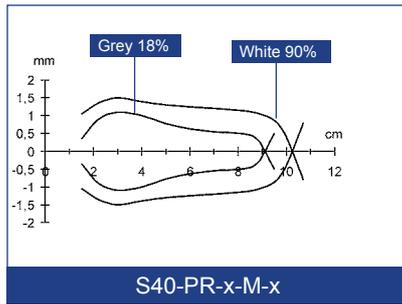
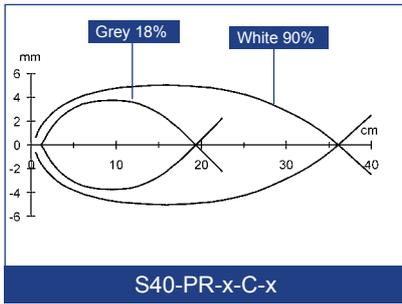
Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	35 mA max.
Light emission:	red LED 660 nm, red laser 650 nm
Diffuse proximity operating distance:	0.5 ... 30 cm
Laser diffuse proximity op. distance:	4 ... 15 cm
Laser proximity resolution:	0.2 mm (on focus point)
Background suppression op. distance:	15 ... 100 mm
Laser background suppr. op. distance:	20 ... 60 mm
Laser background suppr. resolution:	0.2 mm (on focus point)
Background suppr. white/grey diff.:	7%
Polarised retroreflex operating distance:	0.1 ... 2.5 m (on R2)
Laser polarised retroreflex op. distance:	0.1 ... 6 m (on R2)
Laser retroreflex resolution:	1 mm (on focus point)
Retroreflex transparents op. distance:	0.1 ... 0.7 m (on R2)
Setting:	SET push-button Remote by cable
Indicators:	yellow OUTPUT LED green POWER LED (G vers.) green READY/ERROR LED
Output type:	NPN or PNP, Rpull-down/up 22 kW
Saturation voltage:	2.4 V max.
Output current:	100 mA max, short-circuit protection
Response time:	0.5 ms 125 µs (laser B03 and C03 versions)
Switching frequency:	1 kHz max. 4 kHz (laser B03 and C03 versions)
Operating mode:	dark/light programmable
Connection:	4-pole M8 connector 2 m Ø 3.5 mm cable
Laser safety class:	class II
Electrical protection:	class 2
Mechanical protection:	IP67
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	10 g max. (connector vers.) 40 g max. (cable vers.)
Operating temperature:	-20 ... +60°C
Storage temperature:	-20 ... +80°C
Reference standard:	EN 60947-5-2, EN 60825-1
Certifications:	CE 

The operating distances indicate the detection distance with excess gain 2.

CONNECTIONS



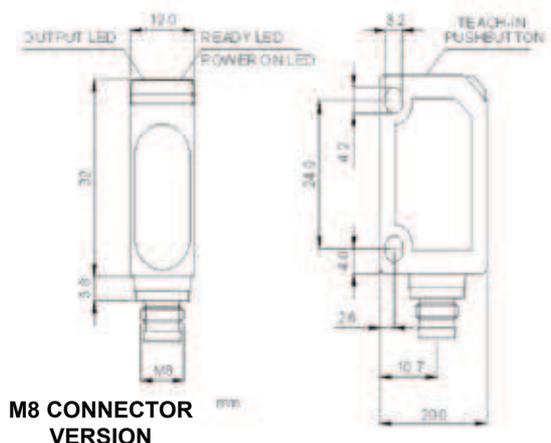
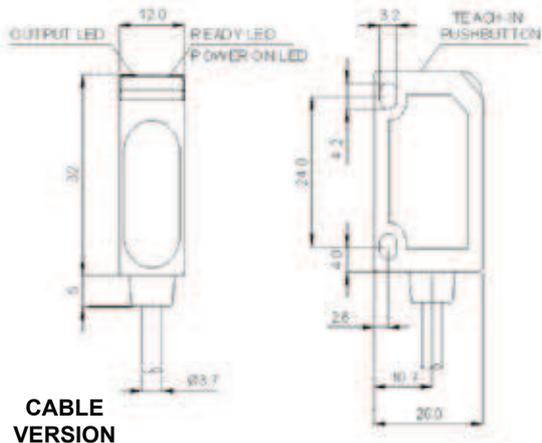
DETECTION DIAGRAMS



The detection diagrams indicate the typical operating distance with excess gain 1.

S40-PH-x-B-x resolution on R7

DIMENSIONS



MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	CONNECTION	OUTPUT	CODE N°
S40-PR-2-B03-NH	polarised retroreflex	2 m cable	NPN	950401360
S40-PR-2-B03-PH	polarised retroreflex	2 m cable	PNP	950401300
S40-PR-2-C03-NH	diffuse proximity	2 m cable	NPN	950401370
S40-PR-2-C03-PH	diffuse proximity	2 m cable	PNP	950401310
S40-PR-2-M03-NH	background suppression	2 m cable	NPN	950401380
S40-PR-2-M03-PH	background suppression	2 m cable	PNP	950401320
S40-PR-2-T03-NH	retroreflex for transparents	2 m cable	NPN	950401410
S40-PR-2-T03-PH	retroreflex for transparents	2 m cable	PNP	950401350
S40-PR-5-B03-NH	polarised retroreflex	M8 connector	NPN	950401480
S40-PR-5-B03-PH	polarised retroreflex	M8 connector	PNP	950401420
S40-PR-5-C03-NH	diffuse proximity	M8 connector	NPN	950401490
S40-PR-5-C03-PH	diffuse proximity	M8 connector	PNP	950401430
S40-PR-5-M03-NH	background suppression	M8 connector	NPN	950401500
S40-PR-5-M03-PH	background suppression	M8 connector	PNP	950401440
S40-PR-5-T03-NH	retroreflex for transparents	M8 connector	NPN	950401530
S40-PR-5-T03-PH	retroreflex for transparents	M8 connector	PNP	950401470
S40-PH-5-B03-NH	laser polarised retroreflex	M8 connector	NPN	950401240
S40-PH-5-B03-PH	laser polarised retroreflex	M8 connector	PNP	950401250
S40-PH-5-C03-NH	laser diffuse proximity	M8 connector	NPN	950401260
S40-PH-5-C03-PH	laser diffuse proximity	M8 connector	PNP	950401270
S40-PH-5-M03-NH	laser background suppression	M8 connector	NPN	950401280
S40-PH-5-M03-PH	laser background suppression	M8 connector	PNP	950401290

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-505	1 pc fixing bracket	95ACC2800



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

S41 SERIES

The **S41** series offers a basic line of photoelectric sensors in a miniature housing, ideal for applications that require reduced dimensions and costs. The optic functions include a diffuse proximity adjustable from 0 to 35 cm and a 11 cm fixed focus proximity suitable for background suppression; 2.5 m polarised retroreflex, 1 m retroreflex for transparents and 6 m through beam are available for longer operating distances; the latter is also available in a narrow beam emitter version that allows to place sensors side by side without interferences. The LED emission is red for the fixed focus proximity and infrared for the other models. Two LED indicators are visible on the sensors: a yellow output LED and a green switching stability LED; the diffuse proximity models and a polarised retroreflex version also present a sensitivity adjustment trimmer. The normally open and normally closed outputs are both present on different poles; cable or M8 connection is offered according to the model chosen.



HIGHLIGHTS

- Diffuse or fixed focus proximity for background suppression
- Polarised retroreflex and emitter-receiver with narrow beam
- Models with trimmer setting
- Double NO-NC NPN or PNP output

APPLICATIONS

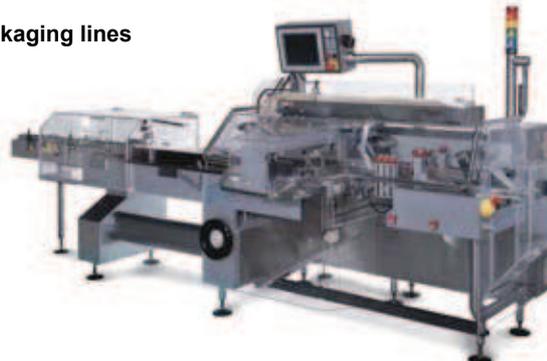
Automotive



Beverage & Bottling



Packaging lines

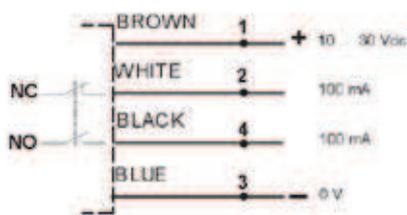


TECHNICAL DATA

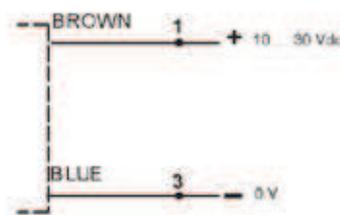
Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	35 mA max.
Light emission:	red LED 660 nm (B, D, P, T vers.) infrared LED 880 nm (C, G, H vers.)
Diffuse proximity operating distance:	0.2 ... 35 cm (C vers.)
Fixed focus operating distance:	11 cm ± 10 % (D vers.)
Polarised retroreflex operating distance:	0.1 ... 2.5 m (on R2)
Retroreflex transparent op. distance:	0.1 ... 0.7 m (on R2)
Through beam operating distance:	0.1 ... 6 m (G vers.), 0.1 ... 1.5 m (H vers.)
Setting:	sensitivity trimmer (B, C, T vers.)
Indicators:	yellow OUTPUT LED green POWER LED (G, H vers.) green STABILITY LED (B, C, D, F, P vers.)
Output type:	NC-NO NPN or PNP
Saturation voltage:	2 V max.
Output current:	100 mA max., short-circuit protection
Response time:	1 ms max.
Switching frequency:	500 Hz max.
Connection:	M8 4-pole connector 2 m Ø 3.5 mm cable
Electrical protection:	class 2
Mechanical protection:	IP67 (P, D, F, G, H vers.) IP66 (B, C, T vers.)
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	10 g max. (connector vers.) 40 g max. (cable vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	CE 

The operating distances indicate the detection distance with excess gain 2.

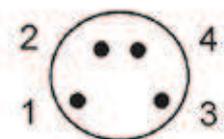
CONNECTIONS



S41-5-B/C/D/F/P/T

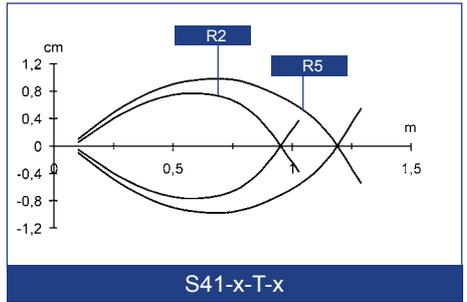
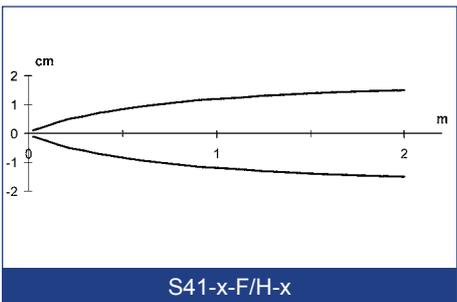
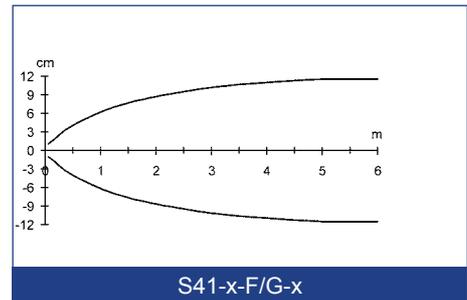
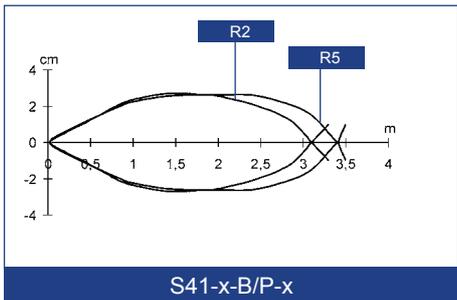
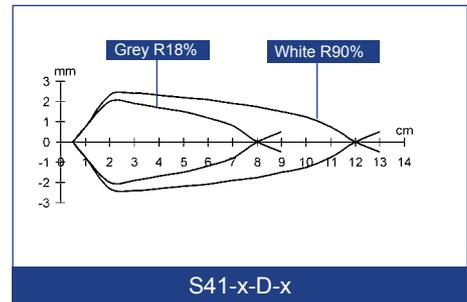
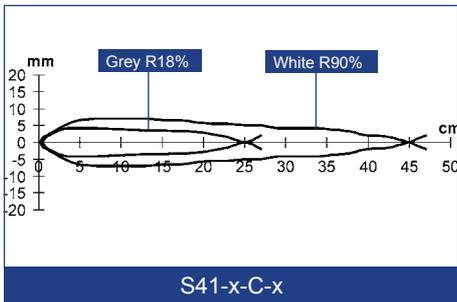


S41-5-G/H



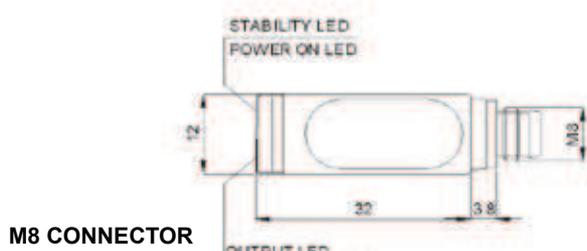
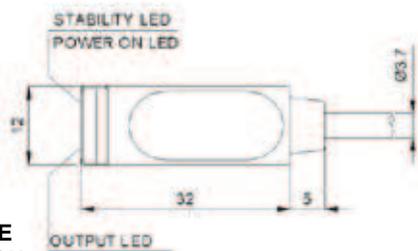
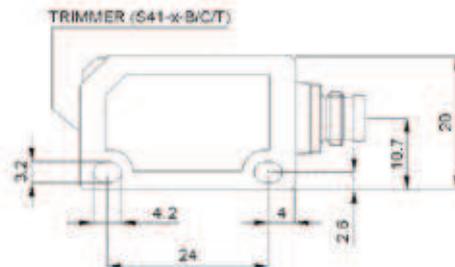
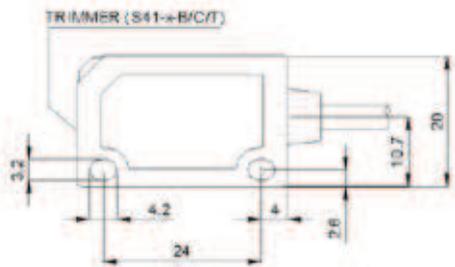
M8 CONNECTOR

DETECTION DIAGRAMS



The detection diagrams indicate the typical operating distance with excess gain 1.

DIMENSIONS



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	TRIMMER	CONNECTION	OUTPUT	CODE N°
S41-2-B-P	polarised retroreflex	present	2 m cable	PNP	950701000
S41-2-C-P	diffuse proximity	present	2 m cable	PNP	950701010
S41-2-D-P	fixed focus proximity	absent	2 m cable	PNP	950701020
S41-2-F-P	receiver	absent	2 m cable	PNP	950701030
S41-2-G	emitter	absent	2 m cable	-	950701040
S41-2-H	emitter with narrow beam	absent	2 m cable	-	950701045
S41-2-P-P	polarised retroreflex	absent	2 m cable	PNP	950701100
S41-2-T-P	retroreflex for transparents	present	2 m cable	PNP	950701130
S41-5-B-P	polarised retroreflex	present	M8 connector	PNP	950701050
S41-5-C-P	diffuse proximity	present	M8 connector	PNP	950701060
S41-5-D-P	fixed focus proximity	absent	M8 connector	PNP	950701070
S41-5-F-P	receiver	absent	M8 connector	PNP	950701080
S41-5-G	emitter	absent	M8 connector	-	950701090
S41-5-H	emitter with narrow beam	absent	M8 connector	-	950701095
S41-5-P-P	polarised retroreflex	absent	M8 connector	PNP	950701110
S41-5-T-P	retroreflex for transparents	present	M8 connector	PNP	950701140
S41-2-B-N	polarised retroreflex	present	2 m cable	NPN	950701150
S41-2-C-N	diffuse proximity	present	2 m cable	NPN	950701160
S41-2-D-N	fixed focus proximity	absent	2 m cable	NPN	950701170
S41-2-F-N	receiver	absent	2 m cable	NPN	950701180
S41-2-P-N	polarised retroreflex	absent	2 m cable	NPN	950701190
S41-2-T-N	retroreflex for transparents	present	2 m cable	NPN	950701200
S41-5-B-N	polarised retroreflex	present	M8 connector	NPN	950701210
S41-5-C-N	diffuse proximity	present	M8 connector	NPN	950701120
S41-5-D-N	fixed focus proximity	absent	M8 connector	NPN	950701230
S41-5-F-N	receiver	absent	M8 connector	NPN	950701240
S41-5-P-N	polarised retroreflex	absent	M8 connector	NPN	950701250
S41-5-T-N	retroreflex for transparents	present	M8 connector	NPN	950701260

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
R1	Ø 23 mm reflector with Ø 31 mm support	S940700023
R2	Ø 48 mm reflector with Ø 63 mm support	S940700048
R3	18 x 54 mm reflector with 22.5 x 82 mm support	S940700972
R4	47 x 47 mm reflector with 51.5 x 61 mm support	95A151340
R5	Ø 75 mm reflector with Ø 82 mm support	S940700075
R6	36 x 55 mm reflector with 40.5 x 60 mm support	95A151350
ST-505	1 pc fixing bracket	95ACC2800

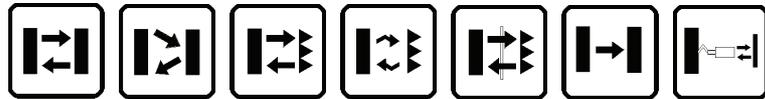


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S3 SERIES

The photoelectric sensors of the **S3** series are characterised by particularly compact dimensions still offering excellent performances and a wide variety of models.

The wide range of optic functions include diffuse proximity with distance adjustable up to 10 cm or 50 cm, or 12 mm fixed focus proximity. The retroreflex versions reach 3 m and are also available in the polarised version suitable for detecting shiny objects, or low hysteresis models to detect transparent objects. The 5 m through beam models complete the series, together with versions for the different fibre-optics available as accessories. All models offer trimmer sensitivity adjustment and LED stability indicator; the axial and lateral optics guarantee the same performances. Maximum installation versatility and use are obtained thanks to the configurable output and miniature housing.

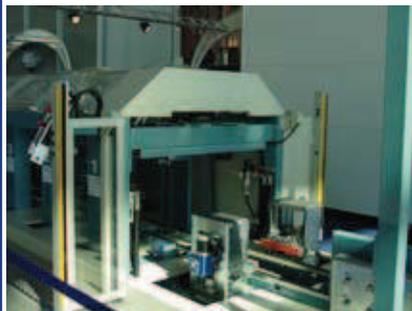


HIGHLIGHTS

- Miniature housing with axial or lateral optics
- Wide range of optic functions including fibre versions
- Sensitivity adjustment and stability LED
- NPN/PNP and dark/light configurable output

APPLICATIONS

Ceramics



Transportation lines



Beverage & Bottling



Packaging lines

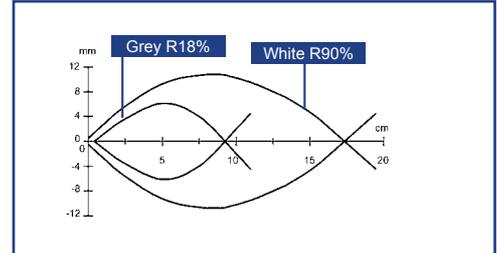


TECHNICAL DATA

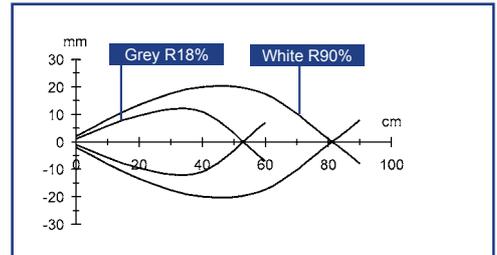
Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	30 mA max.
Light emission:	infrared 880 nm LED red 660 nm LED (B2, D12, E1 vers.)
Diffuse proximity operating distance:	0 ... 10 cm (C10 vers.) 0 ... 50 cm (C50 vers.)
Fixed focus operating distance:	12 mm with 1 mm spot (D12 vers.)
Retroreflex operating distance:	0.1 ... 2.5 m (on R2)
Polarised retroreflex operating distance:	0.1 ... 2 m (on R2)
Retroreflex for transparents op. distance:	0.2 ... 0.8 m (on R2)
Through beam operating distance:	0 ... 5 m
Operating distance with fibre-optics:	33 mm proximity (with OF-18-ST) 110 mm through beam (with OF-19-ST) refer to OF series for other fibres
Setting:	sensitivity trimmer
Indicators:	red OUTPUT LED green STABILITY LED red POWER LED (G5 vers.)
Output type:	PNP (connector vers.) NPN/PNP configurable (cable vers.)
Saturation voltage:	1.5 V max.
Output current:	100 mA max., short-circuit protection
Response time:	1 ms max. 2 ms (F vers.)
Switching frequency:	500 Hz max. 250 Hz max. (F vers.)
Operating mode:	dark/light configurable
Auxiliary functions:	'test +' and 'test -' inputs (G vers.)
Connection:	M8 4-pole connector 2 m Ø 5 mm cable
Electrical protection:	class 2
Mechanical protection:	IP66
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	20 g max. (connector vers.) 90 g max. (cable vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	CE 

DETECTION DIAGRAMS

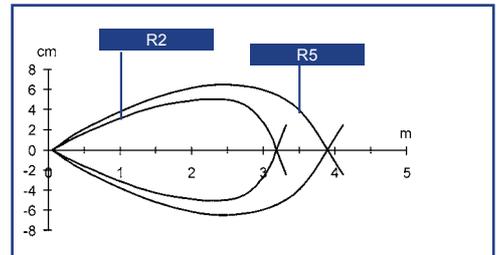
S3-x-C10-x



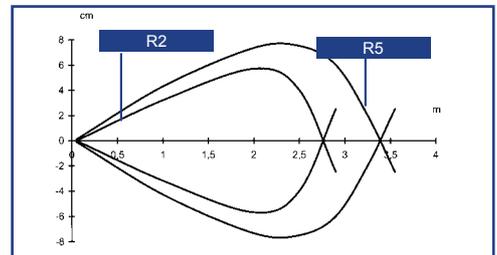
S3-x-C50-x



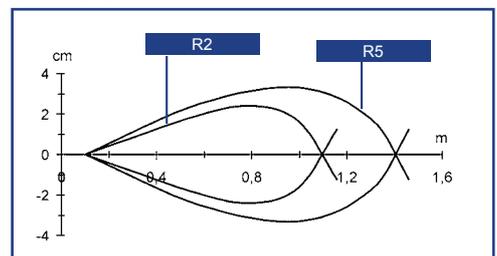
S3-x-A2.5-x



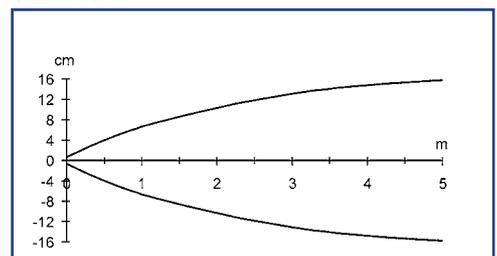
S3-x-B2-x



S3-x-T0.8-x



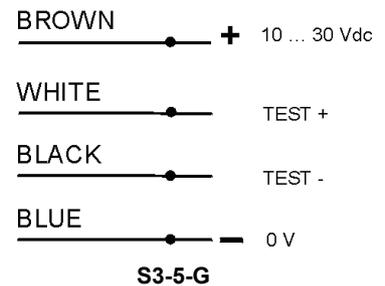
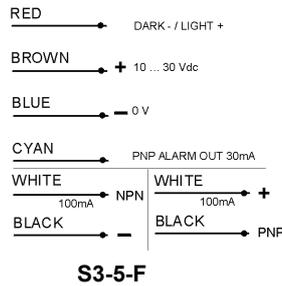
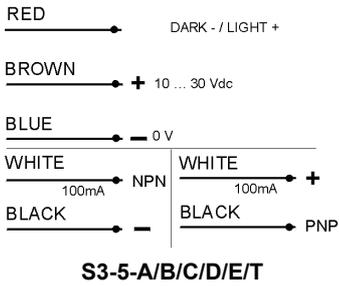
S3-x-F/G-x



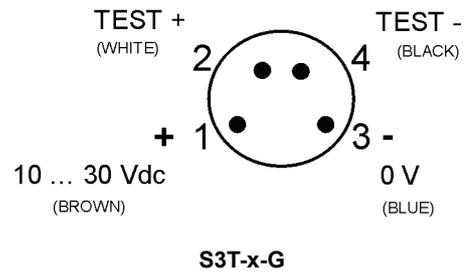
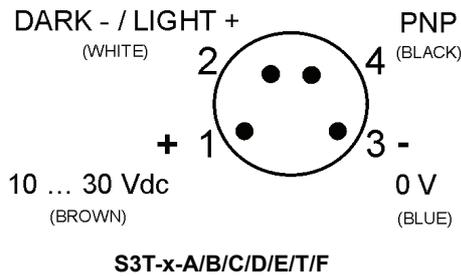
The operating distances indicate the detection distance with excess gain 2.

The detection diagrams indicate the typical operating distance with excess gain 1.

CONNECTIONS



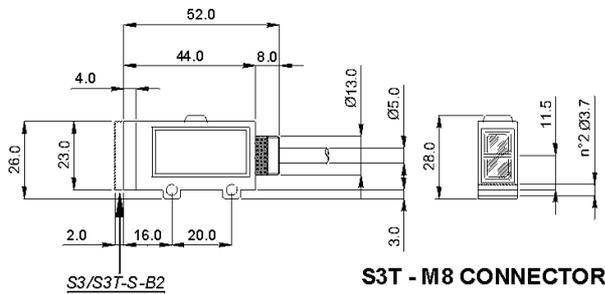
M8 CONNECTOR



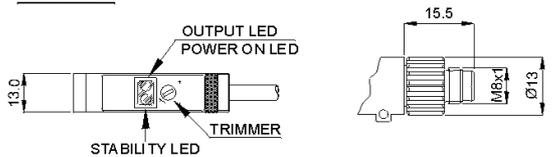
DIMENSIONS

AXIAL OPTIC VERSIONS

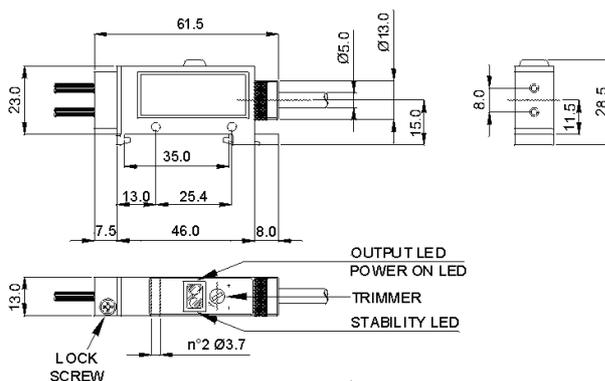
S3-S-A2.5/B2/C10/C50/D12/F5/G5/T0.8



S3T - M8 CONNECTOR

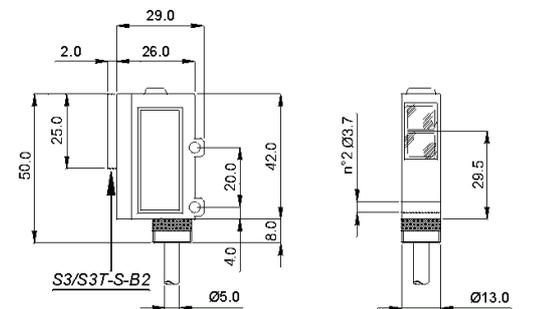


S3-S-E1

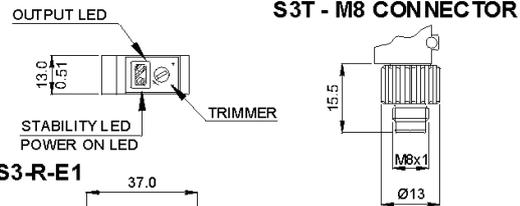


LATERAL OPTIC VERSIONS

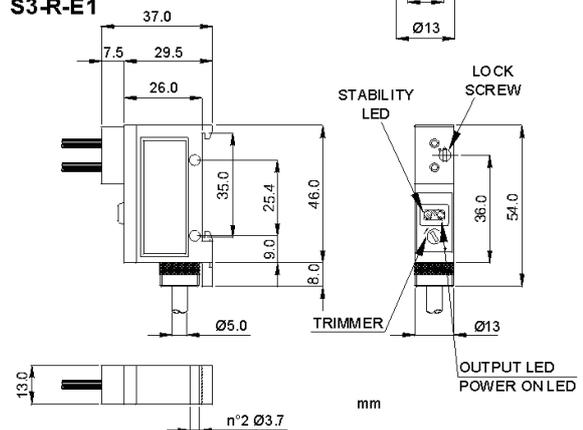
S3-R-A2.5/B2/C10/C50/D12/F5/G5/T0.8



S3T - M8 CONNECTOR



S3-R-E1



MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	OPTICS	CONNECTION	OUTPUT	CODE N°
S3-R-C10	diffuse proximity	lateral	cable	NPN/PNP	S936530005
S3T-R-C10-P	diffuse proximity	lateral	M8 connector	PNP	S939730201
S3-S-C10	diffuse proximity	axial	cable	NPN/PNP	S936530004
S3T-S-C10-P	diffuse proximity	axial	M8 connector	PNP	S939730200
S3-R-C50	diffuse proximity	lateral	cable	NPN/PNP	S936530001
S3T-R-C50-P	diffuse proximity	lateral	M8 connector	PNP	S939530201
S3-S-C50	diffuse proximity	axial	cable	NPN/PNP	S936530000
S3T-S-C50-P	diffuse proximity	axial	M8 connector	PNP	S939530200
S3-R-D12	fixed focus proximity	lateral	cable	NPN/PNP	S936620001
S3T-R-D12-P	fixed focus proximity	lateral	M8 connector	PNP	S939620201
S3-S-D12	fixed focus proximity	axial	cable	NPN/PNP	S936620000
S3T-S-D12-P	fixed focus proximity	axial	M8 connector	PNP	S939620200
S3-R-A2,5	retroreflex	lateral	cable	NPN/PNP	S936330001
S3T-R-A2,5-P	retroreflex	lateral	M8 connector	PNP	S939330201
S3-S-A2,5	retroreflex	axial	cable	NPN/PNP	S936330000
S3T-S-A2,5-P	retroreflex	axial	M8 connector	PNP	S939330200
S3-R-B2	polarised retroreflex	lateral	cable	NPN/PNP	S936420001
S3T-R-B2-P	polarised retroreflex	lateral	M8 connector	PNP	S939420201
S3-S-B2	polarised retroreflex	axial	cable	NPN/PNP	S936420000
S3T-S-B2-P	polarised retroreflex	axial	M8 connector	PNP	S939420200
S3-R-T0,8	retroreflex for transp.	lateral	cable	NPN/PNP	S936330009
S3T-R-T0,8-P	retroreflex for transp.	lateral	M8 connector	PNP	S939330209
S3-S-T0,8	retroreflex for transp.	axial	cable	NPN/PNP	S936330008
S3T-S-T0,8-P	retroreflex for transp.	axial	M8 connector	PNP	S939330208
S3-R-E1	fibre-optic conn.	lateral	cable	NPN/PNP	S936820001
S3T-R-E1-P	fibre-optic conn.	lateral	M8 connector	PNP	S939820201
S3-S-E1	fibre-optic conn.	axial	cable	NPN/PNP	S936820000
S3T-S-E1-P	fibre-optic conn.	axial	M8 connector	PNP	S939820200
S3-R-F5	receiver	lateral	cable	NPN/PNP	S936200001
S3T-R-F5-P	receiver	lateral	M8 connector	PNP	S939200201
S3-S-F5	receiver	axial	cable	NPN/PNP	S936200000
S3T-S-F5-P	receiver	axial	M8 connector	PNP	S939200200
S3-R-G5	emitter	lateral	cable	-	S936130001
S3T-R-G5	emitter	lateral	M8 connector	-	S939130901
S3-S-G5	emitter	axial	cable	-	S936130000
S3T-S-G5	emitter	axial	M8 connector	-	S939130900

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
R1	Ø 23 mm reflector with Ø 31 mm support	S940700023
R2	Ø 48 mm reflector with Ø 63 mm support	S940700048
R3	18 x 54 mm reflector with 22.5 x 82 mm support	S940700972
R4	47 x 47 mm reflector with 51.5 x 61 mm support	95A151340
R5	Ø 75 mm reflector with Ø 82 mm support	S940700075
R6	36 x 55 mm reflector with 40.5 x 60 mm support	95A151350
ST-505	1 pc fixing bracket	95ACC2800

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S8 SERIES

The new **S8** series of compact sensors offers excellent detection performances, usually associated with sensors that have larger dimensions and a higher price. The **S8** series is able to solve the most critical sensor applications. A solution for packaging lines, food and beverage industries, automotive, test and assembling machines and electronic plants. Laser models with coaxial polarized retroreflex and background suppression are available. Base models with LED emission are also offered featuring polarized retroreflex, diffuse proximity, background suppression, coaxial polarized retroreflex for transparents and contrast sensors. The Laser versions present extremely focused spot lower than to 1 mm and switching frequencies that are amongst the highest on the market reaching 10 kHz. The contrast sensor is the most compact sensor available today with RGB emission and coaxial optics. Connector M8 or M12 'pig-tail' versions are available.



HIGHLIGHTS

- Compact dimensions (14x42x25 mm)
- Up to 10 kHz switching frequency
- Extremely focussed spot, under 1 mm (Laser vers.)
- Very high resolutions
- Coaxial versions

APPLICATIONS

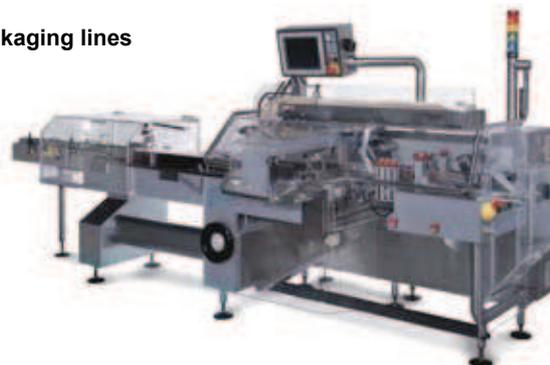
Automotive



Beverage & Bottling

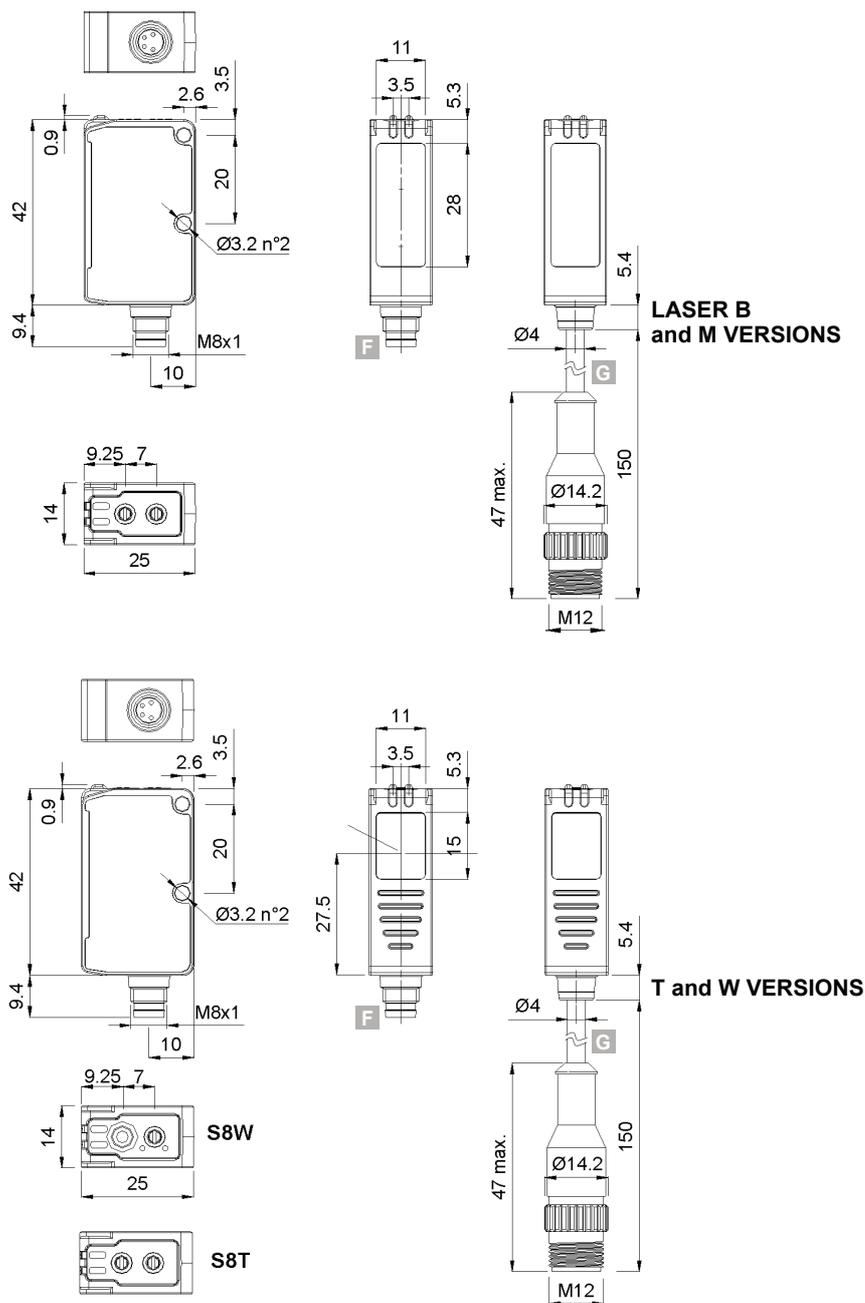


Packaging lines



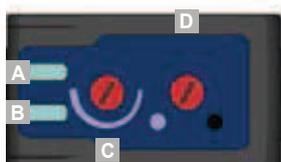
The Laser versions present extremely focused spot inferior to 1 mm and switching frequencies that are amongst the highest on the market reaching 10 kHz. Offering excellent reading repeatability, and the object can be 'detected' always in the same position! The coaxial retroreflex version with LED emission guaranteeing an excellent resolution in detecting transparent objects that, associated to a 2 kHz frequency and ALARM output for dirty lenses, offer great reliability and plant productivity. The contrast sensor is the most compact sensor with RGB emission and coaxial optics available today on the market, offering excellent detection resolution and field of depth typical of sensors with a higher price/dimension ratio. The retroreflex modes offer an additional alarm signal for received signal problems or dirty lenses.

DIMENSIONS



INDICATORS AND SETTINGS

S8...M / B / C / T01

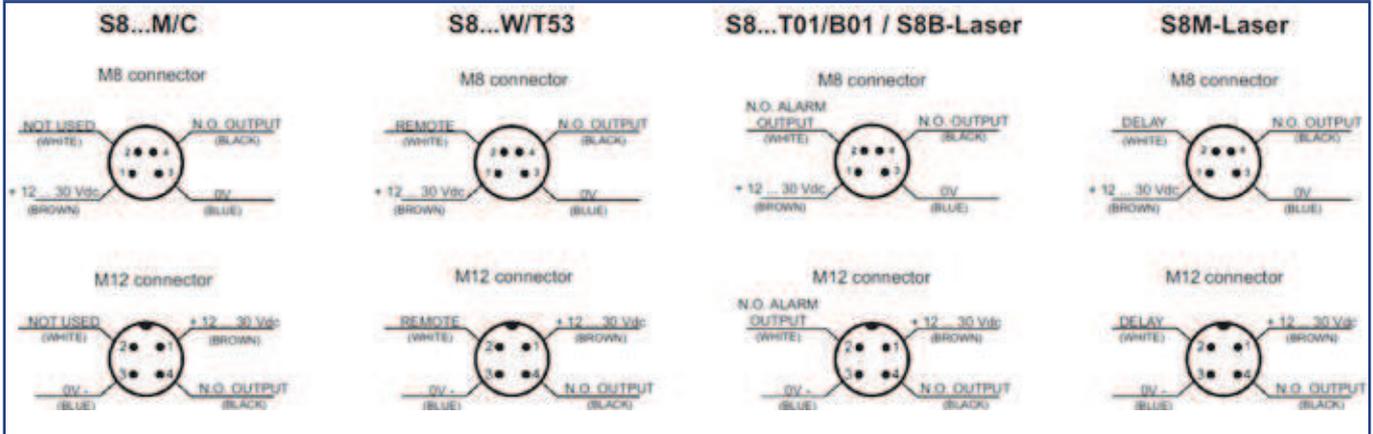


S8...W / T53

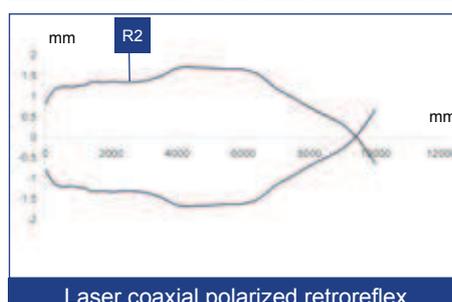
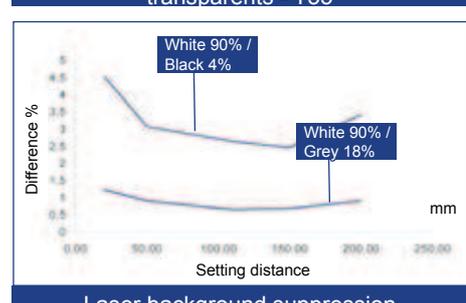
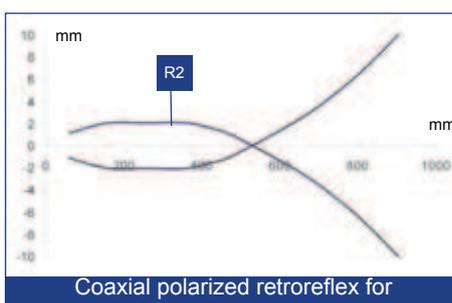
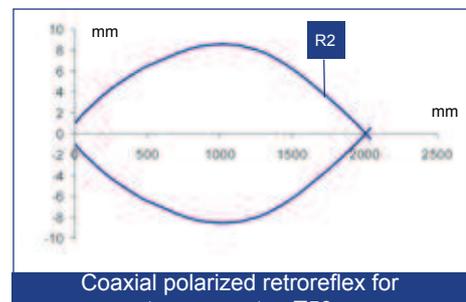
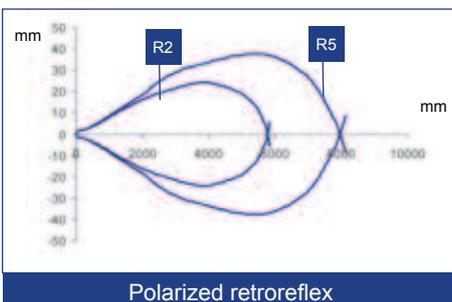
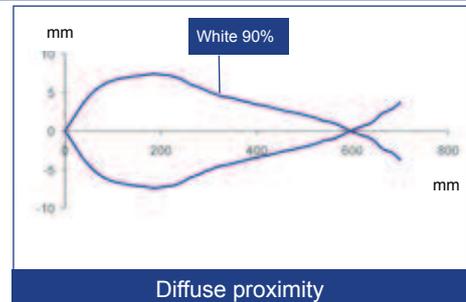
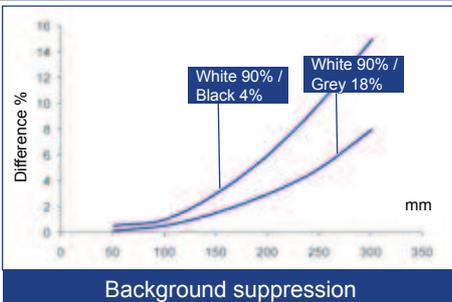


- A** Output status LED
- B** Ready LED or Power ON LED
- C** Sensitivity adjustment trimmer
- D** Dark/light trimmer
- E** Delay trimmer
- F** M8 connector
- G** M12 pig-tail connector
- H** SET push-button

CONNECTIONS



DETECTION DIAGRAMS



TECHNICAL DATA OF MODELS WITH LED EMISSION

		S8-PR-5-B01-xx	S8-PR-3-B01-xx	S8-PR-5-M01-xx	S8-PR-3-M01-xx	S8-PR-5-C01-xx	S8-PR-3-C01-xx	S8-PR-5-T51-xx	S8-PR-3-T51-xx	S8-PR-5-T53-xx	S8-PR-5-W03-xx	S8-PR-3-W03-xx
Polarized retroreflex operating distance:	0 ... 5 m (on R2)	•	•									
Background suppression op. distance:	50 ... 300 mm			•	•							
Difuse proximity operating distance:	0 ... 500 mm					•	•					
RRX for transparents op. distance:	50 ... 800 mm							•	•			
	0 ... 2000 mm									•		
Constrast sensor operating distance:	9 ± 3 mm										•	•
Power supply:	12 ... 30 Vdc	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•
Consumption:	15 mA max.							•	•			
	30 mA max.	•	•	•	•	•	•			•	•	•
Light emission:	red LED 660 nm	•	•	•	•	•	•	•	•	•		
	blue LED 465nm/green LED 520nm/red LED 630nm										•	•
Spot dimension:	3 x 1 mm ²										•	•
	refer to diagrams for the other models	•	•	•	•	•	•	•	•	•		
Setting:	monoturn trimmer for dark/light selection	•	•	•	•	•	•	•	•	•		
	monoturn trimmer for delay OFF 20msec. sel.										•	•
	monoturn sensitivity adjustment trimmer	•	•			•	•	•	•			
	multiturn trimmer (8 turns)			•	•							
	SET push-button										•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•
	green READY LED										•	•
	green POWER ON LED	•	•	•	•	•	•	•	•			
Output type:	PNP or NPN, N.O./N.C.	•	•	•	•	•	•	•	•	•	•	•
	ALARM OUTPUT (PNP/NPN)	•	•					•	•			
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•
Response time:	50 μs										•	•
	250 μs							•	•	•		
	500 μs	•	•			•	•					
	1 ms			•	•							
Max. switching frequency:	10 kHz										•	•
	2 kHz							•	•	•		
	1 kHz	•	•			•	•					
	500 Hz			•	•							
Operating mode:	selectable dark/light	•	•	•	•	•	•	•	•	•	•	•
Connection:	M8 4-pole connector	•		•		•		•		•	•	
	M12 4-pole, Ø 4 mm, pig-tail		•		•		•		•			•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B	•	•	•	•	•	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•	•	•	•	•	•
Lens material:	window in glass							•	•	•	•	•
	lenses in PC	•	•	•	•	•	•				•	•
	lens in glass							•	•	•		
Weight:	12 g max. connector version	•		•		•		•		•	•	
	50 g max. pig-tail version		•		•		•		•			•
Operating temperature:	-10 ... +55°C	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•



TECHNICAL NOTES

¹ Average life of 100.000 h with TA = +25 °C

² A - reverse polarity protection

B - overload and short-circuit protection

TECHNICAL DATA OF MODELS WITH LASER EMISSION

		S8-PH-5-B51-XX	S8-PH-3-B51-XX	S8-PH-5-M01-XX	S8-PH-3-M01-XX
Coaxial retroreflex operating distance:	0 ... 10 m (su R2)	•	•		
Background suppression operative distance:	20 ... 200 mm			•	•
Power supply:	12 ... 30 Vdc	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 30 mA	•	•	•	•
Light emission:	red Laser 645...665 nm	•	•	•	•
	class II EN 60825-1	•	•	•	•
	class II CDRH21 CFR 1040.10	•	•	•	•
Spot dimension:	≤ 0.2 mm at 110 mm			•	•
	≤ 0.5 mm at 400 mm	•	•		
Focussing point:	110 mm			•	•
	400 mm	•	•		
Setting:	monoturn sensitivity adjustment trimmer	•	•		
	multi-turn sensitivity adjustment trimmer			•	•
	monoturn trimmer for dark/light selection	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green POWER ON LED	•	•	•	•
Output type:	PNP or NPN, N.O./N.C.	•	•	•	•
	ALARM OUTPUT (PNP/NPN)	•	•		
Output current:	≤ 100 mA	•	•	•	•
Saturation current:	≤ 2 V	•	•	•	•
Response time:	50 μs	•	•		
	100 μs			•	•
Max. switching frequency:	5 kHz			•	•
	10 kHz	•	•		
Operating mode:	selectable dark/light	•	•	•	•
Connection:	M8 4-pole connector	•		•	
	M12 4-pole, Ø 4 mm, pig-tail		•		•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA	•	•	•	•
	lenses in PC	•	•	•	•
Weight:	12 g max. connector version	•		•	
	50 g max. pig-tail version		•		•
Operating temperature:	-10 ... +55°C	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•	•	•	•


TECHNICAL NOTES
¹ Average life of 50.000 h with TA = +25 °C

² A - reverse polarity protection

B - overload and short-circuit protection

MODEL SELECTION AND ORDER INFORMATION

MODELS WITH LED EMISSION

MODEL	FUNCTION	CONNECTION	OUTPUT	ORDER N°
S8-PR-5-B01-PP	Polarized retroreflex 5 m	M8	PNP	950801160
S8-PR-5-B01-NN	Polarized retroreflex 5 m	M8	NPN	950801170
S8-PR-5-M01-PP	Background suppression 30 cm	M8	PNP	950801200
S8-PR-5-M01-NN	Background suppression 30 cm	M8	NPN	950801210
S8-PR-5-C01-PP	Difuse proximity 50 cm	M8	PNP	950801240
S8-PR-5-C01-NN	Difuse proximity 50 cm	M8	NPN	950801260
S8-PR-5-T51-PP	Retroreflex for transparents 0,8 m	M8	PNP	950801040
S8-PR-5-T51-NN	Retroreflex for transparents 0,8 m	M8	NPN	950801050
S8-PR-5-T53-PP	Retroreflex for transparents 2 m	M8	PNP	950801280
S8-PR-5-T53-NN	Retroreflex for transparents 2 m	M8	NPN	950801290
S8-PR-5-W03-PP	Contrast sensor, RGB	M8	PNP	950801060
S8-PR-5-W03-NN	Contrast sensor, RGB	M8	NPN	950801070
S8-PR-3-B01-PP	Polarized retroreflex 5 m	M12 pig-tail	PNP	950801180
S8-PR-3-B01-NN	Polarized retroreflex 5 m	M12 pig-tail	NPN	950801190
S8-PR-3-M01-PP	Background suppression 30 cm	M12 pig-tail	PNP	950801220
S8-PR-3-M01-NN	Background suppression 30 cm	M12 pig-tail	NPN	950801230
S8-PR-3-C01-PP	Difuse proximity 50 cm	M12 pig-tail	PNP	950801250
S8-PR-3-C01-NN	Difuse proximity 50 cm	M12 pig-tail	NPN	950801270
S8-PR-3-T51-PP	Retroreflex for transparents 0,8 m	M12 pig-tail	PNP	950801120
S8-PR-3-T51-NN	Retroreflex for transparents 0,8 m	M12 pig-tail	NPN	950801130
S8-PR-3-W03-PP	Contrast sensor, RGB	M12 pig-tail	PNP	950801140
S8-PR-3-W03-NN	Contrast sensor, RGB	M12 pig-tail	NPN	950801150

MODELS WITH LED EMISSION

MODEL	FUNCTION	CONNECTION	OUTPUT	ORDER N°
S8-PH-5-B51-PP	Laser coaxial retroreflex 10 m	M8	PNP	950801000
S8-PH-5-B51-NN	Laser coaxial retroreflex 10 m	M8	NPN	950801010
S8-PH-5-M01-PP	Laser background suppression 20 cm	M8	PNP	950801020
S8-PH-5-M01-NN	Laser background suppression 20 cm	M8	NPN	950801030
S8-PH-3-B51-PP	Laser coaxial retroreflex 10 m	M12 pig-tail	PNP	950801080
S8-PH-3-B51-NN	Laser coaxial retroreflex 10 m	M12 pig-tail	NPN	950801090
S8-PH-3-M01-PP	Laser background suppression 20 cm	M12 pig-tail	PNP	950801100
S8-PH-3-M01-NN	Laser background suppression 20 cm	M12 pig-tail	NPN	950801110

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5072	fixing bracket	95ACC1470



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S8 SHINY

The NEW S8 sensor known as the SHINY has a new patented technology which means it is able to detect transparent objects using a form of laser based background suppression. Glass or clear plastic objects such as bottles, vials, packaging films, etc. can be easily detected directly even in the presence of shiny or reflective backgrounds.

This breakthrough technology offers many improvements with respect to previous systems based on polarized retro-reflex photoelectric or even ultrasonic sensors:

- No prismatic reflector: there is no need to have the clear object passing between sensor and reflector so reducing installation time and cost.
- Less mechanical constraints: the detection can be made from either the side or from the above with no need to screen or modify any metal parts of the machine.
- Highest depth of field: the clear object can move or float in any position between its background and the sensor without any need to adjust the detection threshold.



HIGHLIGHTS

- 50 to 150mm operating range with fine mechanical adjustment
- High resolution
- Bright visible red Laser light emission with 5mm spot at maximum distance
- Fast response time: 1ms with a switching frequency of 500Hz.

APPLICATIONS

Food & Pharma



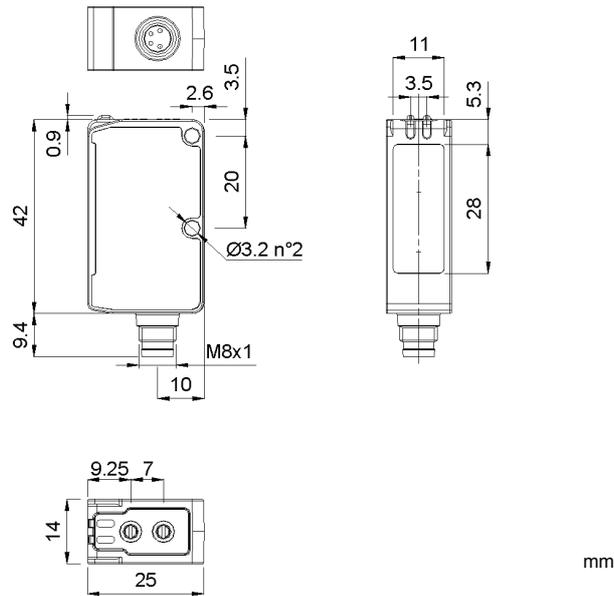
Beverage & Bottling



Packaging lines



DIMENSION



mm

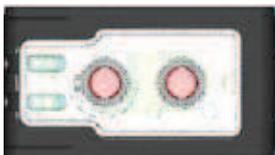
SETTING

SUPPRESSION DISTANCE AND BACKGROUND ACQUISITION SETTING

The S8-PH...M53 sensor which provides background suppression for shiny objects, enables the detection of clear objects without false or multiple triggering typical of other background suppression sensors. To function correctly it is necessary to perform the Background Acquisition Setting procedure described below.

1. Start Setting and Background Acquisition

Rotate the TEACH-IN trimmer fully counter-clockwise. If the trimmer is already in the counter-clockwise position, rotate it to the clockwise position and then back to the counter-clockwise position. The N.O. Output signal (black wire) is set to OFF and the yellow LED indicates the status in the same way as a standard background suppression sensor.



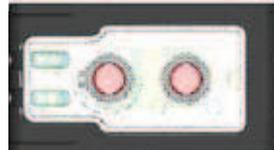
2. Background Exclusion

Position the sensor in front of the background. Rotate the DISTANCE ADJUSTMENT trimmer clockwise until the yellow LED turns ON: condition where background is detected. Rotate counter-clockwise the trimmer until the yellow LED turns OFF: condition where background is out of the field of view.



3. Background Acquisition

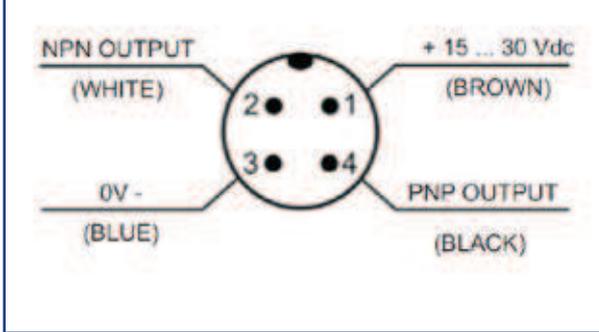
Rotate the TEACH-IN trimmer fully clockwise. The sensor acquires the background characteristics and is ready to detect any object that passes in the Detection Area. If the yellow LED blinks, the background acquisition procedure has failed. Rotate the TEACH-IN trimmer fully counter-clockwise and repeat the procedure from step 2.



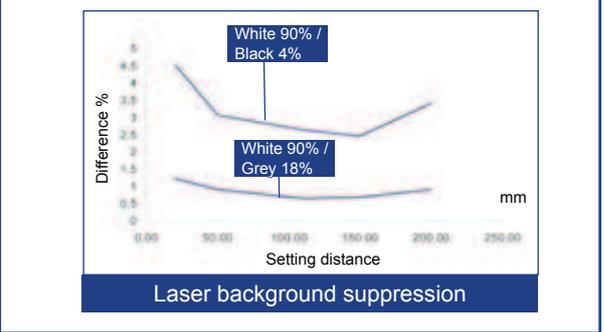
BACKGROUND AUTO-ADJUSTMENT FUNCTION

The sensor provides a background auto-adjustment function. If the background deteriorates and the received signal changes, after one minute the sensor automatically adjusts the background to compensate for this change therefore avoiding the need to continually acquire the background through manual setting.

CONNECTIONS

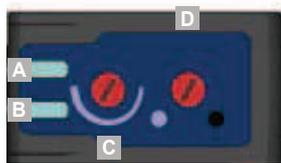


DETECTION DIAGRAM



INDICATORS AND SETTINGS

S8...M53



- A** Output status LED
- B** Ready LED or Power ON LED
- C** Distance adjustment trimmer
- D** Background setting trimmer

TECHNICAL DATA OF MODELS WITH LASER EMISSION

Background suppression operative distance:	50 ... 150 mm
Power supply:	12 ... 30 Vdc
Ripple:	≤ 2 Vpp
Consumption:	≤ 30 mA
Light emission:	red Laser 645...665 nm
	class II EN 60825-1
	class II CDRH21 CFR 1040.10
Spot dimension:	5 mm x 1 mm @ 110 mm
Focussing point:	110 mm
Setting:	multi-turn distance adjustment trimmer
	monoturn trimmer background setting
Indicators:	yellow OUTPUT LED
	green POWER ON LED
Output type:	PNP N.O./N.C.
Output current:	≤ 100 mA
Saturation current:	≤ 2 V
Response time:	1 ms
Max. switching frequency:	500 Hz
Operating mode:	selectable dark/light by wire
Connection:	M8 4-pole connector
Mechanical protection:	IP67
Protection devices:	A, B
Housing material:	ABS
Lens material:	window in PMMA
	lenses in PC
Weight:	12 g max. connector version
Operating temperature:	-10 ... +55°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2,
	EN 60825-1, CDRH21 CFR 1040.10

TECHNICAL NOTES

- ¹ Average life of 50.000 h with TA = +25 °C
- ² A - reverse polarity protection
B - overload and short-circuit protection



MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CONNECTION	OUTPUT	ORDER N°
S8-PH-5-M53-PP	Background Suppression Clear Object Detection with 150mm Range	M8	PNP	950801380

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5072	fixing bracket	95ACC1470



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S8 STAINLESS STEEL

Datalogic's latest **SENSORS** for Contrast and transparent object detection now come for the first time in a stainless steel housing continuing the ONE for ALL concept of the S8 series. The sensors have been designed for frequent wash downs with a corrosion-resistant AISI316L stainless steel case which is IP69K rated. The contrast version is the ideal solution to discriminate fine contrast differences known as print registration marks at very high speeds whilst the clear object polarized retro has been designed to resist typical detection difficulties associated with accurately detecting the position of extremely transparent objects typically seen in the FOOD and BEVERAGE and PHARMACEUTICAL industries.

One for ALL concept means one shape with standard fixing holes with models suitable for solving virtually any application, allowing both the OEM and END USER to reduce and standardize the components used giving a real advantage in the development of their automated machines and production lines.



Diversey **ECOLAB**

HIGHLIGHTS

W model

- Discriminates fine contrast differences with RGB emission
- High speed detection at 50µs
- Coaxial optical system design provides stable detection of moving objects to eliminate false detections
- IP69K degree of protection with AISI316L stainless steel housing resists the effects of detergents, disinfectants and high-temperature, high-pressure wash down

T model

- Detects extremely transparent materials like fine plastic films, glass or PET bottles
- Coaxial optical system design provides stable detection of moving objects to eliminate false detections
- Auto-adaptive function to improve the reliability the detection even when the sensor face or reflector is contaminated
- IP69K degree of protection with AISI316L stainless steel housing resists the effects of detergents, disinfectants and high-temperature, high-pressure wash down

APPLICATIONS

Food & Pharma



Beverage & Bottling



Packaging lines



T53 MODEL

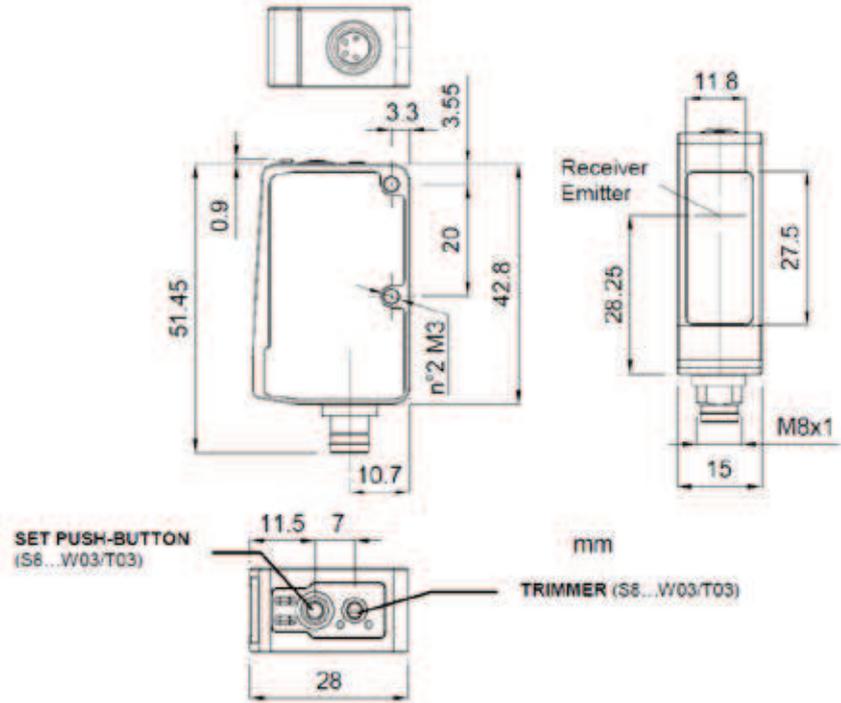
KEYLOCK FUNCTION

The KEYLOCK function (keyboard lock) enables the operator to deactivate the keyboard avoiding accidental changes in the sensor setting. If at sensor powering the REMOTE wire is connected to +DC for at least 1 second the keyboard lock function is activated and the pushbuttons are no longer active. To deactivate the keyboard lock, the sensor must be turned off and repowered with the REMOTE wire not connected or connected to GROUND.

THRESHOLD AUTO-ADJUSTMENT FUNCTION

The sensor provides threshold auto-adjustment function. If received signal decreases due to a dirty optical lens or reflector, the sensor adjusts automatically the commutation threshold to avoid continuous cleaning of optical parts (after 1 minute of low signal). If the received signal is too low to be adjusted from the sensor the output stays turned on meaning it is necessary to clean the sensor lens and reflector.

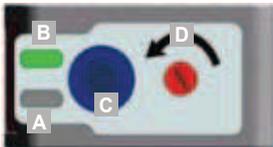
DIMENSIONS



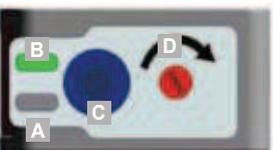
INDICATORS AND SETTINGS

PUSH BUTTON VERSION

Delay On / Light On



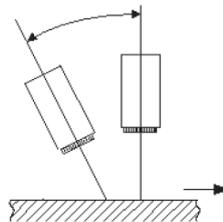
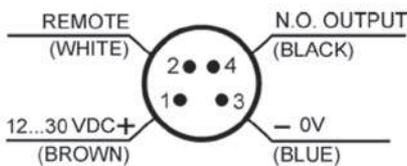
Delay Off / Dark On



REMOTE VERSION



CONNECTIONS AND INSTALLATION



The sensor can be positioned by means of the two mounting holes using two screws (M3x18 or longer, 0.8Nm maximum tightening torque) with washers. Various adjustable fixing brackets are available to ease the mounting of the S8 (please refer to the accessories listed in the general catalogue). The operating distance is measured from the front surface of the sensor optics. S8W - Mark detection on reflective surfaces is improved by adjusting the angle of the beam direction to between 5° and 20° from the surface axis.

TECHNICAL DATA OF MODELS WITH LED EMISSION

TECHNICAL NOTES

¹ Average life of 100.000 h with TA = +25 °C

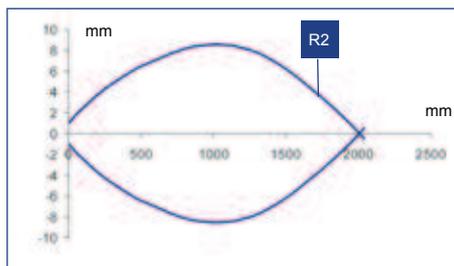
² A - reverse polarity protection

B - overload and short-circuit protection

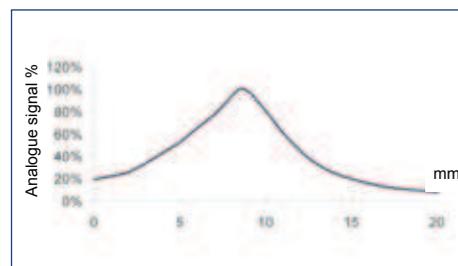
		S8-MR-5-T53-xx	S8-MR-5-T50-xx	S8-MR-5-W03-xx	S8-MR-5-W00-xx
Polarized RRX for transparent:	0 ... 2000 mm	•	•		
Constrast sensor operating distance:	9 ± 3 mm			•	•
Power supply:	12 ... 30 Vdc	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	15 mA max.	•			
	30 mA max.		•	•	•
Light emission: ¹	red LED 660 nm	•	•		
	blue LED 465nm/green LED 520nm/red LED 630nm			•	•
Spot dimension:	3 x 1 mm			•	•
	refer to diagrams	•		•	
Setting:	SET push-button	•		•	
	remote by white wire	•	•	•	•
	monoturn delay selection trimmer			•	
	monoturn dark/light selection trimmer	•			
Indicators:	yellow OUTPUT LED	•	•	•	•
	green READY LED		•	•	•
Output type:	PNP or NPN, N.O./N.C.	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	50 µs			•	•
	250 µs	•	•		
Max. switching frequency:	10 kHz			•	•
	2 kHz	•	•		
Connection:	M8 4-pole connector	•	•	•	•
Mechanical protection:	IP67, IP69K	•	•	•	•
Protection devices:	A, B ²	•	•	•	•
Dielectric strength:	<input type="checkbox"/> 1500 VAC 1 min. between electronics and housing	•	•	•	•
Insulating resistance:	>20 MΩ500 VDC between electronics and housing	•	•	•	•
Housing material:	INOX AISI 316L	•	•	•	•
Lens material:	window in PMMA	•	•	•	•
	lens in PC	•	•	•	•
Weight:	70 g. max.	•	•	•	•
Operating temperature:	-10 ... +55°C	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•



DETECTION DIAGRAMS



Coaxial polarized retroreflex for transparents - T53



Contrast sensor

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	SETTING	OUTPUT	ORDER N°
S8-MR-5-T53-PP	Stainless Steel Polarised Retro for Clear Object Detection with M8 Connector	Push button	PNP	950801300
S8-MR-5-T53-NN	Stainless Steel Polarised Retro for Clear Object Detection with M8 Connector	Push button	NPN	950801310
S8-MR-5-T50-PH	Stainless Steel Polarised Retro for Clear Object Detection with M8 Connector	Remote wire	PNP	950801320
S8-MR-5-T50-NH	Stainless Steel Polarised Retro for Clear Object Detection with M8 Connector	Remote wire	NPN	950801330
S8-MR-5-W03-PP	Stainless Steel Contrast Sensor with RGB Emission and M8 Connector	Push button	PNP	950801340
S8-MR-5-W03-NN	Stainless Steel Contrast Sensor with RGB Emission and M8 Connector	Push button	NPN	950801350
S8-MR-5-W00-PH	Stainless Steel Contrast Sensor with RGB Emission and M8 Connector	Remote wire	PNP	950801360
S8-MR-5-W00-NH	Stainless Steel Contrast Sensor with RGB Emission and M8 Connector	Remote wire	NPN	950801370

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5072	fixing bracket	95ACC1470
R4K	IP69K plastic reflector 51 x 61 mm	95A151220



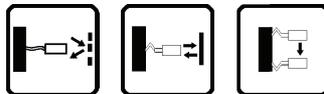
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S7 SERIES

The **S7** series is the first fibre optic amplifier to be manufactured in Europe that is equipped with a full 4 digit display, confirming Datasensor's technological leadership. With its slim 10mm body width, the S7 represents the ideal solution for all applications requiring high accuracy sensing combined with very compact dimensions.

The high resolution 12 bit amplifier has a response time of 50 µs for a switching frequency of 10 KHz; 4096 resolution steps make the **S7** series perfect for ultra high precision detection of small objects and low colour contrasts.

This is made easier by the integral 4 digit display, which clearly indicates the received signal, selected time delay and the adjustable set point values. Moreover, the white light LED emission possibility enhances the contrast detection. Installing and setting the **S7** is easy and rapid, thanks to the patent-covered CLEARLOCK™ fibre fixing and EASYtouch™ adjustment system that offers remote setting, keylock and activation of the output OFF delay function. Furthermore new versions of the **S7** series are available with multiturn mechanical trimmer threshold adjustment for cost-oriented applications.



HIGHLIGHTS

- 10 bit resolution models with 500 µs response for high operating distances
- 12 bit resolution models with 50 µs response and 4 digit display for high speed
- Cost-effective models with multiturn trimmer adjustment
- EASYtouch™ push-button setting with remote control, keylock and output delay
- Ultra-thin housing with CLEARLOCK™ patented fibre fixing system

APPLICATIONS

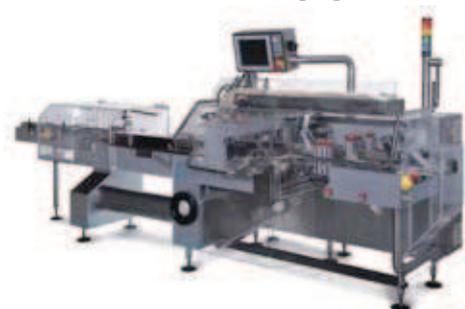
Automotive



Beverage & Bottling



Packaging lines

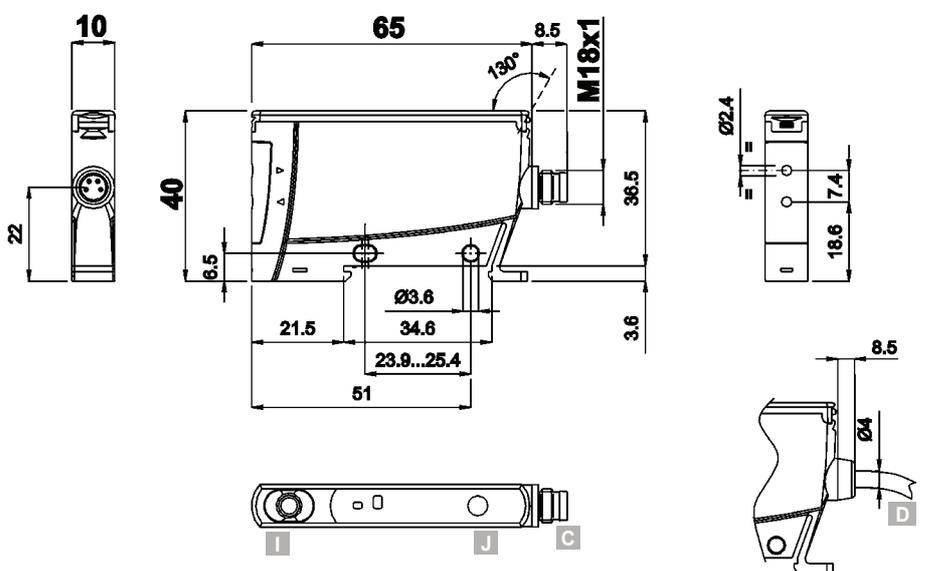


The ultra-thin housing is specifically designed for side-by-side mounting on DIN rail where space is limited or mounting through two M3 clearance holes onto the side of a machine. The CLEARLOCK™ fibre-optic fixing system assists reliable insertion of standard and high performance 2.2mm Ø fibre-optics. The EASYtouch™ one touch setting procedure automatically selects the best detection conditions. For critical applications a two touch setting is provided for fine tuning. S7 benefits from remote teach, keypad lock and delay off timing functions. For further information on our extensive range accessories please see our OF and OFA fibre optic datasheet.

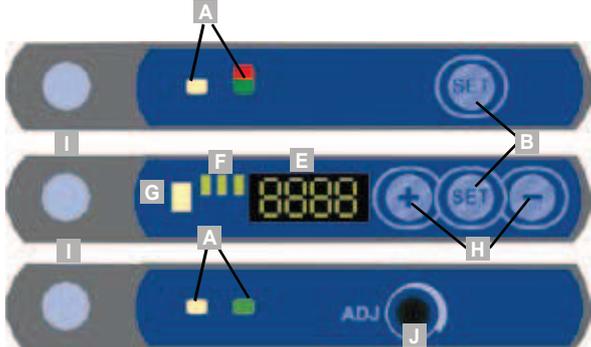


CLEARLOCK™

DIMENSIONS



INDICATORS AND SETTINGS



- A OUTPUT status and READY/ERROR LEDs
- B Teach-in push-button
- C M8 connector output
- D Cable output
- E 4 digit display
- F STATUS signalling LEDs
- G OUTPUT status LED
- H '+' e '-' buttons
- I Fibre lock/unlock button
- J Multiturn trimmer

Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details

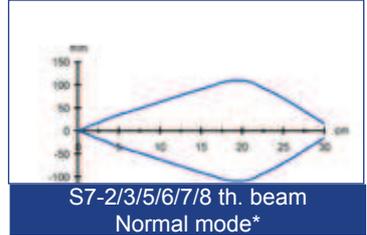
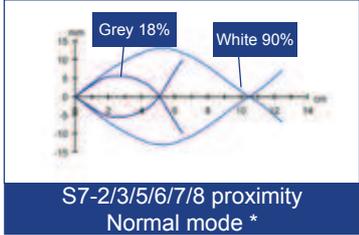
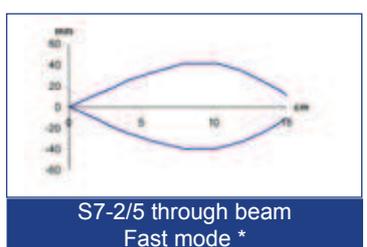
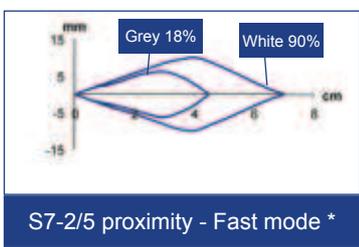
DETECTION DIAGRAM

10	30	S7-2/3/5/6/7/8 Normal mode
5	15	S7-2/5 Fast mode
2.5	7.5	S7-1/4 Fast / norm. mode

■ Proximity operating distance
■ Through beam operating distance

High efficiency fibre-optics or accessory lenses can be used to obtain larger operating distances. Refer to **Fibre-optics (A.02)** of the **General Catalogue**

Note: the detection diagrams of the S7-1/4 models in normal and fast mode, corresponds to the values of the S7-2/5 models in fast mode, but with half the operating distance



TECHNICAL DATA

		S7-1-E	S7-2-E	S7-3-E	S7-4-E	S7-5-E	S7-6-E	S7-7-E	S7-8-E
Proximity operating distance:	0 ... 100 mm (normal mode)			•		•	•	•	•
	0 ... 50 mm (fast mode)		•						
	0 ... 25 mm (fast and normal mode)	•			•				
Through beam operating distance:	0 ... 300 mm (normal mode)		•	•		•	•	•	•
	0 ... 150 mm (fast mode)		•			•			
	0 ... 75 mm (fast and normal mode)	•			•				
Power supply:	12 ... 24 Vdc ± 10 %	•	•	•	•	•	•	•	•
Consumption:	≤ 50 mA	•	•	•	•	•	•	•	•
Light emission ²:	red LED 670 nm	•	•	•	•	•	•	•	•
	white LED 460 ... 630 nm	•			•				
Setting:	teach-in SET button	•	•	•	•	•	•	•	•
	remote via cable	•	•	•	•	•	•	•	•
	'+' e '-' buttons (ADJUST/MENU)	•	•	•	•	•	•	•	•
	12-turn trimmer							•	•
Digital setting :	EASYtouch™ or fine	•	•	•	•	•	•	•	•
Digital resolution:	12 bit (4096 points)	•	•	•	•	•	•	•	•
	10 bit (1024 points)			•			•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•
	green / red READY / ERROR LED			•			•	•	•
	4 digit display, status bar	•	•		•	•			
Output type:	PNP, NO (see table)	•	•	•	•	•	•	•	•
	NPN, NO (see table)	•	•	•	•	•	•	•	•
Output current:	≤100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤2 V	•	•	•	•	•	•	•	•
Response time:	500 ms (normal mode)	•	•	•	•	•	•	•	•
	100 ms (fast mode)		•			•			
	50 ms (fast mode)			•		•			
Switching frequency (max.):	1 kHz (normal mode)	•	•	•	•	•	•	•	•
	5 kHz (fast mode)		•			•			
	10 kHz (fast mode)	•			•				
Operating mode:	light with EASYtouch™ or trimmer	•	•	•	•	•	•	•	•
	automatic dark / light with fine acq.	•	•	•	•	•	•	•	•
Timing function:	20 ms minimum output ON	•	•	•	•	•	•	•	
Auxiliary functions:	remote	•	•	•	•	•	•	•	•
	keylock	•	•	•	•	•	•	•	•
Connection:	2 m Ø 4 mm cable	•	•	•				•	
	M8 4-pole connector				•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP50							•	•
	IP65	•	•	•	•	•	•	•	•
Electrical protection device:	A, B	•	•	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•	•	•
Weight:	30 g max.	•	•	•					•
	115 g max.				•	•	•	•	•
Functioning temp.:	-10 ... +55°C	•	•	•	•	•	•	•	•
Storage temp.:	-10 ... +70°C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

SELECTION TABLE

fibre-optic sensor with display - 2 m cable		
S7-1-E-N	950551080	NPN
S7-1-E-P	950551090	PNP
S7-2-E-N	950551000	NPN
S7-2-E-P	950551010	PNP

fibre-optic sensor without display - 2 m cable		
S7-3-E-N	950551040	NPN
S7-3-E-P	950551050	PNP

fibre-optic sensor with display - M8 connector		
S7-4-E-N	950551100	NPN
S7-4-E-P	950551110	PNP
S7-5-E-N	950551020	NPN
S7-5-E-P	950551030	PNP

fibre-optic sensor without display - M8 connector		
S7-6-E-N	950551060	NPN
S7-6-E-P	950551070	PNP

fibre optic sensor with trimmer - 2 m cable		
S7-7-E-P	950551120	PNP
S7-7-E-N	950551130	NPN

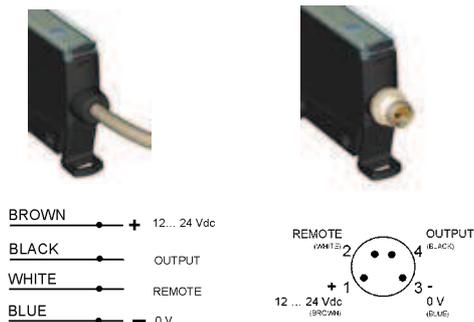
fibre optic sensor with trimmer - M8 connector		
S7-8-E-P	950551140	PNP
S7-8-E-N	950551150	NPN



TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A=+25°C
- ³Connect to 0 V when remote wire not used
- ⁴Active with remote at +V at power on
- ⁵PVC, 4 x 0.14 mm²
- ⁶A - reverse polarity protection
B - overload and short circuit protection

CONNECTIONS



ACCESSORY

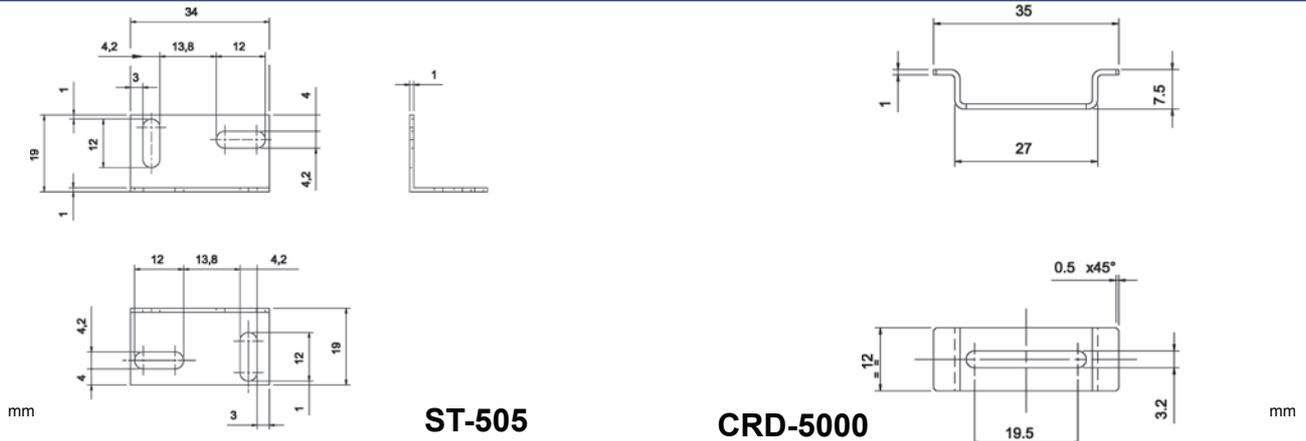
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue

Refer also to **Fibre-Optics, Connectors and Fixing brackets** of the **General Catalogue**

MODEL SELECTION AND ORDER INFORMATION

MODEL	CONNECTION	OUTPUT	DISPLAY	SETTING	EMISSION	CODE N°
S7-1-E-N	4-pole cable	NPN	yes	push-button	white LED	950551080
S7-1-E-P	4-pole cable	PNP	yes	push-button	white LED	950551090
S7-2-E-N	4-pole cable	NPN	yes	push-button	red LED	950551000
S7-2-E-P	4-pole cable	PNP	yes	push-button	red LED	950551010
S7-3-E-N	4-pole cable	NPN	no	push-button	red LED	950551040
S7-3-E-P	4-pole cable	PNP	no	push-button	red LED	950551050
S7-4-E-N	M8 4-pole connector	NPN	yes	push-button	white LED	950551100
S7-4-E-P	M8 4-pole connector	PNP	yes	push-button	white LED	950551110
S7-5-E-N	M8 4-pole connector	NPN	yes	push-button	red LED	950551020
S7-5-E-P	M8 4-pole connector	PNP	yes	push-button	red LED	950551030
S7-6-E-N	M8 4-pole connector	NPN	no	push-button	red LED	950551060
S7-6-E-P	M8 4-pole connector	PNP	no	push-button	red LED	950551070
S7-7-E-P	4-pole cable	PNP	no	trimmer	red LED	950551120
S7-7-E-N	4-pole cable	NPN	no	trimmer	red LED	950551130
S7-8-E-P	M8 4-pole connector	PNP	no	trimmer	red LED	950551140
S7-8-E-N	M8 4-pole connector	NPN	no	trimmer	red LED	950551150

ACCESSORIES



ST-505

CRD-5000

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
ST-505	1 pc 'L' shaped fixing bracket	95ACC2800
CRD-5000	1 pc DIN rail fixing bracket	95ACC2790

Refer also to **Accessories for Sensors** of the **General Catalogue**



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

S6 SERIES

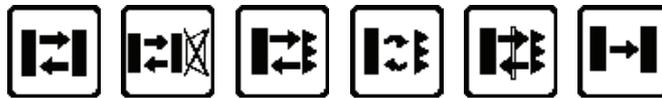
The **S6** series, thanks to the excellent detection performances and the variety of power supply and connection possibilities, offers the most complete universal sensor range in the compact 50x50 mm housing.

The operating distance can be set to the optimal value in each model: 2 m diffuse proximity, 25 or 50 cm background suppression, 5 m polarised retroreflex, 1 m retroreflex versions for transparent objects and 20 m through beam.

Proximity models with 12 to 110 cm background suppression are available.

The free voltage versions have a relay output and cable connection.

The versions with 10-30 Vdc power supply present cable connection and NPN/PNP output or M12 connector, with either PNP output with dark/light configuration and PNP double NO-NC output complying to the EN 60947-5-2 standard.

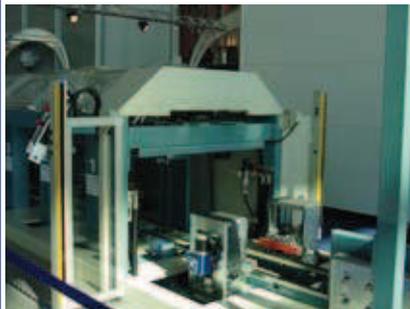


HIGHLIGHTS

- Background suppression models
- Free voltage versions with relay output
- 10-30 Vdc version with transistor output
- Standard cable or M12 connection

APPLICATIONS

Ceramics



Beverage & Bottling



Transportation lines



Packaging lines

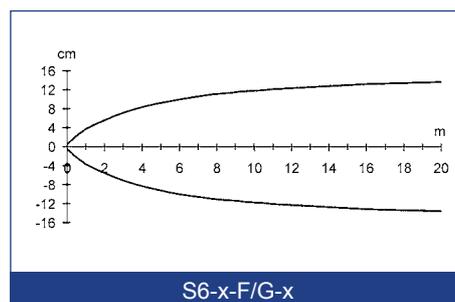
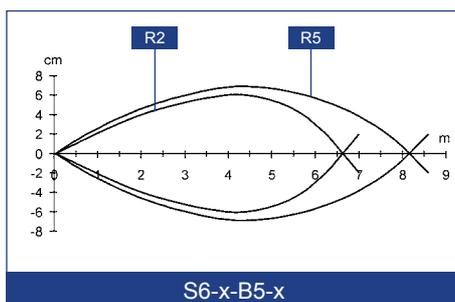
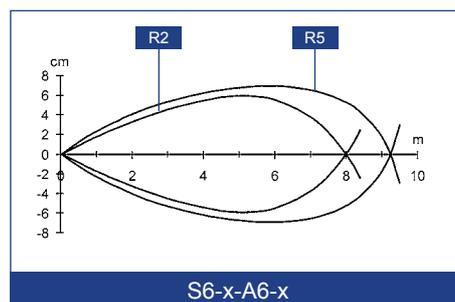
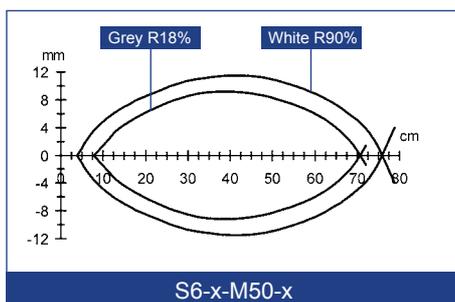
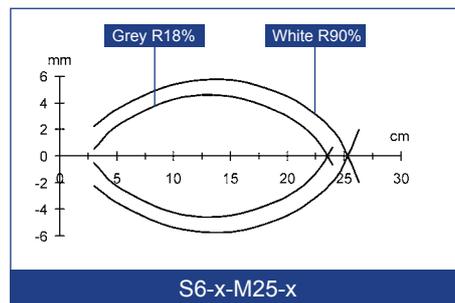
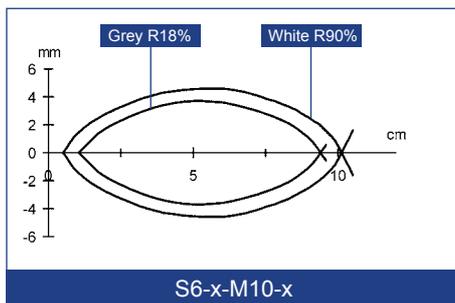
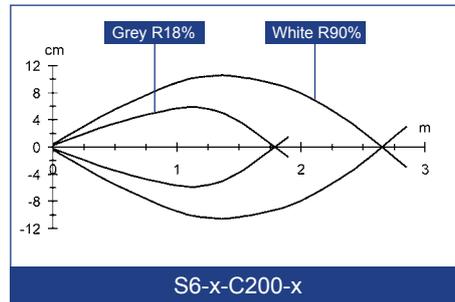
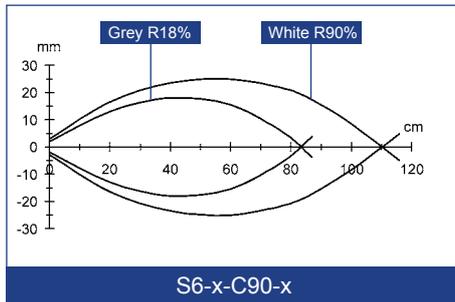


TECHNICAL DATA

Power supply	10 ... 30 Vdc (d.c. vers.), reverse polarity protection 15 ... 264 Vac (free voltage vers.)
Consumption	30 mA max. (d.c. vers.) 40 mA max. (free voltage vers.)
Light emission	infrared LED 880 nm red LED 660 nm (B3, T1, M10 vers.)
Diffuse proximity operating distance	1 ... 90 cm (C90 vers.) 5 ... 200 cm (C200 vers.)
Background suppression op. distance	10 ... 50 cm (M50 vers.) 3 ... 25 cm (M25 vers.), 10 cm (M10 vers.)
Retroreflex operating distance	0.1 ... 6 m (on R2)
Polarised retroreflex operating distance	0.1 ... 5 m (on R2)
Through beam operating distance	0 ... 20 m
Setting	sensitivity trimmer (G vers. excluded) distance adj. screw (M25, M50, N20 vers.)
Indicators	red OUTPUT LED green STABILITY LED (M, N vers.) red POWER LED (G5 vers.)
Output type	NPN/PNP configurable (d.c. vers.) PNP (S6T vers.) PNP NO-NC (S6R vers.) relay SPDT 250V/3A (free voltage vers.)
Saturation tension	1.5 V max. (d.c. vers.)
Output current	100 mA max., short-circuit protection 3 A max. resistive load (free voltage vers.)
Response time	1 ms max. (d.c. vers.), 2 ms max. (F vers.) 30 ms max. (free voltage vers.)
Switching frequency	500 Hz max., 250 Hz max. (F/G vers. in d.c.) 16 Hz max. (free voltage vers.)
Operating mode	dark/light configurable
Auxiliary functions	'test +' and 'test -' inputs (G vers. in d.c.)
Connection	4-pole M12 connector (S6T/S6R vers.) 2 m Ø 6 mm cable (S6 vers.)
Electric protection	class 1 (free voltage vers.) class 2 (d.c. vers.)
Mechanical protection	IP65
Housing material	ABS
Lens material	PMMA plastic
Weight	40 g max. (connector vers.) 160 g max. (cable vers.)
Operating temperature	-25 ... +55°C
Storage temperature	-25 ... +70°C
Reference standard	EN 60947-5-2
Certifications	  d.c.vers.)

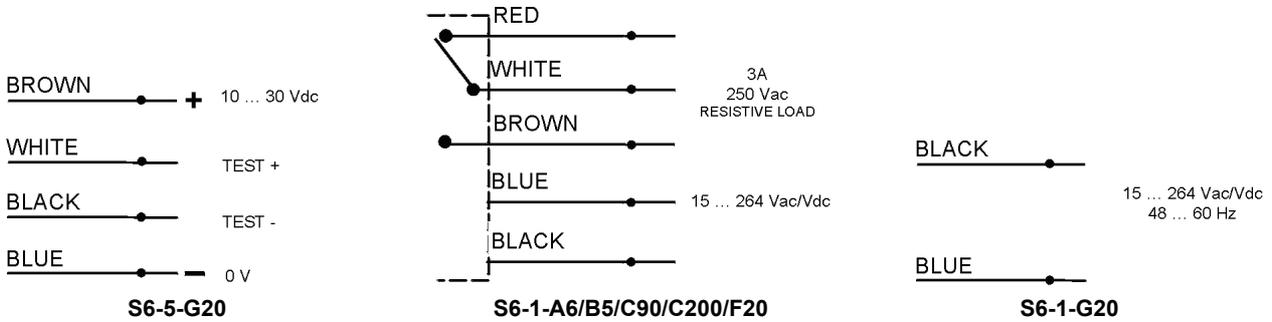
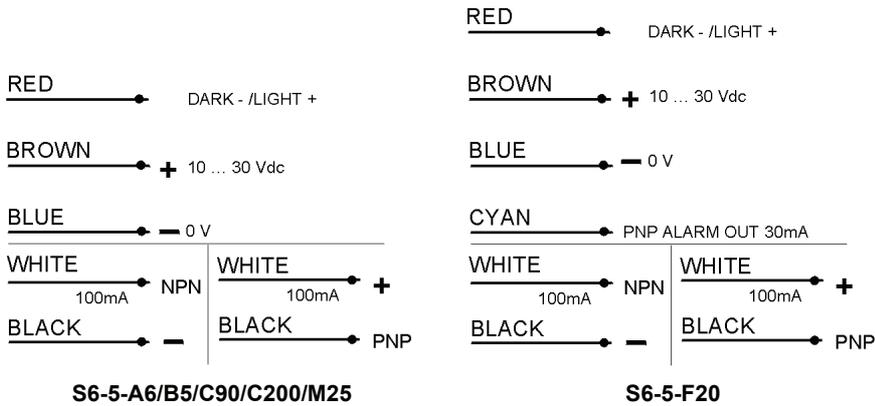
The operating distances indicate the detection distance with excess gain 2.

DETECTION DIAGRAMS

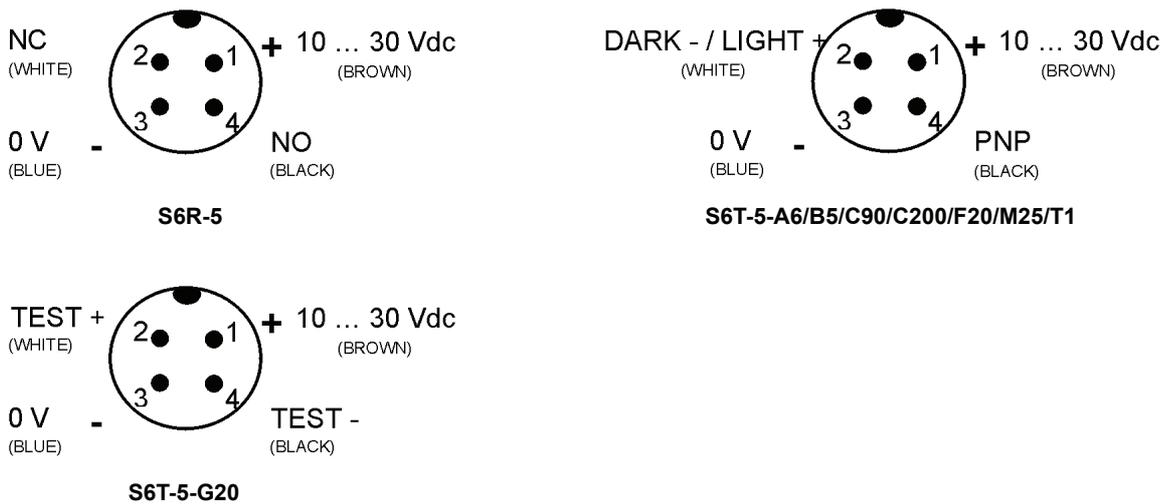


The detection diagrams indicate the typical operating distance with excess gain 1.

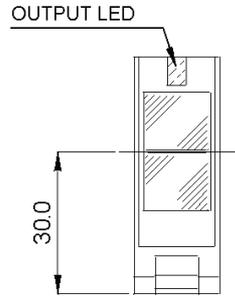
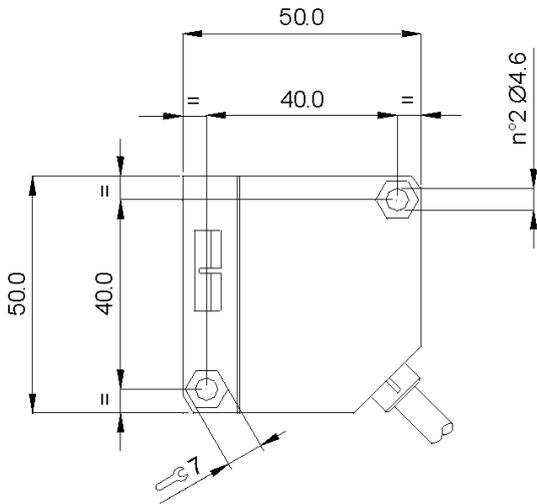
CONNECTIONS



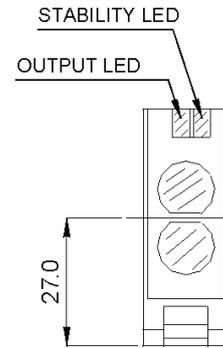
M12 CONNECTOR



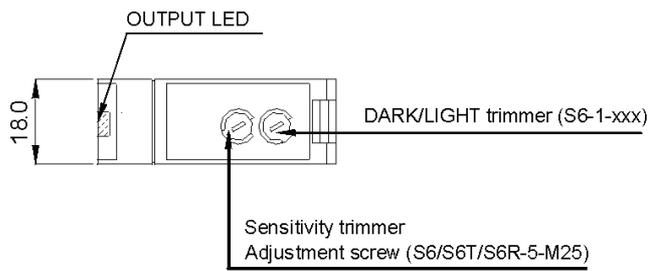
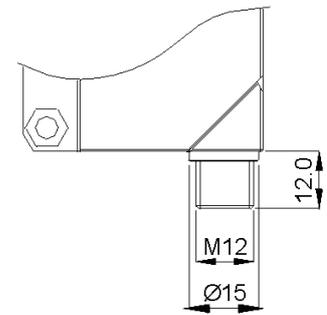
DIMENSIONS



S6/S6T/S6R-5-M25



**M12 CONNECTOR
S6T/S6R-5-xx**



MODEL SELECTION AND ORDER INFORMATION

VERSIONS WITH 15 ... 264 Vac/Vdc POWER SUPPLY

MODEL	FUNCTION	CONNECTION	OUTPUT	CODE N°
S6-1-C90	diffuse proximity	cable	relay	S937530090
S6-1-C200	diffuse proximity	cable	relay	950151140
S6-1-A6	retroreflex	cable	relay	S937330090
S6-1-B5	polarised retroreflex	cable	relay	S937420090
S6-1-F20	receiver	cable	relay	S937200090
S6-1-F20	emitter	cable	relay	S937130090

VERSIONS WITH 15 ... 264 Vac/Vdc POWER SUPPLY

MODEL	FUNCTION	CONNECTION	OUTPUT	CODE N°
S6-5-C90	diffuse proximity	cable	NPN/PNP	S937530000
S6R-5-C90-P	diffuse proximity	M12 connector	PNP NO-NC	950201190
S6T-5-C90-P	diffuse proximity	M12 connector	PNP **	961031020
S6-5-C200	diffuse proximity	cable	NPN/PNP	950201150
S6R-5-C200-P	diffuse proximity	M12 connector	PNP NO-NC	950201200
S6R-5-M10-P	background suppression	M12 connector	PNP NO-NC	950201230
S6-5-M25	background suppression	cable	NPN/PNP	S937830000
S6R-5-M25-P	background suppression	M12 connector	PNP NO-NC	950201220
S6T-5-M25-P	background suppression	M12 connector	PNP **	961041000
S6R-5-M50-P	background suppression	M12 connector	PNP NO-NC	950201250
S6-5-A6	retroreflex	cable	NPN/PNP	S937330000
S6R-5-A6-P	retroreflex	M12 connector	PNP NO-NC	950201170
S6T-5-A6-P	retroreflex	M12 connector	PNP **	961031000
S6-5-B5	polarised retroreflex	cable	NPN/PNP	S937420000
S6R-5-B5-P	polarised retroreflex	M12 connector	PNP NO-NC	950201180
S6T-5-B5-P	polarised retroreflex	M12 connector	PNP **	961031010
S6-5-F20	receiver	cable	NPN/PNP	S937200010
S6R-5-F20-P	receiver *	M12 connector	PNP NO-NC	950201160
S6T-5-F20-P	receiver	M12 connector	PNP **	961211010
S6-5-G20	emitter	cable	-	S937130000
S6T-5-G20	emitter	M12 connector	-	961211000

* use with S6T-5-G20 emitter

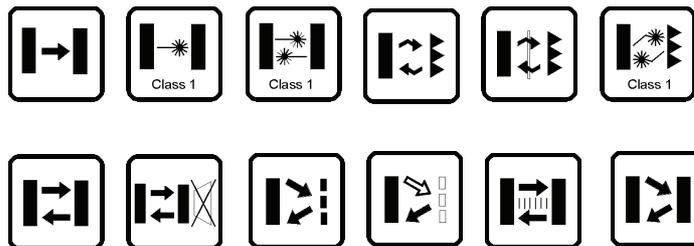
** with dark/light configuration input



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S60 SERIES

The **S60** series, standard 50x50x15 mm compact housing, offers all the most advanced optic functions, as well as the universal, available with safety class 1 laser emission. The series presents a complete range of models, including retroreflex with coaxial optics and polarisation filters for the detection of shiny and/or transparent objects, background suppression, contrast sensors with white light emission for the detection of coloured marks, the sensor with UV emission for the detection of luminescence references and the distance sensor with analogue output. The basic models for presence detection present trimmer sensitivity adjustment, while the models with the advanced optics are microprocessor controlled and have the patent-covered EASYtouch™ setting, which gives rapid and precise setting of the switching threshold, with the possibility of remote control, keyboard block and selection of the output delay function. The **S60** series offers versions with cable or M12 connection that can be rotated for either straight or right-angle positions. All versions have NPN or PNP output and standard configuration conforming to the EN 60947-5-2 standard.

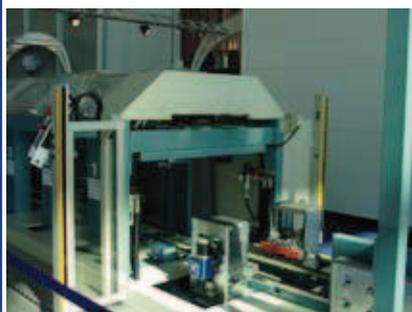


HIGHLIGHTS

- Complete range of optic functions, basic, advanced and laser class 1
- Models with coaxial optics for polarised retroreflex, contrast and luminescence sensors
- Trimmer or EASYtouch™ setting with Remote, Keylock and Delay functions
- Standard cable or M12 connection with standard NPN or PNP configuration

APPLICATIONS

Ceramics



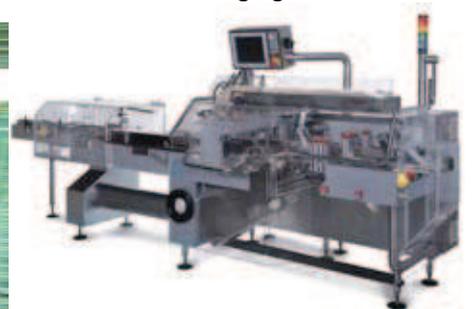
Transportation lines



Beverage & Bottling



Packaging lines

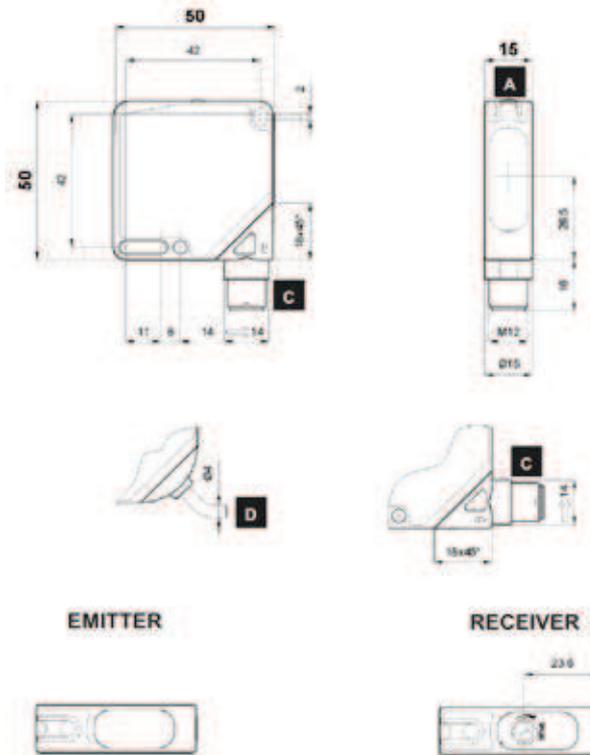


G/F INFRARED EMISSION

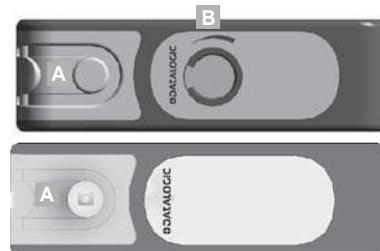
The detection system with two separate emitter and receiver units allows the user to reach larger operating distances. The trimmer, present on the receiver, allows to adjust sensitivity and to detect objects that obscure, even partially, the light emission. The IR emission is modulated to avoid interference with other light sources and can be turned off to test the functioning even without the object to detect.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and stability LEDs (receiver); power on LED (emitter)
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

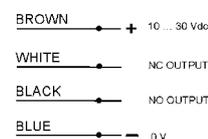
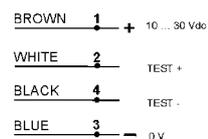
Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

CONNECTIONS



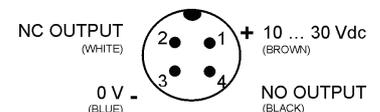
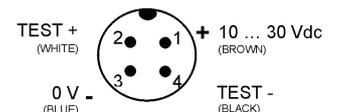
EMITTER

S60-PA-2



RECEIVER

S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴Emitter off with Test+ on Vdc and Test- on 0 V
- ⁵PVC, 4 x 0.14 mm²
- ⁶Connector can be blocked on two positions
- ⁷A - reverse polarity protection
- B - overload and short-circuit protection on receiver outputs
- ⁸Internal lenses in Polycarbonate

		S60-PA-2-F01-NN	S60-PA-2-F01-PP	S60-PA-2-G00-XG	S60-PA-5-F01-NN	S60-PA-5-F01-PP	S60-PA-5-G00-XG
Operating distance:	0 ... 20 m	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•
Light emission:	infrared LED 880 nm ²			•			•
Spot dimension:	aprox. 200 mm at 4 m			•			•
Setting:	sensitivity trimmer ³	•	•		•	•	
Indicators:	yellow OUTPUT LED	•	•		•	•	
	green STABILITY LED	•	•		•	•	
	green POWER ON LED			•			•
Output type:	PNP, NO and NC		•			•	
	NPN, NO and NC	•			•		
Output current:	≤ 100 mA	•	•		•	•	
Saturation voltage:	≤ 2 V	•	•		•	•	
Response time:	1 ms	•	•		•	•	
Switching frequency:	500 Hz	•	•		•	•	
Operating mode:	dark on NO / light on NC	•	•		•	•	
Auxiliary functions:	Test + and Test - ⁴			•			•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•			
	M12 4-pole connector ⁶				•	•	•
Electrical protection:	class 2	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•
Lens material:	window in PMMA ⁸	•	•	•	•	•	•
Weight:	90 g max.	•	•	•			
	40 g max.				•	•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•

SELECTION TABLE

receiver - 2 m cable		
S60-PA-2-F01-NN	956201490	NPN
S60-PA-2-F01-PP	956201330	PNP

emitter - 2 m cable		
S60-PA-2-G00-XG	956201340	

receiver - M12 connector		
S60-PA-5-F01-NN	956201210	NPN
S60-PA-5-F01-PP	956201060	PNP

emitter - M12 connector		
S60-PA-5-G00-XG	956201070	

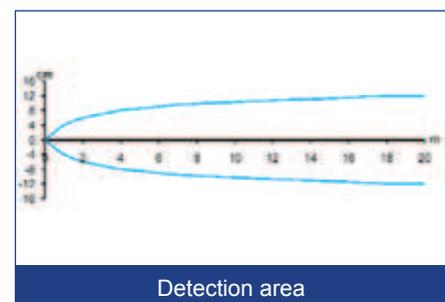
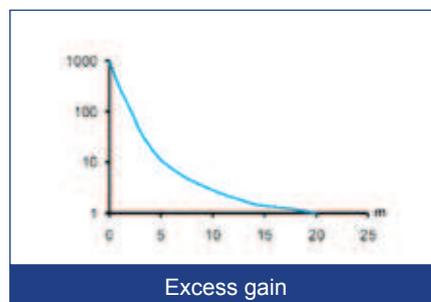
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



- Recommended operating distance
- Maximum operating distance

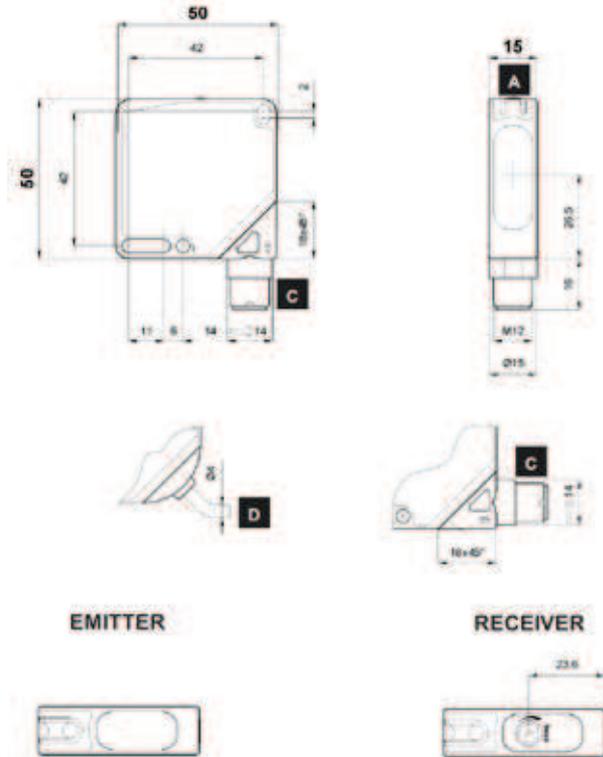


L-G/F RED EMISSION

The high operating distance, typical of the emitter and receiver system, is notably increased thanks to the use of visible red laser emission. The laser beam can be easily aligned and offers excellent detection resolution of even small objects. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.



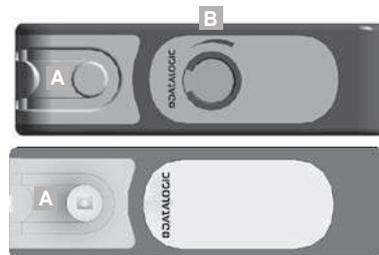
DIMENSIONS



EMITTER

RECEIVER

INDICATORS AND SETTINGS



- A** Output status and stability LEDs (receiver); power on LED (emitter)
- B** Adjustment trimmer (receiver)
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise direction to increase the operating distance. Decrease sensitivity to increase resolution.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

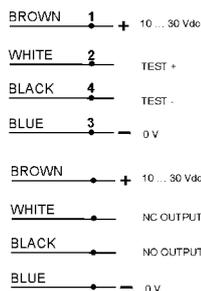


EMITTER

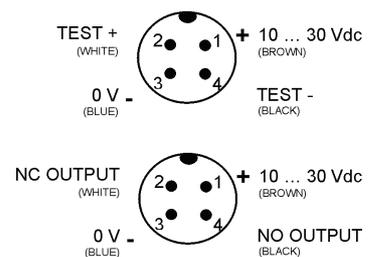


RECEIVER

S60-PA-2



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴Emitter off with Test+ connected to +Vdc
Emitter on with Test+ not connected or connected to 0V
- ⁵PVC, 4 x 0.14 mm²
- ⁶Connector can be blocked on two positions
- ⁷A - reverse polarity protection
- ⁸Internal lenses in glass and Polycarbonate

		S60-PL-2-F01-NN	S60-PL-2-F01-PP	S60-PL-2-G00-XG	S60-PL-5-F01-NN	S60-PL-5-F01-PP	S60-PL-5-G00-XG
Operating distance:	0 ... 60 m	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•	•	•
Light emission:	red Laser 650 nm ²			•			•
	class 1 EN 60825-1						
	class II CDRH21 CFR 1040.10						
Resolution:	aprox. 6 mm a 0.5 m	•	•		•	•	
	aprox.10 mm over 2 m	•	•		•	•	
Setting:	sensitivity trimmer ³	•	•		•	•	
Indicators:	yellow OUTPUT LED	•	•		•	•	
	green POWER ON LED	•	•	•	•	•	•
Output type:	PNP, NA and NC		•			•	
	NPN, NA and NC	•			•		
Output current:	≤ 100 mA	•	•		•	•	
Saturation voltage:	≤2 V	•	•		•	•	
Response time:	333 μs	•	•		•	•	
Switching frequency:	1.5 kHz	•	•		•	•	
Operating mode:	dark on NO / light on NC	•	•		•	•	
Auxiliary functions:	Test + ⁴			•			•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•			
	M12 4-pole connector ⁶				•	•	•
Electrical protection:	class 2	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•
Lens material:	window in PMMA ⁸	•	•	•	•	•	•
Weight:	90 g max.	•	•	•			
	40 g max.				•	•	•
Operating temperature:	-10 ... +50°C	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10			•			•

SELECTION TABLE

receiver - 2 m cable		
S60-PL-2-F01-NN	956201570	NPN
S60-PL-2-F01-PP	956201420	PNP

emitter - 2 m cable		
S60-PL-2-G00-XG	956201430	

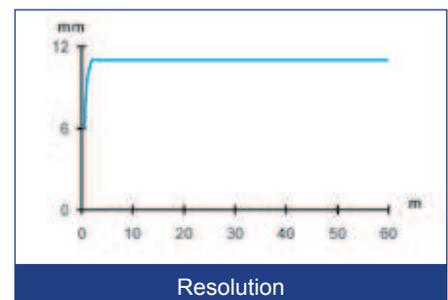
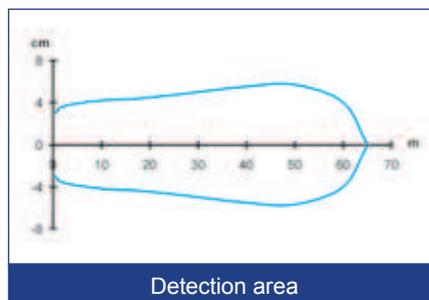
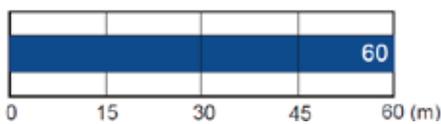
receiver - M12 connector		
S60-PL-5-F01-NN	956201270	NPN
S60-PL-5-F01-PP	956201140	PNP

emitter - M12 connector		
S60-PL-5-G00-XG	956201150	

All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS

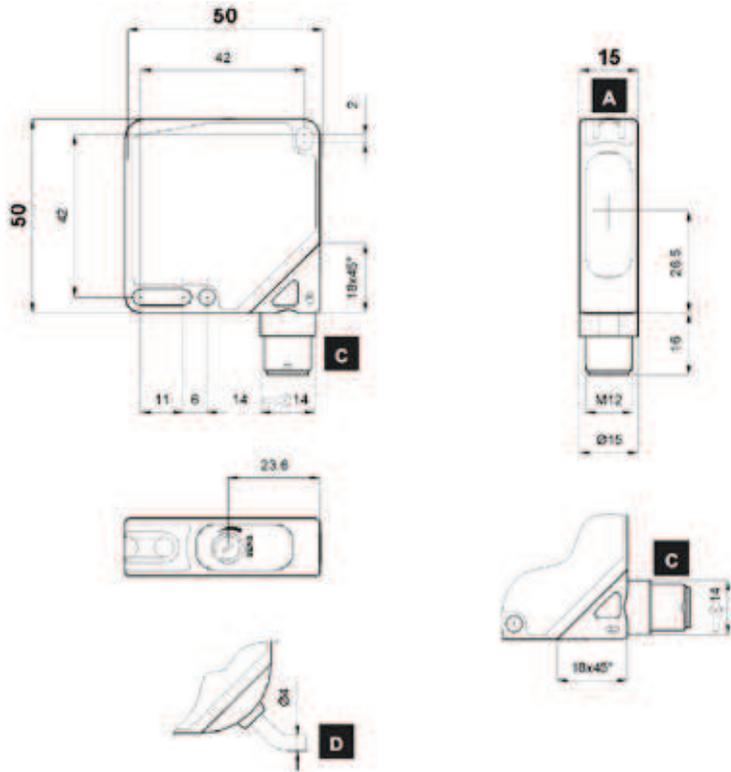


B RED EMISSION

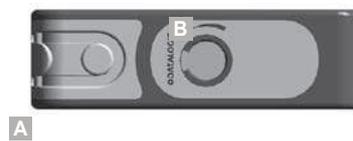
With retroreflex sensors the object is detected when it interrupts the light beam generated between the sensor and its associated prismatic reflector. High-polarisation optic filters also allow reliable detection of very reflective objects, such as mirrored surfaces that, differently from the prismatic reflector, reflect the light beam without rotating the polarisation plane.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Reflectors (A.01)**, **Connectors (A.03)** and **Fixing Brackets (A.04)** of the **General Catalogue**

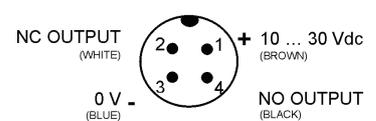
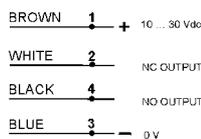
CONNECTIONS



S60-PA-2



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
- ⁷B - overload and short-circuit protection on outputs
- ⁸Internal lenses in Polycarbonate

		S60-PA-2-B01-NN	S60-PA-2-B01-PP	S60-PA-5-B01-NN	S60-PA-5-B01-PP
Operating distance:	0.1 ... 8 m (on R5)	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 40 mA	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•
Spot dimension:	aprox. 90 mm at 3 m	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green STABILITY LED	•	•	•	•
Output type:	PNP, NO and NC		•		•
	NPN, NO and NC	•		•	
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	500 μs	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•		
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA ⁷	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

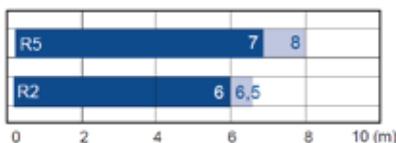
axial optics - 2 m cable		
S60-PA-2-B01-NN	956201460	NPN
S60-PA-2-B01-PP	956201300	PNP

axial optics - M12 connector		
S60-PA-5-B01-NN	956201180	NPN
S60-PA-5-B01-PP	956201040	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

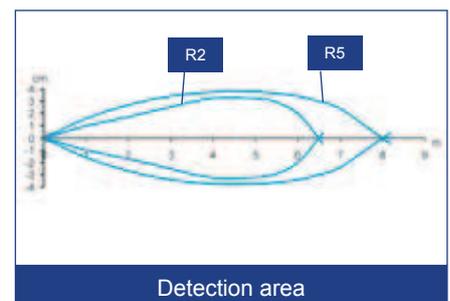
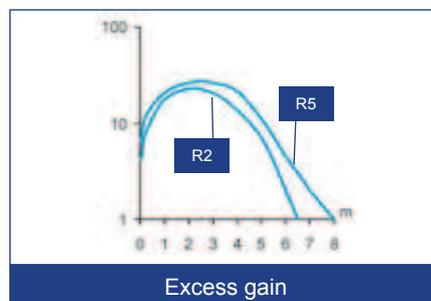


DETECTION DIAGRAMS



- Recommended operating distance
- Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.

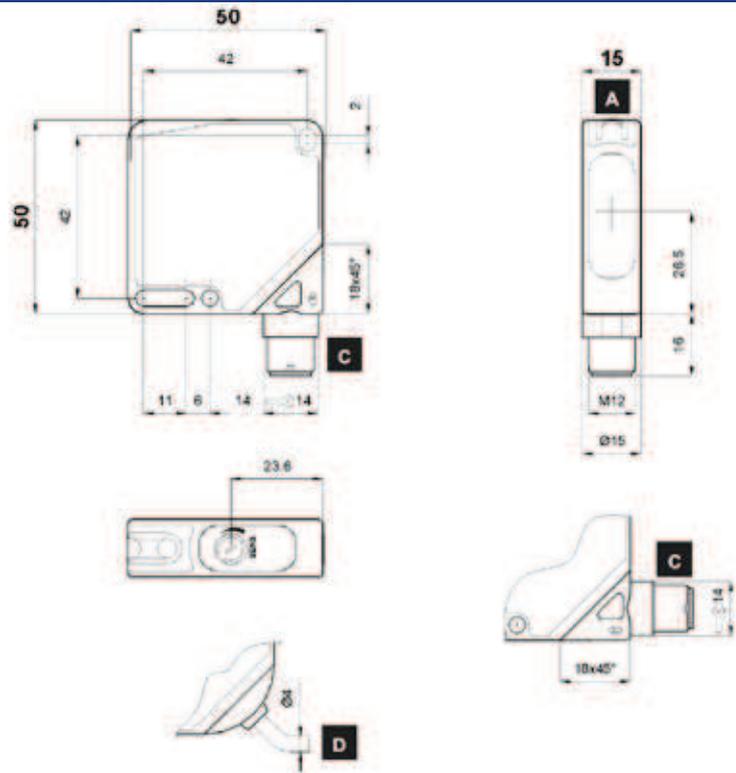


L-B RED EMISSION

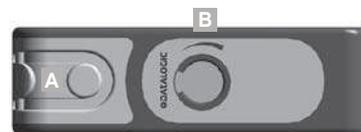
The visible red laser emission increases the operating distance and resolution of the polarised retroreflex sensor. Specific R7 or R8 reflectors with 0.8 mm micro-prisms are available for high-resolution detection of small objects. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance. Decrease sensitivity to increase resolution.

ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

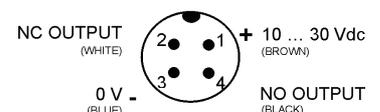


S60-PA-2



S60-PA-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
- ⁷Internal lenses in glass and Polycarbonate

		S60-PL-2-B01-NN	S60-PL-2-B01-PP	S60-PL-5-B01-NN	S60-PL-5-B01-PP
Operating distance:	0.1 ... 20 m	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•
Light emission:	red Laser 650 nm ²	•	•	•	•
	class 1 EN 60825-1	•	•	•	•
	class II CDRH21 CFR 1040.10	•	•	•	•
Resolution:	approx. 10 mm	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green POWER ON LED	•	•	•	•
Output type:	PNP, NO and NC		•		•
	NPN, NO and NC	•		•	
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	250 ms	•	•	•	•
Switching frequency:	2 kHz	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•	•	•
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-10 ... +50°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Standard reference:	EN 60947-5-2, EN 60825-1,	•	•	•	•
	CDRH21 CFR 1040.10	•	•	•	•

SELECTION TABLE

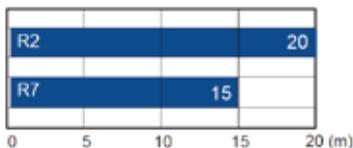
axial optics - 2 m cable		
S60-PL-2-B01-NN	956201560	NPN
S60-PL-2-B01-PP	956201410	PNP

axial optics - M12 connector		
S60-PL-5-B01-NN	956201260	NPN
S60-PL-5-B01-PP	956201120	PNP

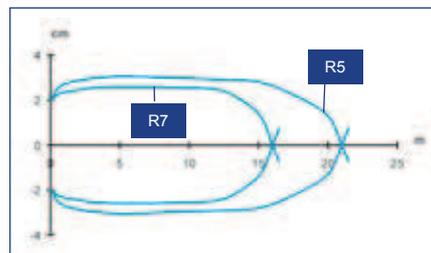
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance



Detection area



Resolution on R7 reflector

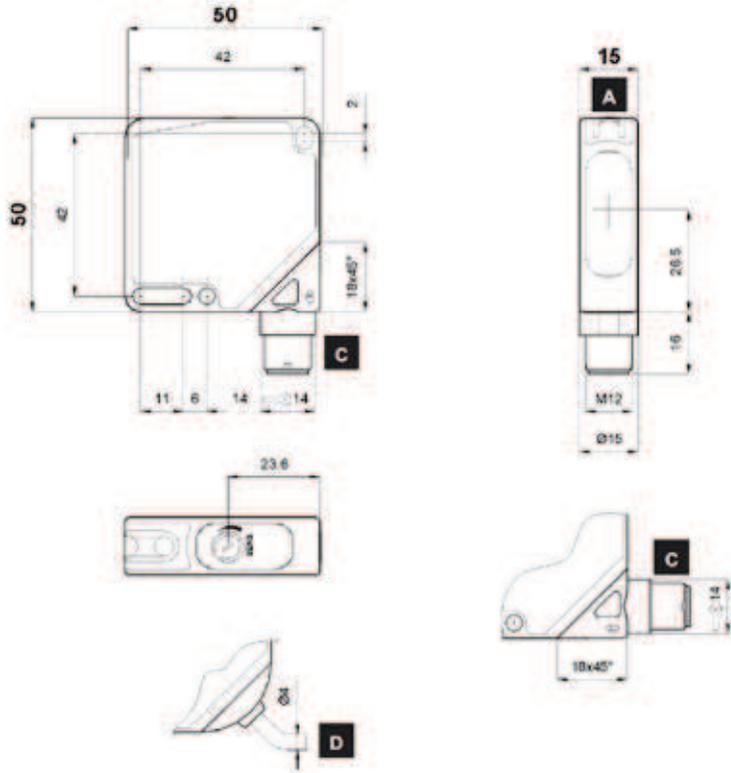
High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.

B RED EMISSION

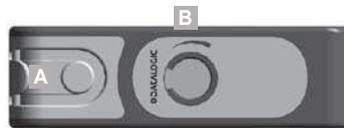
The polarised retroreflex sensor with a coaxial optics offers the best resolution of the detection point as the optic emitting axis coincides with the optic receiving axis. The coaxial system also allows to reduce drastically the sensor's blind zone and consents the detection of objects very close to the sensor's frontal lens.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and stability LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

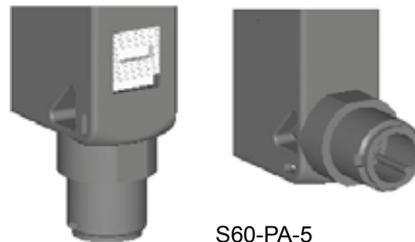
Single-turn trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.

ACCESSORIES

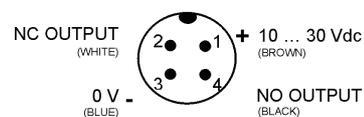
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
B - overload and short-circuit protection on outputs
- ⁷Internal lenses in Polycarbonate

		S60-PA-2-B51-NN	S60-PA-2-B51-PP	S60-PA-5-B51-NN	S60-PA-5-B51-PP
Operating distance:	0 ... 4 m	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 40 mA	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•
Spot dimension:	aprox. 50 mm at 1.5 m	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green STABILITY LED	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•
	NPN, NO and NC	•	•	•	•
Output current:	≤ 100 mA		•		•
Saturation voltage:	≤ 2 V	•		•	
Response time:	500 μs	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•	•	•
	M12 4-pole connector ⁵	•	•	•	•
Electrical protection:	class 2	•	•		
Mechanical protection:	IP67			•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in glass (tilted anti-reflection) ⁷	•	•	•	•
Weight:	90 g max.	•	•	•	•
	40 g max.	•	•	•	•
Operating temperature:	-25 ... +55°C	•	•	•	•
Storage temperature:	-25 ... +70°C			•	•
Reference standard:	EN 60947-5-2	•	•	•	•

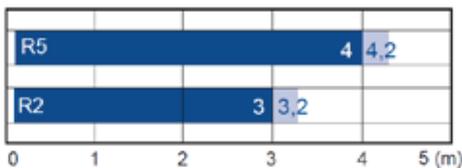
SELECTION TABLE

coaxial optics - M12 connector		
S60-PA-5-B51-NN	956201630	NPN
S60-PA-5-B51-PP	956201620	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

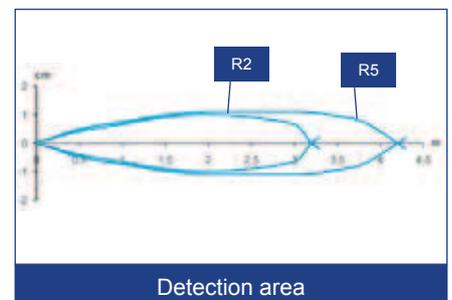
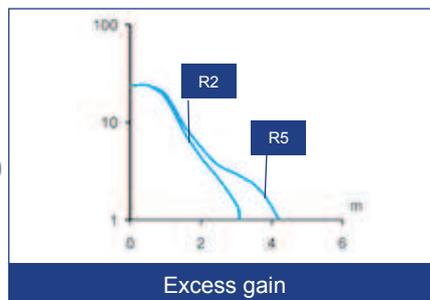


DETECTION DIAGRAMS



- Recommended operating distance
- Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.

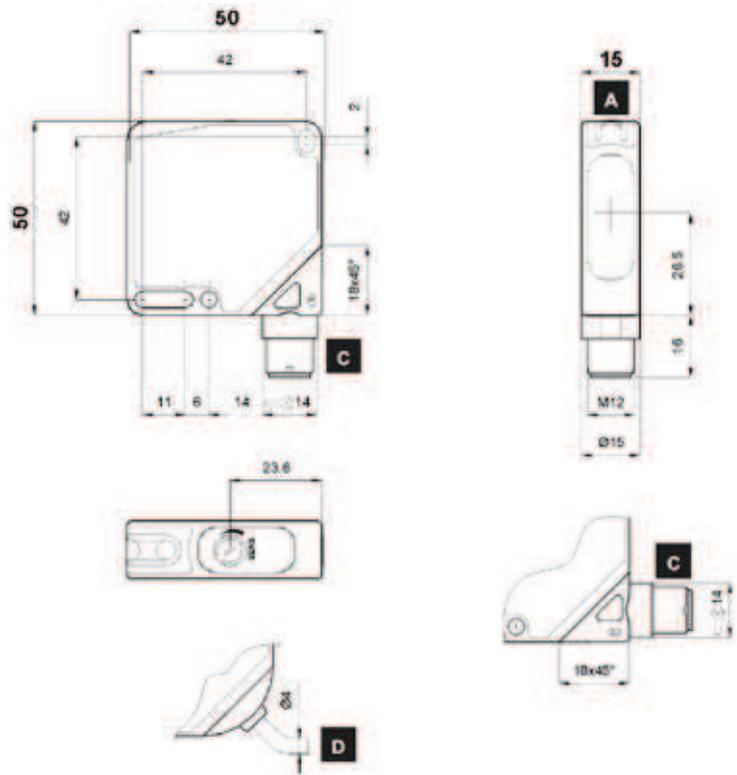


T RETROREFLEX

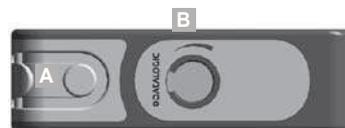
The high sensitivity and reduced hysteresis of this retroreflex sensor allow to detect even the slightest attenuation of the received light emission, caused by the presence of transparent objects, such as glass or PET bottles or plastic film sheets for packaging. The presence of polarisation filters avoids false switching on shiny surfaces and the coaxial optics improves the detection precision on the entire operating range.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status LED
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

CONNECTIONS

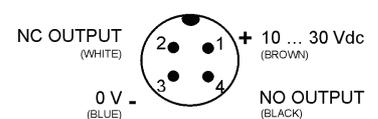


S60-PA-2



S60-PA-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
- ⁷B - overload and short-circuit protection on outputs
- ⁷Internal lenses in Polycarbonate

		S60-PA-2-T51-NN	S60-PA-2-T51-PP	S60-PA-5-T51-NN	S60-PA-5-T51-PP
Operating distance:	0 ... 2 m	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 40 mA	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•
Spot dimension:	aprox. 50 mm at 1.5 m	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
Output type:	PNP, NO and NC	•	•	•	•
	NPN, NO and NC	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	500 μs	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•
Operating mode:	dark on NO / light on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•		
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens materiale:	window in glass (tilted anti-reflection) ⁷	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

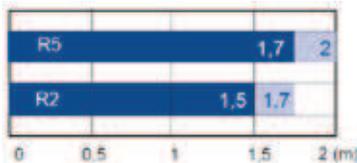
coaxial optics - 2 m cable		
S60-PA-2-T51-NN	956201530	NPN
S60-PA-2-T51-PP	956201380	PNP

coaxial optics - M12 connector		
S60-PA-5-T51-NN	956201250	NPN
S60-PA-5-T51-PP	956201100	PNP

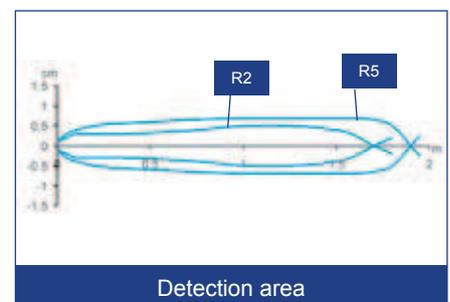
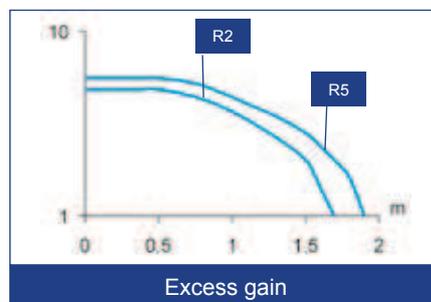
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



- Recommended operating distance
- Maximum operating distance

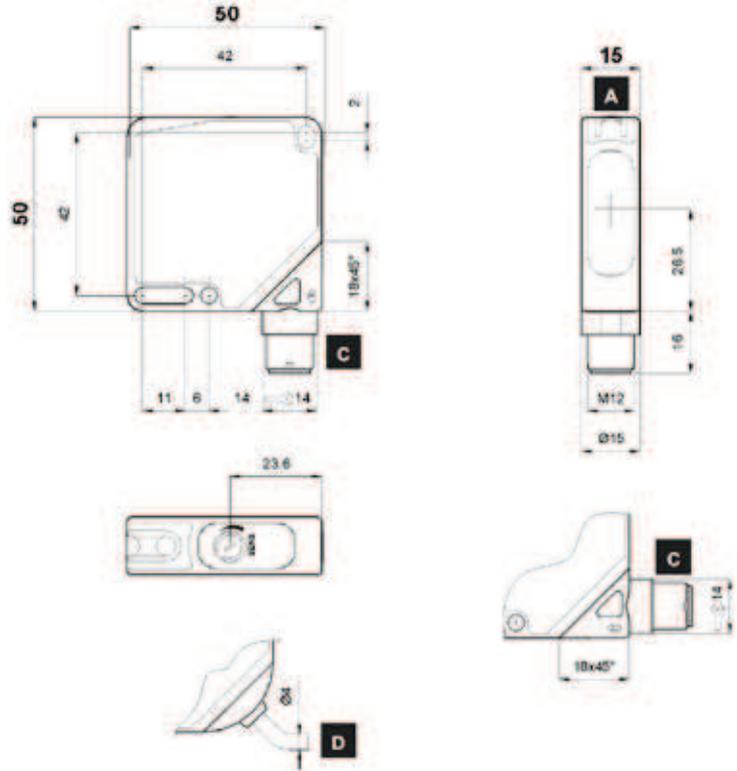


C DIFFUSE PROXIMITY

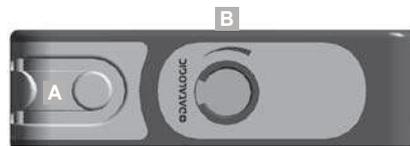
This diffuse proximity sensor represents a reliable, simple and cost-effective solution for the direct detection of any object within the operating distance, that can be set using the sensitivity adjustment trimmer. The visible red emission facilitates the alignment of the sensor or of the object to detect and in particular in short operating distances.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status LED
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

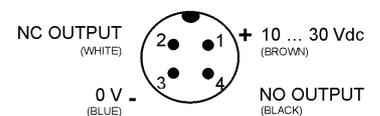


S60-PA-2



S60-PA-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
- ⁷B - overload and short-circuit protection on outputs
- ⁷Internal lenses in Polycarbonate

		S60-PA-2-C01-NN	S60-PA-2-C01-PP	S60-PA-5-C01-NN	S60-PA-5-C01-PP
Operating distance:	0 ... 100 cm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤40 mA	•	•	•	•
Light emission:	red LED 660 nm ²	•	•	•	•
Spot dimension:	approx. 50 mm at 90 cm	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green STABILITY LED	•	•	•	•
Output type:	PNP, NO and NC		•		•
	NPN, NO and NC	•		•	
Output current:	≤100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	1 ms	•	•	•	•
Switching frequency:	500 Hz	•	•	•	•
Operating mode:	light on NO / dark on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•		
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA ⁷	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

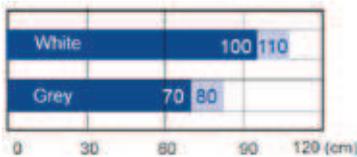
axial optics - 2 m cable		
S60-PA-2-C01-NN	956201470	NPN
S60-PA-2-C01-PP	956201310	PNP

axial optics - M12 connector		
S60-PA-5-C01-NN	956201190	NPN
S60-PA-5-C01-PP	956201050	PNP

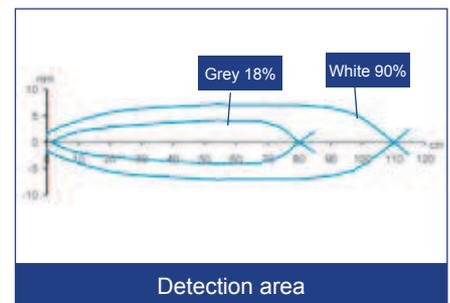
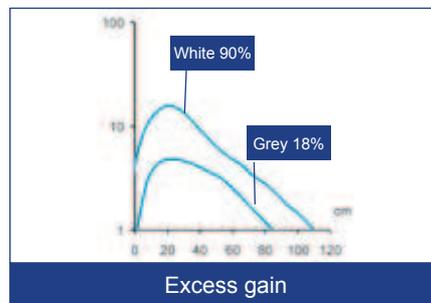
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Recommended operating distance
 ■ Maximum operating distance

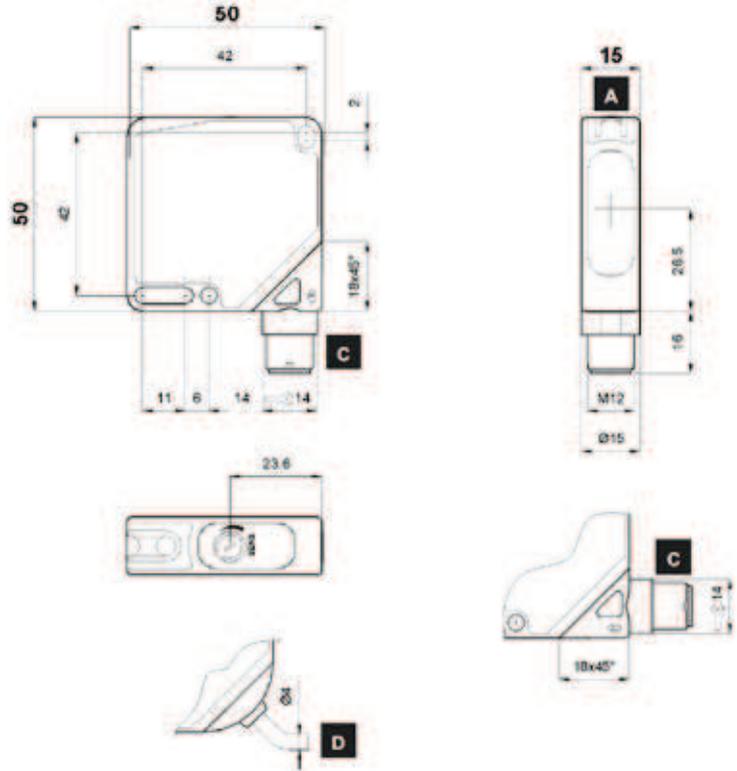


C LONG DIFFUSE PROXIMITY

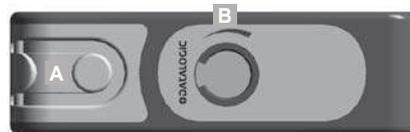
This version of diffuse proximity sensor offers the maximum operating distance for the direct detection of objects, without the use of separate reflectors or receivers. The detection distance can be set using the sensitivity adjustment trimmer. The green stability LED indicates that the received signal is higher than the minimum signal for stable output switching.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and stability LED
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise direction to increase the operating distance.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

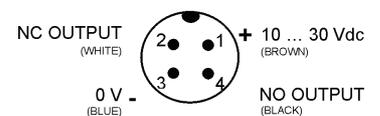


S60-PA-2



S60-PA-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



TECHNICAL DATA

TECHNICAL NOTES		S60-PA-2-C01-NN	S60-PA-2-C01-PP	S60-PA-5-C01-NN	S60-PA-5-C01-PP
¹ Limit values ² Average life of 100.000 h with TA = +25 °C ³ 270° trimmer ⁴ PVC, 4 x 0.14 mm ² ⁵ Connector can be blocked on two positions ⁶ A - reverse polarity protection ⁷ B - overload and short-circuit protection on outputs ⁷ Internal lenses in Polycarbonate					
Operating distance:	5 ... 200 cm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤2 Vpp	•	•	•	•
Consumption:	≤ 40 mA	•	•	•	•
Light emission:	infrared LED 880 nm ²	•	•	•	•
Spot dimension:	approx. 250 mm at 1 m	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green STABILITY LED	•	•	•	•
Output type:	PNP, NO and NC		•		•
	NPN, NO and NC	•		•	
Output current:	≤100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	1 ms	•	•	•	•
Switching frequency:	500 Hz	•	•	•	•
Operating mode:	light on NO / dark on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•		
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA ⁷	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-25 ... +55°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

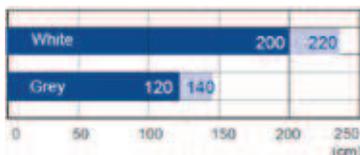
axial optics - 2 m cable		
S60-PA-2-C11-NN	956201480	NPN
S60-PA-2-C11-PP	956201320	PNP

axial optics -M12 connector		
S60-PA-5-C11-NN	956201200	NPN
S60-PA-5-C11-PP	956201110	PNP

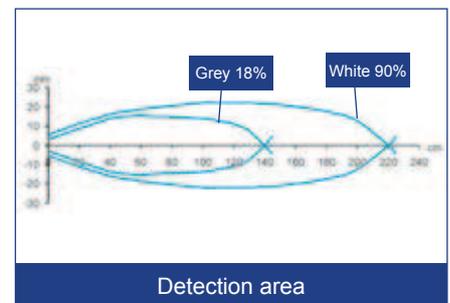
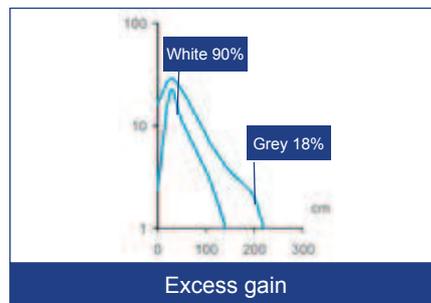
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Recommended operating distance
 ■ Maximum operating distance

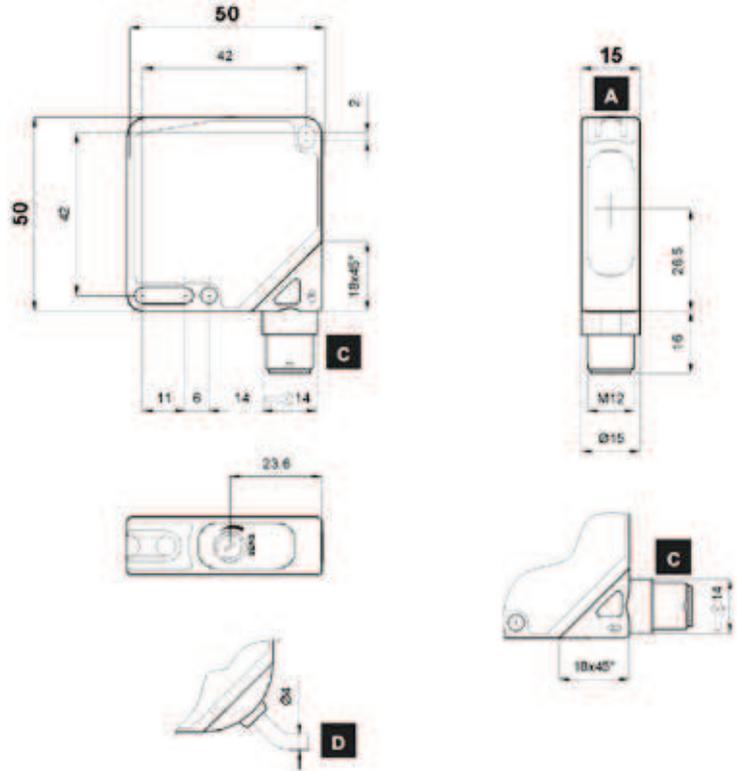


L-C RED EMISSION

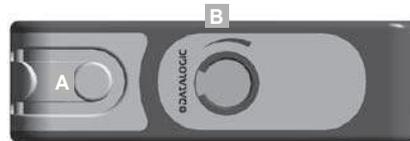
The visible red laser emission allows the accurate detection of very small objects. The sensors operate as a proximity device up to 60 cm and can be used as a contrast sensor for high contrast mark detection. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and power on LEDs
- B** Adjustment trimmer
- C** M12 connector output
- D** Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise direction to increase the operating distance.

ACCESSORIES

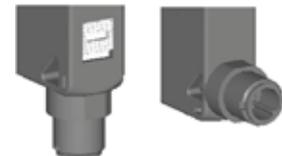
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS

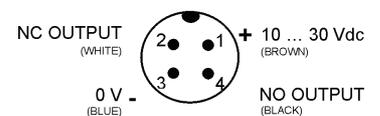


S60-PA-2



S60-PA-5

BROWN	1	+	10 ... 30 Vdc
WHITE	2		NC OUTPUT
BLACK	4		NO OUTPUT
BLUE	3	-	0 V



TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with TA = +25 °C
- ³270° trimmer
- ⁴PVC, 4 x 0.14 mm²
- ⁵Connector can be blocked on two positions
- ⁶A - reverse polarity protection
- ⁷B - overload and short-circuit protection on outputs
- ⁸Internal lenses in Polycarbonate

		S60-PL-2-C01-NN	S60-PL-2-C01-PP	S60-PL-5-C01-NN	S60-PL-5-C01-PP
Operating distance:	0 ... 60 cm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 35 mA	•	•	•	•
Light emission:	red Laser 650 nm ²	•	•	•	•
	class 1 EN 60825-1	•	•	•	•
	class II CDRH21 CFR 1040.10	•	•	•	•
Resolution:	approx. 0.2 mm at 15 cm	•	•	•	•
	approx. 1 mm at 35 cm	•	•	•	•
	approx. 2 mm at 50 cm	•	•	•	•
Setting:	sensitivity trimmer ³	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green POWER ON LED	•	•	•	•
Output type:	PNP, NO and NC		•		•
	NPN, NO and NC	•		•	
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	250 μs	•	•	•	•
Switching frequency:	2 kHz	•	•	•	•
Operating mode:	light on NO / dark on NC	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁴	•	•		
	M12 4-pole connector ⁵			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁶	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA ⁷	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-10 ... +50°C	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2, EN 60825-1, CDRH21 CFR 1040.10	•	•	•	•

SELECTION TABLE

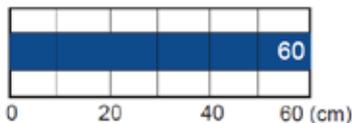
axial optics - 2 m cable		
S60-PL-2-C01-NN	956201640	NPN
S60-PL-2-C01-PP	956201650	PNP

axial optics - M12 connector		
S60-PL-5-C01-NN	956201660	NPN
S60-PL-5-C01-PP	956201670	PNP

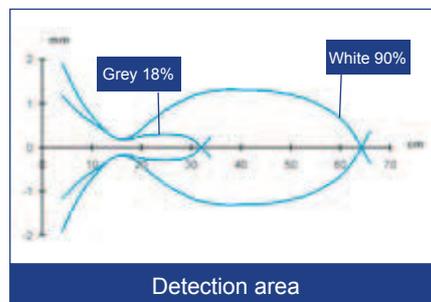
All the ordering codes and information are summarised in the last pages of this catalogue.



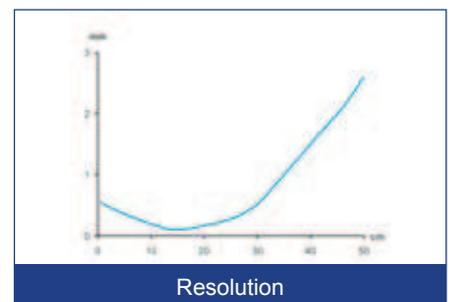
DETECTION DIAGRAMS



■ Operating distance



Detection area



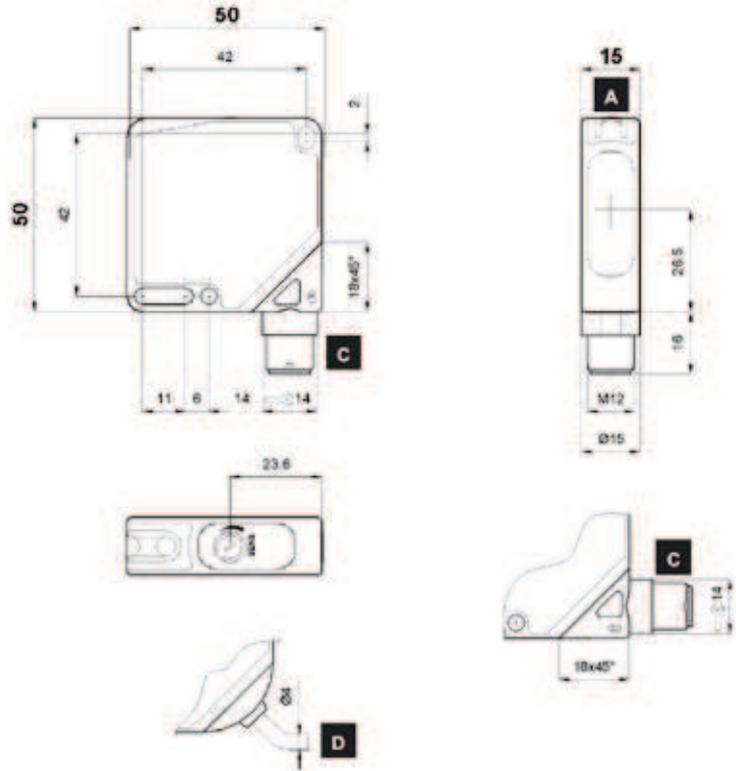
Resolution

M RED EMISSION

Background suppression proximity allows to precisely adjust the distance over which the object is not detected, with the minimum difference between different coloured objects. The EASYtouch™ setting procedure fixes automatically the best detection conditions with medium or high precision, simply pressing once the teach-in push-button, in presence of the background to suppress.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and READY/ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output

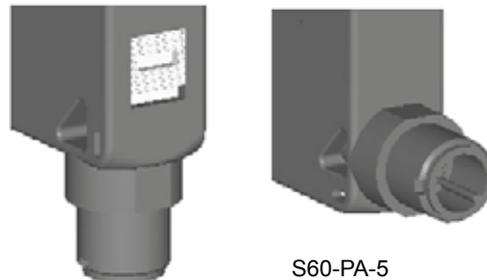
Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.

ACCESSORIES

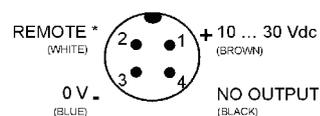
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES		S60-PA-5-M08-NH	S60-PA-5-M08-PH
¹ Limit values ² Average life of 100.000 h with TA = +25 °C ³ Connect to 0 V when remote wire not used ⁴ 270° trimmer ⁵ PVC, 4 x 0.14 mm ² ⁶ Connector can be blocked on two positions ⁷ A - reverse polarity protection B - overload and short-circuit protection on outputs ⁸ Internal lenses in Polycarbonate			
Operating distance:	7 ... 20 cm	•	•
Power supply:	10 ... 30 Vdc ¹	•	•
Ripple:	≤ 2 Vpp	•	•
Consumption:	≤30 mA	•	•
Light emission:	red LED 670 nm ²	•	•
Spot dimension:	approx. 16 mm at 20 cm	•	•
Setting:	teach-in push-button	•	•
	remote on cable ³	•	•
Setting procedure:	EASYtouch TM	•	•
Indicators:	yellow OUTPUT LED	•	•
	green / red READY / ERROR LED	•	•
Output type:	PNP, NO		•
	NPN, NO	•	
Output current:	≤100 mA	•	•
Saturation voltage:	≤2 V	•	•
Response time:	500 μs	•	•
Max. switching frequency:	1 kHz	•	•
Operating mode:	light with EASYtouch TM	•	•
	dark / light configurable	•	•
Timing function:	20 ms minimum output ON	•	•
Auxiliary functions:	remote	•	•
	keylock ⁴	•	•
Connection:	2 m Ø 4 mm cable ⁵		
	M12 4-pole connection ⁶	•	•
Electrical protection:	class 2	•	•
Mechanical protection:	IP67	•	•
Protection devices:	A, B ⁷	•	•
Housing material:	ABS	•	•
Lens material:	window in PMMA ⁸	•	•
Weight:	90 g max.		
	40 g max.	•	•
Operating temperature:	-25 ... +55 °C	•	•
Storage temperature:	-25 ... +70 °C	•	•
Reference standard:	EN 60947-5-2	•	•

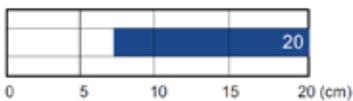
SELECTION TABLE

axial optics - M12 connector		
S60-PA-5-M08-NH	956201220	NPN
S60-PA-5-M08-PH	956201080	PNP

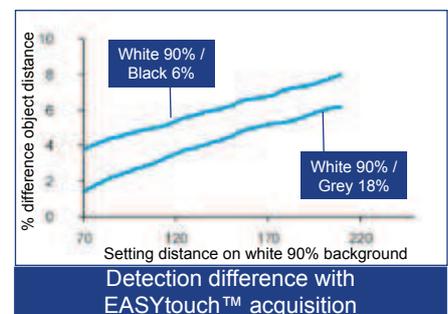
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance

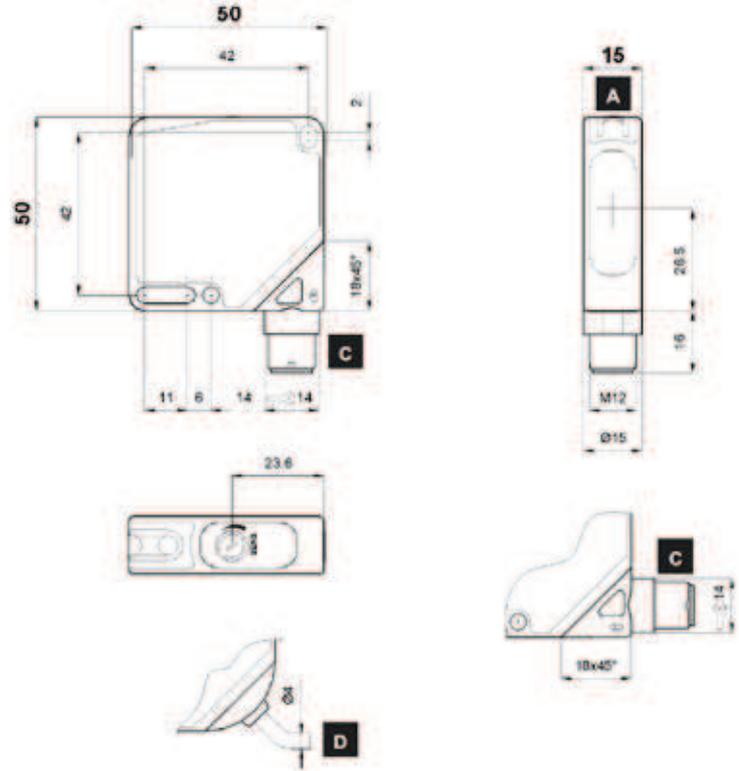


L-M RED EMISSION

The background suppression with red laser emission offers the best precision in terms of resolution and for background suppression, over which the object is not detected. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and LASER ON S /ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output

Teach-in button for setting. EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

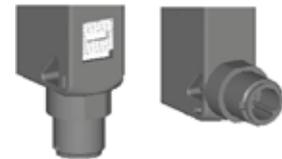
ACCESSORIES

For dedicated accessories refer to the **ACCESSORIES** section of this catalogue.

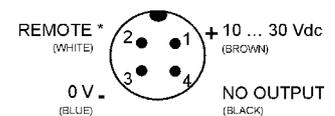
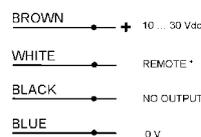
Refer also to **Connectors and Fixing brackets of the General Catalogue**.



S60-PA-2



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES		S60-PL-2-M08-NN	S60-PL-2-M08-PP	S60-PL-5-M08-NN	S60-PL-5-M08-PP
¹ Limit values					
² Average life of 100.000 h with TA = +25 °C					
³ Connect to 0 V when remote wire not used					
⁴ 270° trimmer					
⁵ PVC, 4 x 0.14 mm ²					
⁶ Connector can be blocked on two positions					
⁷ A - reverse polarity protection					
⁷ B - overload and short-circuit protection on outputs					
⁸ Internal lenses in Polycarbonate					
Operating distance:	5 ... 10 cm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	≤ 60 mA	•	•	•	•
Light emission:	red Laser 650 nm ²	•	•	•	•
	class 1 EN 60825-1	•	•	•	•
	class II CDRH21 CFR 1040.10	•	•	•	•
Resolution:	approx. 0.5 mm at 6 cm	•	•	•	•
Setting:	teach-in push-button	•	•	•	•
	remote on cable ³	•	•	•	•
Setting procedure:	EASYtouch TM	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green / red LASER ON / ERROR LED	•	•	•	•
Output type:	PNP, NO	•	•	•	•
	NPN, NO	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	500 μs	•	•	•	•
Switching frequency:	1 kHz	•	•	•	•
Operating mode:	light with EASYtouch TM	•	•	•	•
	dark / light configurable	•	•	•	•
Timing function:	20 ms minimum output ON	•	•	•	•
Auxiliary functions:	remote	•	•	•	•
	keylock ⁴	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁵	•	•		
	M12 4-pole connector ⁶			•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in PMMA ⁸	•	•	•	•
Weight:	90 g max.	•	•		
	40 g max.			•	•
Operating temperature:	-10 ... +50 °C	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•	•	•	•

SELECTION TABLE

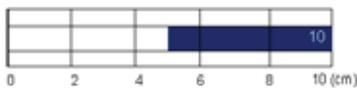
axial optics - 2 m cable		
S60-PL-2-M08-NH	956201580	NPN
S60-PL-2-M08-PH	956201440	PNP

axial optics - M12 connector		
S60-PL-5-M08-NH	956201280	NPN
S60-PL-5-M08-PH	956201160	PNP

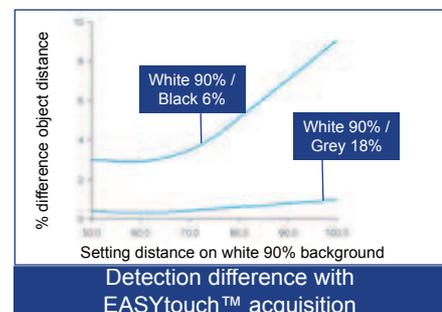
All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance

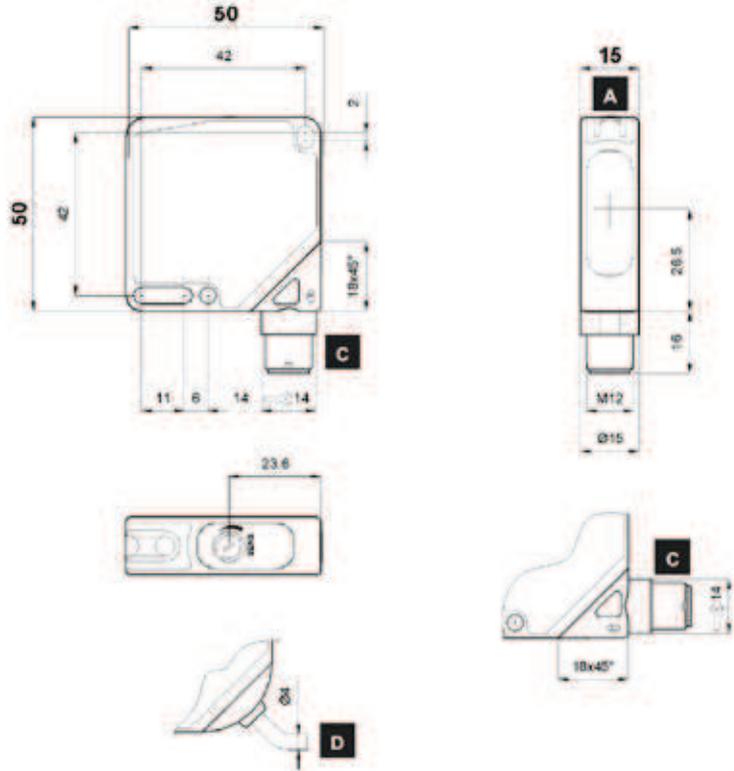


W RED EMISSION

The white light LED emission is designed for the detection of a large number of coloured or grey-scale contrasts, in order to detect print registration marks or similar. The patent-covered EASYtouch[®] setting procedures automatically selects the best detection conditions, simply by pressing the teach-in push-button once. A higher level of accuracy can be obtained or the dark/light operating mode can be inverted.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and READY/ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output orientable in two positions
- D** Cable output

Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.

ACCESSORIES

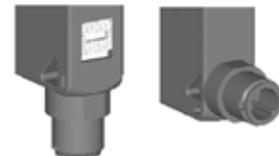
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

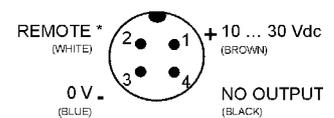
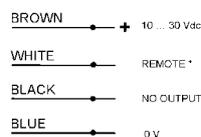
CONNECTIONS



S60-PA-2



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES		S60-PA-5-W08-NH	S60-PA-5-W08-PH
¹ Limit values ² Average life of 100.000 h with TA = +25 °C ³ Connect to 0 V when remote wire not used ⁴ 270° trimmer ⁵ PVC, 4 x 0.14 mm ² ⁶ Connector can be blocked on two positions ⁷ A - reverse polarity protection ⁸ B - overload and short-circuit protection on outputs ⁹ Internal lenses in glass			
Operating distance:	19 mm	•	•
Max. field of depth:	± 2 mm	•	•
Power supply:	10 ... 30 Vdc ¹	•	•
Ripple:	≤ 2 Vpp	•	•
Consumption:	≤30 mA	•	•
Light emission:	white LED 400 - 700 nm ²	•	•
Spot dimension:	aprox. 3.5 mm at 19 mm	•	•
Resolution:	0.5 mm	•	•
Setting:	teach-in push-button	•	•
	remote on cable ³	•	•
Setting procedure:	EASYtouch TM	•	•
Indicators:	yellow OUTPUT LED	•	•
	green / red READY / ERROR LED	•	•
Output type:	PNP, NO	•	•
	NPN, NO	•	
Output current:	≤ 100 mA	•	•
Saturation voltage:	≤ 2 V	•	•
Response time:	100 µs	•	•
Max. switching frequency:	5 kHz	•	•
Operating mode:	dark with EASYtouch TM	•	•
	automatic dark / light with fine acquisition	•	•
Timing function:	20 ms minimum output ON	•	•
Auxiliary functions:	remote	•	•
	keylock ⁴	•	•
Connection:	2 m Ø 4 mm cable ⁵		
	M12 4-pole connector ⁶	•	•
Electrical protection:	class 2	•	•
Mechanical protection:	IP67	•	•
Protection devices:	A, B ⁷	•	•
Housing material:	ABS	•	•
Lens materiale:	window in glass (tilted anti-reflection) ⁹	•	•
Weight:	90 g max.	•	•
	40 g max.	•	•
Operating temperature:	-25 ... +55°C	•	•
Storage temperature:	-25 ... +70°C	•	•
Reference standard:	EN 60947-5-2	•	•

SELECTION TABLE

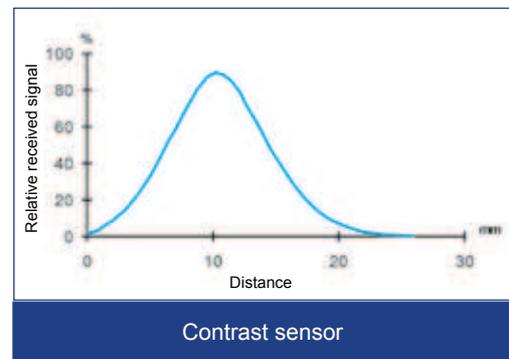
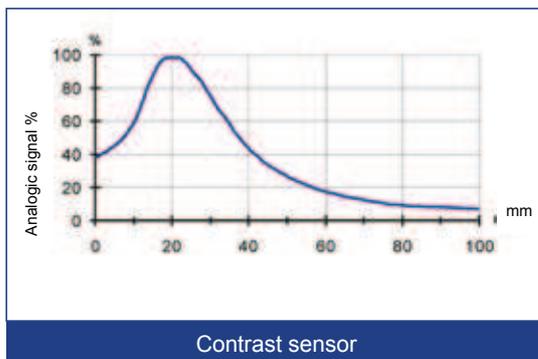
contrast sensor - 2 m cable		
S60-PA-2-W08-NH	956201550	NPN
S60-PA-2-W08-PH	956201400	PNP

contrast sensor - M12 connector		
S60-PA-5-W08-NH	95621030	NPN
S60-PA-5-W08-PH	95621020	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS

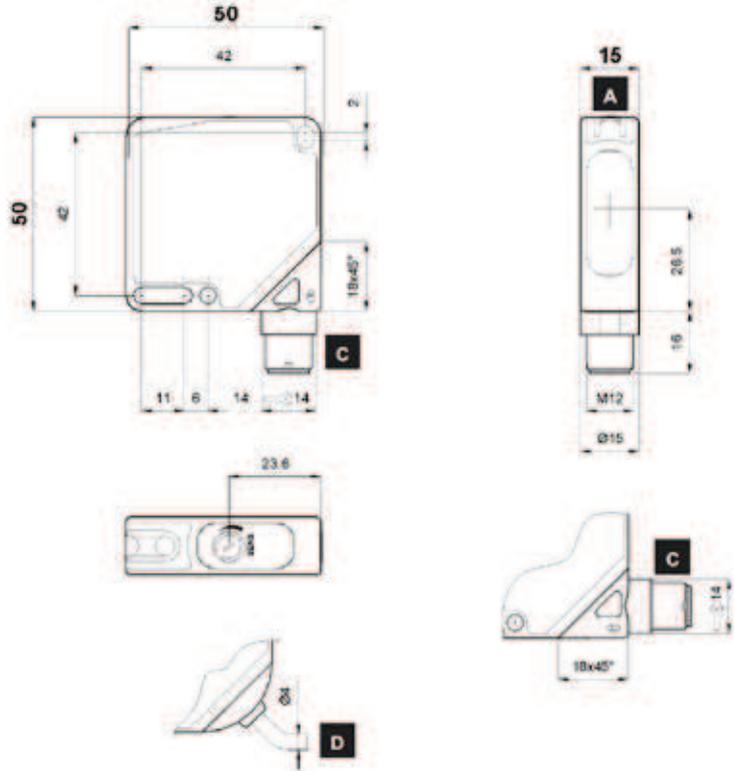


U UV EMISSION

The UV light LED emission detects any luminescent reference, even on very reflective surfaces, such as ceramics, metal or mirrored glass. The patent-covered EASYtouch™ setting procedures fixes automatically the best detection conditions, simply by pressing the teach-in push-button once, with the reference to detect. The threshold between two different luminescence degrees can be set by a second pressure of the button



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and READY/ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output orientable in two positions
- D** Cable output

Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets** of the **General Catalogue**.

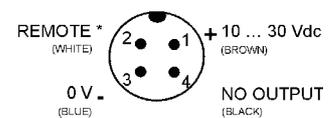
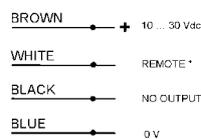
CONNECTIONS



S60-PA-2



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES		S60-PA-2-U08-NH	S60-PA-2-U08-PH	S60-PA-5-U08-NH	S60-PA-5-U08-PH
¹ Limit values ² Average life of 100.000 h with TA = +25 °C ³ Connect to 0 V when remote wire not used ⁴ 270° trimmer ⁵ PVC, 4 x 0.14 mm ² ⁶ Connector can be blocked on two positions ⁷ A - reverse polarity protection B - overload and short-circuit protection on outputs ⁸ Internal lenses in glass					
Operating distance:	0 ... 40 mm	•	•	•	•
Power supply :	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤2 Vpp	•	•	•	•
Consumption:	≤ 30 mA	•	•	•	•
Light emission:	LED UV 370 nm ²	•	•	•	•
Spot dimension:	approx. 1.5 mm at 10 mm (max. signal)	•	•	•	•
Resolution:	0.5 mm	•	•	•	•
Setting:	teach-in push-button	•	•	•	•
	remote on cable ³	•	•	•	•
Setting procedure:	EASYtouch TM	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•
	green / red READY / ERROR LED	•	•	•	•
Output type:	PNP, NO	•	•	•	•
	NPN, NO	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•
Response time:	250 μs	•	•	•	•
Max. switching frequency:	2 kHz	•	•	•	•
Operating mode:	light with EASYtouch TM	•	•	•	•
	automatic dark / light with fine acquisition	•	•	•	•
Timing function:	20 ms minimum output ON	•	•	•	•
Auxiliary functions:	remote	•	•	•	•
	keylock ⁴	•	•	•	•
Connection:	2 m Ø 4 mm cable ⁵	•	•	•	•
	M12 4-pole connector ⁶	•	•	•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁷	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	window in glass (tilted anti-reflection) ⁸	•	•	•	•
Weight:	90 g max.	•	•	•	•
	40 g max.	•	•	•	•
Operating temperature:	-25 ... +55 °C	•	•	•	•
Storage temperature:	-25 ... +70 °C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

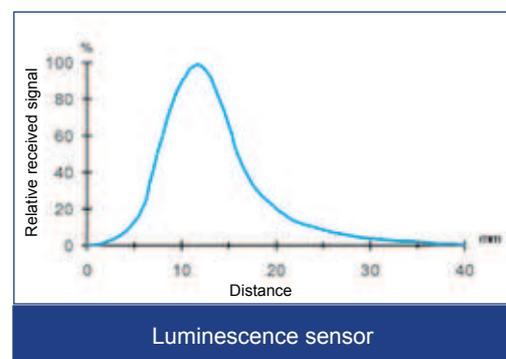
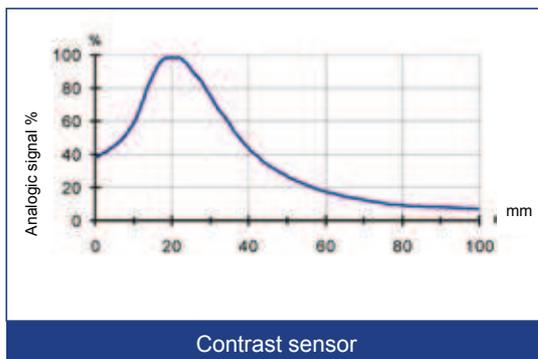
luminescence sensor - 2 m cable		
S60-PA-2-U08-NH	956201540	NPN
S60-PA-2-U08-PH	956201390	PNP

luminescence sensor - M12 connector		
S60-PA-5-U08-NH	956201010	NPN
S60-PA-5-U08-PH	956201000	PNP

All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS

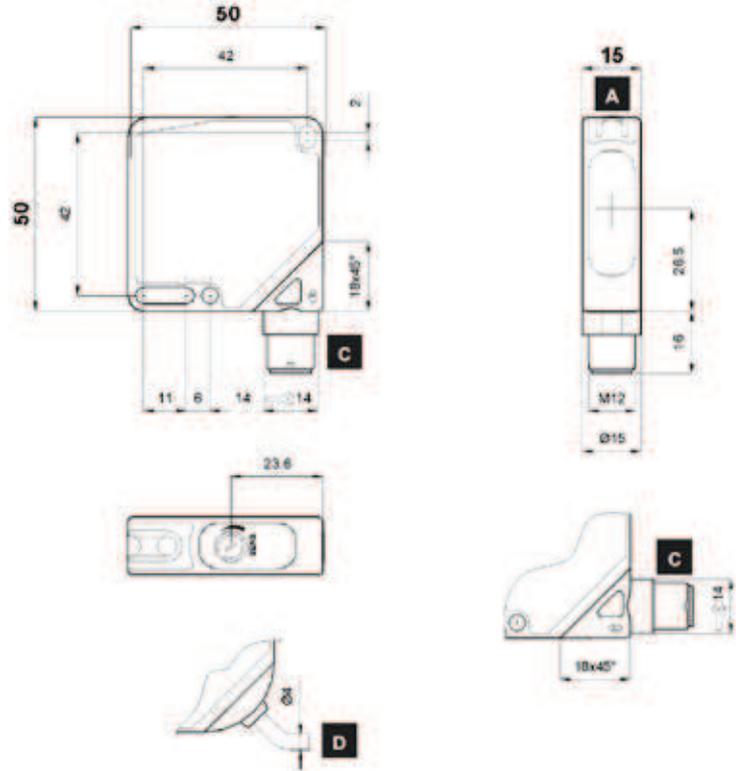


Y RED EMISSION

This sensor gives an analogue 0-10 Vdc output proportional to the target distance in the measurement range, with the possibility of setting a threshold for the other switching output. The yellow LED indicates the activation of the output during switching while the red LED turns on when the object is outside the measurement range.



DIMENSIONS



INDICATORS AND SETTINGS



- A** Output status and READY/ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output orientable in two positions
- D** Cable output

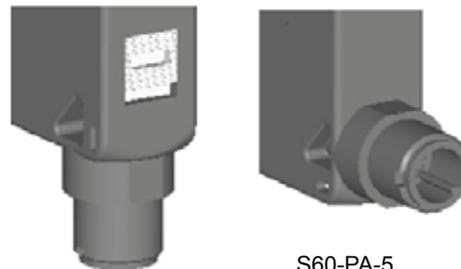
Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors and Fixing brackets of the General Catalogue**.

CONNECTIONS



S60-PA-5



TECHNICAL DATA

TECHNICAL NOTES		S60-PA-5-Y03-NV	S60-PA-5-Y03-PV
¹ Measurement field can be reduced at device setting			
² Limit values			
³ Average life of 100.000 h with TA = +25 °C			
³ Connect to 0 V when remote wire not used			
⁴ PVC, 4 x 0.14 mm ²			
⁵ Connector can be blocked on two positions			
⁶ A - reverse polarity protection			
⁶ B - overload and short-circuit protection on outputs			
⁷ Internal lenses in Polycarbonate			
Operating distance:	60 ... 150 mm ¹	•	•
Power supply:	18 ... 30 Vdc ²	•	•
Ripple:	≤2 Vpp	•	•
Consumption:	≤60 mA	•	•
Light emission:	red LED 670 nm ³	•	•
Spot dimensions:	approx. 16 mm at 150 mm	•	•
Setting:	teach-in push-button	•	•
Setting procedure:	EASYtouch TM	•	•
Indicators:	yellow OUTPUT LED	•	•
	red FIELD LED	•	•
Output type:	PNP, NO		•
	NPN, NO	•	
	analogue with 0 ... 10 V (8 bit)	•	•
Minimum resistance load:	1 KW	•	•
Output current:	≤100 mA	•	•
Saturage voltage:	≤ 2 V	•	•
Response time:	1 ms	•	•
Switching frequency:	500 Hz	•	•
Resolution:	1 mm (linearity ± 2.5 %)	•	•
Operating mode:	light with EASYtouch TM	•	•
	automatic dark / light fine acquisition	•	•
	configurable direct/inverse proportionality	•	•
Switching output hysteresis:	10 % max.	•	•
Connection:	2 m Ø 4 mm cable ⁴		
	M12 4-pole connector ⁵	•	•
Electrical protection:	class 2	•	•
Mechanical protection:	IP67	•	•
Protection devices:	A, B ⁶	•	•
Housing material:	ABS	•	•
Lens material:	window in PMMA ⁷	•	•
Weight:	90 g max.		
	40 g max.	•	•
Operating temperature:	-25 ... +55°C	•	•
Storage temperature:	-25 ... +70°C	•	•
Reference standard:	EN 60947-5-2	•	•

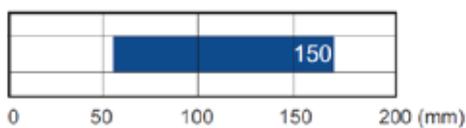
SELECTION TABLE

distance sensor - M12 connector		
S60-PA-5-Y03-NV	956201710	PNP
S60-PA-5-Y03-PV	956201700	NPN

All the ordering codes and information are summarised in the last pages of this catalogue.



DETECTION DIAGRAMS



■ Operating distance



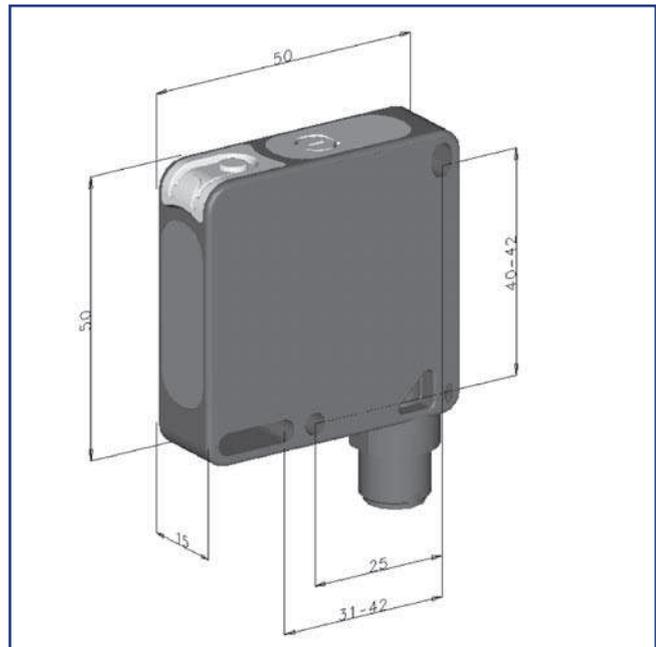
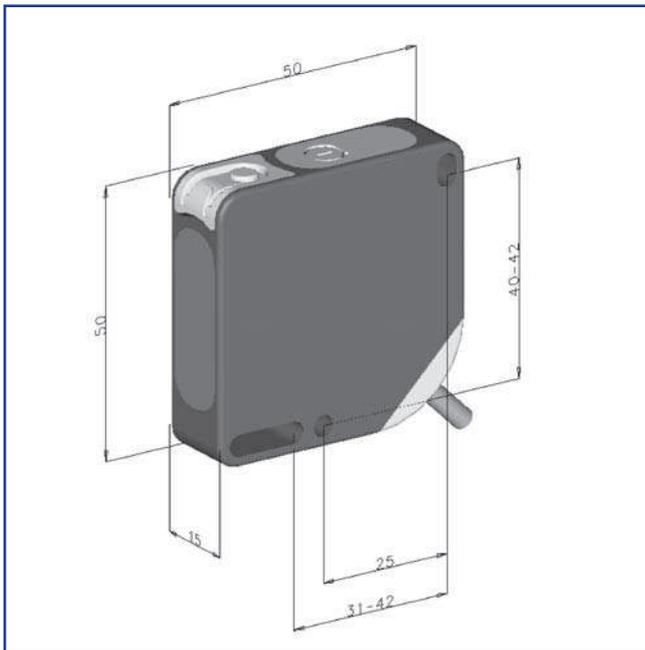
Analogue output on max. measurement range in inverse proportionality

TECHNOLOGY ADVANTAGES

The S60 series establishes the new market standard in the compact 50 x 50 mm photoelectric sensors, offering a complete family of optic functions with only 15 mm housing width.

The standard dimensions, reduced housing width and the multi-hole fixing system make the **S60** series compatible with the majority of compact sensors present on the market.

STANDARD 50 x 50 x 15 mm



COMPACT PHOTOELECTRIC SENSORS

All the models are available in cable or M12 connector versions, with NPN or PNP type static output, conforming to the EN 60947-5-2 European standard.

The M12 connector can be easily rotated to 90° and can be blocked in the straight or right-angle positions respect to the optic axis, the cable emerges at 45° and thanks to its flexibility can rotate practically 360°. Thanks to these characteristics the sensor can be easily fixed on all sides and at all angles.

All the basic optic functions such as the through beam, polarised retroreflex, diffuse proximity and background suppression are available also in the version with visible red laser emission, with all the safety characteristics for the user in class 1 conforming to the EN 60825-1 European standard and in class II according to CDRH21 CFR Part 1040 USA standard.

Besides the evident advantages for the alignment of sensors and of the object to detect, thanks to the high spot visibility and concentration, the laser emissions offer an improved detection resolution, millimetric for the through beam and polarised retroreflex versions, or decimillimetric for the diffuse proximity and background suppression.

The polarised retroreflex model is available also in the coaxial optic version that, with the emitter optic axis coinciding with the receiver one, offers a better detection axis precision and the elimination of the blind zone near to the sensor.

TECHNOLOGY ADVANTAGES

The coaxial optics is present also in the polarised retroreflex model for the detection of transparent objects, notably increasing the performances of this optic function and its immunity to object movements inside the detection area.

The contrast sensor with white LED emission has an operating distance ranging from 17 to 21 mm and detects coloured or grey-scale marks, with a minimum dimension of 0.5 mm and an operating frequency reaching 5 kHz.

The luminescence sensor with UV LED emission has an operating distance ranging from 0 to 40 mm and detects fluorescent or luminescent targets, with a minimum dimension of 0.5 mm and an operating frequency reaching 2 kHz.

The setting of these sensors is extremely rapid and easy, thanks to the patent-covered **EASYtouch™** system that allows to automatically fix the object detection threshold, with a single pressure of the teach-in push-button.

It is possible to set the sensor to detect more critical differences between the mark and the background, or invert the dark or light operating mode, by pressing twice the push-button.

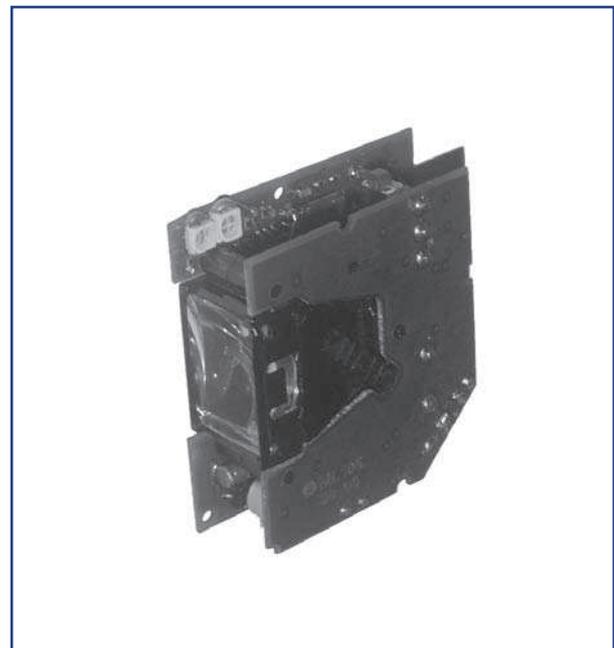
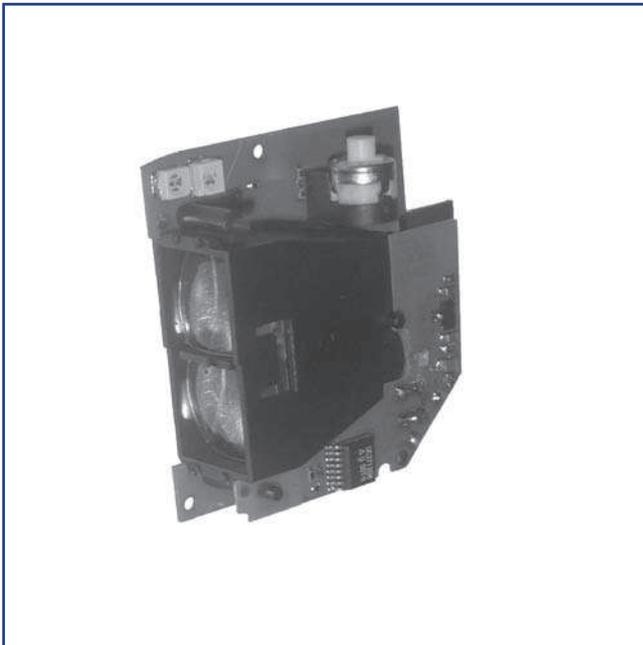
The EASYtouch™ system allows to select the 'Remote' function for the remote sensor setting through the cable or connector, the 'Keylock' function to block the keyboard, 'Delay OFF' function for the 20 ms timing of the output deactivation.

The sensor technology with background and/or foreground suppression of the **S60** series has allowed to develop also a cost-effective distance sensor with a double output: a 0 - 10 V analogue output and a digital NPN or PNP switching output.

The measurement range and the switching threshold output can be selected in the 50 - 150 mm range, with a ± 1 mm precision; the direct or inverse proportionality and the light or dark operating mode can be selected.

SMT chip-size for the electronic miniaturisation and more space for the optics

COAXIAL OPTICS



BIAXIAL OPTICS

Complete external shield for high electro-magnetic compatibility

ACCESSORIES

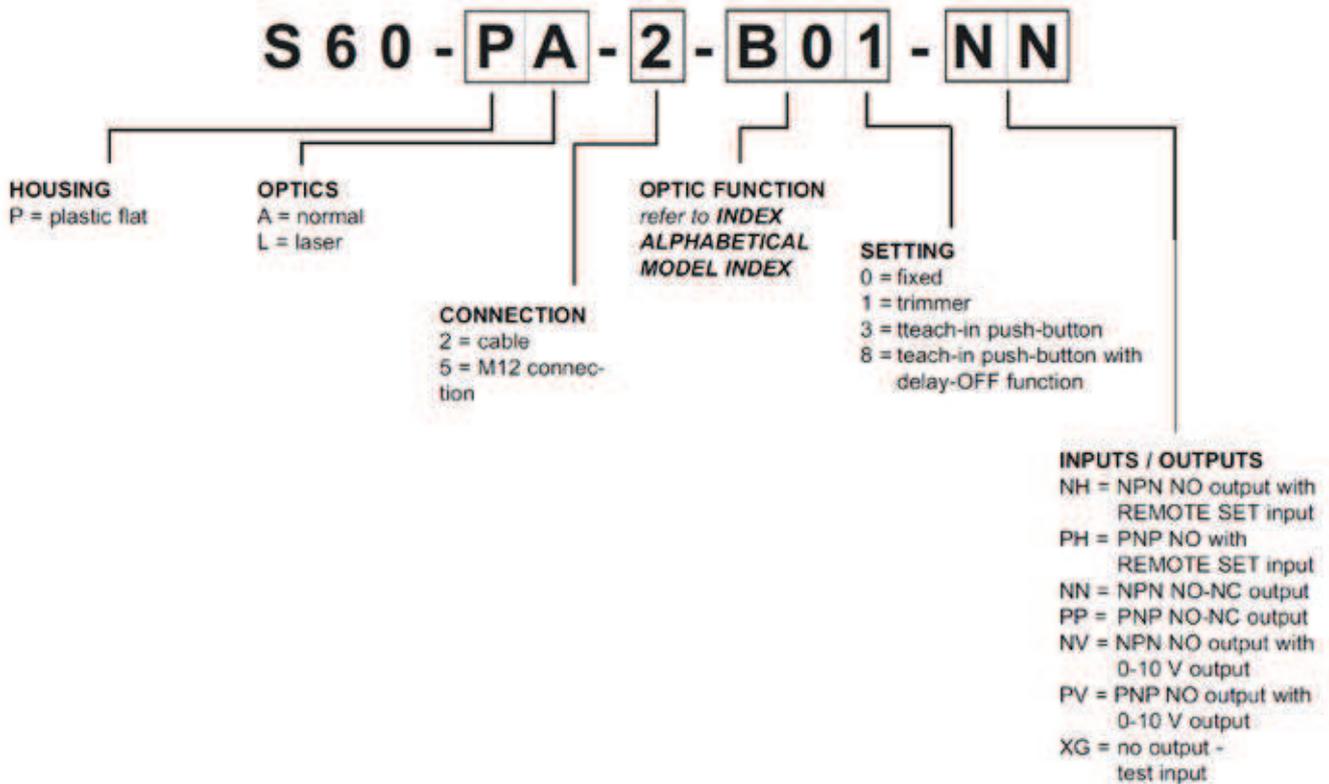
The series is compatible with the following Datalogic Automation accessories (refer **General Catalogue**)

- CS connectors
- R reflectors

New accessories dedicated to the **S60** series have been developed to cover all the fixing requirements and improve functioning.

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5018	protection bracket	95ACC5310
ST-5019	protection bracket	95ACC5320
ST-5020	fixing bracket	95ACC5330
ST-5021	fixing bracket	95ACC5340
JOINT-60	protection bracket with jointed support	95ACC5350
ST-504	S6/S60 fixing bracket	95ACC2820



Note: Not all code combinations are available. Please refer to alphabetical model index for the list of available models.

MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	N° ORDER	PAGE
S60-PA-2-B01-NN	polarised retroreflex	956201460	6
S60-PA-2-B01-PP	polarised retroreflex	956201300	6
S60-PA-2-C01-NN	diffuse proximity	956201470	14
S60-PA-2-C01-PP	diffuse proximity	956201310	14
S60-PA-2-C11-NN	long diffuse proximity	956201480	16
S60-PA-2-C11-PP	long diffuse proximity	956201320	16
S60-PA-2-F01-NN	recevier	956201490	2
S60-PA-2-F01-PP	recevier	956201330	2
S60-PA-2-G00-XG	emitter	956201340	2
S60-PA-2-T51-NN	retroreflex for transparents	956201530	12
S60-PA-2-T51-PP	retroreflex for transparents	956201380	12
S60-PA-2-U08-NH	luminescence sensor	956201540	28
S60-PA-2-U08-PH	luminescence sensor	956201390	28
S60-PA-2-W08-NH	contrast sensor	956201550	26
S60-PA-2-W08-PH	contrast sensor	956201400	26
S60-PA-5-B01-NN	polarised retroreflex	956201180	6
S60-PA-5-B01-PP	polarised retroreflex	956201040	6
S60-PA-5-B51-NN	coaxial polarised retroreflex	956201630	8
S60-PA-5-B51-PP	coaxial polarised retroreflex	956201620	8
S60-PA-5-C01-NN	diffuse proximity	956201190	14
S60-PA-5-C01-PP	diffuse proximity	956201050	14
S60-PA-5-C11-NN	long diffuse proximity	956201200	16
S60-PA-5-C11-PP	long diffuse proximity	956201110	16
S60-PA-5-F01-NN	recevier	956201210	2
S50-PA-5-F01-PP	recevier	956201060	2
S60-PA-5-G00-XG	emitter	956201070	2
S60-PA-5-M08-NH	background suppression	956201220	20
S60-PA-5-M08-PH	background suppression	956201080	20

MODEL	FUNCTION	N° ORDER	PAGE
S60-PA-5-N03-NH	fore-background suppression	956201240	24
S60-PA-5-N03-PH	fore-background suppression	956201090	24
S60-PA-5-T51-NN	retroreflex for transparents	956201250	12
S60-PA-5-T51-PP	retroreflex for transparents	956201100	12
S60-PA-5-U08-NH	luminescence sensor	956201010	28
S60-PA-5-U08-PH	luminescence sensor	956201000	28
S60-PA-5-W08-NH	contrast sensor	956201030	26
S60-PA-5-W08-PH	contrast sensor	956201020	26
S60-PA-5-Y03-NV	distance sensor	956201700	30
S60-PA-5-Y03-PV	distance sensor	956201710	30
S60-PL-2-B01-NN	laser polarised retroreflex	956201560	10
S60-PL-2-B01-PP	laser polarised retroreflex	956201410	10
S60-PL-2-C01-NN	laser diffuse proximity	956201640	18
S60-PL-2-C01-PP	laser diffuse proximity	956201650	18
S60-PL-2-F01-NN	laser receiver	956201570	4
S60-PL-2-F01-PP	laser receiver	956201420	4
S60-PL-2-G00-XG	laser emitter	956201430	4
S60-PL-2-M08-NH	laser background suppression	956201580	22
S60-PL-2-M08-PH	laser background suppression	956201440	22
S60-PL-5-B01-NN	laser polarised retroreflex	956201260	10
S60-PL-5-B01-PP	laser polarised retroreflex	956201120	10
S60-PL-5-C01-NN	laser diffuse proximity	956201660	18
S60-PL-5-C01-PP	laser diffuse proximity	956201670	18
S60-PL-5-F01-NN	laser receiver	956201270	4
S50-PL-5-F01-PP	laser receiver	956201140	4
S60-PL-5-G00-XG	laser emitter	956201150	4
S60-PL-5-M08-NH	laser background suppression	956201280	22
S60-PL-5-M08-PH	laser background suppression	956201160	22



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

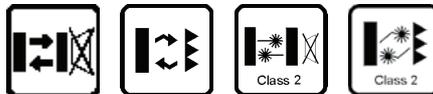
S62 SERIES

The **S62** series, developed in the 50 x 50 x 18 mm compact plastic housing, offers the maximum performances in the main optic detection functions for industrial automation.

The background suppression proximity models reach a 3-30 cm range with visible red LED emission, or 6-60, 6-120 and 20-200 cm with infrared emission. The operating distance can be adjusted through a precise multiturn mechanical regulation of the optic triangulation, to obtain the maximum immunity against colour differences of the objects to detect or of the backgrounds to suppress, even if very reflective.

The polarised retroreflex models with visible red LED emission present a very long operating distance reaching 10 m with high excess gain and immunity against reflection received from objects different from a prismatic reflector, such as shiny mirror surfaces.

Furthermore, versions with visible red Laser emission are available with both 3-15 or 5-35 cm background suppression proximity and polarised retroreflex reaching more than 22 m. These Laser sensors are characterised by a very small light spot, as well as a low response time that guarantee excellent detection repeatability, even of very small objects or movements.

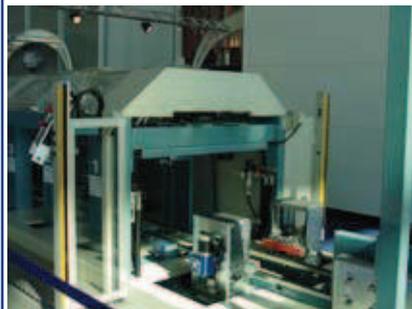


HIGHLIGHTS

- High-resolution sensors with LED or Laser emission
- Background suppression models ranging from 30 cm to 2 m
- Polarised retroreflex with operating distance reaching 20 m
- Sturdy ABS housing with compact 50 x 50 x 18 mm dimensions
- NPN or PNP double output with standard NO-NC configuration

APPLICATIONS

Ceramics



Beverage & Bottling



Transportation lines

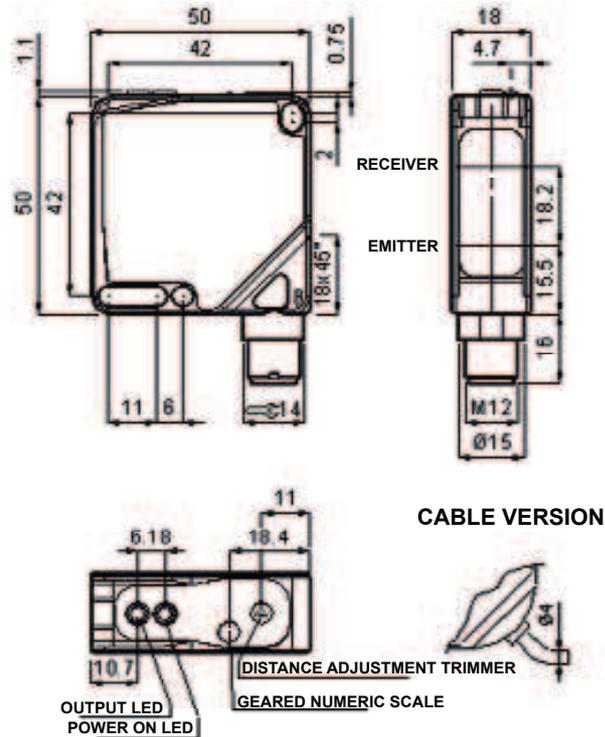


Packaging lines

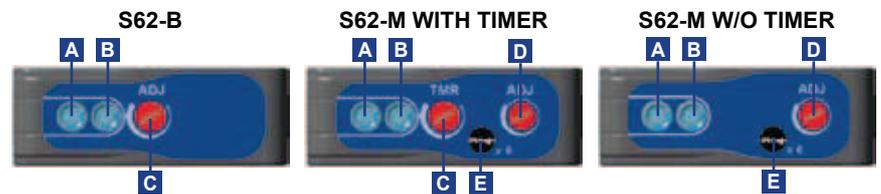


The background suppression proximity can set very precisely the limit over which the object is not detected, with minimum differences also between objects with material or colour differences. The threshold switching adjustment is easier and more precise thanks to the multiturn mechanical trimmer and the gear numeric scale. The polarised retroreflex, thanks to high-polarisation optic filters, detects also very reflective objects also with mirror surfaces, that however do not rotate the polarisation plane of the reflected light, like the prismatic reflector.

DIMENSIONS



INDICATORS AND SETTINGS



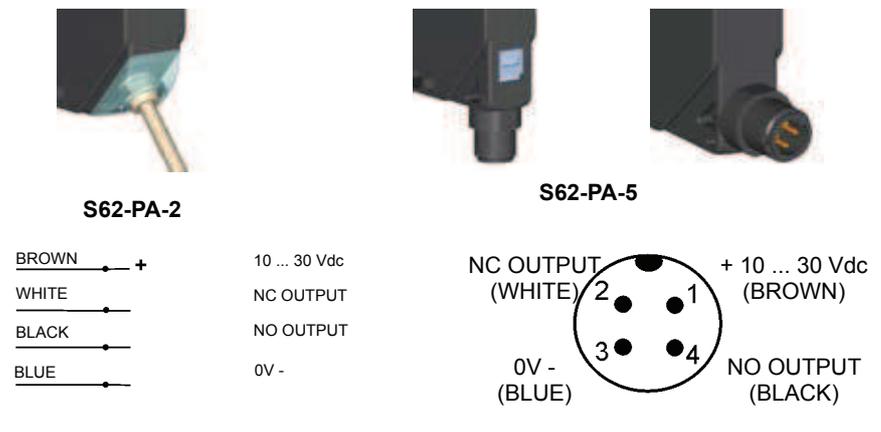
- A** Output status LED
- B** Stability LED or Power ON LED (laser vers.)
- C** Timer adjustment trimmer
- D** Distance adjustment trimmer
- E** Geared numeric scale
- F** M12 connector output
- G** Cable output

ACCESSORIES

For dedicated accessories refer to the ACCESSORIES section.

Refer also to Connectors and Reflectors of the General Catalogue.

CONNECTIONS



TECHNICAL DATA OF MODELS WITH LED EMISSION

		S62-PA-2-B01	S62-PA-2-M01	S62-PA-2-M11	S62-PA-2-M21	S62-PA-2-M31	S62-PA-5-B01	S62-PA-5-M01	S62-PA-5-M05	S62-PA-5-M11	S62-PA-5-M15	S62-PA-5-M21	S62-PA-5-M25	S62-PA-5-M31	S62-PA-5-M35
Polarised retroreflex operating distance:	0 ... 10 m (on R5)	•					•								
Background suppr. operating distance:	30 ... 300 mm		•					•	•						
	60 ... 600 mm			•						•	•				
	60 ... 1200 mm				•							•	•		
	200 ... 2000 mm					•								•	•
Power supply:	10 ... 30 Vdc	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	≤ 40 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission ¹:	red LED 640 nm	•					•								
	red LED 660 nm		•					•	•						
	infrared LED 880 nm			•	•	•				•	•	•	•	•	•
Spot dimension:	6 x 6 mm at 200 mm		•					•	•						
	15 x 15 mm at 400 mm			•	•					•	•	•	•		
	ca. 80 mm at 3 m	•					•								
	200 x 200 at 2000 mm					•								•	•
Setting:	270° trimmer	•					•								
	6-turn trimmer		•	•	•	•		•	•	•	•	•	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP, NO and NC (-PP suffix)	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	NPN, NO and NC (-NN suffix)		•	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	500 μs	•	•	•			•	•	•	•					
	1 ms				•							•	•		
	1.5 ms					•								•	•
Max. switching frequency:	330 Hz					•								•	•
	500 Hz				•							•	•		
	1 kHz	•	•	•			•	•	•	•	•				
Operating mode:	light on NO / dark on NC		•	•	•	•		•	•	•	•	•	•	•	•
	light on NC / dark on NO	•					•								
Timing function:	0 ... 1 sec.							•		•		•		•	
Connection:	2 m Ø 4 mm cable ²	•	•	•	•	•									
	M12 4-pole connector ³						•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁴	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lens material:	window in PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	lenses in PC	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	90 g max.	•	•	•	•	•									
	40 g max.						•	•	•	•	•	•	•	•	•
Operating temperature:	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•



TECHNICAL NOTES

¹ Average life of 100.000 h with TA = +25 °C

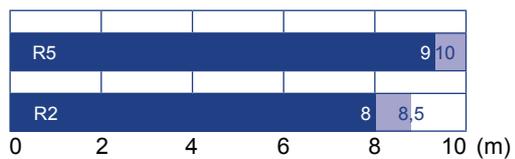
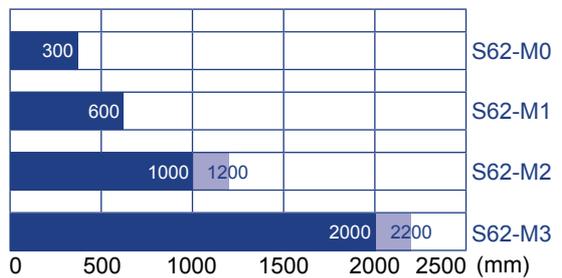
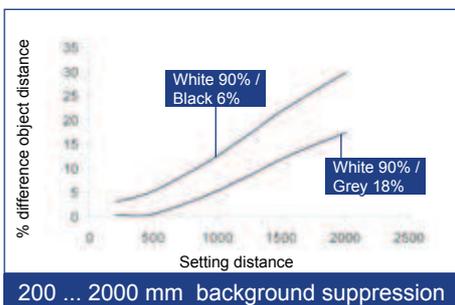
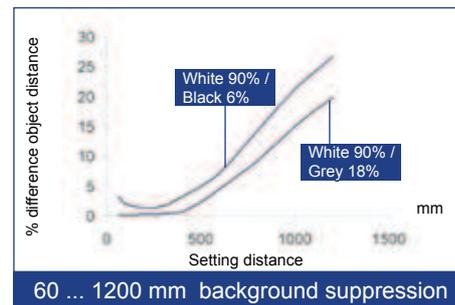
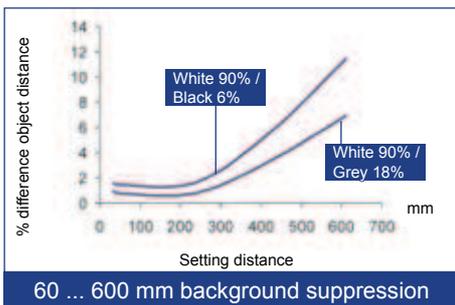
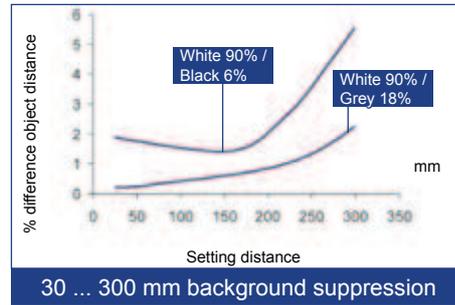
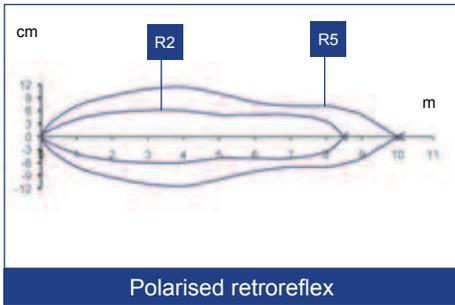
² PVC, 4 x 0.14 mm²

³ Connettore bloccabile in two positions

⁴ A - reverse polarity protection

B - overload and short-circuit protection

DETECTION DIAGRAMS OF MODELS WITH LED EMISSION



■ Recommended operating distance

■ Maximum operating distance

TECHNICAL DATA OF MODELS WITH LASER EMISSION

		S62-PL-5-B01	S62-PL-5-M01	S62-PL-5-M11
Polarised retroreflex operating distance:	0.3 ... 20 m (on R2, refer to table)	•		
Background suppr. operating distance:	30 ... 150 mm		•	
	50 ... 350 mm			•
Power supply:	10 ... 30 Vdc	•	•	•
Ripple:	≤ 2 Vpp	•	•	•
Consumption:	≤ 30 mA	•	•	•
Light emission¹ :	red Laser 645...665 nm	•	•	•
	classe II EN 60825-1			
	classe II CDRH21 CFR 1040.10			
Spot dimension:	0.5 mm at 0.5 m	•		
	£ 0.2 mm at 60 mm		•	
	£ 0.4 mm at 150 mm			•
Setting:	270° trimmer	•		
	4-turn trimmer		•	
	6-turn trimmer			•
Indicators:	yellow OUTPUT LED	•	•	•
	green POWER ON LED	•	•	•
Output type:	PNP, NA and NC (-PP suffix)	•	•	•
	NPN, NA and NC (-NN suffix)	•	•	•
Output current:	≤100 mA	•	•	•
Saturation voltage:	≤ 2 V	•	•	•
Response time:	140 µs		•	
	200 µs	•		•
Max. switching frequency:	2.5 kHz	•		•
	3.5 kHz		•	
Operating mode:	light on NO / dark on NC		•	•
	light on NC / dark on NO	•		
Connection:	M12 4-pole connector ²	•	•	•
Mechanical protection:	IP67	•	•	•
Protection devices:	A, B ³	•	•	•
Housing material:	ABS	•	•	•
Lens material:	window in PMMA	•	•	•
	lenses in PC / PMMA	•	•	•
Weight:	40 g max.	•	•	•
Operating temperature:	-10 ... +55°C	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•	•	•



TECHNICAL NOTES

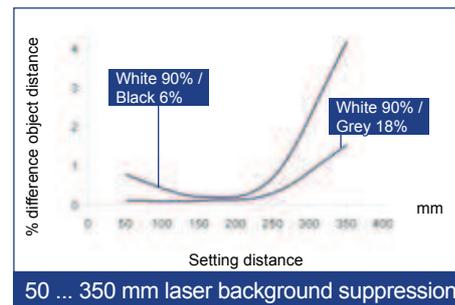
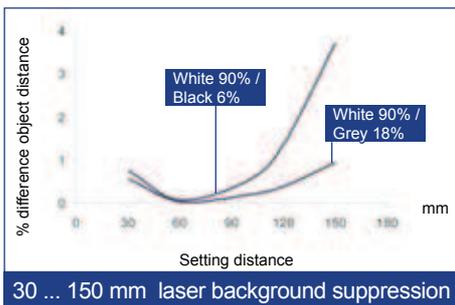
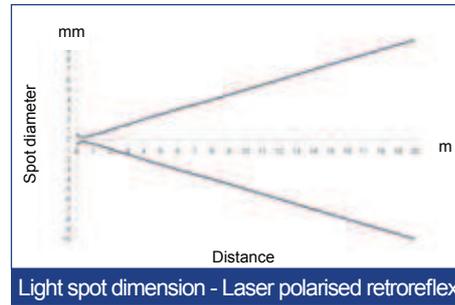
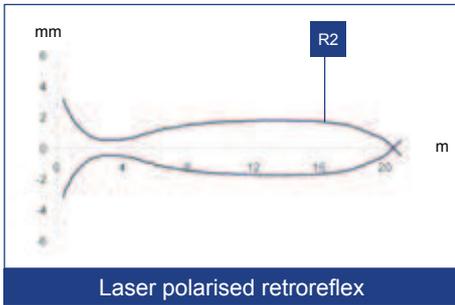
¹ Average life of 50.000 h with TA = +25 °C

² Connettore bloccabile in two positions

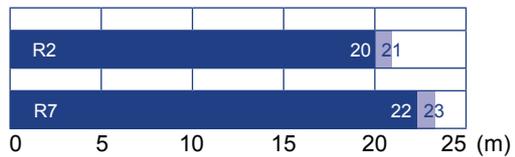
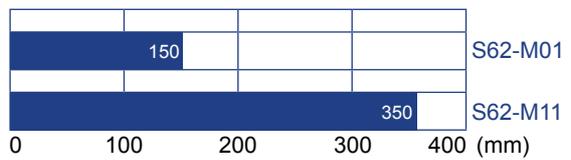
³ A - reverse polarity protection

B - overload and short-circuit protection

DETECTION DIAGRAMS OF MODELS WITH LASER EMISSION



Reflector operating distances (m)				
R1	R2	R6	R7 / R20	R8
0.3 ... 16	0.3 ... 20	0.4 ... 22	0.3 ... 22	0.2 ... 2
The use of the RT3970 reflecting tape is suggested.				



■ Recommended operating distance
■ Maximum operating distance

MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	CONNECTION	OUTPUT	ORDER N°
S62-PA-2-B01-PP	10 m polarised retroreflex	2 m cable	PNP	956211010
S62-PA-5-B01-PP	10 m polarised retroreflex	M12 connector	PNP	956211000
S62-PA-5-B01-NN	10 m polarised retroreflex	M12 connector	NPN	956211020
S62-PA-2-M01-PP	300 mm background suppression	2 m cable	PNP	956201840
S62-PA-5-M01-PP	300 mm background suppression	M12 connector	PNP	956201830
S62-PA-5-M01-NN	300 mm background suppression	M12 connector	NPN	956201810
S62-PA-5-M05-PP	300 mm background suppression, with timer	M12 connector	PNP	956201820
S62-PA-5-M05-NN	300 mm background suppression, with timer	M12 connector	NPN	956201800
S62-PA-2-M11-PP	600 mm background suppression	2 m cable	PNP	956201890
S62-PA-5-M11-PP	600 mm background suppression	M12 connector	PNP	956201880
S62-PA-5-M11-NN	600 mm background suppression	M12 connector	NPN	956201860
S62-PA-5-M15-PP	600 mm background suppression, with timer	M12 connector	PNP	956201870
S62-PA-5-M15-NN	600 mm background suppression, with timer	M12 connector	NPN	956201850
S62-PA-5-M21-PP	1200 mm background suppression	M12 connector	PNP	956201900
S62-PA-2-M21-PP	1200 mm background suppression	2 m cable	PNP	956201940
S62-PA-5-M21-NN	1200 mm background suppression	M12 connector	NPN	956201910
S62-PA-5-M25-PP	1200 mm background suppression, with timer	M12 connector	PNP	956201920
S62-PA-5-M25-NN	1200 mm background suppression, with timer	M12 connector	NPN	956201930
S62-PA-2-M31-PP	2000 mm background suppression	2 m cable	PNP	956211050
S62-PA-5-M31-NN	2000 mm background suppression	M12 connector	NPN	956211060
S62-PA-5-M31-PP	2000 mm background suppression	M12 connector	PNP	956211070
S62-PA-5-M35-NN	2000 mm background suppression, with timer	M12 connector	NPN	956211080
S62-PA-5-M35-PP	2000 mm background suppression, with timer	M12 connector	PNP	956211090
S62-PL-5-B01-NN	20 m laser polarised retroreflex	M12 connector	NPN	956211100
S62-PL-5-B01-PP	20 m laser polarised retroreflex	M12 connector	PNP	956211110
S62-PL-5-M01-NN	150 mm laser background suppression	M12 connector	NPN	956211120
S62-PL-5-M01-PP	150 mm laser background suppression	M12 connector	PNP	956211130
S62-PL-5-M11-NN	350 mm laser background suppression	M12 connector	NPN	956211140
S62-PL-5-M11-PP	350 mm laser background suppression	M12 connector	PNP	956211150

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
R1	Ø 23 mm prismatic reflector with Ø 31 mm support	S940700023
R2	Ø 48 mm prismatic reflector with Ø 63 mm support	S940700048
R6	36 x 55 mm prismatic reflector with 40.5 x 60 mm support	95A151350
R7	38 x 40 mm microprism reflector with 51 x 60.7 mm support	95A151360
R8	9.7 x 19 mm microprism reflector with 13.8 x 23 mm support	95A151370
R20	Ø 48 mm prismatic reflector with Ø 63 mm support	95A151090
JOINT-S62	protection bracket with jointed support	95ACC2430
ST-504	fixing bracket	95ACC2820
ST-5020	fixing bracket	95ACC5330
ST-5021	fixing bracket	95ACC5340
ST-5053	protection bracket	95ACC2410
ST-5054	protection bracket	95ACC2420

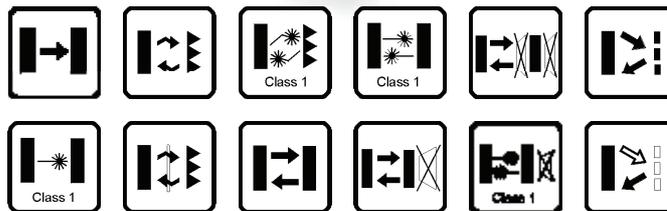
Please refer also to Datalogic Automation connectors and reflectors



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S90 SERIES

The **S90** series, in a compact 41x49x15 mm metal housing, offers all the application and universal optic functions also with safety class 1 laser emission. The series includes polarised retroreflex models with coaxial optics for the detection of reflective and transparent objects, background and foreground suppression versions, contrast sensor with white light emission for colour mark detection, ultraviolet sensor for luminescent object detection. Basic models are available with class 1 laser emission for high-resolution detection. The **S90** models with universal proximity, retroreflex and through beam optic functions have trimmer sensitivity adjustment. More sophisticated models are microprocessor controlled and offer the patent-covered EASYtouch™ setting procedure for rapid and precise automatic setting of the switching threshold, with remote control, keyboard lock and output delay activation functions. NPN or PNP versions are available with standard M12 connector that can be rotated in 4 different positions.

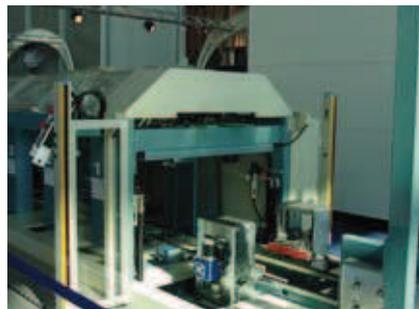


HIGHLIGHTS

- Sturdy metal housing in a compact 41x49x15 mm format
- Complete range of universal, application and laser optic functions
- Trimmer or push-button setting with EASYtouch™ function
- NPN and PNP versions standard M12 rotatable connector

APPLICATIONS

Ceramics



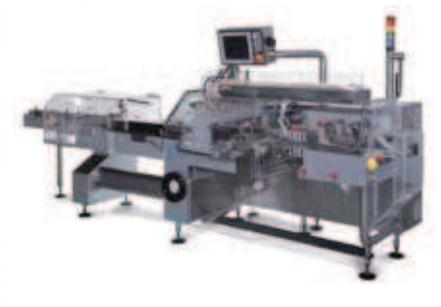
Beverage & Bottling



Transportation lines



Packaging lines



The polarised retroreflex model and the version for transparent object detection are available also with coaxial optics guaranteeing a more accurate axis detection as well as the elimination of the blank zone near to the sensor.

The coaxial optics is also present in the contrast sensor with white light LED emission and in the luminescence sensor with ultraviolet light LED emission, improving the precision and depth of field.

The biaxial optics which is present in the background suppression models, including laser versions, allows the triangulation for a precise detection.

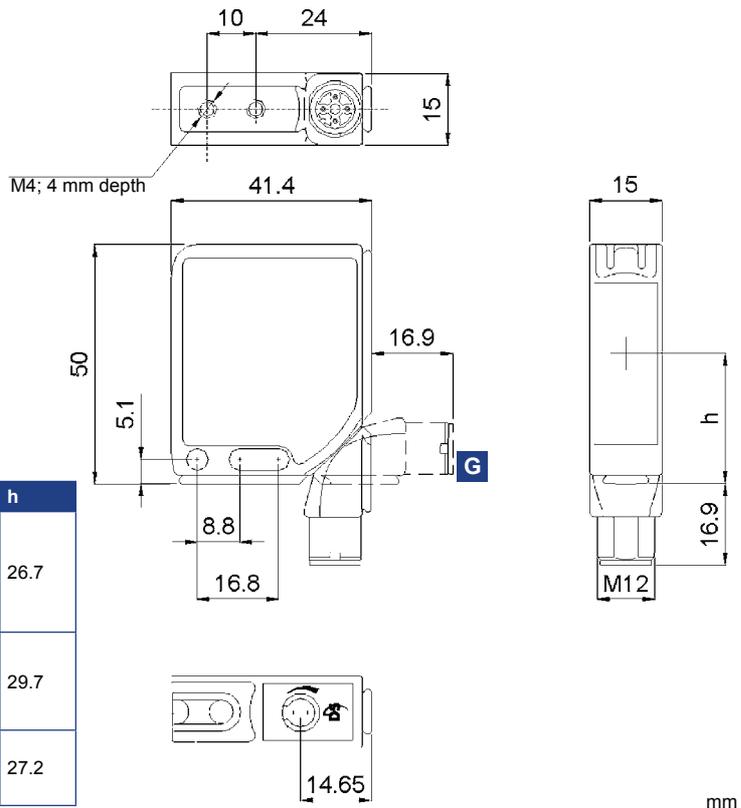


BIAXIAL OPTICS



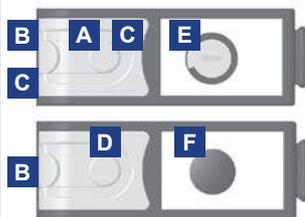
COAXIAL OPTICS

DIMENSIONS



VERSIONS	h
B01	26.7
C01	
C11	
F01	
G00	
B51	29.7
T51	
U	
W	27.2
M	
N	
ML	

INDICATORS AND SETTINGS



- A** STABILITY LED
- B** Output status LED
- C** POWER ON LED
- D** READY/ERROR LED
- E** Trimmer
- F** SET push-button *
- G** M12 connector output, orientable in 4 positions

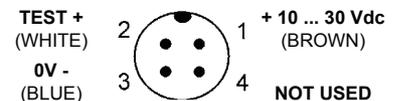
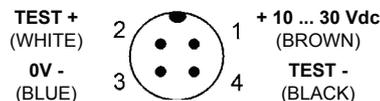
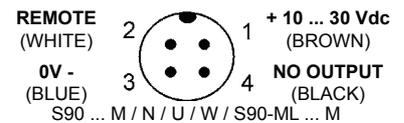
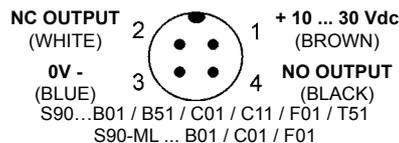
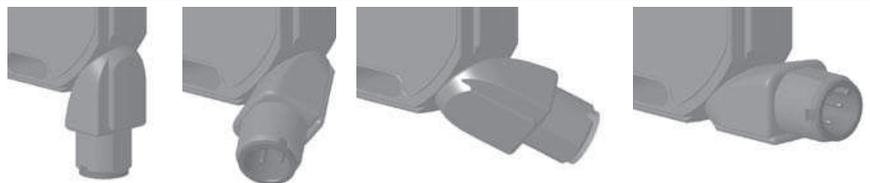
* Teach-in push-button for setting.

EASYtouch™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.

ACCESSORIES

For dedicated accessories refer to the ACCESSORIES section of this catalogue.
Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

CONNECTIONS



Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

		S90-MA-5-F01	S90-ML-5-F01	S90-MA-5-G00	S90-ML-5-G00	S90-MA-5-B01	S90-ML-5-B01	S90-MA-5-B51	S90-ML-5-T51	S90-MA-5-C01	S90-ML-5-C01	S90-MA-5-C11	S90-ML-5-M08	S90-MA-5-N03	S90-ML-5-W08	S90-MA-5-U08
Operating distance:																
through beam	0 ... 20 m	•														
laser through beam	0 ... 60 m	•														
polarised retroreflex	0.1 ... 6 m (on R2)					•										
coaxial polarised retroreflex	0 ... 3 m (on R2)															
retroreflex for transparents	0 ... 1.5 m (on R2)															
laser polarised retroreflex	0.1 ... 20 m (on R2)					•										
medium proximity	1 ... 100 cm															
long proximity	5 ... 200 cm															
laser proximity	0 ... 60 cm															
background suppression	2 ... 20 cm															
foreground suppression	7 ... 20 cm															
laser background suppression	5 ... 10 cm															
contrast sensor	19 mm ± 2 mm															
luminescence sensor	0 ... 40 mm															
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Ripple:	2 Vpp	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	30 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	35 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	50 mA max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Light emission²:	red LED 660 nm					•	•	•	•							
	infrared LED 880 nm					•										
	red LED 670 nm															
	UV LED 370 nm															
	white LED 400 - 700 nm															
	red LASER 650 nm					•	•	•	•	•	•	•	•	•	•	•
Setting:	sensitivity trimmer ³	•	•			•	•	•	•	•	•	•	•	•	•	•
	SET push-button															
Setting Procedure:	EASYtouch™															
Indicators:	yellow OUTPUT LED ²	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green STABILITY LED	•				•	•	•	•							
	green POWER ON LED	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	green/red READY/ERROR LED															
Output type:	30 Vdc max., NPN or PNP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	£ 100 mA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Saturation voltage:	£ 2 V	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	100 ms															
	250 ms															
	333 ms															
	500 ms															
	1 ms															
Switching frequency:	500 Hz	•														
	1 kHz															
	1.5 kHz															
	2 kHz															
	5 kHz															
Connection:	M12 4-pole connector ⁴	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	Zama (Zn-Al alloy)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Lens material⁶:	window in PMMA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	window in glass (tilted anti-reflection)															
Weight:	77 g max.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating temperature:	-10 ... +50°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	-10 ... +55°C															
	-25 ... +55°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-20 ... +70°C															
	-25 ... +70°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

SELECTION TABLE

receiver			
S90-MA-5-F01-PP	956301050	PNP	
S90-MA-5-F01-NN	956301210	NPN	
S90-ML-5-F01-PP	956301110	PNP	laser
S90-ML-5-F01-NN	956301280	NPN	laser

emitter			
S90-MA-5-G00-XG	956301060	-	
S90-ML-5-G00-XG	956301120	-	laser

polarised retroreflex			
S90-MA-5-B01-PP	956301000	PNP	
S90-MA-5-B01-NN	956301160	NPN	
S90-ML-5-B01-PP	956301090	PNP	laser
S90-ML-5-B01-NN	956301260	NPN	laser

coaxial polarised retroreflex			
S90-MA-5-B51-PP	956301030	PNP	coaxial
S90-MA-5-B51-NN	956301170	NPN	coaxial

retroreflex for transparents			
S90-MA-5-T51-PP	956301040	PNP	coaxial
S90-MA-5-T51-NN	956301180	NPN	coaxial

diffuse proximity			
S90-MA-5-C01-PP	956301010	PNP	
S90-MA-5-C01-NN	956301190	NPN	
S90-ML-5-C01-PP	956301100	PNP	laser
S90-ML-5-C01-NN	956301270	NPN	laser
S90-MA-5-C11-PP	956301020	PNP	
S90-MA-5-C11-NN	956301200	NPN	

background suppression			
S90-MA-5-M08-PH	956301070	PNP	
S90-MA-5-M08-NH	956301220	NPN	
S90-ML-5-M08-PH	956301130	PNP	laser
S90-ML-5-M08-NH	956301290	NPN	laser

foreground suppression			
S90-MA-5-N03-PH	956301080	PNP	
S90-MA-5-N03-NH	956301230	NPN	

contrast sensor			
S90-MA-5-W08-PH	956301150	PNP	coaxial
S90-MA-5-W08-NH	956301250	NPN	coaxial

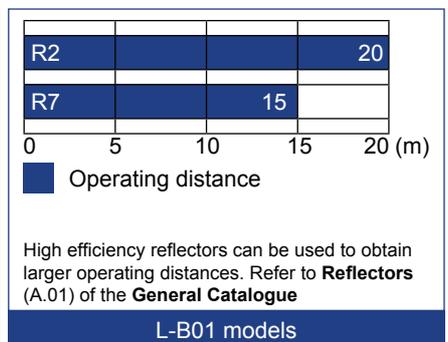
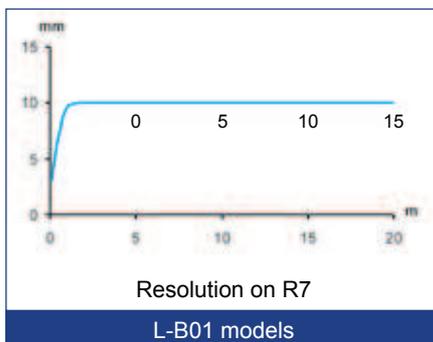
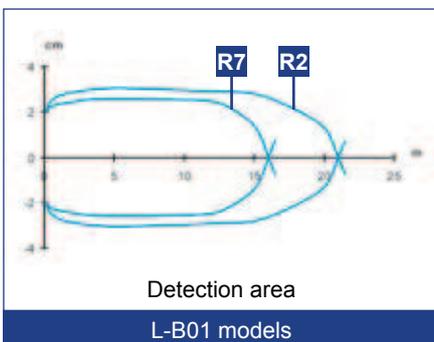
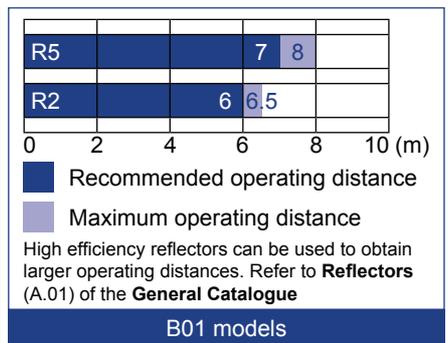
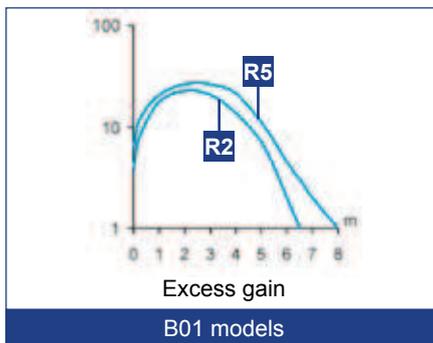
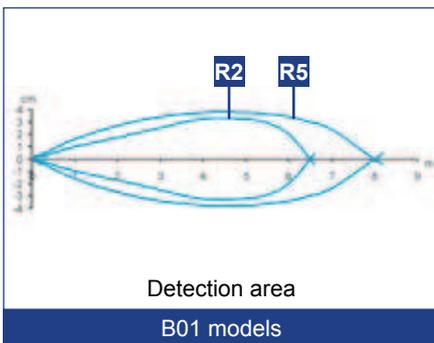
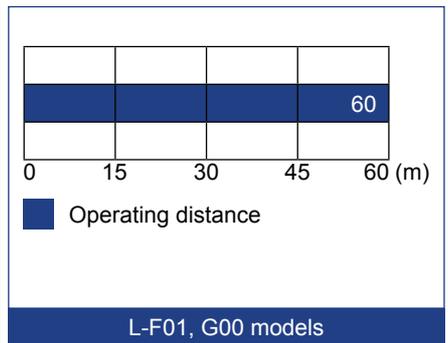
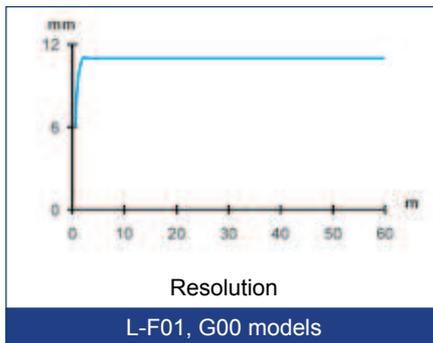
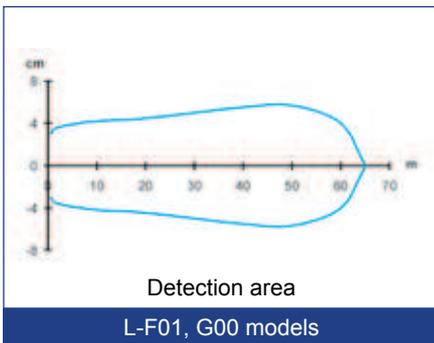
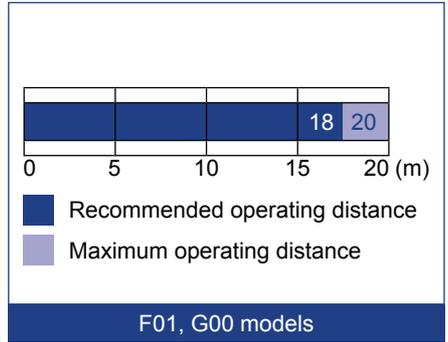
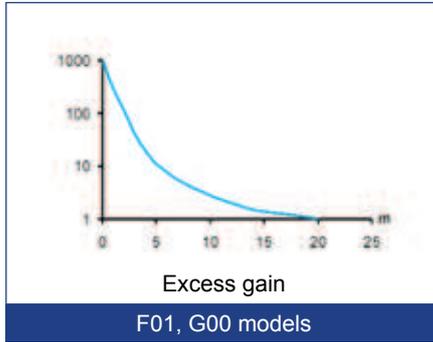
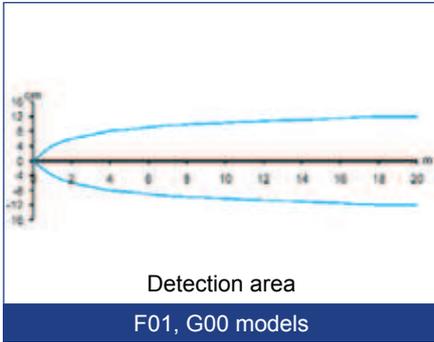
luminescence sensor			
S90-MA-5-U08-PH	956301140	PNP	coaxial
S90-MA-5-U08-NH	956301240	NPN	coaxial

TECHNICAL NOTES

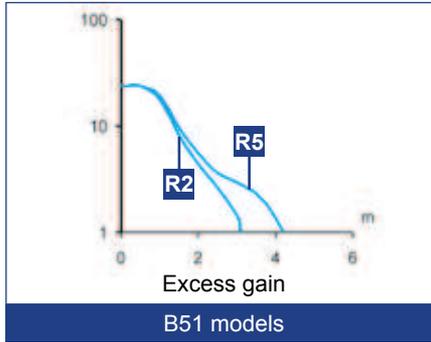
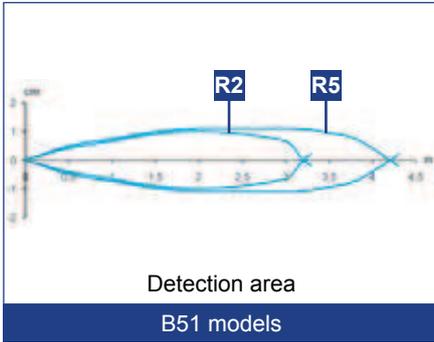
- Limit values
- Average life of 100.000 h with TA = +25 °C
Average life of 50.000 in ML-B01, C01, F01, M vers.
- 270° single-turn trimmer
- Connector with 4 position rotation
- A - reverse polarity protection
B - overload and short-circuit protection
- Internal lenses in polycarbonate
Internal lenses in glass in B51, T51, U, W vers.
Internal lenses in glass and PC in ML-B01, C01, F01, M vers.



DETECTION DIAGRAMS



DETECTION DIAGRAMS



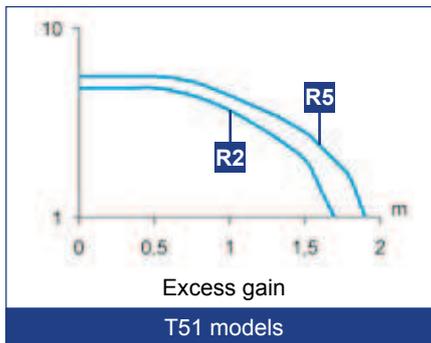
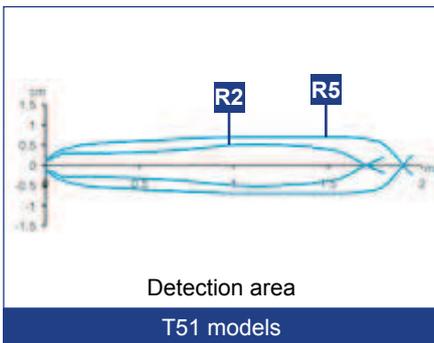
R5				4	5
R2			3	3.5	

0 1 2 3 4 5 (m)

■ Recommended operating distance
■ Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**

B51 models

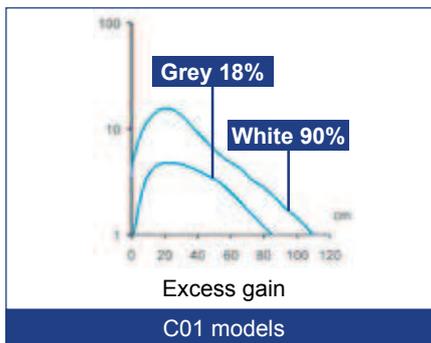
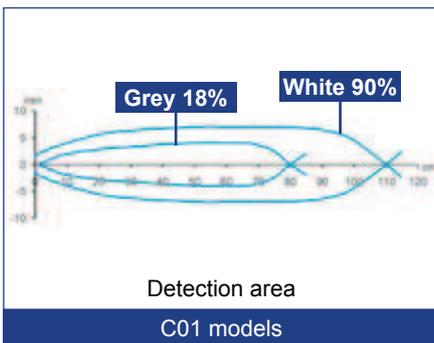


R5			1.7	2
R2			1.5	1.7

0 0.5 1 1.5 2 (m)

■ Recommended operating distance
■ Maximum operating distance

T51 models

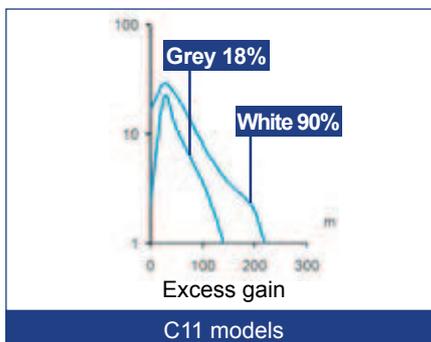
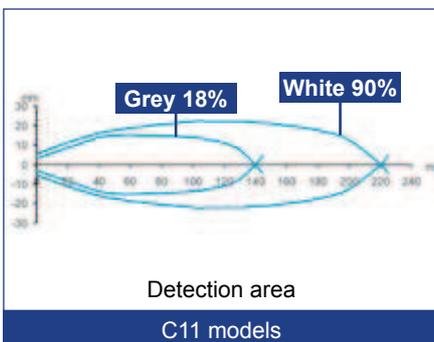


White			100	110
Grey			70	80

0 30 60 90 120 (cm)

■ Recommended operating distance
■ Maximum operating distance

C01 models



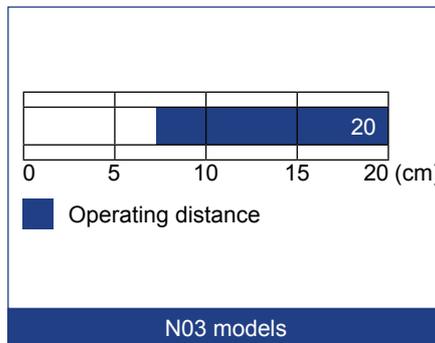
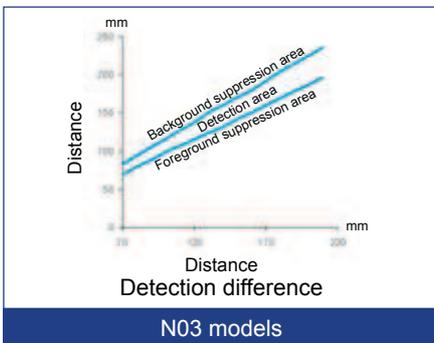
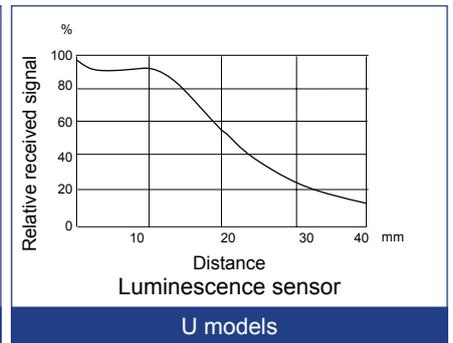
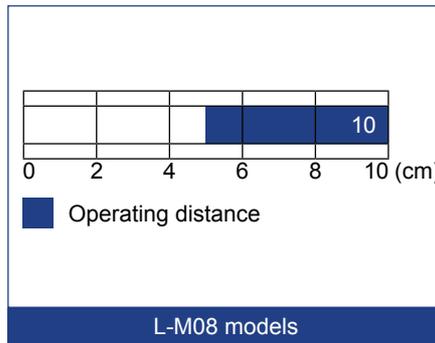
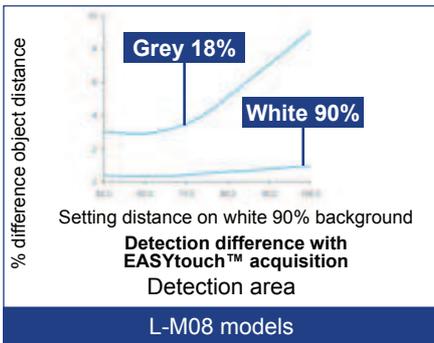
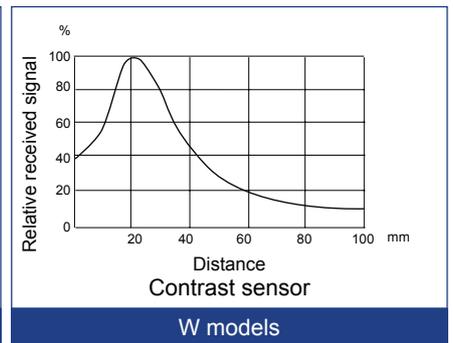
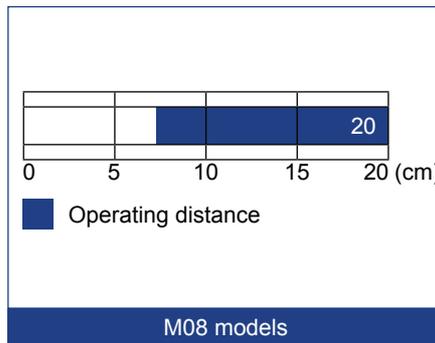
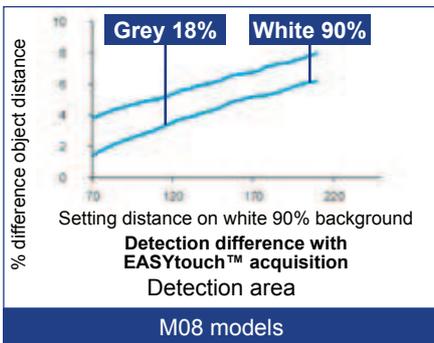
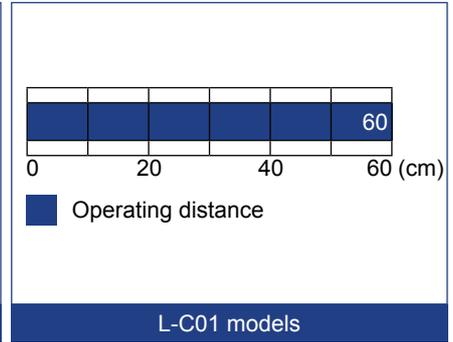
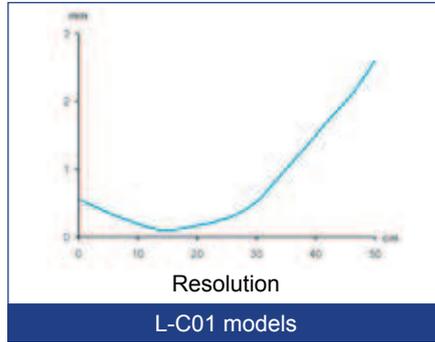
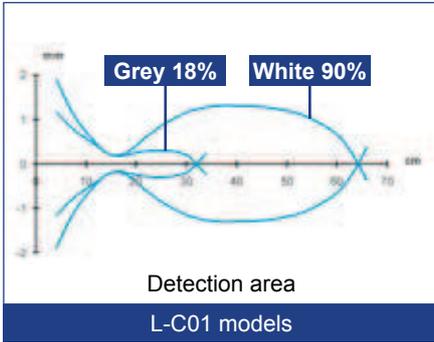
R5			2	2.2
R2			1.2	1.4

0 0.5 1 1.5 2 2.5 (m)

■ Recommended operating distance
■ Maximum operating distance

C11 models

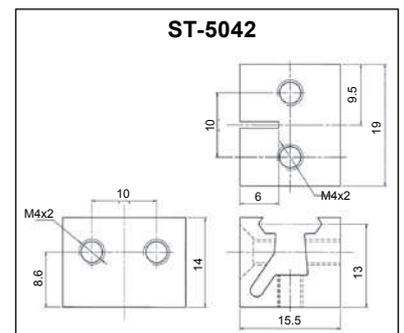
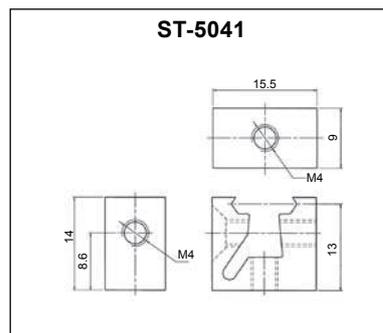
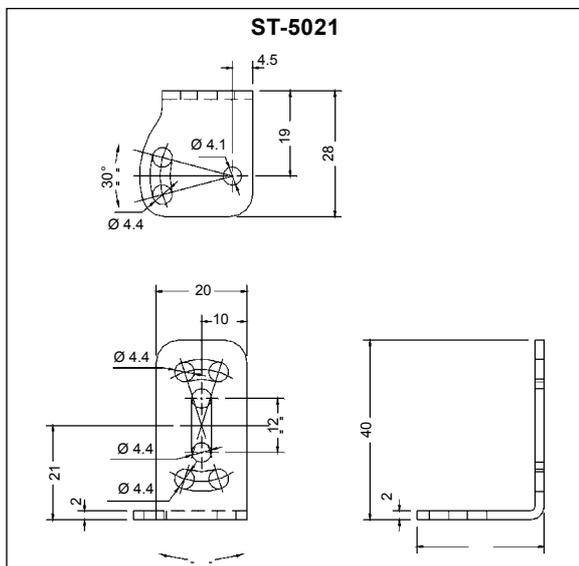
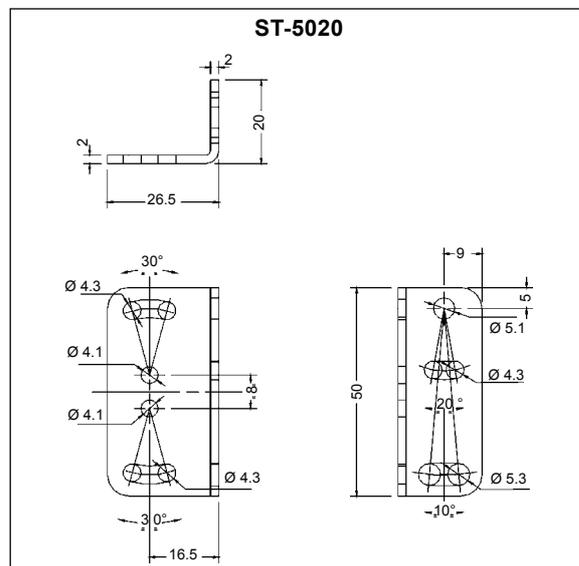
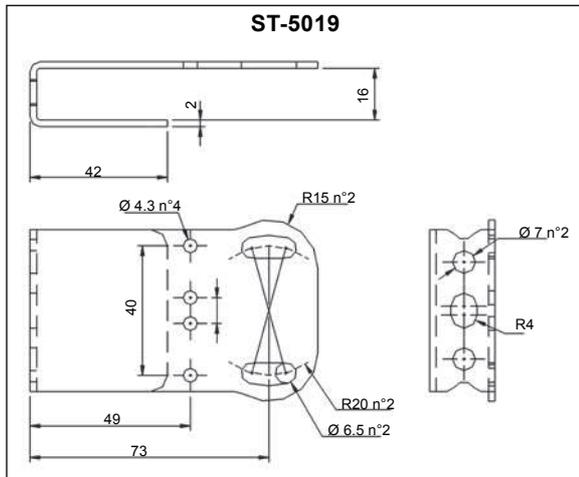
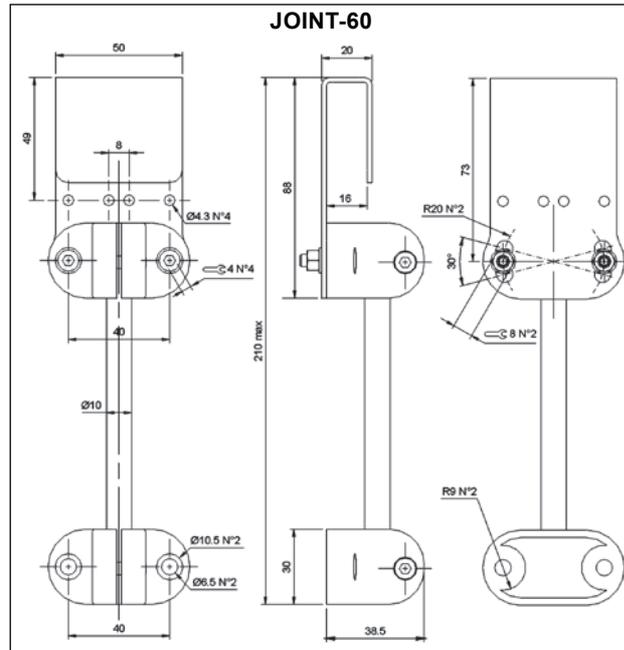
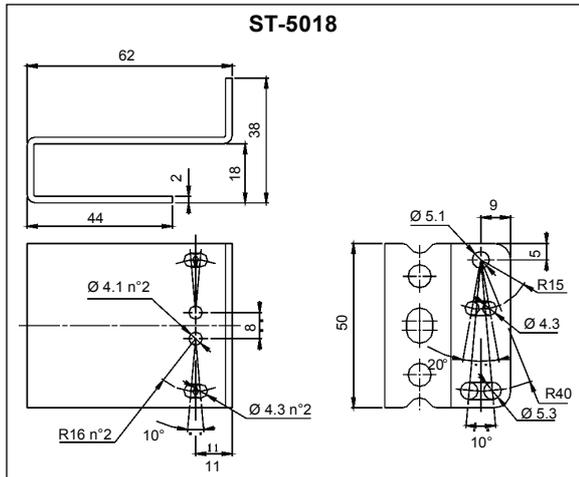
DETECTION DIAGRAMS



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5018	protection bracket	95ACC5310
ST-5019	protection bracket	95ACC5320
ST-5020	fixing bracket	95ACC5330
ST-5021	fixing bracket	95ACC5340
ST-5041	short dove-tail fixing bracket	95ACC2300
ST-5042	long dove-tail fixing bracket	95ACC2310
JOINT-60	protection bracket with jointed support	95ACC5350

Refer also to Accessories for Sensors



MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	OUTPUT	CONNECTION	ORDER N°
S90-MA-5-F01-PP	receiver	PNP NO-NC	M12 connector	956301050
S90-MA-5-F01-NN	receiver	NPN NO-NC	M12 connector	956301210
S90-ML-5-F01-PP	laser receiver	PNP NO	M12 connector	956301110
S90-ML-5-F01-NN	laser receiver	NPN NO	M12 connector	956301280
S90-MA-5-G00-XG	emitter	-	M12 connector	956301060
S90-ML-5-G00-XG	laser emitter	-	M12 connector	956301120
S90-MA-5-B01-PP	polarised retroreflex	PNP NO-NC	M12 connector	956301000
S90-MA-5-B01-NN	polarised retroreflex	NPN NO-NC	M12 connector	956301160
S90-ML-5-B01-PP	laser polarised retroreflex	PNP NO-NC	M12 connector	956301090
S90-ML-5-B01-NN	laser polarised retroreflex	NPN NO-NC	M12 connector	956301260
S90-MA-5-B51-PP	coaxial polarised retroreflex	PNP NO-NC	M12 connector	956301030
S90-MA-5-B51-NN	coaxial polarised retroreflex	NPN NO-NC	M12 connector	956301170
S90-MA-5-T51-PP	coaxial retroreflex for transparents	PNP NO-NC	M12 connector	956301040
S90-MA-5-T51-NN	coaxial retroreflex for transparents	NPN NO-NC	M12 connector	956301180
S90-MA-5-C01-PP	diffuse proximity	PNP NO-NC	M12 connector	956301010
S90-MA-5-C01-NN	diffuse proximity	NPN NO-NC	M12 connector	956301190
S90-ML-5-C01-PP	laser diffuse proximity	PNP NO-NC	M12 connector	956301100
S90-ML-5-C01-NN	laser diffuse proximity	NPN NO-NC	M12 connector	956301270
S90-MA-5-C11-PP	diffuse proximity	PNP NO-NC	M12 connector	956301020
S90-MA-5-C11-NN	diffuse proximity	NPN NO-NC	M12 connector	956301200
S90-MA-5-M08-PH	background suppression	PNP NO	M12 connector	956301070
S90-MA-5-M08-NH	background suppression	NPN NO	M12 connector	956301220
S90-ML-5-M08-PH	laser background suppression	PNP NO	M12 connector	956301130
S90-ML-5-M08-NH	laser background suppression	NPN NO	M12 connector	956301290
S90-MA-5-N03-PH	foreground suppression	PNP NO	M12 connector	956301080
S90-MA-5-N03-NH	foreground suppression	NPN NO	M12 connector	956301230
S90-MA-5-W08-PH	coaxial contrast sensor	PNP NO	M12 connector	956301150
S90-MA-5-W08-NH	coaxial contrast sensor	NPN NO	M12 connector	956301250
S90-MA-5-U08-PH	coaxial luminescence sensor	PNP NO	M12 connector	956301140
S90-MA-5-U08-NH	coaxial luminescence sensor	NPN NO	M12 connector	956301240



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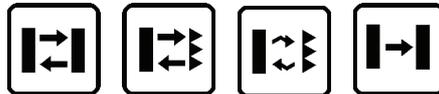
S2 SERIES

The photoelectric sensors of the **S2** series are enclosed in sturdy plastic housings, developed to guarantee the complete protection of the control panel and connection terminals.

The free voltage versions present a relay output, while the 10-30 Vdc versions have a double NPN and PNP output, both available with 1 or 2 m proximity, 5 m polarised retroreflex, 3 m polarised retroreflex and 10 or 50 m through beam optic functions.

The red output LED and the green stability LED are visible through the IP66 hermetically-sealed cover, that also protects the terminal block and commands, such as the sensitivity adjustment trimmer and dark/light operating mode selector.

The versions with output timing present a trimmer to regulate the time up to 16 s. and a selector to set 5 different functions.



HIGHLIGHTS

- Sensitivity adjustment and Stability LED
- Free voltage power supply and relay output
- 10-30 Vdc power supply with NPN and PNP outputs
- Versions with 5 timing functions

APPLICATIONS

Automotive



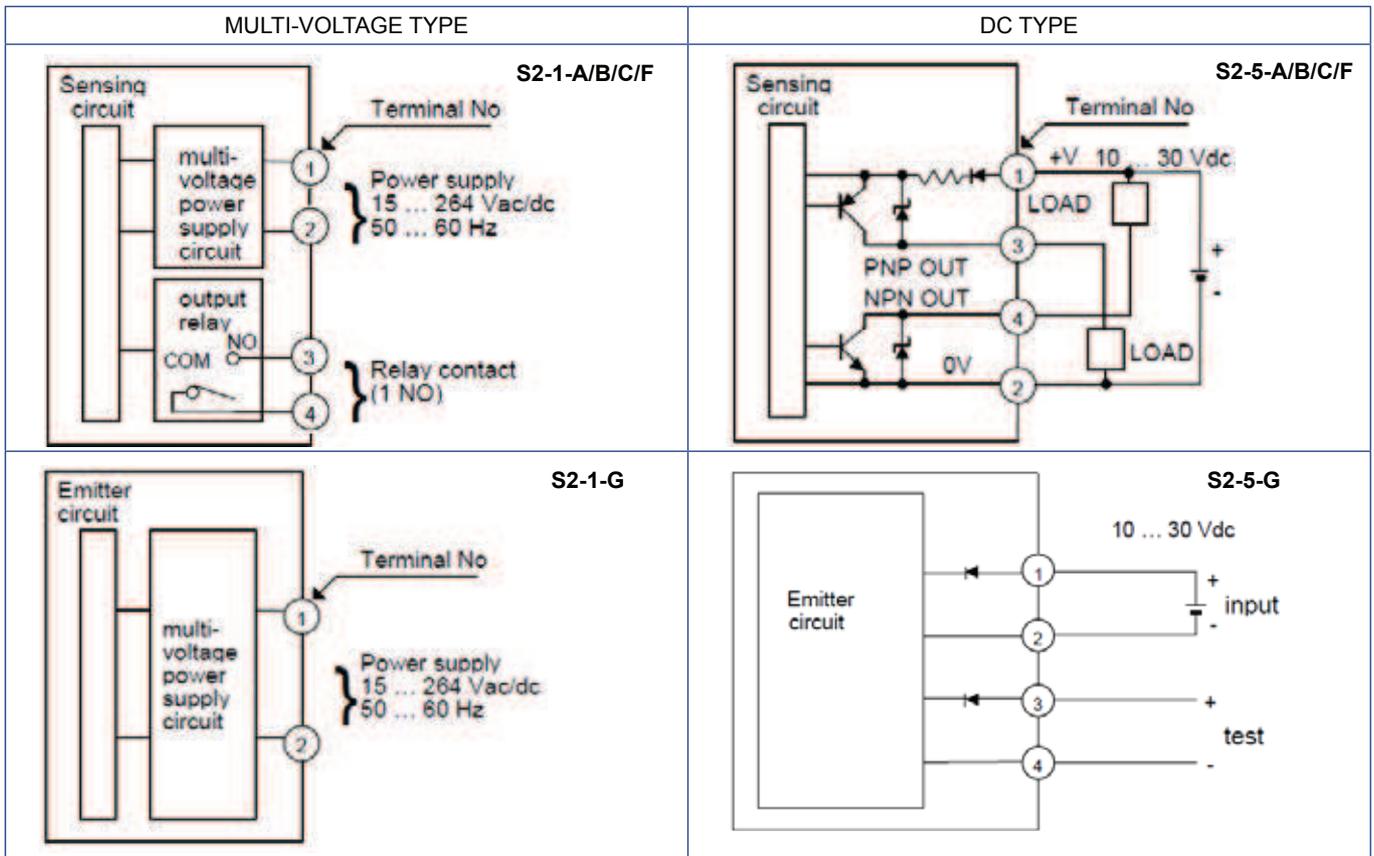
Conveyors



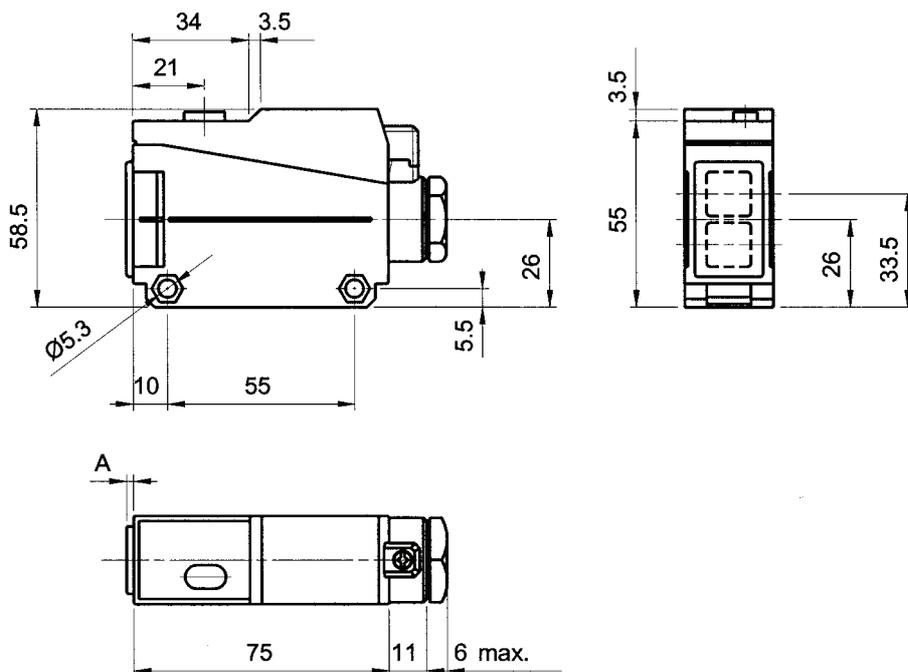
Automatic warehouse



CONNECTIONS



DIMENSIONS

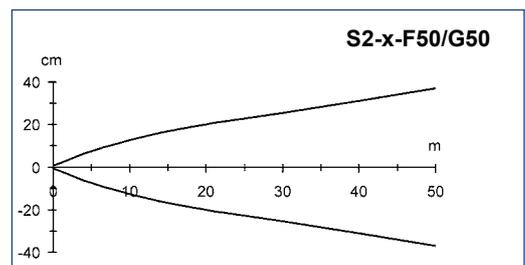
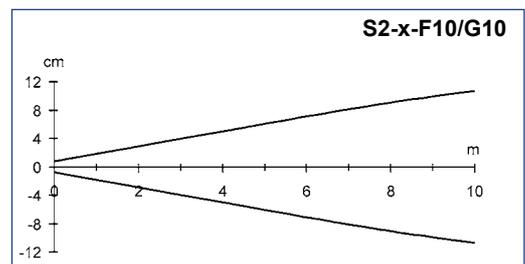
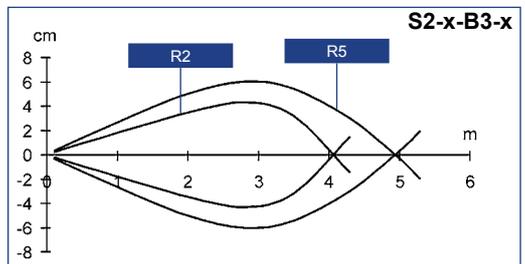
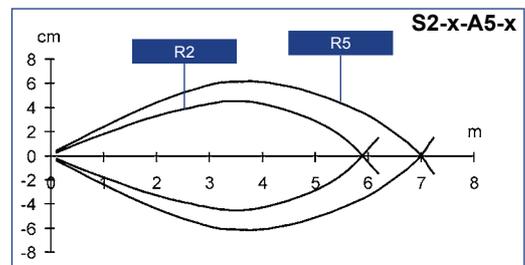
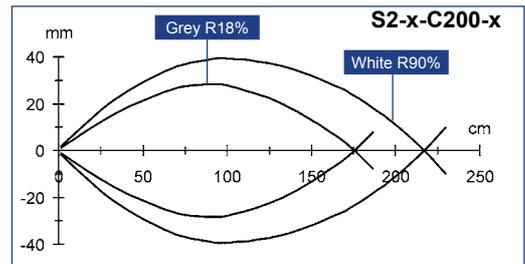
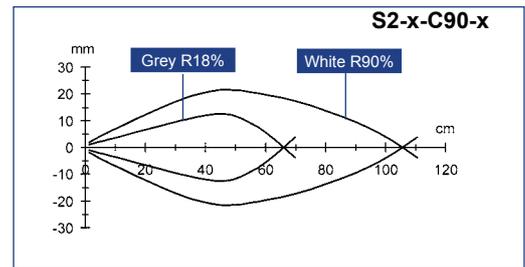


mm

TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection 15 ... 264 Vac/Vdc
Consumption:	30 mA max. (d.c. vers.) 3 VA max. (a.c. vers.)
Light emission:	infrared LED 880 nm red LED 660 nm (B vers.)
Diffuse proximity operating distance:	1 ... 90 cm (C90 vers.) 1 ... 200 cm (C200 vers.)
Retroreflex operating distance:	0.1 ... 5 m (on R2)
Polarised retroreflex operating distance:	0.15 ... 3 m (on R2)
Through beam operating distance:	0 ... 10 m (G10/F10 vers.) 0 ... 50 m (G50/F50 vers.)
Setting:	sensitivity trimmer
Indicators:	red OUTPUT LED green STABILITY LED
Output type:	NPN and PNP, open collector (d.c. vers.) or relay 1 NO contact (a.c. vers.)
Saturation voltage:	1 V max. (NPN vers.) 2 V max. (PNP vers.)
Output current:	100 mA max., short-circuit protection relay 1 A (250 Vac), resistive load
Response time:	1 ms max. (d.c. vers.) 20 ms max. (a.c. vers.)
Switching frequency:	500 Hz max. (d.c. vers.) 25 Hz max. (a.c. vers.)
Timing function:	normal, ON-delay, OFF-delay, ON/OFF-delay, one-shot all adjustable from 0.6 to 16 sec.
Operating mode:	dark/light selectable
Connection:	terminal block with 4 screw terminals gland for cables with 8 to 10 mm diameter
Electrical protection:	class 1 (a.c. vers.) class 2 (d.c. vers.)
Mechanical protection:	IP66
Housing material:	PBT plastic
Lens material:	PMMA plastic
Weight:	100 g max.
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	CE

DETECTION DIAGRAMS



The operating distances indicate the detection distance with excess gain 2.



The detection diagrams indicate the typical operating distance with excess gain 1.

MODEL SELECTION AND ORDER INFORMATION

VERSIONS WITH 15 ... 264 Vac/Vdc POWER SUPPLY

MODEL	FUNCTION	OUTPUT	CODE N°
S2-1-C90	proximity	relay	J950530390
S2-1-C90T	proximity	relay with timer	J950535390
S2-1-C200	proximity	relay	J950530393
S2-1-C200T	proximity	relay with timer	J950535393
S2-1-A5	retroreflex	relay	J950330390
S2-1-A5T	retroreflex	relay with timer	J950335390
S2-1-B3	polarised retroreflex	relay	J950320390
S2-1-B3T	polarised retroreflex	relay with timer	J950325390
S2-1-F10	receiver	relay	J950200390
S2-1-F10T	receiver	relay with timer	J950205390
S2-1-F50	receiver	relay	J950200394
S2-1-F50T	receiver	relay with timer	J950205394
S2-1-G10	emitter	-	J950139990
S2-1-G50	emitter	-	J950139995

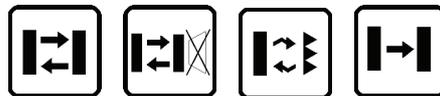
VERSIONS WITH 10 ... 30 Vdc POWER SUPPLY

MODEL	FUNCTION	OUTPUT	CODE N°
S2-5-C90	proximity	NPN/PNP	J950530000
S2-5-C90T	proximity	NPN/PNP with timer	J950535000
S2-5-C200	proximity	NPN/PNP	J950530003
S2-5-C200T	proximity	NPN/PNP with timer	J950535003
S2-5-A5	retroreflex	NPN/PNP	J950330000
S2-5-A5T	retroreflex	NPN/PNP with timer	J950335000
S2-5-B3	polarised retroreflex	NPN/PNP	J950320000
S2-5-B3T	polarised retroreflex	NPN/PNP with timer	J950325000
S2-5-F10	receiver	NPN/PNP	J950200000
S2-5-F10T	receiver	NPN/PNP with timer	J950205000
S2-5-F50	receiver	NPN/PNP	J950200004
S2-5-F50T	receiver	NPN/PNP with timer	J950205004
S2-5-G10	emitter	-	J950139900
S2-5-G50	emitter	-	J950139905

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S20 SERIES

The **S20** series offers all the basic optic functions at the highest operating distances. The series presents models with 50 cm background suppression with microprocessor-based Teach-in setting or, with trimmer adjustment, 10 m polarised retroreflex, 2 m diffuse proximity and 50 m emitter-receiver optic functions. Even with particular compact dimensions, these sensors guarantee optimal performances, thanks to special aspherical lenses that take full advantage of the high-power LED emission, visible red in the background suppression and polarised retroreflex versions and infrared in all the other models. Both NO and NC outputs are present in the NPN or PNP versions. M12 connector is available. The connection block can be adjusted either in a straight or right angle position, in order to offer improved mounting versatility.



HIGHLIGHTS

- Enhanced emission and special lenses ideal for long operating distances
- µP Teach-in setting for background suppression
- Orientable M12 connector
- Impermeable, compact and resistance plastic housing

APPLICATIONS

Automotive



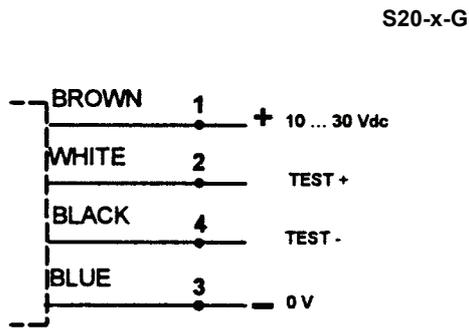
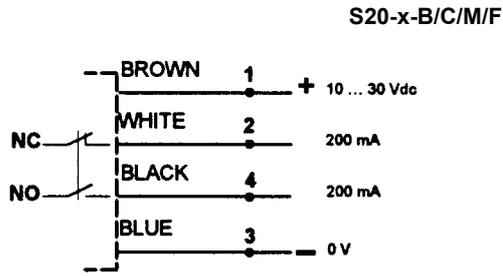
Conveyors



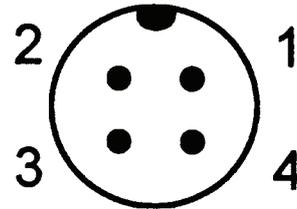
Automatic warehouse



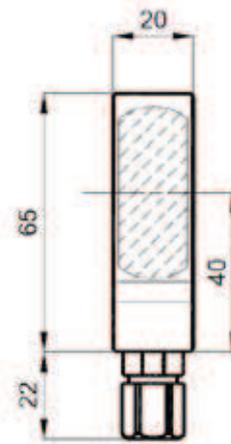
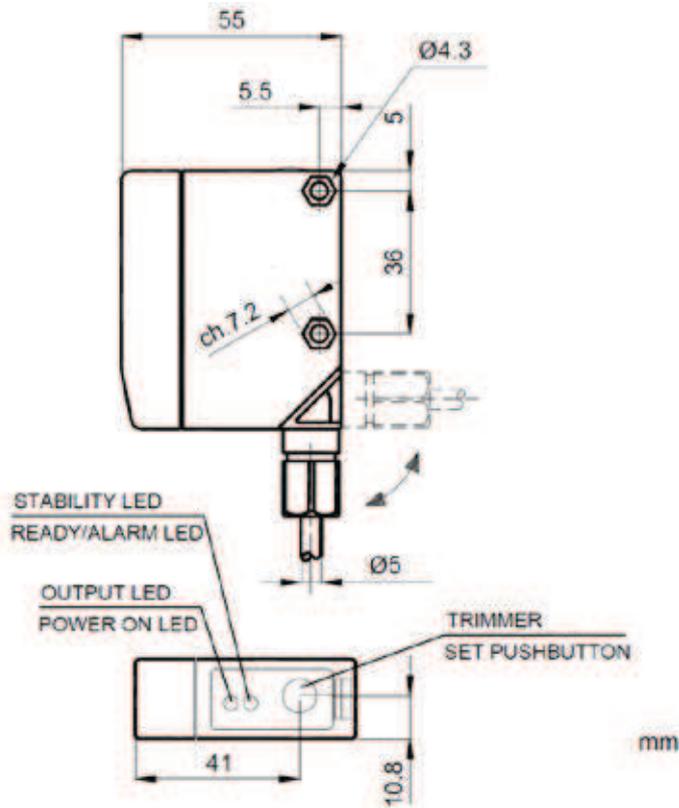
CONNECTIONS



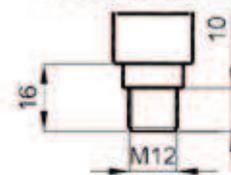
M12 CONNECTOR



DIMENSIONS



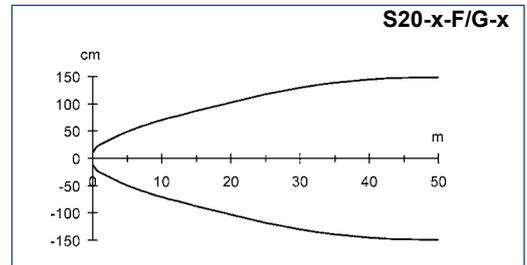
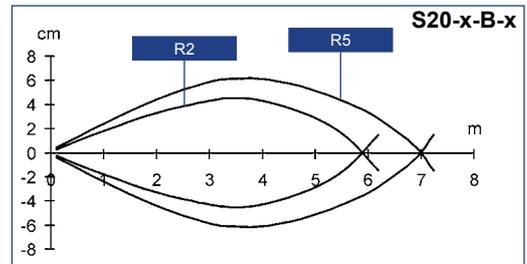
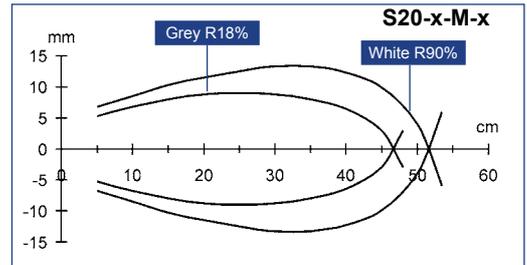
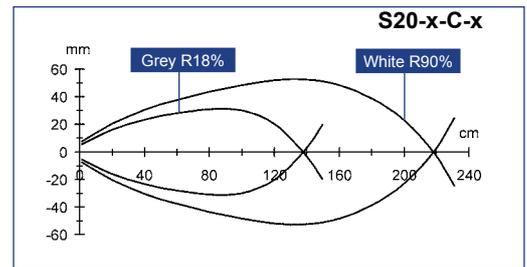
M12 CONNECTOR



TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	50 mA max.
Light emission:	red LED 660 nm (B, M vers.) infrared LED 880 nm (C, F/G vers.)
Diffuse proximity operating distance:	1... 200 cm
Background suppression op. distance:	10 ... 50 cm
Polarised retroreflex operating distance:	0.1 ... 7 m (on R2)
Through beam operating distance:	0.1 ... 50 m
Setting:	sensitivity trimmer (B, C, F vers.) SET push-button (M vers.)
Indicators:	yellow OUTPUT LED green STABILITY LED (B, C, F vers.) green READY LED (M vers.) red ALARM LED (M vers.)
Output type:	NO-NC NPN or PNP, open collector
Saturation voltage:	1 V max. (NPN vers.) 2 V max. (PNP vers.)
Output current:	200 mA max., short-circuit protection
Response time:	1 ms max.
Switching frequency:	500 Hz max.
Connection:	M12 4-pole connector
Electrical protection:	class 2
Mechanical protection:	IP66
Housing material:	ABS
Lens material:	PMMA plastic
Weight:	50 g max.
Functioning temperature:	-25 ... +55°C -10 ... +55°C (M vers.)
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	 

DETECTION DIAGRAMS



The operating distances indicate the detection distance with excess gain 2.



The detection diagrams indicate the typical operating distance with excess gain 1.

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	CONNECTION	OUTPUT	CODE N°
S20-5-C-P	diffuse proximity	M12 connector	PNP	951351110
S20-5-C-N	diffuse proximity	M12 connector	NPN	951351160
S20-5-M-P	background suppression	M12 connector	PNP	951351120
S20-5-M-N	background suppression	M12 connector	NPN	951351170
S20-5-B-P	polarised retroreflex	M12 connector	PNP	951351100
S20-5-B-N	polarised retroreflex	M12 connector	NPN	951351150
S20-5-F-P	receiver	M12 connector	PNP	951351130
S20-5-F-N	receiver	M12 connector	NPN	951351180
S20-5-G	emitter	M12 connector	-	951351140
S20-2-C-P	diffuse proximity	cable	PNP	951351010
S20-2-C-N	diffuse proximity	cable	NPN	951351060
S20-2-M-P	background suppression	cable	PNP	951351020
S20-5-G	polarised retroreflex	cable	PNP	951351000
S20-5-G	through beam	cable	-	951351040
S20-5-G	through beam	cable	PNP	951351030

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
ST-164	1 pc fixing bracket	95ACC1340

Please refer also to *Sensor Accessories*

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S300 SERIES

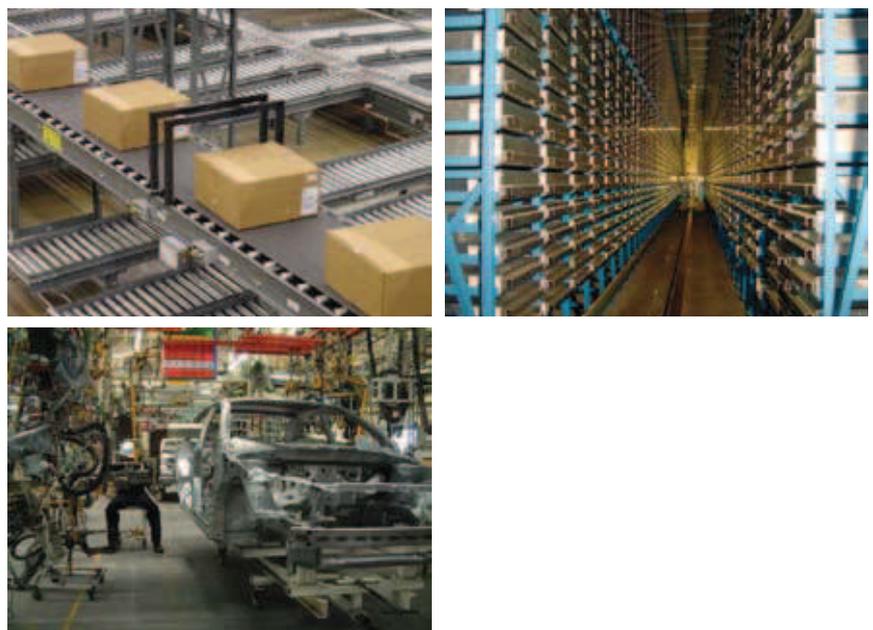
The **S300** series of advanced **MAXI** photoelectric sensors represents the most suitable solution for critical applications thanks to excellent performances and resistance in harsh working conditions. The new series offers a wide range of models and functions in order to guarantee easy use and installation. The new series presents **4** different models with **through beam** optical function up to **60m**, **polarized retroreflex** at **22m**, **diffused proximity** at **5m** and **background suppression** at **2.5m**. All the models are available both **Vdc** from **10 to 30V** and **Vac/Vdc** free-voltage from **24 to 240V** versions. A timing function version and with both the **SPDT** relay or the bipolar transistor **NPN/PNP** open collector outputs is offered. The **terminal block connection** simplifies and speeds-up the installation procedure, whereas the **heavy-duty plastic housing** guarantees excellent resistance under harsh use conditions.



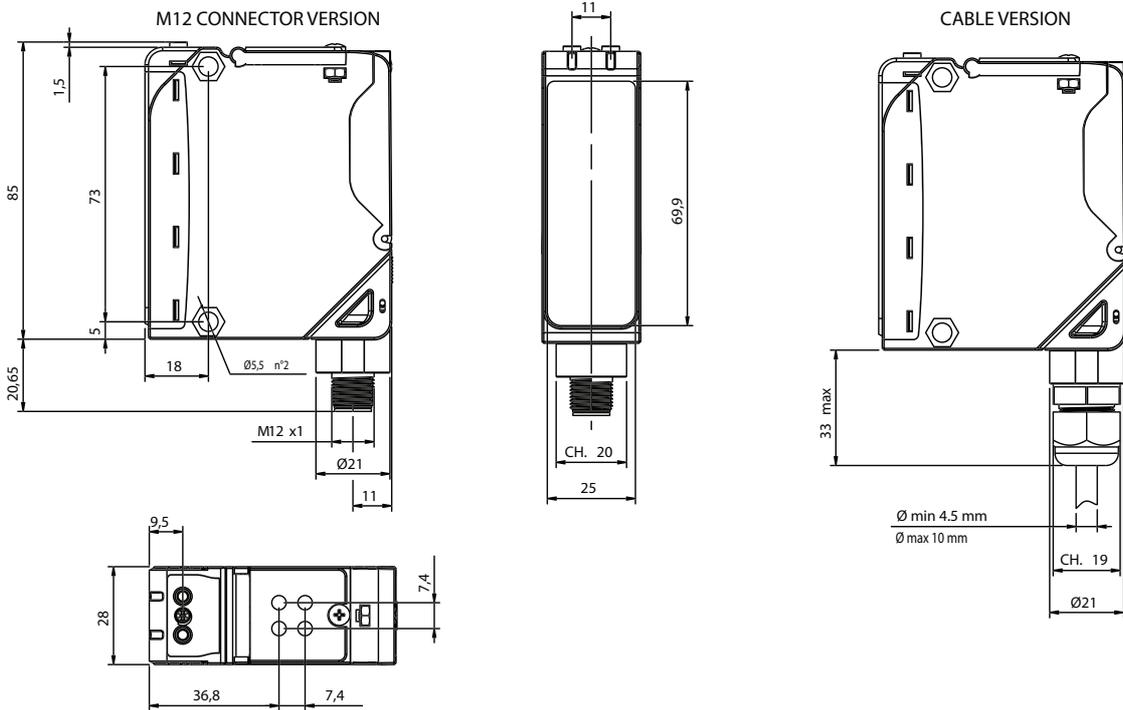
HIGHLIGHTS

- Excellent optical performances
- Sturdy plastic housing with **IP67** mechanical protection
- Defogging system function
- Wide range of operating temperatures ranging from **-40 to 55°C**
- Double independent timing with double time scale from 0-2s and from **0-10s**, **ON-delay**, **OFF delay** **ONE SHOT** timing functions
- **M12 4-pole** rotatable connector for Vdc version and terminal block for Vac/Vdc free-voltage version
- Distance trimmer clutch for mechanical background suppression models

APPLICATIONS



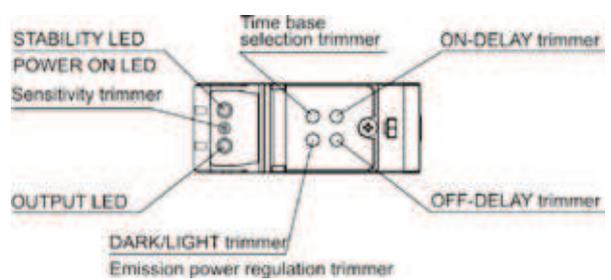
DIMENSIONS



SETTINGS

The **M** model presents a **multiturn adjustment screw** for the adjustment of the background suppression distance using a mechanical variation of the optic triangulation angle. The **other models have a mono-turn electronic trimmer** that adjusts the sensitivity and the sensor operating distance. The operating distance can be increased by rotating the screws clockwise. Trimmers can be used to adjust the **output activation and deactivation delay time** as well as to select the functioning mode.

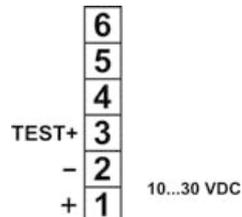
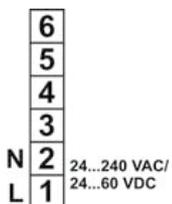
INDICATORS



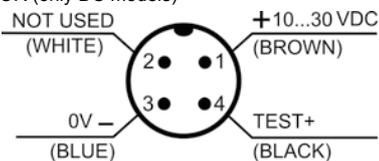
CONNECTIONS G

AC MODELS

DC MODELS



M12 CONNECTOR (only DC models)

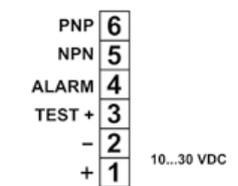
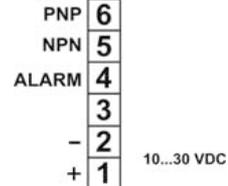
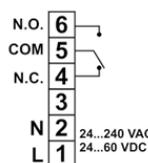


CONNECTIONS B, C, M, F

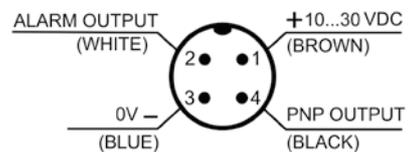
AC MODELS

ONLY F MODELS

DC MODELS



M12 CONNECTOR (only DC models)



TECHNICAL DATA

COMMON DATA	S300-B	S300-C	S300-M	S300-F	S300-G
Emission type:	Red LED	IR LED	IR LED		IR LED
Operating distances (typical values):	22m	5m	2.5m	60m	
Setting:	Mono-turn sensitivity trimmers		Multi-turn adjustment screw	Mono-turn sensitivity trimmers	
White/Black difference (90% / 4%)	< 15%				
Indicators:	OUTPUT LED (yellow) STABILITY LED (green)			OUTPUT LED (yellow) STABILITY LED (green)	POWER ON LED (green)
Operating temperature:	-40...55°C				
Storage temperature:	-40...70°C				
Dielectric strength:	1500Vac 1 min between electronics and housing				
Insulating resistance:	>20MΩ 500Vdc between electronics and housing				
Ambient light rejection:	according to EN 60947-5-2				
Vibrations:	0.5mm width, 10 ... 55Hz, for each axis (EN60068-2-6)				
Shock resistance:	11ms (30G) 6 shocks for each axis (EN60068-2-27)				
Housing material:	PBT (30% fibre-reinforced glass)				
Lens material:	PC				
Mechanical protection:	IP67 (IEC / EN60529) / NEMA TYPE 1 (For UL / c-UL)				
Connections:	Terminal block (recommended cable diameter: between 8 and 10mm)				

AC VOLTAGE MODELS	S300-B	S300-C	S300-M	S300-F/G
Power supply:	24...240Vac / 24...60Vdc			
Ripple:	10% max			
Consumption (output current excluded):	< 3VA			
Outputs:	SPDT electromagnetic relay: 250Vac, 30Vdc			
Output current:	3A (resistive load)			
Response time:	20ms max			
Switching frequency:	25Hz			
Weight:	150g			

DC MODELS	S300-B	S300-C	S300-M	S300-F/G
Power supply:	10...30Vdc			
Ripple:	10% max			
Consumption (output current excluded):	< 30mA			F= < 25mA G= < 20mA
Outputs:	PNP and NPN open collector			
Output current:	100mA (resistive load)			
Output saturation voltage:	2.4V max			
Response time:	1ms max		2ms max	1ms max
Switching frequency:	500Hz		250Hz	500Hz
Weight:	140gr			

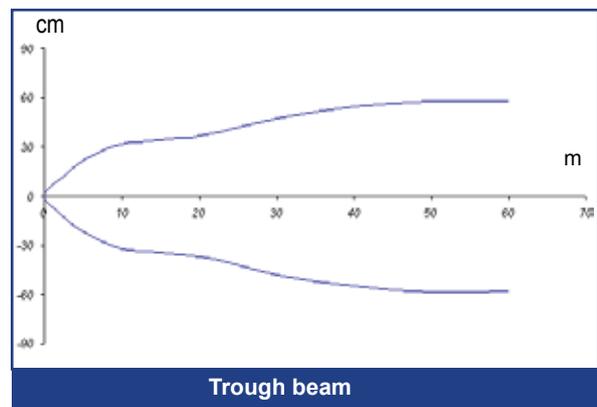
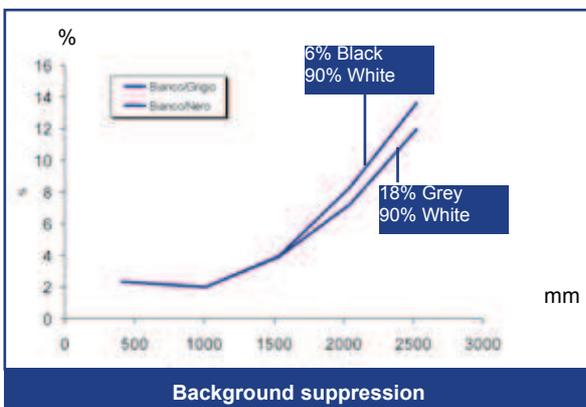
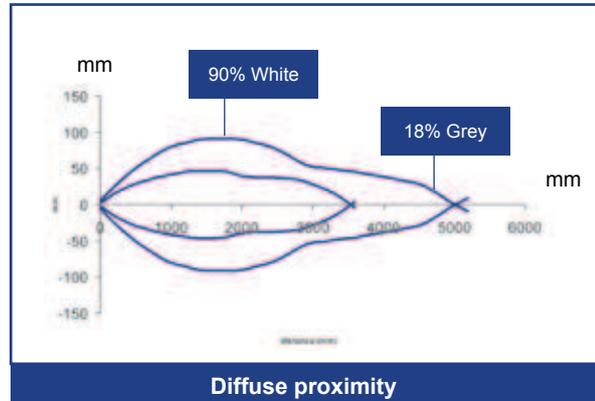
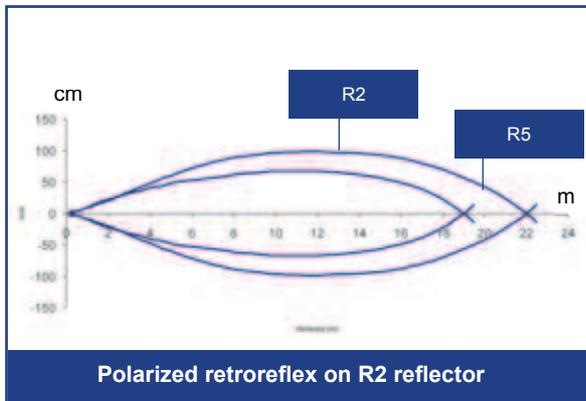


TIMING FUNCTION DIAGRAM

Four selectable **timing functions**: one shot, ON delay, OFF delay and normal mode. **Trimmer adjustment** of the functions is available. The timing functions can be particularly useful in applications where the output signal pulse has to be modified.

OPERATION MODE	OUTPUTS
Normal (timing disable)	
ONE SHOT (only with short time base 0...2 sec.)	
ON/OFF Delay	
ON Delay	
OFF Delay	

DETECTION DIAGRAMS



MODEL SELECTION AND ORDER INFORMATION



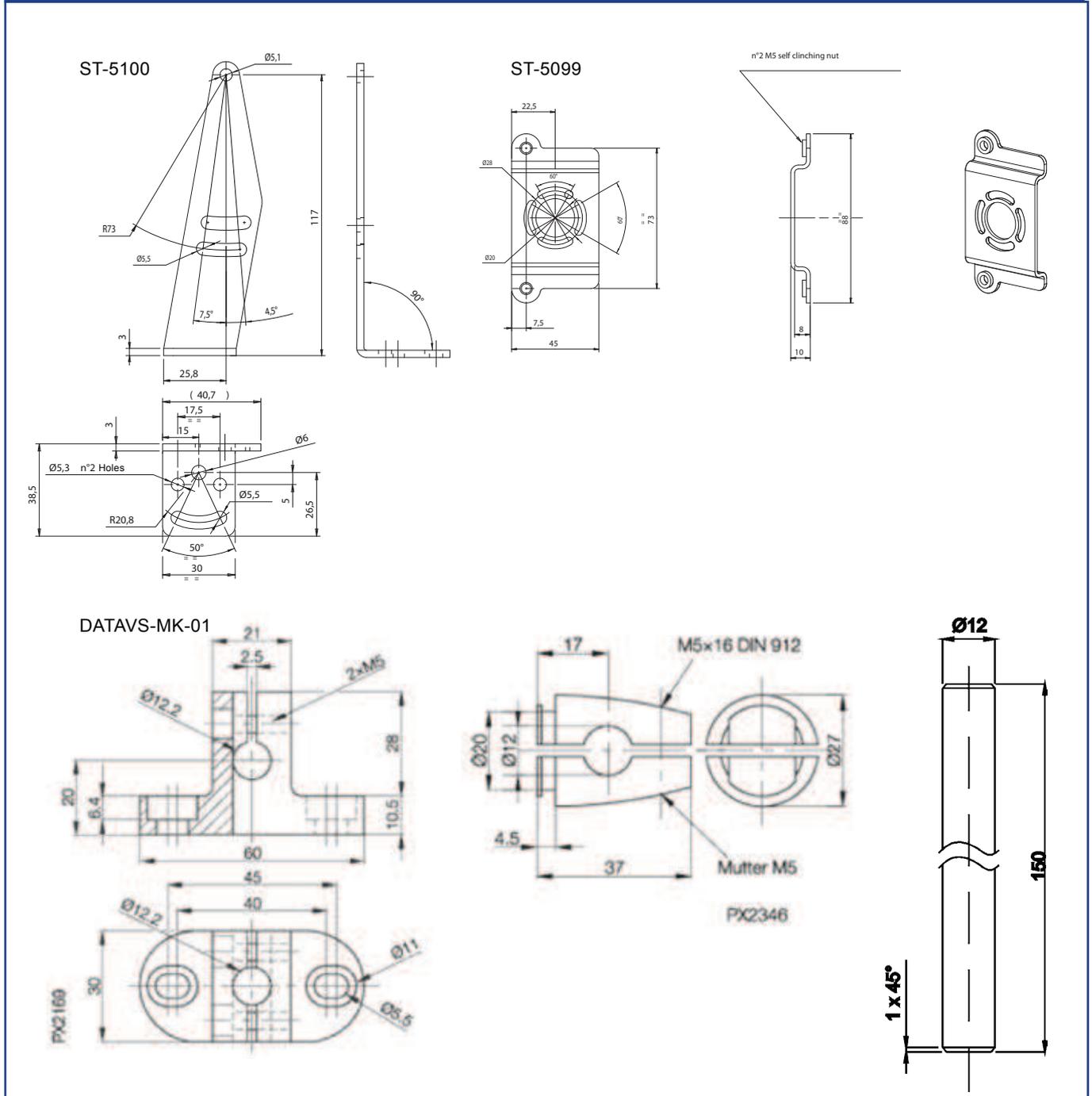
<u>Power Supply</u>	<u>Optics Function</u>	<u>Timing Function</u>	<u>Output</u>	<u>Version</u>
1 = AC/DC terminal block 2 = DC terminal block 5 = DC M12 4p connector	M = Background Suppression C = Diffused proximity B = Polarized retroreflex F = Receiver G = Emitter	00 = no ADJ, no timing 01 = Adj, no timing 06 = Adj, timing	OC = PNP/NPN RX = Relay NO-NC EX = No outputs	M = Defogging system

ORDER NO.	MODEL	DESCRIPTION
951451140	S300-PR-2-M01-OC	Background suppression, terminal block, DC
951451150	S300-PR-2-M06-OC	Background suppression, terminal block, DC, with timing function
951451160	S300-PR-5-M01-OC	Background suppression, M12 connector, DC
951451170	S300-PR-5-M06-OC	Background suppression, M12 connector, DC, with timing function
951451180	S300-PR-1-M01-RX	Background suppression, terminal block, AC
951451190	S300-PR-1-M06-RX	Background suppression, terminal block, AC, with timing function
951451200	S300-PR-1-M06-RX-M	Background suppression, terminal block, AC, with timing and defogging functions
951451000	S300-PR-2-B01-OC	Polarized retroreflex, terminal block, DC
951451010	S300-PR-2-B06-OC	Polarized retroreflex, terminal block, DC, with timing function
951451020	S300-PR-5-B01-OC	Polarized retroreflex, M12 connector, DC
951451030	S300-PR-5-B06-OC	Polarized retroreflex, M12 connector, DC, with timing function
951451040	S300-PR-1-B01-RX	Polarized retroreflex, terminal block, AC
951451050	S300-PR-1-B06-RX	Polarized retroreflex, terminal block, AC, with timing function
951451060	S300-PR-1-B06-RX-M	Polarized retroreflex, terminal block, AC, with timing and defogging functions
951451070	S300-PR-2-C01-OC	Proximity, terminal block, DC
951451080	S300-PR-2-C06-OC	Proximity, terminal block, DC, with timing function
951451090	S300-PR-5-C01-OC	Proximity, M12 connector, DC
951451100	S300-PR-5-C06-OC	Proximity, M12 connector, DC, with timing function
951451110	S300-PR-1-C01-RX	Proximity, terminal block, AC
951451120	S300-PR-1-C06-RX	Proximity, terminal block, AC, with timing function
951451130	S300-PR-1-C06-RX-M	Proximity, terminal block, AC, with timing and defogging functions
951451210	S300-PR-2-F01-OC	Receiver, terminal block, DC
951451220	S300-PR-2-F06-OC	Receiver, terminal block, DC, with timing function
951451230	S300-PR-5-F01-OC	Receiver, M12 connector, DC
951451240	S300-PR-5-F06-OC	Receiver, M12 connector, DC, with timing function
951451250	S300-PR-1-F01-RX	Receiver, terminal block, AC
951451260	S300-PR-1-F06-RX	Receiver, terminal block, AC, with timing function
951451270	S300-PR-1-F06-RX-M	Receiver, terminal block, AC, with timing and defogging functions
951451280	S300-PR-2-G00-EX	Emitter, terminal block, DC
951451290	S300-PR-5-G00-EX	Emitter, M12 connector, DC
951451300	S300-PR-1-G00-EX	Emitter, terminal block, AC
951451310	S300-PR-1-G00-EX-M	Emitter, terminal block, AC, with timing and defogging functions

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5099	FIXED BRACKET	95ACC2830
ST-5100	FIXED BRACKET	95ACC2840
DataVS-MK-01	MOUNTING KIT	95A901380

ACCESSORY DRAWINGS



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SR21 SERIES

The slot sensors of the **SR21** series, with 2 mm slot width, are characterised by a high 12 bit (4096 steps) resolution, a low 20 ms response time and a switching frequency reaching 25 kHz. The setting of the switching threshold is carried-out automatically by simply pressing a push-button, or dynamically during label (or other reference) movement.

The **SR21-IR** model with infrared emission is ideal for label or hole detection on continuous surfaces, while the **SR21-RG** model with double red or green emission suits colour print register mark detection on transparent films for automatic packaging.



HIGHLIGHTS

- High 25 kHz switching frequency
- IR or red/green light models
- Detection of semi-transparent labels
- Detection of register marks on transparents
- 4 wire antivalent NPN and PNP output

APPLICATIONS

Labelling machines



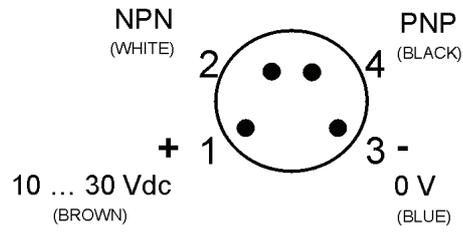
Packaging lines



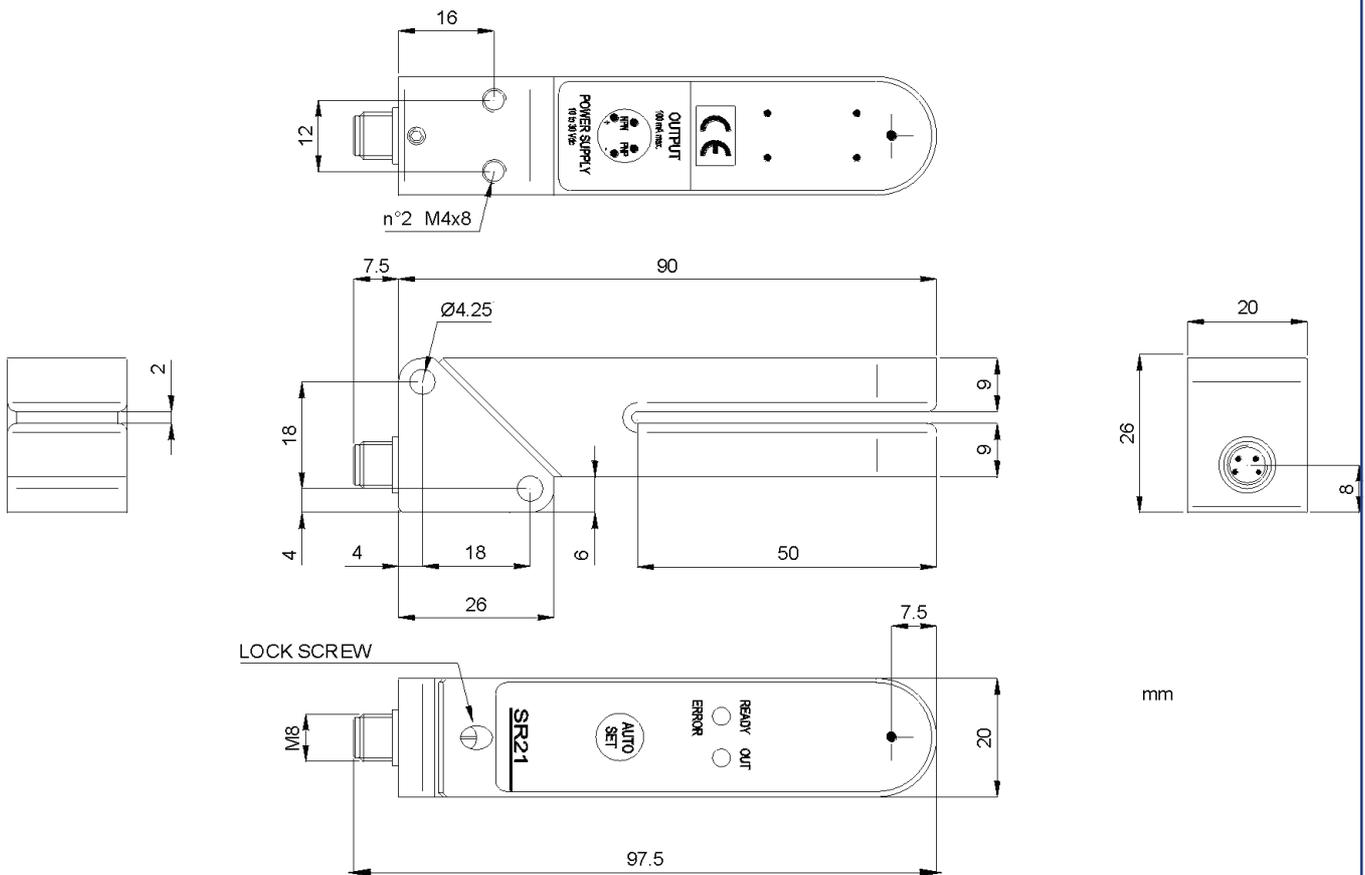
TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	55 mA max.
Light emission:	infrared LED 880 nm (IR vers.) red 635 nm/green LED 535 nm (RG vers.)
Resolution:	0.5 mm
Slot width:	2 mm
Slot depth:	50 mm
Detection point depth:	7.5 mm
Setting:	AUTO SET push-button
Indicators:	yellow OUTPUT LED green/red bicolour READY/ERROR LED
Output type:	NPN and PNP, Rpull-down/up 10 kW
Saturation voltage:	2 V max.
Output current:	100 mA max., short-circuit protection
Response time:	20 µs max.
Switching frequency:	25 kHz
Operating mode:	dark/light configurable
Connection:	M8 4-pole connector
Electrical protection:	class 1
Mechanical protection:	IP65
Housing material:	ZAMA
Lens material:	glass
Weight:	120 g max.
Operating temperature:	-20 ... +60°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	

CONNECTIONS



DIMENSIONS



MODEL SELECTION AND ORDER INFORMATION

MODEL	EMISSION	FREQUENCY	ORDER N°
SR21-IR	infrared	25 KHz	953151070
SR21-RG	red/green	25 KHz	953151080



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SR22 SERIES

The new **SR22** series of 2 mm slot sensors has been developed as the most cost-effective solution for label detection on reels.

The infrared LED emission allows to detect over even darker or thicker supports, while the low response time of only 100 μ s allows to reach a 10 kHz switching frequency in the faster labelling processes.

The label detection sensitivity is trimmer adjustable.

The compact metal housing with 40 mm slot depth fits even the most limited spaces.

The M8 4-pole connector offers simple and fast connection.

The power supply is 24 Vdc and versions with light or dark mode, both with double NPN and PNP outputs, are available.



HIGHLIGHTS

- Fast switching frequency up to 10 kHz
- Infrared LED light emission
- Trimmer for sensibility adjustment
- 4 wire antivalent NPN and PNP outputs
- Compact metal housing with glass lenses

APPLICATIONS

Labelling machines



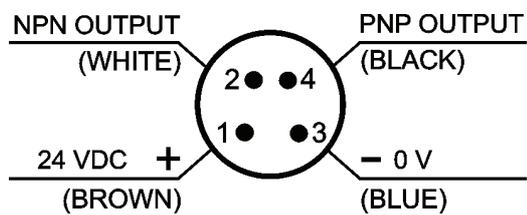
Packaging lines



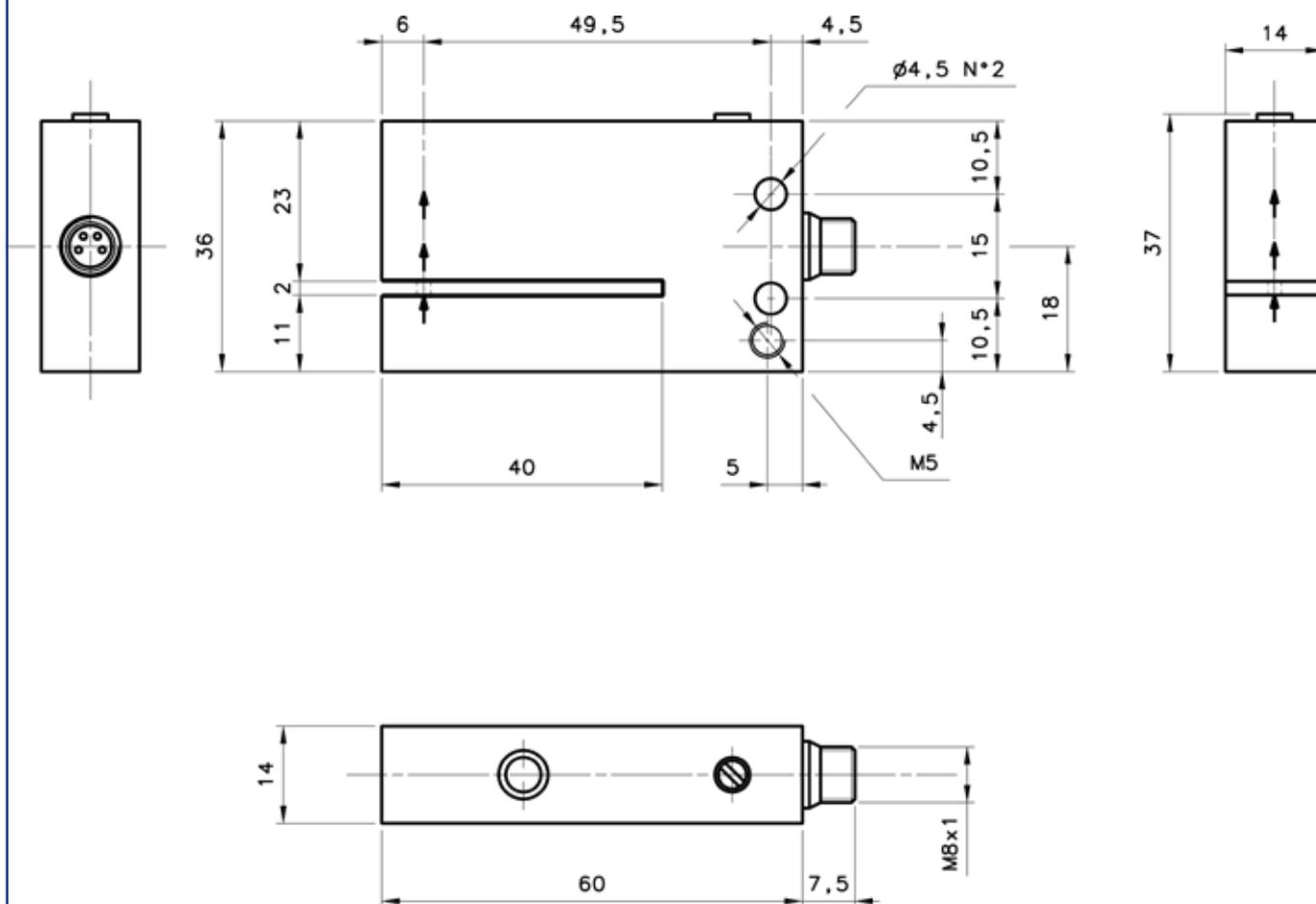
TECHNICAL DATA

Power supply:	24 Vdc \pm 15%
Consumption:	55 mA max.
Light emission:	infrared LED 880 nm
Resolution:	1 mm
Slot width:	2 mm
Slot depth:	40 mm
Detection point depth:	6 mm
Setting:	trimmer
Indicators:	red OUTPUT LED
Output type:	NPN and PNP
Saturation voltage:	2 V max.
Output current:	200 mA max.
Response time:	50 μ s max.
Switching frequency:	10 kHz
Operating mode:	dark (SR22-5-IR-OD vers.) light (SR22-5-IR-OL vers.)
Connection:	M8 4-pole connector
Electrical protection:	class 1
Mechanical protection:	IP60
Housing material:	aluminium
Lens material:	glass
Weight:	100 g max.
Operating temperature:	-10 ... +60°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	

CONNECTIONS



DIMENSIONS



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DETECTION MODE*	ORDER N°
SR22-5-IR-OD	dark	953101100
SR22-5-IR-OL	light	953101110

*In the dark detection mode the output is activated when the label enters in the detection point inside the sensor slot.
In the light detection mode, the output is activated when the label is outside the detection point inside the sensor slot.



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SR31 SERIES

The **SR31** series is composed of slot sensors with infrared LED emission, distinguished by an elevated 10 kHz switching frequency and by a sturdy and compact metal housing.

The detection sensitivity is adjusted by means of a trimmer. The dark/light operating mode is configured according to the connection.

The series includes M8 connector versions with NPN output, or PNP output; cable versions present both NPN/PNP outputs.

The **SR31** sensors have a 30 mm wide and 42 mm deep slot. These sensors are suitable for detecting opaque labels on a transparent support, to control material presence and continuity, to detect synchronism pulses on toothed or holed wheels, or as on-off edge guide.



HIGHLIGHTS

- Infrared LED emission
- Sensitivity trimmer adjustment
- Elevated switching frequency
- Metal housing with wide slot

APPLICATIONS

Labelling machines



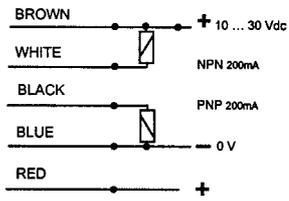
Packaging lines



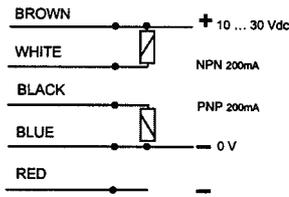
TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	50 mA max.
Light emission:	infrared LED 880 nm
Resolution:	2 mm
Slot width:	30 mm
Slot depth:	42 mm
Detection point depth:	12 mm
Setting:	multi-turn sensitivity trimmer
Indicators:	red OUTPUT LED
Output type:	NPN or PNP (connector vers.) NPN and PNP (cable vers.) Rpull-down/up 10 kW
Saturation voltage:	0.8 V max. (NPN vers.) 2 V max. (PNP vers.)
Output current:	200 mA max., short-circuit protection
Response time:	50 µs max.
Switching frequency:	10 kHz max.
Operating mode:	dark/light configurable
Connection:	4-pole M8 connector 2 m Ø 5 mm cable
Electrical protection:	class 1
Mechanical protection:	IP60
Housing material:	ZAMA
Lens material:	glass
Weight:	100 g max.
Operating temperature:	-10 ... +60°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	

CONNECTIONS

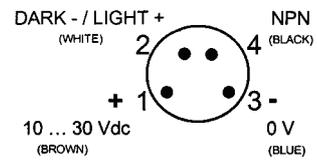


LIGHT MODE

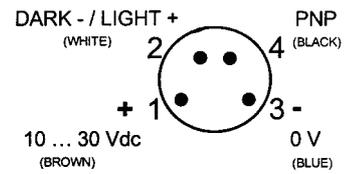


DARK MODE

M8 CONNECTOR



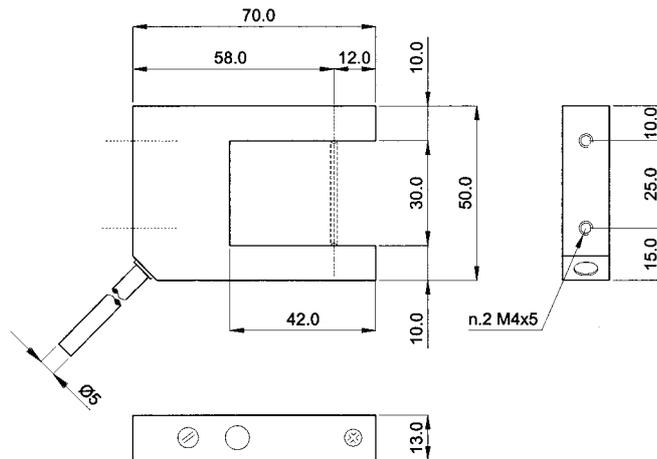
NPN OUTPUT(SR31-0)



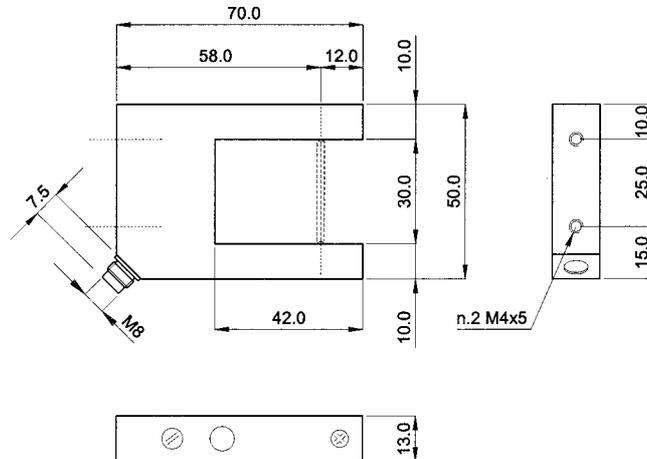
PNP OUTPUT (SR31-1)

DIMENSIONS

CABLE VERSIONS



M8 CONNECTOR VERSIONS



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	CONNECTION	OUTPUT	CODE N°
SR31	cable	NPN/PNP	S970830000
SR31-0	M8 connector	NPN	S970830101
SR31-1	M8 connector	PNP	S970830201



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SRF SERIES

The slot sensors of the **SRF** series are photoelectric devices characterised by an excellent precision thanks to the red LED emission which offers resolutions reaching 0.3 mm or class II LASER emission for resolutions down to 0.03 mm. High precision and reading repeatability are obtained thanks to the Laser emission combined with high switching frequency.

The particular 'U' shape with opposite receiver and emitter units, together with the high resistance of the metal housing, make monitoring extremely simple and rapid, guaranteeing reliable functioning as well as shock and vibration resistance. The **SRF** series presents versions with 30, 50, 80 and 120 mm slots allowing the best adaptation to the many different applications, including opaque label detection on transparent supports, monitoring of the correct material position and dimension or object counting on conveyor belts. Sensitivity adjustment is easily accomplished thanks to the trimmer positioned on the back side of the sensor. The range offers versions with PNP or NPN output. The light/dark mode can be selected in all models.



HIGHLIGHTS

- Visible red LED emission versions
- High resolution LASER versions
- Versions with 30, 50, 80 and 120 mm slots
- Sensitivity adjustment and dark/light selectors
- Sturdy metal housing with glass lenses

APPLICATIONS

Automotive



Labelling machines



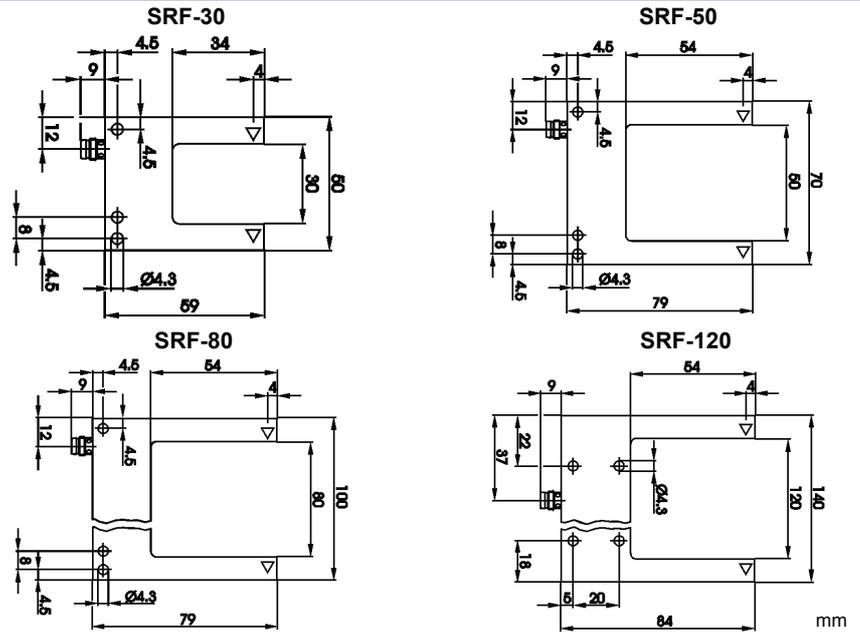
Packaging lines



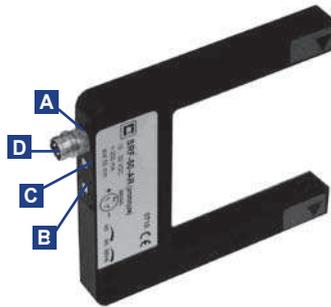
The best resolution, in terms of minimum detectable object, can be obtained rotating completely the sensitivity trimmer in a clockwise direction.

The normally closed output is selected by turning clockwise the output trimmer. The sensor, in this manner, functions in the light mode where the connector LED ON signals the absence of an object to detect. The opposite effect is obtained rotating the trimmer in an anti-clockwise direction and the sensor functions in the dark mode with the LED ON in presence of an object.

DIMENSIONS



INDICATORS AND SETTINGS

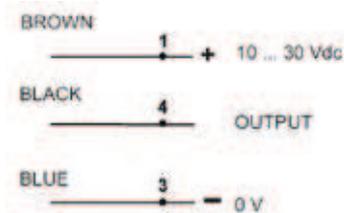


- A Output status LED
- B Sensitivity trimmer
- C Output type selector
- D M8 connector output

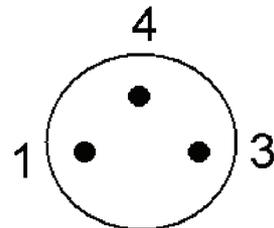
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

CONNECTIONS



M8 CONNECTOR



Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

TECHNICAL NOTES		SRF-30-5-P	SRF-30-5-N	SRF-50-5-P	SRF-50-5-N	SRF-80-5-P	SRF-80-5-N	SRF-120-5-P	SRF-120-5-N	SRF-L-30-5-P	SRF-L-50-5-P	SRF-L-80-5-P	SRF-L-120-5-P
1Limit values 2Average life of 100.000 h with TA = +25 °C 3Class 1 EN60825-1, CDRH21 CFR 1040.10 4270° trimmer 5Dark/light selector 6A - reverse polarity protection B - overload and short-circuit protection													
Power supply:	10..30 Vdc ¹	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	35 mA max	•	•	•	•	•	•	•	•	•	•	•	•
Light emission:	red LED 640 nm ²	•	•	•	•	•	•	•	•				
	red LASER 650 nm ³									•	•	•	•
Setting:	sensitivity trimmer ⁴	•	•	•	•	•	•	•	•	•	•	•	•
Resolution:	0.06 mm									•			
	0.1 mm										•		
	0.2 mm											•	
	0.3 mm	•	•										•
	0.5 mm			•	•	•	•						
	0.8 mm							•	•				
Repeatability:	0.015 mm									•	•	•	•
	0.02 mm	•	•										
	0.04 mm			•	•								
	0.06 mm					•	•						
	0.08 mm							•	•				
Power on delay:	0.33 ms	•	•	•	•	•	•	•	•	•	•	•	•
Slot width:	30 mm	•	•							•	•		
	50 mm			•	•						•		
	80 mm					•	•					•	
	120 mm							•	•				•
Slot depth:	34 mm	•	•							•			
	54 mm			•	•	•	•	•	•		•	•	•
Detection point depth::	4 mm	•	•	•	•	•	•	•	•	•	•	•	•
Indicators:	red LED	•	•	•	•	•	•	•	•	•	•	•	•
Output type:	PNP	•		•		•		•		•	•	•	•
	NPN		•		•		•		•				
Saturation voltage:	3 V max	•	•	•	•	•	•	•	•	•	•	•	•
Output current:	200 mA, short-circuit protection	•	•	•	•	•	•	•	•	•	•	•	•
Response time:	166 µs									•	•	•	•
	333 µs	•	•	•	•	•	•	•	•				
Switching frequency:	1.5 KHz	•	•	•	•	•	•	•	•				
	3 KHz									•	•	•	•
Operating mode:	configurable light/dark ⁵	•	•	•	•	•	•	•	•	•	•	•	•
Connection:	M8 3-pole connector	•	•	•	•	•	•	•	•	•	•	•	•
Electrical protection:	class 1	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP65	•	•	•	•	•	•	•	•	•	•	•	•
Protection devices:	A,B ⁶	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	anodised aluminium	•	•	•	•	•	•	•	•	•	•	•	•
Lens material:	glass	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	36 g	•	•							•			
	54 g			•	•						•		
	77 g					•	•					•	
	118 g							•	•				•
Operating temperature:	-10...+60°C	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-20...+70°C	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2,	•	•	•	•	•	•	•	•	•	•	•	•
	EN 60825-1, CDRH21 CFR 1040.10							•	•	•	•	•	•

SELECTION TABLE

slot sensors		
model	slot	output
SRF-30-5-P	30 mm	PNP
SRF-30-5-N	30 mm	NPN
SRF-50-5-P	50 mm	PNP
SRF-50-5-N	50 mm	NPN
SRF-80-5-P	80 mm	PNP
SRF-80-5-N	80 mm	NPN
SRF-120-5-P	120 mm	PNP
SRF-120-5-N	120 mm	NPN
SRF-L-30-5-P	30 mm	PNP
SRF-L-50-5-P	50 mm	PNP
SRF-L-80-5-P	80 mm	PNP
SRF-L-120-5-P	120 mm	PNP



MODEL SELECTION AND ORDER INFORMATION

MODEL	SLOT	EMISSION TYPE	USCITA	ORDER N°
SRF-30-5-P	30 mm	red LED	PNP	95B020050
SRF-30-5-N	30 mm	red LED	NPN	95B020090
SRF-50-5-P	50 mm	red LED	PNP	95B020060
SRF-50-5-N	50 mm	red LED	NPN	95B020100
SRF-80-5-P	80 mm	red LED	PNP	95B020070
SRF-80-5-N	80 mm	red LED	NPN	95B020110
SRF-120-5-P	120 mm	red LED	PNP	95B020080
SRF-120-5-N	120 mm	red LED	NPN	95B020120
SRF-L-30-5-P	30 mm	red LASER	PNP	95B020130
SRF-L-50-5-P	50 mm	red LASER	PNP	95B020140
SRF-L-80-5-P	80 mm	red LASER	PNP	95B020150
SRF-L-120-5-P	120 mm	red LASER	PNP	95B020160

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CS-B1-01-G-03	3 m M8 3-pole axial connector	95A251490
CS-B1-01-G-05	5 m M8 3-pole axial connector	95A251510
CS-B2-01-G-03	3 m M8 3-pole radial connector	95A251500
CS-B2-01-G-05	5 m M8 3-pole radial connector	95A251520



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LD μ SERIES

The **LD μ** luminescence sensors emit ultraviolet light and detect only visible light converted and reflected from fluorescent objects or marks, independent from the background's colour and surface.

A microprocessor controls and synchronises the emission, reception and output circuits offering a completely automatic setting. The **LD μ** sensors can reach a 75 mm operating distance and a 2 kHz switching frequency, thanks to the UV High-Power emission. Focusing lenses and special fibre-optics able to replace the lens are available as accessories.

The **LD μ** sensors are used in the pharmaceutical and cosmetic industries to identify labels on glass phials or bottles; in the wood and ceramic selection lines; in automatic packaging to detect paper and fluorescent glues; in the textile industry to identify cutting guides; in the mechanical industry to verify the presence of paints or fluorescent lubricants.



SENSORS

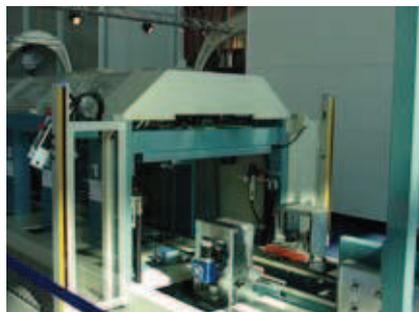


HIGHLIGHTS

- High-Power UV LED emission
- Microprocessor-based Teach-in setting
- High switching frequency at 2 kHz
- Fibre-optic accessories and high-resolution lenses

APPLICATIONS

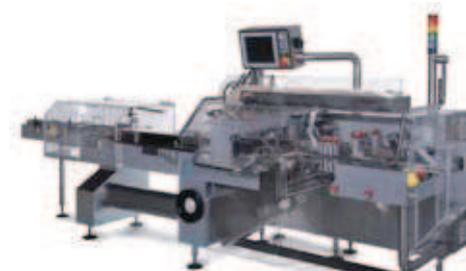
Ceramics



Beverage & Bottling



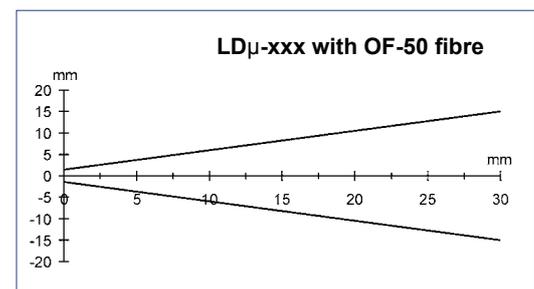
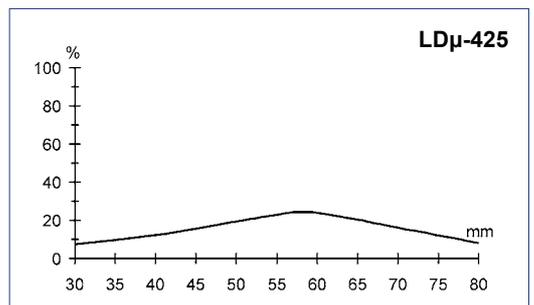
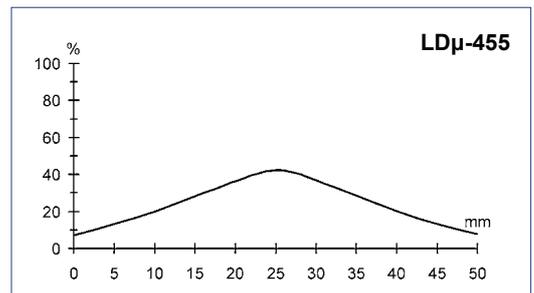
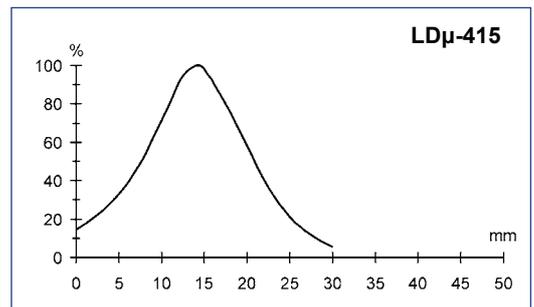
Packaging lines



TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	80 mA max.
Light emission:	LED HP-UV 370 nm
Spot dimension:	circular Ø 5 mm max. on focal point
Diffuse proximity operating distance:	9 ... 18 mm (LDµ-415)
	20 ... 40 mm (LDµ-455)
	40 ... 75 mm (LDµ-425)
Operating distance with fibre-optics:	0 ... 30 mm
Setting:	Teach-in with 2 push-buttons
	Remote by cable
Indicators:	red OUTPUT LED
	green READY LED
Output type:	NPN or PNP, Rpull-down/up 10 kΩ
Saturation voltage:	1 V max. with NPN
	2 V max. with PNP
Output current:	200 mA max., short-circuit protection
Response time:	250 µs max.
Switching frequency:	2 kHz max.
Timing function:	20 ms minimum output ON
Analog output range:	0 ... 7 Vdc, 2.2 kΩ output resistance
Auxiliary functions:	deviator for setting block
Connection:	M12 4-pole connector
	3 m Ø 6.1 mm shielded cable
Electrical protection:	class 1
Mechanical protection:	IP67
Housing material:	ZAMA
Lens material:	glass
Weight:	310 g (connector vers.)
	450 g (cable vers.)
Operating temperature:	-10 ... +55°C
Storage temperature:	-20 ... +70°C
Reference standard:	EN 60947-5-2
Certifications:	CE
OF-50 fibre-optic data:	fibre in saline solution with PET sheath, operating temperature: -5 ... +60°C

DETECTION DIAGRAMS



The detection diagrams indicate the typical operating distance.

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC	CONNECTION	CODE N°
LD μ -415	9 - 18 mm (high sensitivity)	M12 connector	955151120
LD μ -425	40 - 75 mm (high sensitivity)	M12 connector	955151110
LD μ -455	20 - 40 mm (high sensitivity)	M12 connector	955151100

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
AF-50	focusing lens for OF-50 (\varnothing 5 mm spot at 15 mm)	95ACC1400
Lens No.22	lens with 22 mm focus	95ACC1100
Lens No.60	lens with 60 mm focus	95ACC2740
OF-50-5	fibre-optic L50 cm - proximity op. distance 30 mm	95A201130
OF-50-10	fibre-optic L100 cm - proximity op. distance 30 mm	95A201370

Please refer also to M12 connectors of the CS series



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LD46 SERIES

The luminescence sensors emit ultraviolet (UV) light and receive visible light reflected from luminescent surfaces. This technology allows the detection of fluorescent marks (even invisible to the human eye) on any object independently from its material, colour or distance inside the operating range. Moreover, it avoids light interferences or reflections from non-luminescent surfaces, like glass, mirrors, shiny metal surfaces, etc. Luminescence sensors can satisfy many different applications, as for example in pharmaceutical and cosmetic industries to detect labels on glass phials or bottles, or correct medicine packaging, in woodworking and ceramic tiles production to check fluorescent selection marks; in automatic packaging to detect whitened paper or fluorescent glues, in textile industry to identify fluorescent cutting guides or labels; in mechanical industry to verify fluorescent paints, lubricants, gaskets or fittings; in vending machines or cash dispensers to check banknotes and credit cards. The high power and definition of the **LD46** sensor light spot enable the detection of critical targets with a very poor or non-homogeneous or discontinued luminescent level, as for example on raw wood, corrugated carton, fabric, ceramic tiles.



HIGHLIGHTS

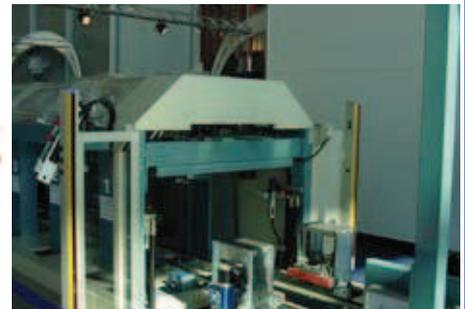
- The best solution for luminescent mark detection
- High-power UV emission for improved sensitivity
- Fast switching frequency and response time
- Easy setting and clear bargraph indicator

APPLICATION

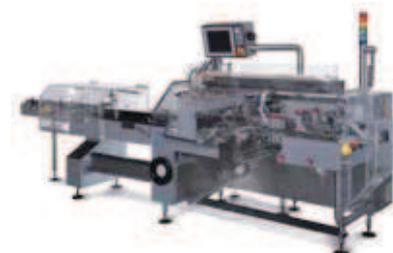
Wood



Ceramics



Packaging lines



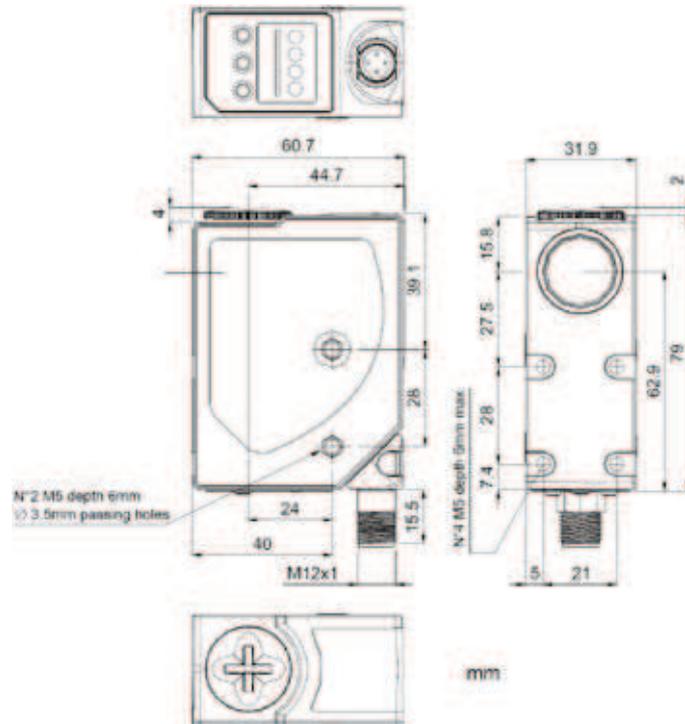
SETTING

The switching threshold setting can be easily made pressing the '+' and '-' push-buttons that increase or decrease the sensitivity level which is visualised on the bargraph indicator. The sensor has a KEYLOCK function that deactivates the keyboard avoiding accidental sensor setting.

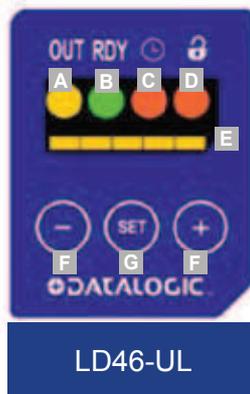
The keyboard is locked at the sensor powering and can be activated by pressing the SET push-button for 5 seconds until the keylock LED turns on.

The keyboard is locked again automatically if not used for 2 minutes.

DIMENSIONS



INDICATORS AND PUSH-BUTTONS



- A yellow OUTPUT LED
- B green READY LED
- C orange DELAY LED
- D orange KEYLOCK LED
- E Bargraph

- F +/- push-buttons
- G SET push-button

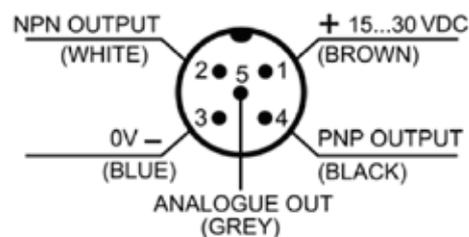
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** of the **General Catalogue**.

CONNECTIONS

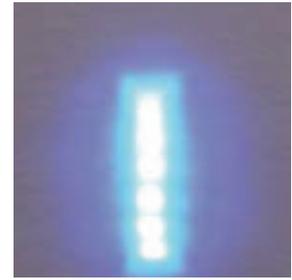
M12 CONNECTOR



TECHNICAL DATA

LIGHT SPOT

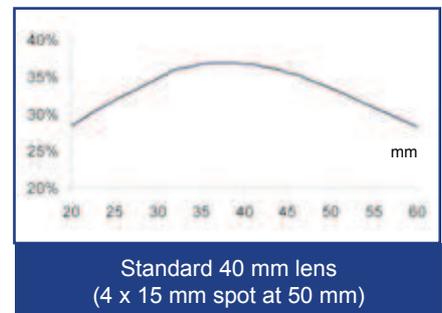
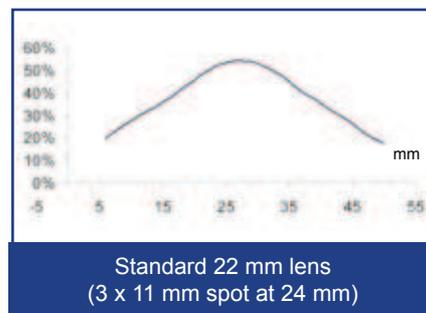
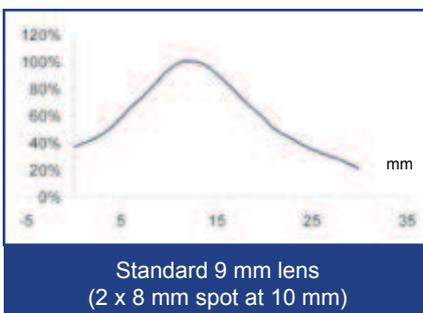
TECHNICAL NOTES		TL46-W-815	TL46-W-815L	TL46-WL-815
¹ Average life of 100.000 h with T _A = +25 °C ² Rotatable connector block in 5 positions ³ A - reverse polarity protection B - overload and short-circuit protection				
Power supply:	15 ... 30 Vdc, reverse polarity protection	•	•	•
Consumption:	50 mA max at 24 Vdc	•	•	•
Light emission:	LED UV, 375 nm ¹	•	•	•
Spot dimension:	2 x 8 mm at 10 mm	•		
	3 x 11 mm at 24 mm			•
	4 x 15 mm at 50 mm		•	
Operating distance:	10 ... 20 mm	•		
	20 ... 40 mm			•
	30 ... 50 mm		•	
Setting:	manual using '+', '-' and SET push-buttons	•	•	•
Indicators:	yellow OUTPUT LED	•	•	•
	green ready LED	•	•	•
	orange delay LED	•	•	•
	orange keylock LED	•	•	•
	5-segment bargraph	•	•	•
Output type:	1 NPN output	•	•	•
	1 PNP output	•	•	•
Output current:	100 mA max.	•	•	•
Saturation voltage:	≤2 V	•	•	•
Response time:	250 µs	•	•	•
Switching frequency:	2 kHz	•	•	•
Operating mode:	light	•	•	•
Analogue output:	0.75 ... 5.5 V max.	•	•	•
Timing function:	20 ms selectable	•	•	•
Auxiliary functions:	keylock	•	•	•
Connections:	M12 5-pole connector ²	•	•	•
Electrical protection:	class 2, double insulation	•	•	•
Mechanical protection:	IP67	•	•	•
Protection devices:	A, B	•	•	•
Housing material:	aluminum	•	•	•
Lens material:	glass	•	•	•
Weight:	180 g max.	•	•	•
Operating temperature:	-10...55°C	•	•	•
Storage temperature:	-20...70°C	•	•	•
Reference standard:	EN 60947-5-2	•	•	•



The improved UV emission power and light spot sharpness enable the detection of critical targets with a very poor or non-homogeneous luminescence level.



DETECTION DIAGRAMS

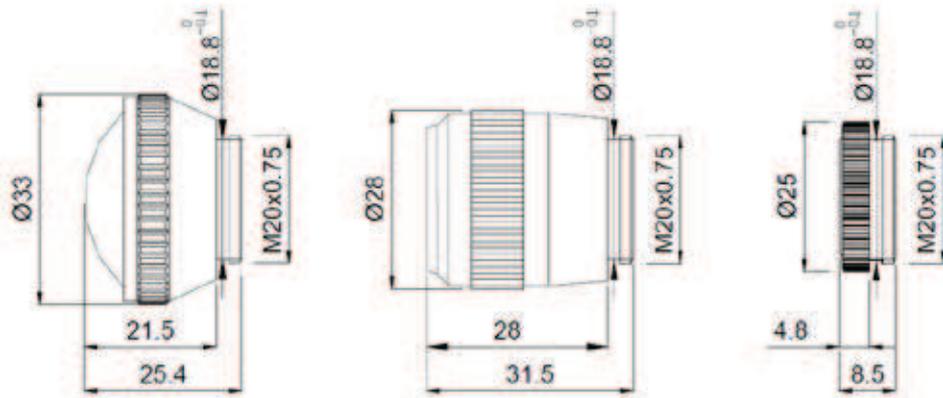


MODELS

MODEL	OPERATING DISTANCE	ORDER N°
LD46-UL-715	10 - 20 mm	955201000
LD46-UL-735	30 - 50 mm	955201020
LD46-UL-755	20 - 40 mm	955201010

ACCESSORY LENSES

DIMENSIONS



Lens 40 mm glass

Lens 22 mm glass

Lens No.9 glass

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
Lens No.9 glass	glass lens with 9 mm focus	95ACC2670
Lens No.22 glass	glass lens with 22 mm focus	95ACC1100
Lens No.40 glass	glass lens with 40 mm focus	95ACC2740

Please refer also to **Sensor Accessories**



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TL μ SERIES

The **TL μ** series offers the most reliable and innovative solutions for all detection applications of register marks and other neutral or coloured references. The microprocessor-based setting can be either 'Teach-in' using two push-buttons or 'Remote' by cable with the possibility of rapidly memorising and recalling 4 different formats. The setting can also be dynamic and completely automatic in the models with the 'Auto-Set' function. The LED emission can be red/green with automatic selection, or white offering the possibility of operating on all contrasts, also amongst same-coloured objects and backgrounds, presenting different surface treatments or workings. Models with interchangeable 9 mm or 18 mm lenses are available; 22, 28 and 50 mm lenses are supplied as accessories. Moreover many different fibre-optic models are available. The output is NPN or PNP according to the model, but is always selectable by means of an internal switch; an analog output proportional to the received light is also present.



HIGHLIGHTS

- 'Teach-in', 'Remote' setting and models with 'Auto-Set'
- Red/green or white LED emission
- Various interchangeable lenses and fibre-optic versions
- Metal housing with orientable optics and connector

APPLICATIONS

Packaging lines



Contrast reading

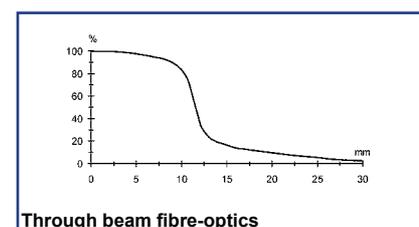
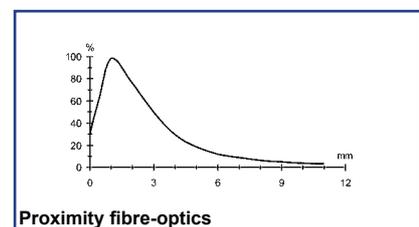
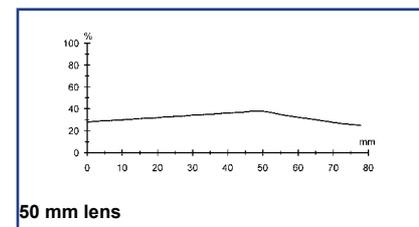
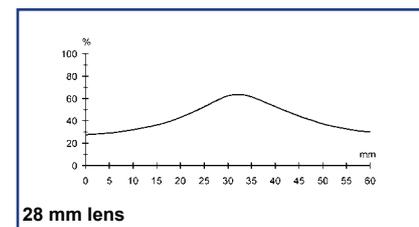
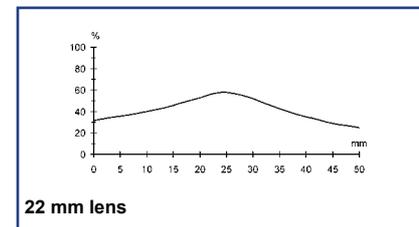
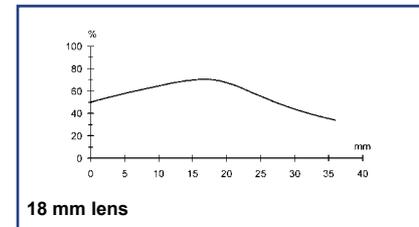
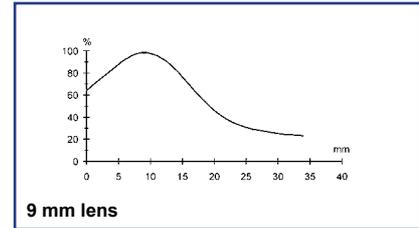


TECHNICAL DATA

Power supply:	10 ... 30 Vdc, reverse polarity protection
Consumption:	80 mA max.
Light emission:	red 630 nm / green 526 nm LED white LED (TL μ -4/5xx vers.)
Spot dimension:	1.5 x 5 mm (9 mm lens) \varnothing 3 mm (9 lens - circular) 2 x 7 mm (18 mm lens)
Operating distance:	6 ... 12 mm (9 mm lens) 14 ... 22 mm (18 mm lens) 22 ... 34 mm (28 mm lens) 40 ... 60 mm (50 mm lens)
Operating distance with fibre-optics:	0 ... 3 mm proximity 0 ... 10 mm through beam
Depth of field:	\pm 3 mm (9 mm lens) \pm 4 mm (18 mm lens) \pm 6 mm (28 mm lens) \pm 10 mm (50 mm lens)
Setting:	Teach-in with 2 push-buttons Remote with 2 wires
Indicators:	red OUTPUT LED green READY LED
Output type:	NPN or PNP, Rpull-down/up 10 k Ω
Saturation voltage:	1 V max. (NPN vers.) 2 V max. (PNP vers.)
Output current:	200 mA max., short-circuit protection
Response time:	50 μ s max., 25 ms max. (TL μ -4/5xx vers.)
Switching frequency:	10 kHz max., 20 kHz max. (TL μ -4/5xx vers.)
Operating mode:	automatic dark/light selection
Analog output range:	0 ... 5.5 Vdc (2 Vdc on white 90%) 2.2 k Ω output resistance
Timing function:	20 ms minimum output ON
Connection:	M12 4-pole connector 3m \varnothing 6.1 mm shielded cable
Electrical protection:	class 1
Mechanical protection:	IP67
Housing material:	ZAMA
Lens material:	glass
Fibre-optic material:	fibre in glass / sheath in metal fibre in PMMA / sheath in PE (OF-30)
Weight:	310 g max. (connector vers.) 450 g max. (cable vers.)
Operating temperature:	-10 ... +55°C
Storage temperature:	-25 ... +70°C
Fibre operating temperature:	-30 ... +150°C (glass OF vers.) -30 ... +60°C (OF-30)
Reference standard:	EN 60947-5-2
Certifications:	

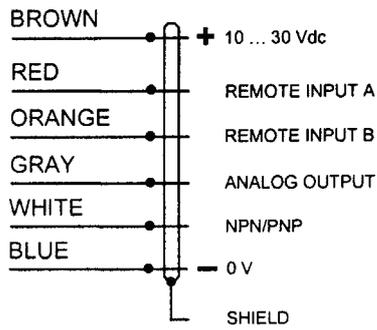
The detection diagrams indicate the typical detection distance.

DETECTION DIAGRAMS

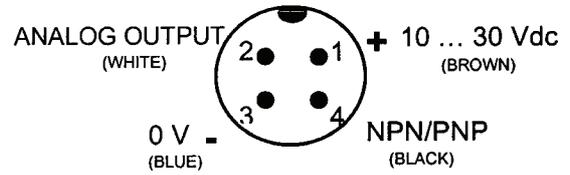


The detection diagrams indicate the typical operating distance.

CONNECTIONS

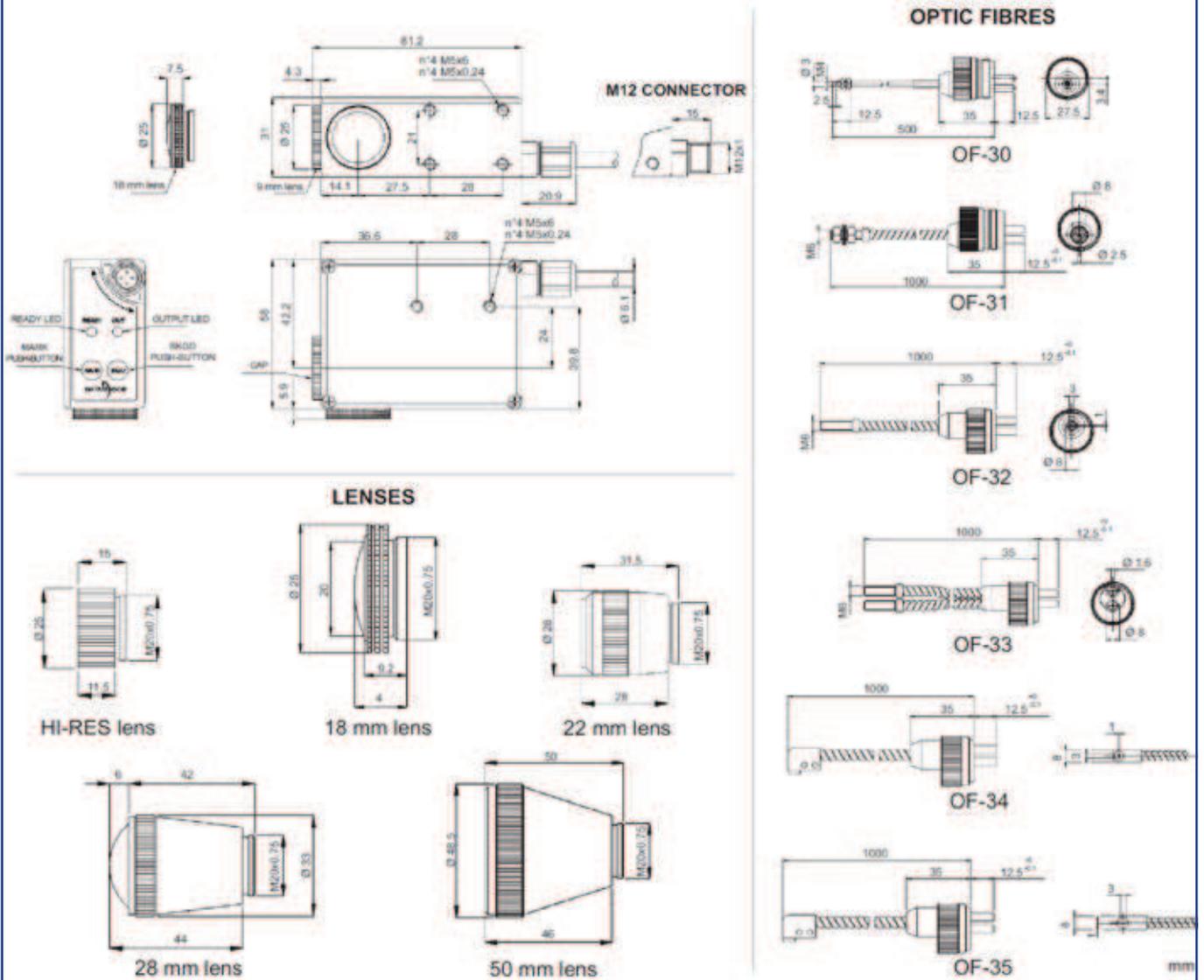


M12 COONECTOR



* Dark/light mode selection input for Auto-Set models

DIMENSIONS



MODEL SELECTION AND ORDER INFORMATION

MODEL	EMISSION	SPOT	OPTICS	CONNECTION	OUTPUT	CODE N°
TLμ-011	red/green	vertical	9 mm	cable	NPN	964401000
TLμ-011L	red/green	horizontal	9 mm	cable	NPN	964401010
TLμ-015	red/green	vertical	9 mm	M12 connector	NPN	964401020
TLμ-015L	red/green	horizontal	9 mm	M12 connector	NPN	964401030
TLμ-065	red/green	vertical	18 mm	M12 connector	NPN	964401060
TLμ-111	red/green	vertical	9 mm	cable	PNP	964401080
TLμ-111L	red/green	horizontal	9 mm	cable	PNP	964401090
TLμ-115	red/green	vertical	9 mm	M12 connector	PNP	964401100
TLμ-115L	red/green	horizontal	9 mm	M12 connector	PNP	964401110
TLμ-165	red/green	vertical	18 mm	M12 connector	PNP	964401140
TLμ-415C	white	circular	9 mm	M12 connector	NPN	954151330
TLμ-411C	white	circular	9 mm	cable	NPN	954151410
TLμ-445	white	refer to fibres	fibre-optic	M12 connector	NPN	954151350
TLμ-515C	white	circular	9 mm	M12 connector	PNP	954151360
TLμ-511C	white	circular	9 mm	cable	PNP	954151420
TLμ-545	white	refer to fibres	fibre-optic	M12 connector	PNP	954151380

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
Lens Hi-Res	lens with 9 mm focus (*)	95ACC1050
Lens No.18	lens with 18 mm focus	95ACC2680
Lens No.22	lens with 22 mm focus	95ACC1100
Lens No.28	lens with 28 mm focus	890000194
Lens No.50	lens with 50 mm focus	S73030511
OF-30-5	plastic fibre-optic L 50 cm - point-shaped spot proximity	96B001070
OF-31-10	glass fibre-optic L 100 cm - point-shaped spot proximity	96B201000
OF-32-10	glass fibre-optic L 100 cm - rectangular spot proximity	96B211000
OF-33-10	glass fibre-optic L 100 cm - through beam	96B221000
OF-34-10	glass fibre-optic L 100 cm - horizontal spot 90° proximity	96B231000
OF-35-10	glass fibre-optic L 100 cm - vertical spot 90° proximity	96B24100

* focussing lens to screw between the sensor and the normal 9 mm lens

Please refer also to **Sensor Accessories**



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TL46 SERIES

The new digital contrast sensor line of the **TL46** series is characterised by excellent performances in terms of resolution, definition and precision of the light spot emitted by RGB LEDs, low response time and high switching speed. The sensor, developed in a sturdy metal housing with standard fixing, is available in 3 different versions able to better satisfy all applications offering avantgarde technology at the best price/performance ratio. The **TL46-W** basic version has only one set push-button, 2 LEDs indicating respectively the output status and sensor acquisition condition. The performances and use ease have been optimised and offered at a competitive price. The **TL46-WL** standard version has set 3 push-buttons, 4 LEDs signalling the output status, sensor acquisition condition, delay output activation and push-button activation. A bargraph is also available for manual setting of the threshold to detect particularly difficult contrasts. The standard version supplies excellent performances in general at a 20 kHz switching frequency. The **TL46-WLF** enhanced version presents a 4-digit display for the setting of the most advanced functions, such as dynamic acquisition of the contrast mark. The sensor reaches the maximum market performances at 30 kHz switching frequency. Accessory lenses with 9 - 40 mm focal distance are available for all versions, as well as a high-resolution focussing lens and a PMMA plastic patent-covered lens particularly suitable to food applications with standard 9 mm focal distance.

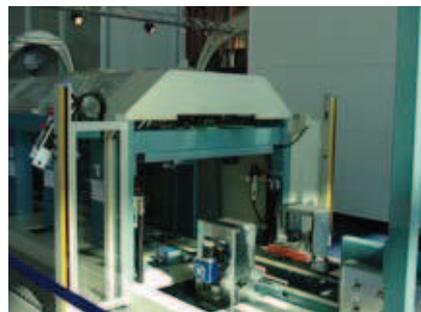


HIGHLIGHTS

- Wide-spectrum RGB LED emission
- 3 different versions: basic, standard and enhanced
- Automatic, manual and dynamic setting
- 15, 20 or 30 kHz switching frequency
- NPN/PNP and analogue outputs
- Standard fixing, M12 connector rotatable on 5 positions

APPLICATIONS

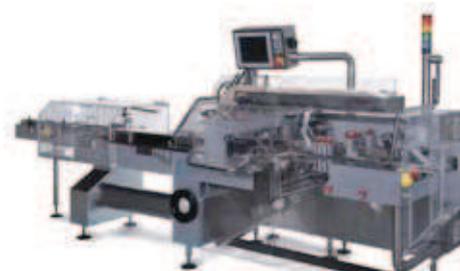
Ceramics



Beverage & Bottling



Packaging lines



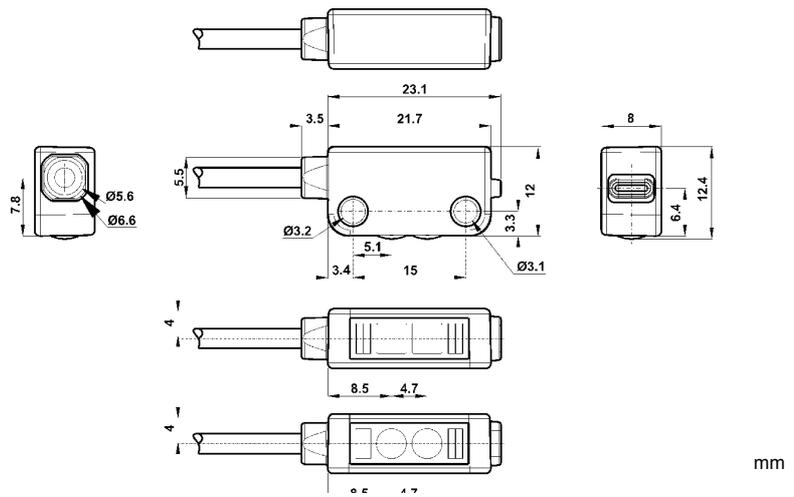
SETTING

The switching threshold is set pressing twice the SET push-button; the first for the mark the second for the background.

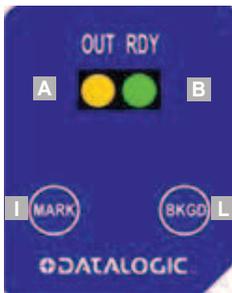
The threshold level can be set manually, in the TL46-WL/WLF version, pressing the '+' and '-' push-buttons which increase or reduce the threshold as visualised on the bargraph or display.

The dynamic setting, present in the TL46-WLF version, detects the moving mark by simply keeping the SET push-button pressed, or activating the Remote/Dyn input.

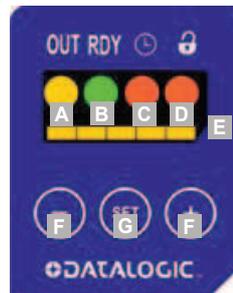
DIMENSIONS



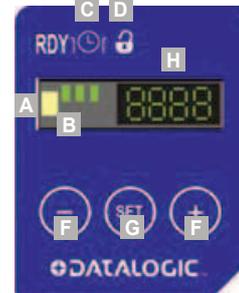
INDICATORS AND PUSH-BUTTONS



TL46-W
BASE



TL46-WL
STANDARD

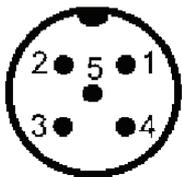


TL46-WLF
ENHANCED

- A yellow OUTPUT LED
- B green READY LED
- C orange DELAY LED
- D orange KEYLOCK LED
- E Bargraph

- F +/- push-buttons
- G SET push-button
- H Display
- I MARK push-button
- L BKGD push-button

CONNECTIONS



M12 CONNECTOR

Version	pin 1	pin 2	pin 3	pin 4	pin 5 *
	(brown)	(white)	(blue)	(black)	(grigio)
TL46-W Base	+10...30Vdc	1...5.5Vdc output	0Vdc	NPN/PNP output	Delay
TL46-WL Std.	+10...30Vdc	1...5.5Vdc output	0Vdc	NPN/PNP output	Remote
TL46-WLF Enh.	+10...30Vdc	Dark/Light Dyn.	0Vdc	NPN/PNP output	Remote/Dyn.

* A M12 4-pole connector can be used if the PIN5 function is not necessary.

TECHNICAL DATA

VERTICAL SPOT



HORIZONTAL SPOT

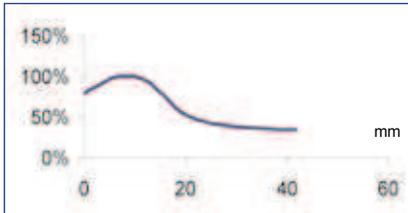


Horizontal spot is present in the TL46 models with final '-L' suffix

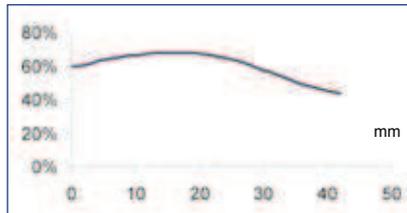
TECHNICAL NOTES		TL46-W-815	TL46-W-815L	TL46-WL-815	TL46-WL-815L	TL46-WLF-815	TL46-WLF-815L
¹ Limit values							
² Average life of 100.000 h with TA = +25 °C							
³ Connector block rotatable on 5 positions							
⁴ A - reverse polarity protection							
B - overload and short-circuit protection							
Power supply:	10 ... 30 Vdc , reverse polarity protection	•	•	•	•	•	•
Consumption:	85 mA max	•	•	•	•	•	•
Light emission:	RGB LED (630nm red, 520nm green, 465nm blue) ²	•	•	•	•	•	•
Spot dimension:	1.5 x 5 mm (with standard 9 mm lens)	•	•	•	•	•	•
Spot orientation:	horizontal		•		•		•
	vertical	•		•		•	
Operating distance:	6 ... 12 mm (with standard 9 mm lens)	•	•	•	•	•	•
Depth of field:	± 3 mm (with standard 9 mm lens)	•	•	•	•	•	•
Setting:	automatic	•	•				
	automatic / manual / remote			•	•		
	automatic / manual / remote / dynamic					•	•
Indicators:	yellow OUTPUT LED	•	•	•	•	•	•
	green READY LED	•	•	•	•	•	•
	orange DELAY LED			•	•	•	•
	orange KEYLOCK LED			•	•	•	•
	5-segment bargraph			•	•		
	4-digit display					•	•
Output type:	NPN/PNP programmable					•	•
Output current:	100 mA max.	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•
Response time:	33 µs	•	•				
	25 µs			•	•		
	17 µs					•	•
Switching frequency:	15 kHz	•	•				
	20 kHz			•	•		
	30 kHz					•	•
Operating mode:	dark/light selectable					•	•
Analogue output:	1 ... 5.5 V (3 V on 90% white)	•	•	•	•	•	•
Timing function:	20 ms programmable	•	•	•	•		
	0 ... 100 ms programmable					•	•
Auxiliary functions:	keylock			•	•	•	•
	fine hysteresis regulation					•	•
Connections:	m12 5-pole connector ³	•	•	•	•	•	•
Electrical protection:	class 2, double insulation	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•
Protection devices:	A, B ⁴	•	•	•	•	•	•
Housing material:	aluminum	•	•	•	•	•	•
Lens material:	PMMA	•	•				
	glass			•	•	•	•
Weight:	170 g max.	•	•	•	•	•	•
Operating temperature:	-10...55°C	•	•	•	•	•	•
Storage temperature:	-20...70°C	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•



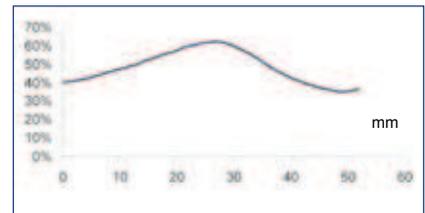
READING DIAGRAM



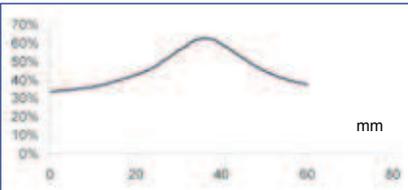
Standard 9 mm lens
(1.5 x 5 mm spot on focal point)



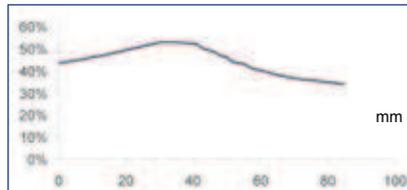
Accessory 18 mm lens
(2 x 7 mm spot on focal point)



Accessory 22 mm lens
(2 x 8 mm spot on focal point)



Accessory 28 mm lens
(2 x 9 mm spot on focal point)



Accessory 40 mm lens
(2.5 x 11 mm spot on focal point)

MODEL SELECTION

MODEL	V	SPOT	ORDER N°
TL46-W-815	basic	vertical	954601000
TL46-W-815L	basic	horizontal	954601010
TL46-WL-815	standard	vertical	954601020
TL46-WL-815L	standard	horizontal	954601030
TL46-WLF-815	enhanced	vertical	954601040
TL46-WLF-815L	enhanced	horizontal	954601050

ACCESSORY SELECTION

MODEL	DESCRIPTION	ORDER NO.
CS-A1-03-G-03	axial M12 NO-NC 5-poles 3 m	95ACC2110
CS-A1-03-G-05	axial M12 NO-NC 5-poles 5 m	95ACC2120
CS-A1-03-G-10	axial M12 NO-NC 5-poles 10 m	95ACC2140
Lens No.9 glass	glass lens with 9 mm focus	95ACC2670
Lens No.9 PMMA	plastic lens with 9 mm focus	95ACC2540
Lens Hi-Res glass	additional focussing glass lens (*)	95ACC1050
Lens No.18 glass	glass lens with 18 mm focus	95ACC2680
Lens No.22 glass	glass lens with 22 mm focus	95ACC1100
Lens No.28 glass	glass lens with 28 mm focus	890000194
Lens No.40 glass	glass lens with 40 mm focus	95ACC2740

* focussing lens to screw between the sensor and normal 9 mm lens to reduce the light spot dimension and increase resolution
Please refer also to Sensor Accessories



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TL50 SERIES

The **TL50** contrast sensor line offers the best solution for all the applications where cost reduction is requested, without compromising the excellent detection performances. The optimised optics of these sensors, the RGB LED emission with automatic colour selection and the very fine resolution, allow the detection of the weakest contrast of colours or grayscale between mark and background, or between different objects or surfaces. The high resolution is not a limit for the detection speed, reaching 33 ms response time and 15 kHz switching frequency. Thanks to the compact dimensions and multiple fixing holes with metallic inserts present in standard positions, the sturdy ABS plastic housing is fully compatible and can replace the most traditional contrast sensors, as well as offering an interesting cost reduction. The special PMMA plastic lens, that can be fixed either in an axial or lateral position, is suitable for sensor use in the food industry, where the presence of glass parts must be avoided.

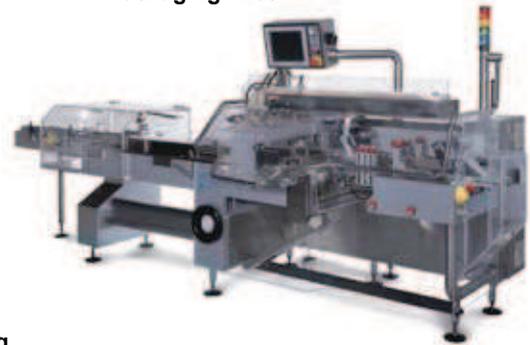


HIGHLIGHTS

- High resolution and RGB LED emission with automatic colour selection
- Very fast switching frequency and low response time
- Easy sensor setting by means of two pushbuttons Mark/Bkgd
- Sturdy plastic housing with standard dimensions and fixing holes

APPLICATIONS

Packaging lines



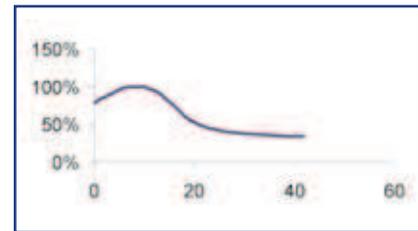
Contrast reading



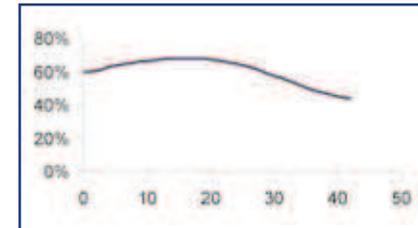
TECHNICAL DATA

Power supply:	10 ... 30 Vdc ¹ , reverse polarity protection
Ripple:	2 Vpp max.
Consumption:	50 mA max. at 24Vdc
Light emission:	RGB LED (630nm red, 520nm green, 465nm blue) ²
Spot dimension:	1.5 x 5 mm at 9 mm
Operating distance:	9 mm
Depth of field:	± 3 mm (with standard 9 mm lens)
Setting:	MARK push-button BKGD push-button
Indicators:	yellow OUTPUT LED green READY LED orange DELAY LED
Output type:	1 PNP output / 1 NPN output
Output current:	100 mA max.
Saturation voltage:	≤2 V
Response time:	33 μs
Switching frequency:	15 kHz
Operating mode:	dark/light automatic
Timing function:	0 ... 20 ms selectable
Connections:	4-pole M12 connector
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B ³
Housing material:	ABS
Lens material:	PMMA
Weight:	90 g max.
Operating temperature:	-10...55°C
Storage temperature:	-20...70°C
Reference standard:	EN 60947-5-2

DETECTION DIAGRAMS



Standard 9 mm lens
(1,5 x 5 mm spot on the focus distance)



Accessory 18 mm lens
(2 x 7 mm spot on the focus distance)



TECHNICAL NOTES

¹ Limit values

² Average life of 100.000 h with TA = +25 °C

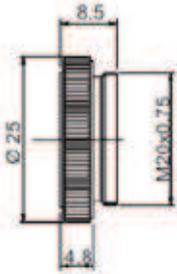
³ A - reverse polarity protection

B - overload and short-circuit protection

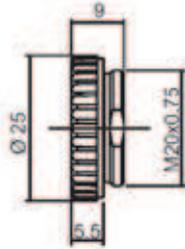
MODEL SELECTION AND ORDER INFORMATION

MODEL	OPERATING DISTANCE	ORDER N°
TL50-W-815	9 mm	954651000

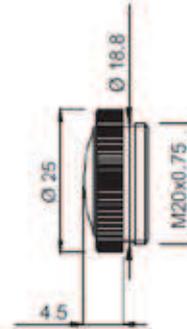
ACCESSORY LENSES



Lens No.9 glass



Lens No.9 PMMA



Lens 18 mm glass

mm

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
Lens No.9 glass	glass lens with 9 mm focus	95ACC2670
Lens No.9 PMMA	plastic lens with 9 mm focus	95ACC2540
Lens No.18 glass	glass lens with 18 mm focus	95ACC2680

Please refer also to **Sensor Accessories**



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S65-W SERIES

The **S65-W** series offers, in a sturdy standard compact 50x50 mm ABS housing with IP67 mechanical protection, an advanced contrast sensor for the detection of register marks and other neutral or coloured targets.

The control panel presents three push-buttons for easy and immediate setting and a 4-digit display that indicates the configuration parameters and the level of received signal without the need of connecting external devices.

Different operating modes, automatic EASYtouch™ and fine, manual and dynamic, allow extremely easy and precise object detection.

Models with only one NPN or PNP switching output are available, or with RS485 serial interface for data transmission as well as an analogue monitoring output proportional to the received light intensity. Electric connection is made by means of a standard 5 or 8-pole connector according to the model.

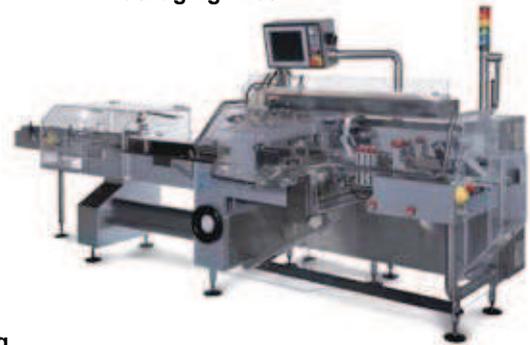


HIGHLIGHTS

- High 12 bit resolution and 30 kHz switching speed
- 3 push-button setting with 4-digit display indication
- All setting modes: automatic, manual or dynamic
- PNP or NPN output with RS485 serial interface for data transmission

APPLICATIONS

Packaging lines



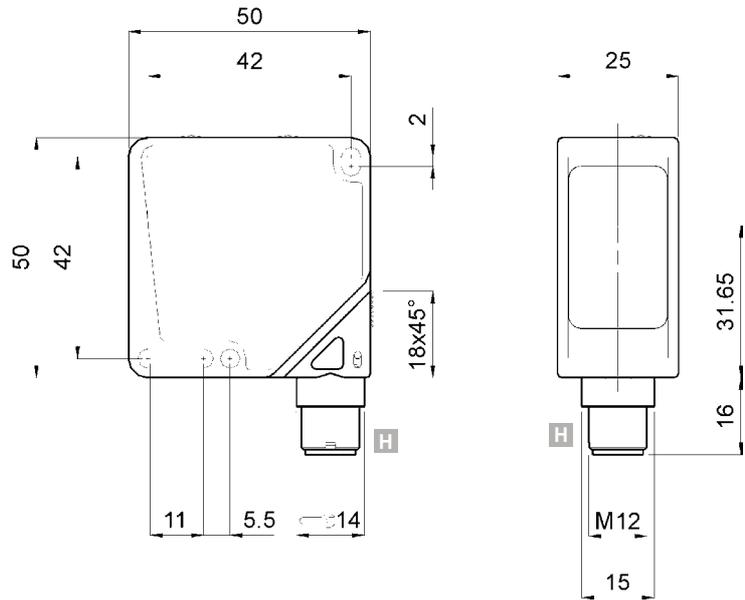
Contrast reading



DIMENSIONS

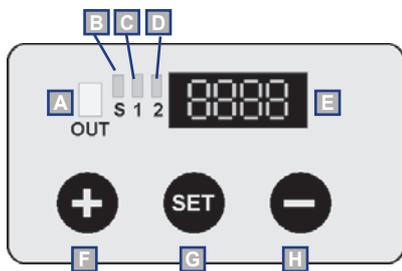
Sensor setting can be made in four different modes; **EASYtouch™** with one SET push-button pressure for a quicker setting, **fine** pressing twice the SET push-button for better precision, **manual** for rapid setting correction using the +/- push-buttons and **dynamic** for the detection of moving targets.

The timing function allows to set a delay of the output activation or deactivation, to avoid the detection of temporarily rapid changes, improve interfacing with slower systems or synchronise activator activation without needing external timers.



mm

INDICATORS AND PUSH-BUTTONS



- A Output status LED
- B Stability LED
- C Delay ON LED
- D Delay OFF LED
- E 4-digit display
- F +/- push-buttons
- G SET push-button
- H M12 connector output, orientable on two positions

ACCESSORIES

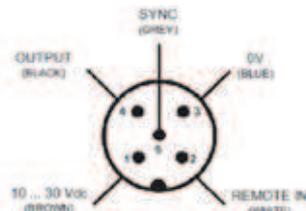
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** of the **General Catalogue**.

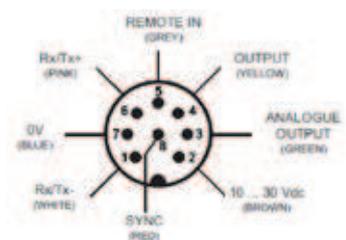
CONNECTIONS



M12 5-POLE CONNECTOR



M12 8-POLE CONNECTOR



Versions and options: refer to **MODEL SELECTION TABLE**

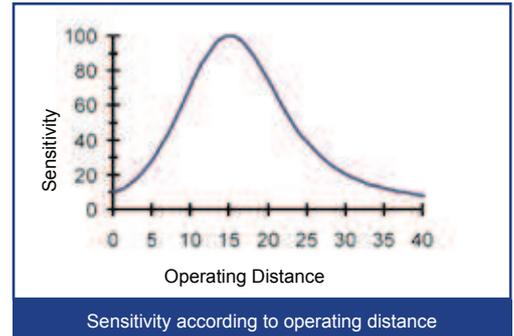
TECHNICAL DATA

TECHNICAL NOTE		S65-PA-5-W09-NH	S65-PA-5-W09-NHZ	S65-PA-5-W09-PH	S65-PA-5-W09-PHZ
¹ Limit values ² Average life of 100.000 h with TA = +25 °C ³ Is activated at powering with remote input connected to +Vdc for at least 1 sec. ⁴ Connector can be blocked on two positions ⁵ A - reverse polarity protection B - overload and short-circuit protection					
Operating distance:	15 mm	•	•	•	•
Depth of field:	± 2 mm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•
Consumption:	50 mA max. at 24 Vdc	•	•	•	•
Light emission:	white LED 400 - 700 nm ²	•	•	•	•
Spot dimension:	3x1 mm rectangular at 19 mm	•	•	•	•
Setting:	+ push-button	•	•	•	•
	- push-button	•	•	•	•
	SET push-button	•	•	•	•
Digital resolution:	12 bit (4096 points)	•	•	•	•
Indicators:	4-digit display	•	•	•	•
	yellow active OUTPUT LED	•	•	•	•
	green ON/OFF stabile OUTPUT LED	•	•	•	•
	green active DELAY ON LED	•	•	•	•
	green active DELAY OFF LED	•	•	•	•
Output type:	PNP - NO			•	•
	NPN - NO	•	•		
Output current:	≤100 mA	•	•	•	•
Saturation voltage:	≤2 V	•	•	•	•
Response time:	16 µs	•	•	•	•
Switching frequency:	30 KHz	•	•	•	•
Timing function:	1 ... 100 ms setting	•	•	•	•
Auxiliary functions:	RS485 serial interface		•		•
	keyboard lock ³	•	•	•	•
	external synchronism	•	•	•	•
Connection:	M12 5-pole connector ⁴	•		•	
	M12 8-pole connector ⁴		•		•
Electrical protection:	class 2	•	•	•	•
Mechanical protection:	IP67	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	glass	•	•	•	•
Weight:	60 g max.	•	•	•	•
Operating temperature:	-10 ... +55°C	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

contrast sensors			
S65-PA-5-W09-NH	954201000	NPN	
S65-PA-5-W09-NHZ	954201010	NPN	RS485
S65-PA-5-W09-PH	954201020	PNP	
S65-PA-5-W09-PHZ	954201030	PNP	RS485

DETECTION DIAGRAMS



MODEL SELECTION AND ORDER INFORMATION

MODEL	CONNECTION	OUTPUT	SERIAL INTERFACE	ORDER N°
S65-PA-5-W09-NH	M12 5-pole connector	NPN	No	954201000
S65-PA-5-W09-NHZ	M12 8-pole connector	NPN	RS485	954201010
S65-PA-5-W09-PH	M12 5-pole connector	PNP	No	954201020
S65-PA-5-W09-PHZ	M12 8-pole connector	PNP	RS485	954201030

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5020	50 x 27 x 20 mm fixing bracket	95ACC5330
ST-5021	20 x 40 x 28 mm fixing bracket	95ACC5340
CS-A1-03-G-03	M12 5-pole conn. with 3 m unshielded cable	95ACC2110
CS-A1-03-G-05	M12 5-pole conn. with 5 m unshielded cable	95ACC2120
CS-A1-03-G-10	M12 5-pole conn. with 10 m unshielded cable	95ACC2140
CS-A1-06-B-03	M12 8-pole conn. with 3 m unshielded cable	95ACC2230
CS-A1-06-B-05	M12 8-pole conn. with 5 m unshielded cable	95ACC2240
CS-A1-06-B-10	M12 8-pole conn. with 10 m unshielded cable	95ACC2250



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S65-V SERIES

The **S65-V** colour sensors offer the best performances for colour detection in a standard 50x50x25 mm compact housing. The **S65-V0** model, thanks to a good response time of only 340 µs, results to be particularly suitable for automatic packaging applications where high speed and colour mark detection are necessary. The **S65-V1** model increases the chromatic sensitivity of S65-V0 towards dark colours. The sensors can memorise and recognise 3 colours on 3 independent channels. The C (chromaticity) or C+I (chromaticity and intensity) detection algorithm and the tolerance level can be chosen for each colour. The auxiliary functions include keylock and synchronisation with external events through a specific input. The control panel presents two setting push-buttons, outputs LEDs and a 4-digit display for functioning messages and sensor configuration. Complete remote control is possible for the version with the RS485 serial interface, which in the **S65-V1** sensor can also receive RGB chromatic information.



SENSOR

HIGHLIGHTS

- 3 channel colour sensor with C or C+I functions and 10 tolerance levels
- Wide spectrum white light LED emission and RGB photoreceiver
- 3 independent NPN or PNP outputs and RS485 serial interface
- 2 push-button easy setting and 4 digit display

APPLICATIONS

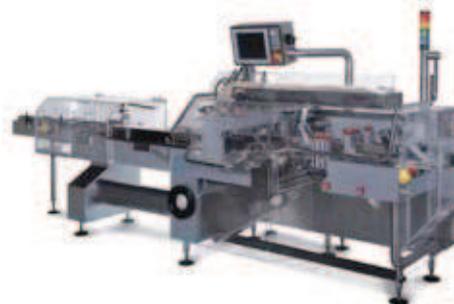
Automatic machines



Automotive

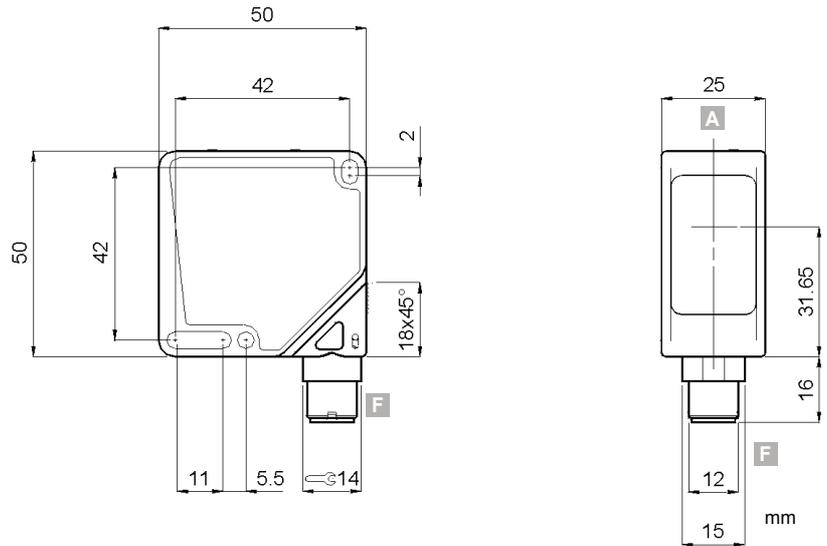


Packaging lines

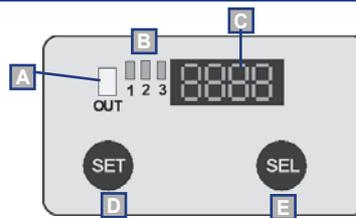


The colour sensor can be configured in a 'C' or 'C+' detection mode. The 'C' type algorithm is used to obtain a larger depth of field, or to detect colours on different opaque, shiny or reflecting surfaces. The 'C+' type algorithm offers a higher sensitivity towards tone variations, and is recommended for the detection of different colours on the same type of material. It will also distinguish grey tones.

DIMENSIONS



INDICATORS AND SETTING



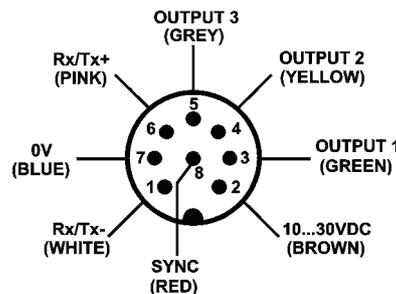
- A Output 'OR' function LED
- B Output status LEDs
- C 4 digit display
- D SET push-button
- E SEL push-button
- F +/- selection push-buttons
- G M12 connector output, orientable on two positions

ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** and **Fixing Brackets** and **Supports** of the **General Catalogue**.

CONNECTIONS



Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

SELECTION TABLE

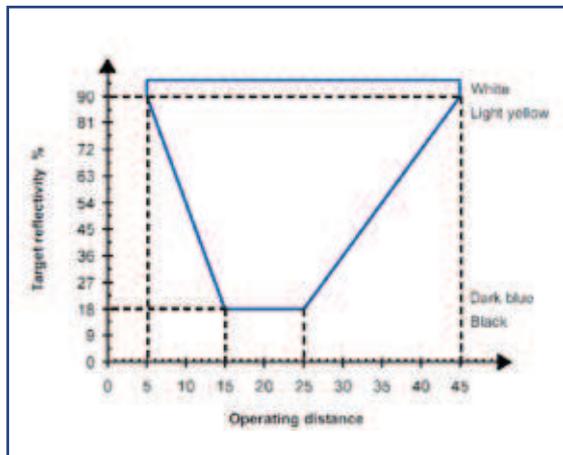
TECHNICAL NOTES		S65-PA-5-V05-NNN	S65-PA-5-V09-NNNZ	S65-PA-5-V09-PPP	S65-PA-5-V09-PPPZ	S65-PA-5-V19-NNN	S65-PA-5-V19-NNNZ	S65-PA-5-V19-PPP	S65-PA-5-V19-PPPZ
TECHNICAL NOTES									
¹ Limit values									
² Average life of 100.000 h with T _A = +25 °C									
³ Is activated with SYNC connected to +V at powering									
⁴ Connector can be blocked on two positions									
⁵ A - reverse polarity protection									
B - overload and short-circuit protection									
Operating distance:	5 ... 45 mm *	•	•	•	•	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•	•	•	•	•
Ripple:	2 Vpp	•	•	•	•	•	•	•	•
Consumption:	60 mA at 24 V	•	•	•	•	•	•	•	•
Light emission:	white LED 400 -700 nm ²	•	•	•	•	•	•	•	•
Spot dimension:	approx. 4 mm at 20 mm	•	•	•	•	•	•	•	•
Setting:	SET push-button	•	•	•	•	•	•	•	•
	SEL push-button	•	•	•	•	•	•	•	•
Indicators:	4 digit display	•	•	•	•	•	•	•	•
	green active OUTPUT LEDs	•	•	•	•	•	•	•	•
	yellow 'OR' function OUTPUT LED	•	•	•	•	•	•	•	•
Output type:	PNP - NO			•	•			•	•
	NPN - NO	•	•			•	•		
Output current:	≤ 100 mA	•	•	•	•	•	•	•	•
Saturation voltage:	≤ 2 V	•	•	•	•	•	•	•	•
Response time:	335 µs	•	•	•	•				
	1 ms (FAST); 5 ms (NORM)					•	•	•	•
Switching frequency:	1.5 kHz	•	•	•	•				
	500 Hz (FAST); 100 Hz (NORM)					•	•	•	•
Operating mode:	C or C+I independent for each channel	•	•	•	•	•	•	•	•
Tolerance level:	selectable from TOL0 to TOL9	•	•	•	•	•	•	•	•
Timing function:	selectable between 5, 10, 20, 30 and 40 ms	•	•	•	•	•	•	•	•
Auxiliary functions:	ext. synchronism	•	•	•	•	•	•	•	•
	keylock ³	•	•	•	•	•	•	•	•
	RS485 serial interface		•	•	•				
Connection:	M12 8-pole connector ⁴	•	•	•	•	•	•	•	•
Electrical protection:	class 2	•	•	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Protection devices:	A, B ⁵	•	•	•	•	•	•	•	•
Housing material:	ABS	•	•	•	•	•	•	•	•
Lens material:	glass	•	•	•	•	•	•	•	•
Weight:	100 g max.	•	•	•	•	•	•	•	•
Operating temperature:	-10 ... +55°C	•	•	•	•	•	•	•	•
Storage temperature:	-25 ... +70°C	•	•	•	•	•	•	•	•
Reference standard:	EN 60947-5-2	•	•	•	•	•	•	•	•

colour sensors			
S65-PA-5-V09-NNN	956251030	NPN	
S65-PA-5-V09-NNNZ	956251010	NPN	RS485
S65-PA-5-V09-PPP	956251020	PNP	RS485
S65-PA-5-V09-PPPZ	956251000	PNP	RS485
S65-PA-5-V19-NNN	956251110	NPN	
S65-PA-5-V19-NNNZ	956251090	NPN	RS485
S65-PA-5-V19-PPP	956251100	PNP	
S65-PA-5-V19-PPPZ	956251080	PNP	RS485

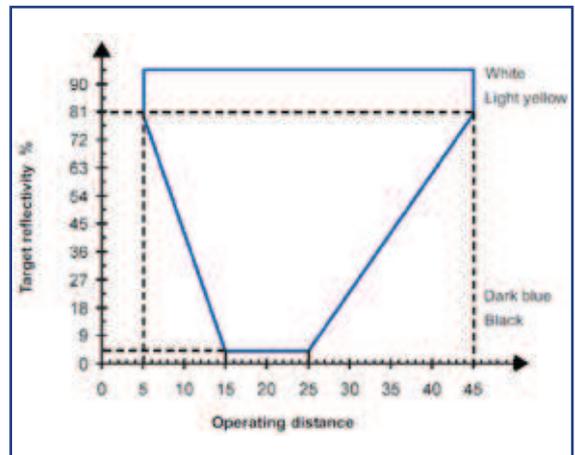


* refer to detection diagrams

DETECTION DIAGRAMS



S65-V0: operating distance according to target reflectivity degree

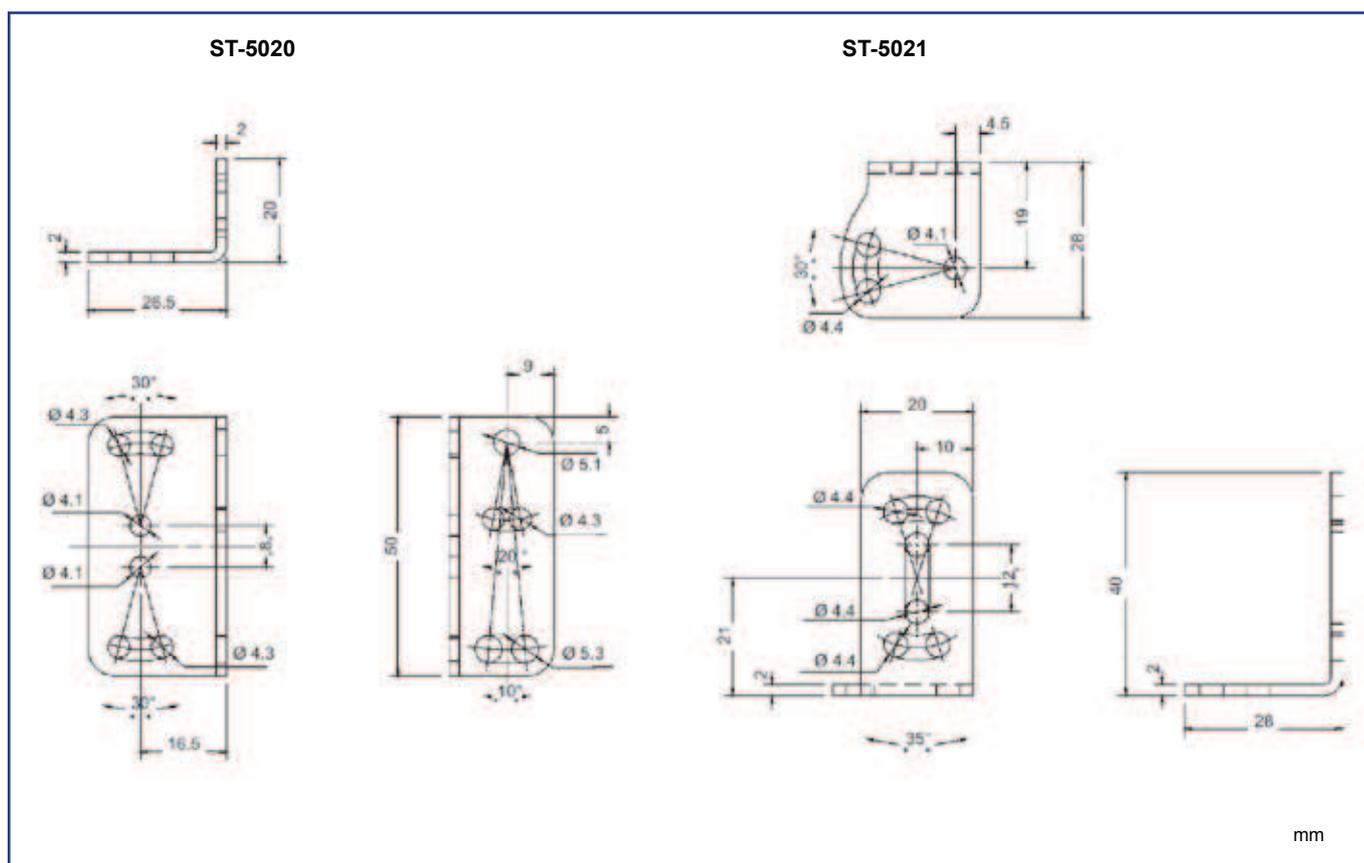


S65-V1: operating distance according to target reflectivity degree

MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	CONNECTION	OUTPUT	RS485	ORDER N°
S65-PA-5-V09-NNN	colour sensor	M12 connector	NPN		956251030
S65-PA-5-V09-NNNZ	colour sensor	M12 connector	NPN	•	956251010
S65-PA-5-V09-PPP	colour sensor	M12 connector	PNP		956251020
S65-PA-5-V09-PPPZ	colour sensor	M12 connector	PNP	•	956251000
S65-PA-5-V19-NNN	colour sensor	M12 connector	NPN		956251110
S65-PA-5-V19-NNNZ	colour sensor	M12 connector	NPN	•	956251090
S65-PA-5-V19-PPP	colour sensor	M12 connector	PNP		956251100
S65-PA-5-V19-PPPZ	colour sensor	M12 connector	PNP	•	956251080

ACCESSORY DIMENSIONS



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5020	fixing bracket 50 x 27 x 20 mm	95ACC5330
ST-5021	fixing bracket 20 x 40 x 28 mm	95ACC5340
Refer also to Accessories for Sensors		
CS-A1-06-B-03	M12 8-pole unshielded axial 3 m connector	95ACC2230
CS-A1-06-B-05	M12 8-pole unshielded axial 5 m connector	95ACC2240
CS-A1-06-B-10	M12 8-pole unshielded axial 10 m connector	95ACC2250



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AS1

The photoelectric light grids of the **AS1** series are **crossed-beam area sensors** able to detect all objects, with even 0.2mm thickness, inside a 100mm height, over operating distances reaching 3m between emitter and receiver.

The **AS1** area sensors represent the ideal solution for the detection of very small objects, even when passing in different positions inside the controlled height and width.

Version with **trimmer adjustment and optic synchronism** between emitter and receiver unit are available.

The distance between emitter and receiver can range from 0.3 up to 2.1 m for the **AS1-LD** models and from 0.8 up to 3 m for the **AS1-HD** models.



HIGHLIGHTS

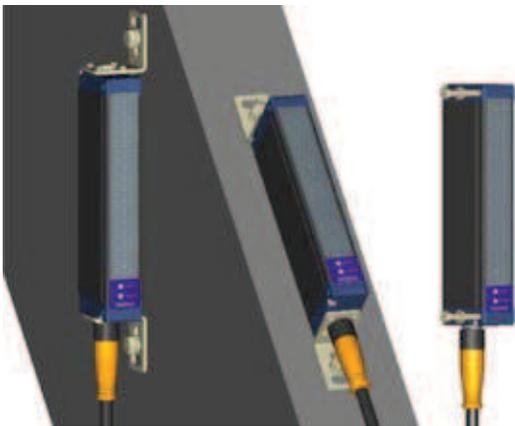
- Crossed beam area sensors
- 100mm controlled height
- Operating distance reaching 3m
- Adjustment trimmer
- PNP output
- Optic synchronism (trimmer models)
- Scan Mode input (HR models)

APPLICATIONS

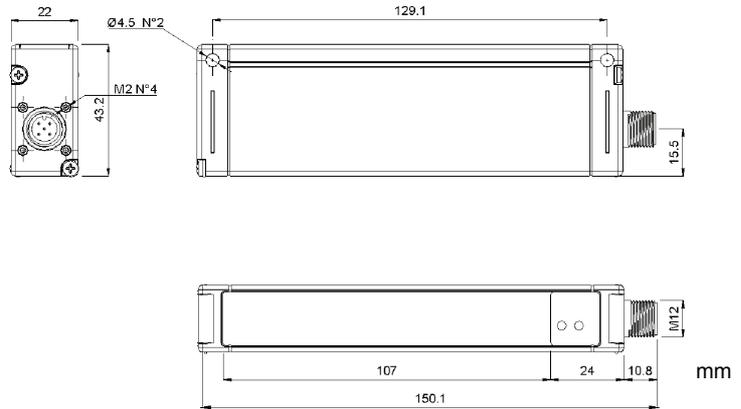
- Object presence/absence control
- Object counting
- Object passage control on conveyor lines



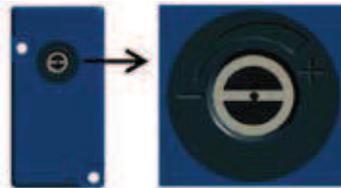
Two different models are available: **high resolution (AS1-HR)** or **standard resolution (AS1-SR)**. In the first case the light array has 16 beams, while in the second case the beams are reduced to 6. In the AS1-HR model, the selection inputs of the SCAN MODE, can configure 4 different crossed-beam scanning modes. These different modes allow to vary the detection performances, in particular the resolution can be increased to 0.2mm thickness, or the response time up to less than 3ms.



DIMENSIONS



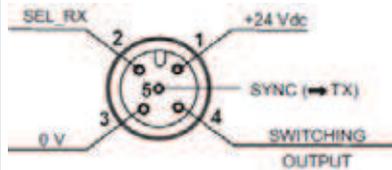
INDICATORS AND SETTING (TRIMMER VERSIONS)



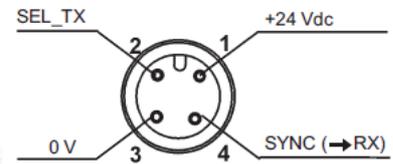
Emitter is equipped with a manual regulation which lets the user change the emission power by means of a screwdriver. The emission power reduction can be particularly useful to lower passive reflections when maximum operating distance it is not required.

CONNECTIONS

RECEIVER (RX)



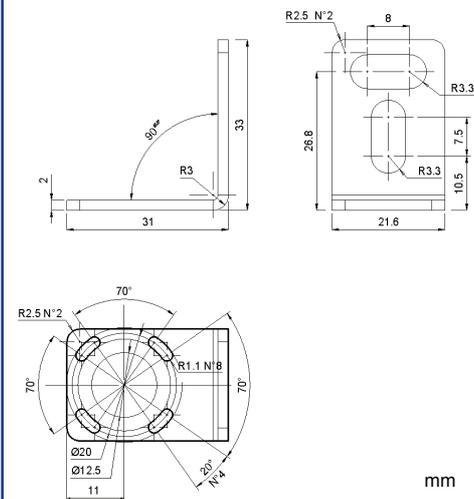
EMITTER (TX)



1	=	brown	=	+24Vdc
2	=	white	=	SEL_RX (only AS1-HR)
3	=	blue	=	0 V
4	=	black	=	SWITCHING OUTPUT
5	=	grey	=	SYNC

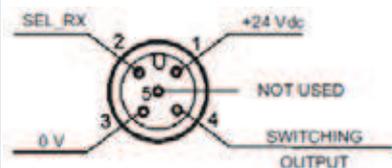
1	=	brown	=	+24Vdc
2	=	white	=	SEL_RX (only AS1-HR)
3	=	blue	=	0 V
4	=	black	=	SYNC

FIXING BRACKET

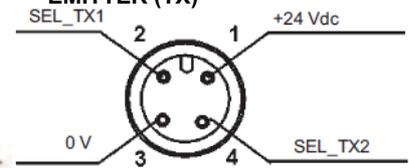


TRIMMER VERSIONS

RECEIVER (RX)



EMITTER (TX)

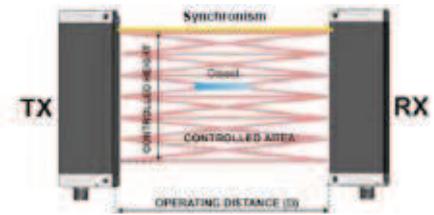


1	=	brown	=	+24Vdc
2	=	white	=	SEL_RX (only AS1-HR)
3	=	blue	=	0 V
4	=	black	=	SWITCHING OUTPUT
5	=	grey	=	SYNC

1	=	brown	=	+24Vdc
2	=	white	=	SEL_TX1 (only AS1-HR)
3	=	blue	=	0 V
4	=	black	=	SEL_TX2 (only AS1-HR)

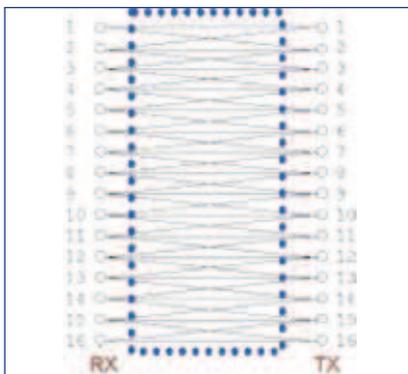
TECHNICAL DATA

Power supply:	24 Vdc ± 15 %
Consumption on emitting unit:	150 mA max.
Consumption on receiving unit:	40 mA max. load excluded
Outputs:	1 PNP output
Load current on PNP output:	100 mA; short-circuit protection
Saturation voltage on PNP output:	≤ 1.5 V at T=25°C
Emission type:	infrared 880 nm
Response time:	1,75 ms (AS1-SR vers.) 2,75 - 8 ms (AS1-HR vers.)
Optics number:	6 (AS1-SR vers.) 16 (AS1-HR vers.)
Resolution:	refer to tables
Operating distance:	0.3 – 2.1 m (AS1-LD) 0.8 – 3 m (AS1-HD)
Receiver indicators:	green POWER ON LED yellow OUT LED
Emitter indicators:	green POWER ON LED
Functioning temperature:	0 ... + 50 °C
Storage temperature:	- 25 ... + 70 °C
Humidity:	15...95 % (uncondensed)
Mechanical protection:	IP65
Housing material:	aluminium
Optics material:	PMMA
Connections:	M12 4-pole connector (TX) M12 5-pole connector (RX)
Weight:	300g

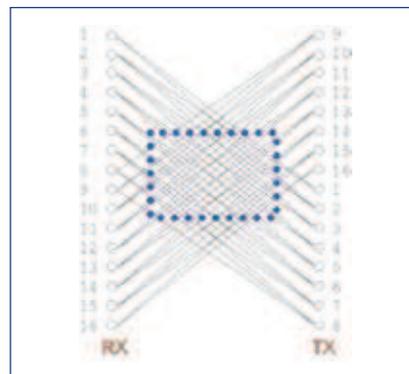


HIGH RESOLUTION SCANNING MODE

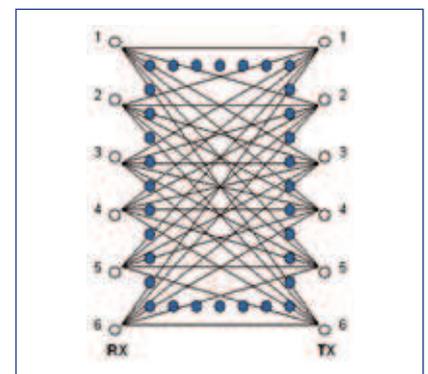
PROG. N°	SEL_RX	SEL_TX	RESOLUTION	RESPONSE TIME (msec)
1	0 Vdc or FLOAT	0 Vdc or FLOAT	LOW	2.75
2	0 Vdc or FLOAT	24 Vdc	M/L	3
3	24 Vdc	0Vdc or FLOAT	M/H	7.75
4	24 Vdc	24 Vdc	HIGH	8



Scan mode 1:
high speed / low resolution
Minimum object detection
Flat = 0.4 (thickness) x 100 (width) mm
Cylindrical objects = Ø 6 mm

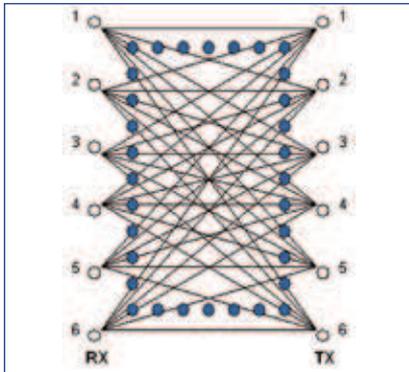


Scan mode 2:
high speed / mid resol. central area
Minimum object detection
Flat = 0.4 (thickness) x 90 (width) mm
Cylindrical objects = Ø 6 mm



Scan mode 3-4:
low speed / high resolution
Minimum object detection
Flat = 0.2 (thickness) x 75 (width) mm
Cylindrical objects = Ø 6 mm

STANDARD RESOLUTION SCANNING MODE



Note: the scan mode is fixed in the standard resolution version.

Minimum object detection
Flat = 0.2 (thickness) x 200 (width) mm
Cylindrical objects = Ø 18 mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DISTANCE	RESOLUTION	CONTROLLED HEIGHT	ADJUSTMENT TRIMMER	ORDER N°
AS1-LD-HR-010-J	0.3 – 2.1m	high	100mm		958101000
AS1-LD-HR-P-010-P	0.3 – 2.1m	high	100mm	•	958101040
AS1-LD-SR-010-J	0.3 – 2.1m	standard	100mm		958101010
AS1-LD-SR-P-010-P	0.3 – 2.1m	standard	100mm	•	958101050
AS1-HD-HR-010-J	0.8 – 3m	high	100mm		958101020
AS1-HD-SR-010-J	0.8 – 3m	standard	100mm		958101030

Fixing brackets and screws are supplied in the package

ACCESSORY SELECTION AND ORDER INFORMATION

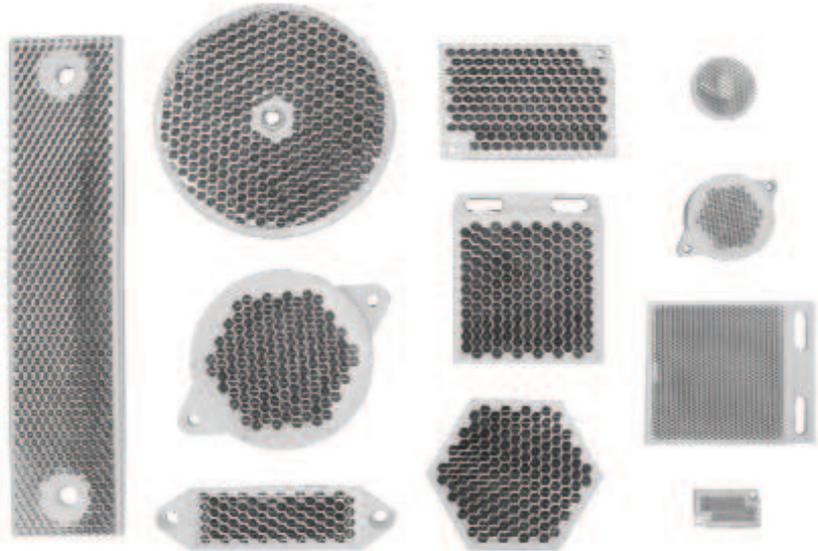
MODEL	DESCRIPTION	ORDER N°
CS-A1-03-G-03	axial M12 5-pole unshielded 3 m connector	95ACC2110
CS-A1-03-G-05	axial M12 5-pole unshielded 5 m connector	95ACC2120
CS-A1-03-G-10	axial M12 5-pole unshielded 10 m connector	95ACC2140
CS-A1-02-G-03	axial M12 4-pole unshielded 3 m connector	95A251380
CS-A1-02-G-05	axial M12 4-pole unshielded 5 m connector	95A251270
CS-A1-02-G-10	axial M12 4-pole unshielded 10 m connector	95A251390



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

R SERIES

A wide range of prismatic reflectors is available as accessories for retroreflex sensors in order to guarantee excellent operation with infrared, visible red light and polarised emission. Reflectors of the R series satisfy the most varied application requirements, thanks to the different dimensions, shape, mounting possibilities or operating distances. The R2 and R5 reflectors are standard reflectors, respectively with 48 mm and 75 mm diameters, whereas the R4 and R6 high-efficiency reflectors can be used for longer operating distances. The R10 and R11 are suitable for specific applications requiring broad surfaces. The R7, R8 and R20 microprism reflectors, suitable for high resolution detection, are available for sensors with laser emission. The R9 reflector is a miniature reflector with a self-adhesive housing fixing system. The self-adhesive reflective tape can be cut according to the required shape and dimensions, and a version for polarised light is available.

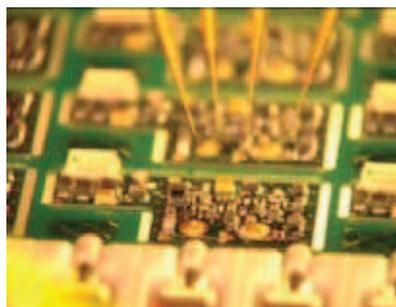


HIGHLIGHTS

- Prismatic reflectors for retroreflex sensors
- High efficiency models for long operating distances
- Microprism reflectors for sensors with laser emission
- Self-adhesive reflectors and reflective tape

APPLICATIONS

Electronics



Automatic warehouse



Packaging lines



Beverage & Bottling



TECHNICAL DATA

PRISMATIC REFLECTORS	
Mechanical protection	IP67
Material	reflector in PMMA plastic support in ABS
Operating temperature	-30 ... +70°C
Storage temperature	-30 ... +70°C
Normalised efficiency	refer to table 1
Prism dimension:	refer to table 2

REFLECTIVE TAPE	
Mechanical protection	IP00
Material	RT3870/RT3970 scotch tape
Operating temperature	-30 ... +70°C
Storage temperature	-30 ... +70°C
Normalised efficiency	refer to table 1

Note: The RT3870 tape is used only with retroreflex sensors. Used with RT3870/RT3970 reflective tapes, the sensor performances are strongly influenced by the dimensions used. The 'efficiency' values are only indicative and can vary according to the application and sensor type used.

TABLES

MODEL	EFFICIENCY
R1	60%
R2	100%
R3	85%
R4	120%
R5	120%
R6	120%
R7	70%
R8	30%
R9	60%
R10	100%
R11	80%
R20	100%
S12	100%
RT3870 20x30cm	60%
RT3970 20x30cm	80%
RT3970 60x40mm	40%

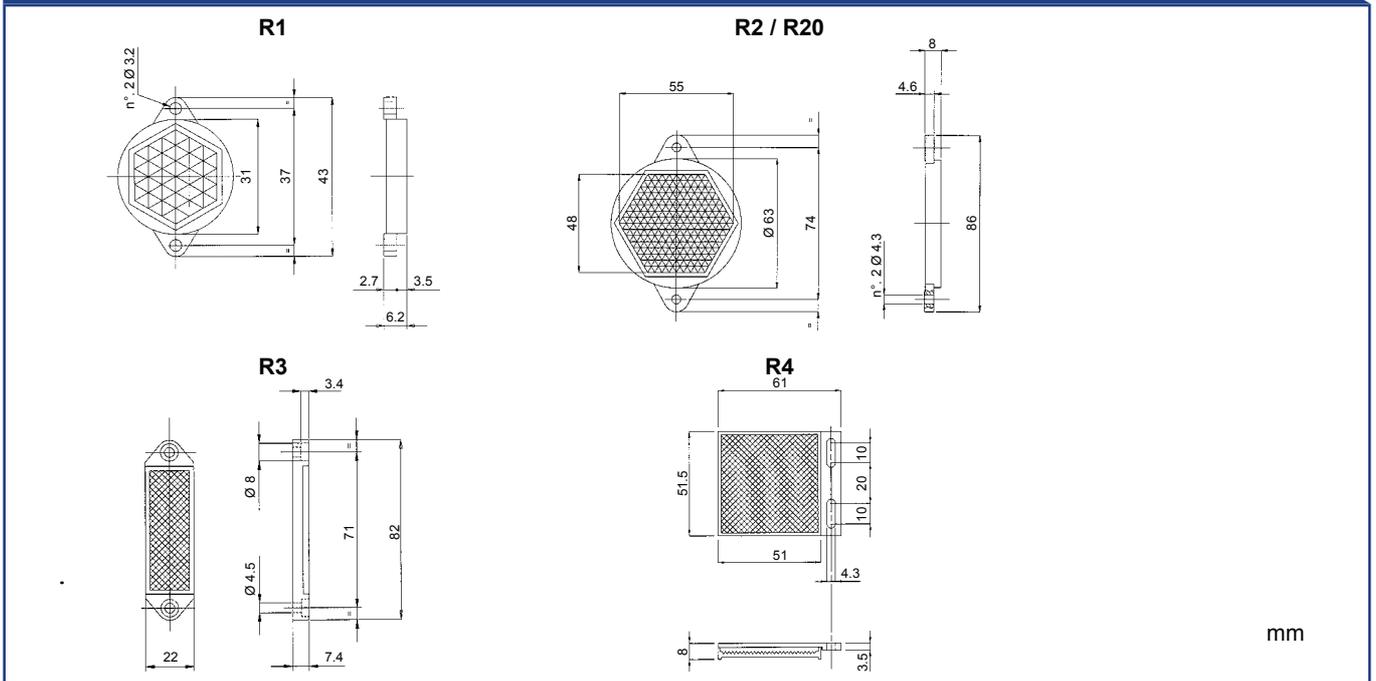
Table 1: NORMALISED EFFICIENCY *

The operating distance obtainable can be calculated multiplying the normalised efficiency value by the operating distance indicated for each sensor respect to the R2 reference reflector.

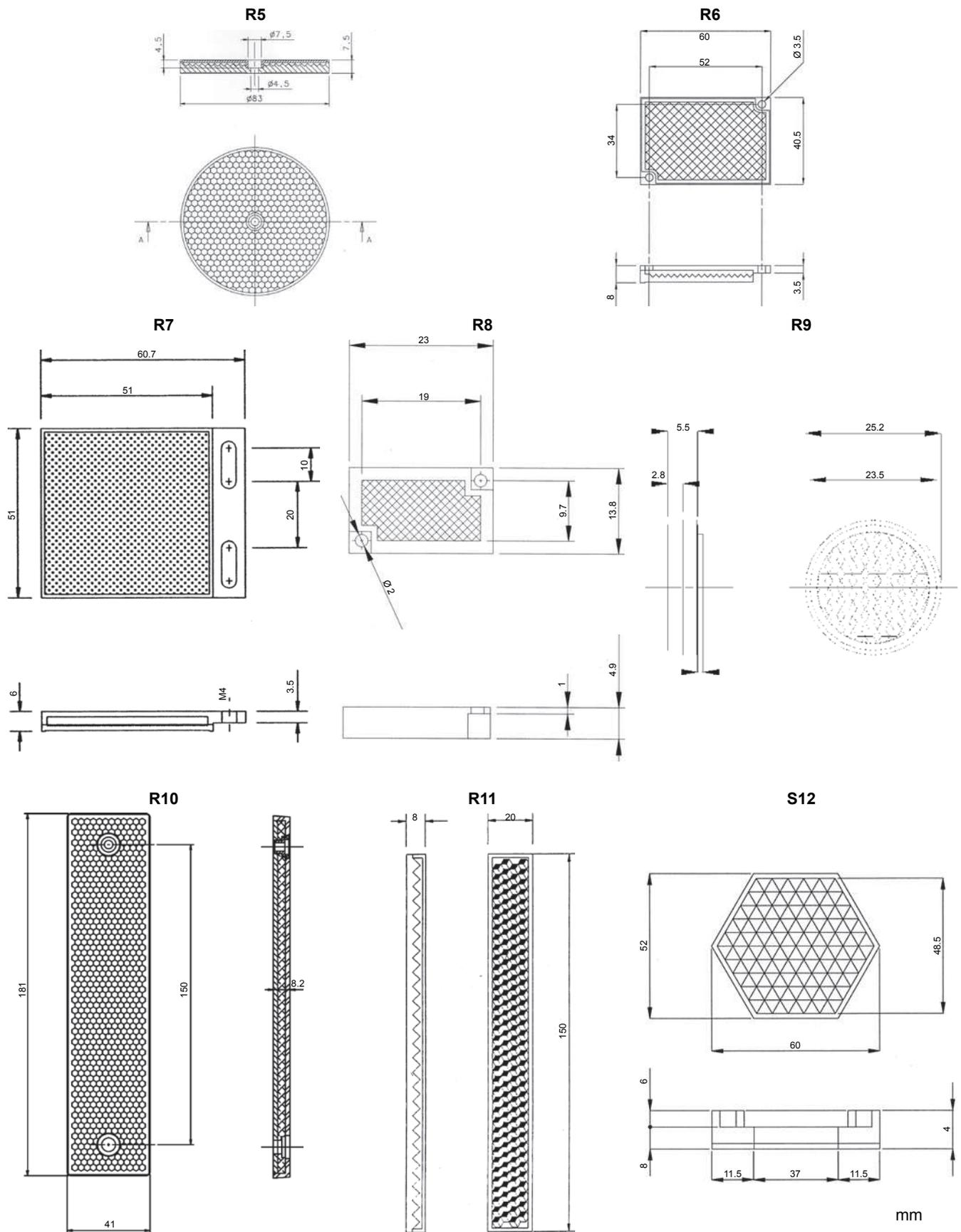
MODEL	CH HEXAGON
R1	2.1 mm
R2	4.2 mm
R3	4.2 mm
R4	4.2 mm
R5	4.2 mm
R6	4.2 mm
R7	0.8 mm
R8	0.8 mm
R9	2.1 mm
R10	4.2 mm
R11	4.2 mm
R20	0.8 mm
S12	4.2 mm

Table 2: PRISM DIMENSIONS

DIMENSIONS



DIMENSIONS



mm

MODELLI

MODEL	DESCRIPTION	CODE N°
RT3870	200 x 300 mm self-adhesive reflective tape	S94000600
RT3970	200 x 300 mm self-adhesive reflective tape for polarised light	S94000900
RT3970	60 x 40 mm self-adhesive reflective tape for polarised light	S94000604
R1	Ø 23 mm prismatic reflector with Ø 31 mm support	S940700023
R2*	Ø 48 mm prismatic reflector with Ø 63 mm support	S940700048
R3	18 x 54 mm prismatic reflector with 22 x 82 mm support	S940700972
R4	47x 47 mm prismatic reflector with 51.5 x 61 mm support	95A151340
R5	Ø 75 mm prismatic reflector with Ø 82 mm support	S940700075
R6	36 x 55 mm prismatic reflector with 40.5 x 60 mm support	95A151350
R7	38 x 40 mm microprism reflector with 51 x 61 mm support	95A151360
R8	9.7 x 19 mm microprism reflector with 13.8 x 23 mm support	95A151370
R9	Ø 23 mm prismatic reflector with Ø 25 mm self-adhesive support	95A151080
R10	36 x 176 mm prismatic reflector with 41 x 181 mm support	S19120000
R11	146 x 15 mm prismatic reflector with 150 x 18 mm support	95A155050
R20	Ø 48 mm prismatic reflector with Ø 63 mm support	95A151090
S12	Ø 48 mm prismatic reflector with CH.52 mm hexagon support	S940710048

Note: R2 reflector is supplied together with S2, S3 and S6 retroreflex models



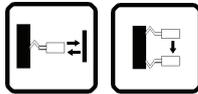
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OF SERIES

The **OF series** offers a complete range of universal plastic fibreoptics, either for through-beam or diffuse and coaxial proximity detection, with free terminals that can be cut and connected to all the sensors with standard holes of 2.2 mm diameter.

Together with the standard models, suited to the most diffused applications, other versions for particular requirements are available: high temperature fibres resistant up to 125°C, ultra-flexible fibres with only 2 mm bending radius, highefficiency fibres with enhanced core, fibres with extending coiled cable, thin fibres with only 1 mm external diameter.

The OF series accessories include various additional lenses for focusing, collimating, or deviating the beam; as well as protecting metal sheaths, diameter adapters for thin.



HIGHLIGHTS

- Extra-flexible versions
- High-temperature versions
- High-efficiency versions
- Focusing, collimating and deviating lenses

APPLICATIONS

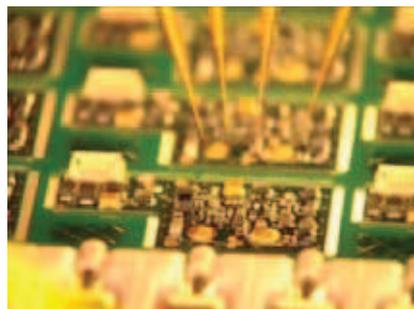
Beverage & Bottling



Packaging lines



Electronics



TECHNICAL DATA

External diameter (sheath)	Ø 2.2 mm
	Ø 1 mm (-TN vers.)
Internal diameter (core)	Ø 1 mm
	Ø 1.5 mm (-HP vers.)
	Ø 0.5 mm (-TN vers.)
Bending radius	25 mm
	15 mm (-TN vers.)
	5 mm (-XF vers.)
	2 mm (-UF vers.)
Normalised efficiency	refer to table 1
Mechanical protection	IP67
Core material	PMMA plastic
Sheath material	PE plastic
Terminal material	nickel-plated brass
Operating temperature	-40 ... +60°C
	-40 ... +125°C (-HT vers.)
Storage temperature	-40 ... +60°C
	-40 ... +125°C (-HT vers.)

TABLE

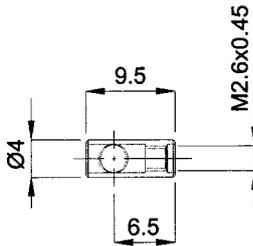
FIBRE TYPE	CODE	EFFICIENCY
standard	-ST-	100%
high-temperature	-HT-	70%
extra-flexible	-XF-	90%
ultra-flexible	-UF-	90%
high-efficiency	-HP-	125%
coiled cable	-CL-	65%
thin cable	-TN-	35%

Table 1: NORMALISED EFFICIENCY *

The operating distance is obtained multiplying the normalised efficiency value by the distance indicated for each sensor with standard fibre-optics.

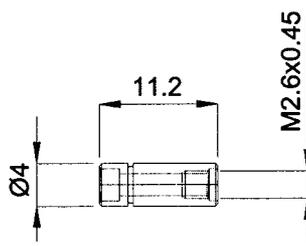
ACCESSORIES

AF-1
2 pcs 90° deviating lenses
Gain: distance x 0.7



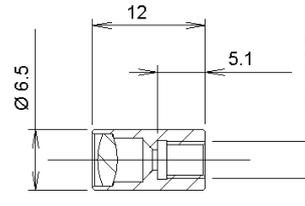
Suitable fibres: OF-43-xx

AF-2
2 pcs collimating lenses
Gain: distance x 4



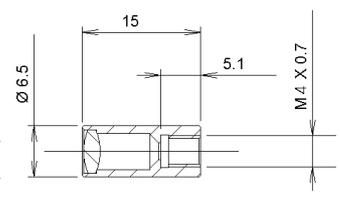
Suitable fibres: OF-43-xx

AF-3
1 pc focusing lenses
with 4 mm resolution
Operating distance: 19 ± 2 mm



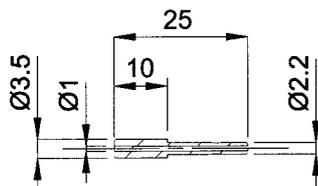
Suitable fibres: OF-44-xx

AF-4
1 pc focusing lenses
with 0.4 mm resolution
Operating distance: 7 ± 1 mm



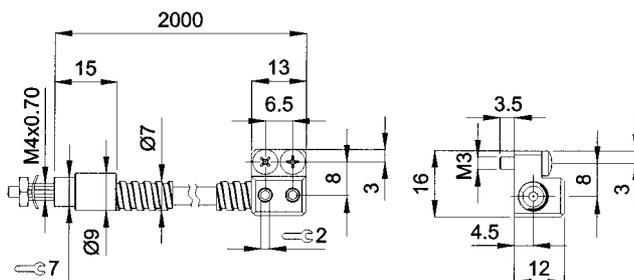
Suitable fibres: OF-44-xx

AF-5
2 pcs adapters Ø2.2mm for thin fibres Ø1mm
Material: plastic



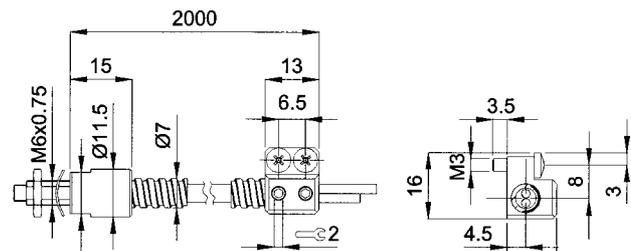
Suitable fibres: OF-xx-TN

AF-9
1 pc metal sheath for M4 x 0.7 fibres
Material: stainless steel



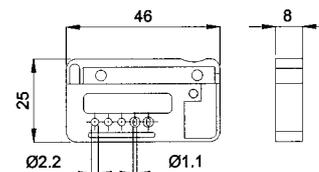
Suitable fibres: OF-43-xx

AF-7
1 pc metal sheath for M6 x 0.75 fibres
Material: stainless steel



Suitable fibres: OF-42-xx

AF-11
Fibre-cutting tool with Ø 2.2 mm and Ø 1.1 mm holes
Material: plastic with stainless steel blade

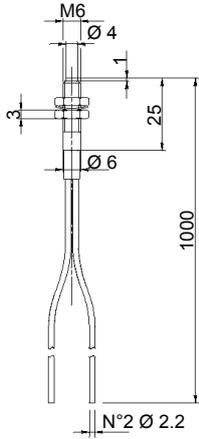


Suitable fibres: all

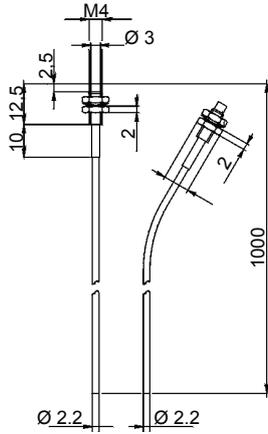
mm

FIBRE-OPTIC DIMENSIONS

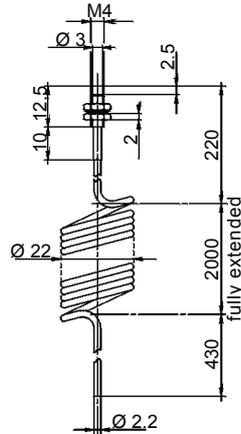
OF-18



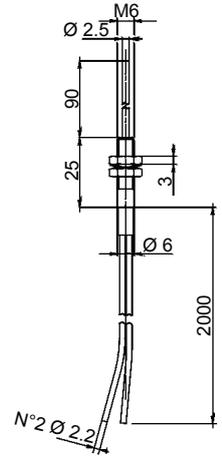
OF-19



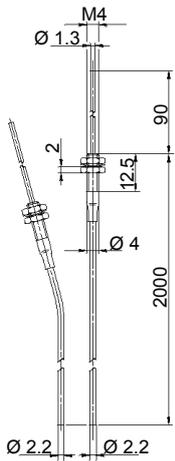
OF-21



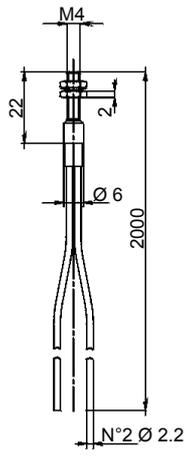
OF-22



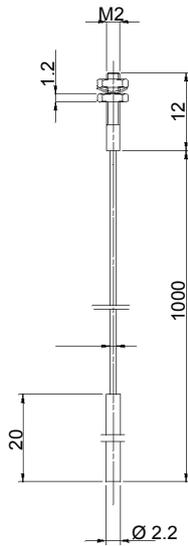
OF-23



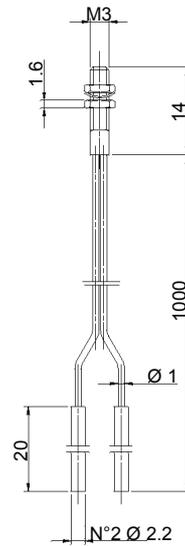
OF-24



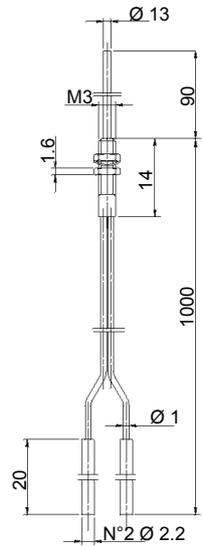
OF-25



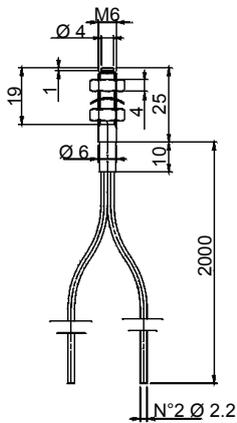
OF-26



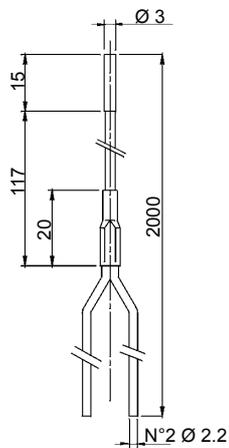
OF-28



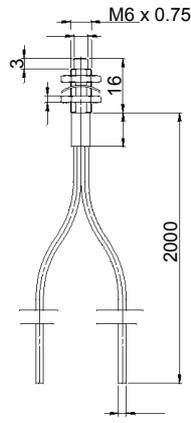
OF-36



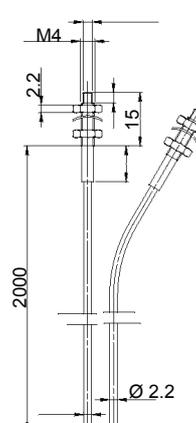
OF-38



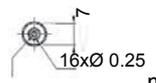
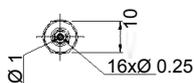
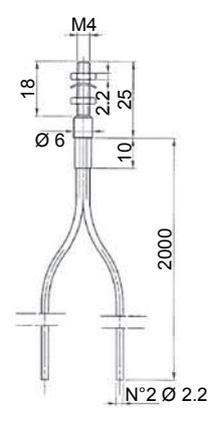
OF-42



OF-43



OF-44



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	FIBRE TYPE	LENGTH **	TERMINAL	CODE N°
OF-18-ST-10	proximity	standard	1 m	M6x1 mm	S76021801
OF-19-ST-10	through beam	standard	1 m	M4x0.7 mm	S76021901
OF-21-CL-20	through beam	coiled	2 m	M4x0.7 mm	S76022100
OF-22-ST-20	proximity	standard	2 m	M6x1 mm *	S76022200
OF-23-ST-20	through beam	standard	2 m	M4x0.7 mm *	S76022300
OF-24-ST-20	proximity	standard	2 m	M4x0.7 mm	S76022400
OF-25-TN-10	through beam	thin (Ø 1 mm)	1 m	M2x0.4 mm	S76022500
OF-26-TN-10	proximity	thin (Ø 1 mm)	1 m	M3x0.5 mm	S76022600
OF-28-TN-10	proximity	thin (Ø 1 mm)	1 m	M3x0.5 mm *	S76022800
OF-36-ST-20	coaxial proximity	standard	2 m	M6x1 mm	95A201000
OF-36-XF-20	coaxial proximity	extra-flexible	2 m	M6x1 mm	95A201330
OF-38-ST-20	proximity	standard	2 m	D3x15 mm	95A201070
OF-42-ST-20	proximity	standard	2 m	M6x0.75 mm	95A201340
OF-42-HT-20	proximity	high-temperature	2 m	M6x0.75 mm	95A201250
OF-42-UF-20	proximity	ultra-flexible	2 m	M6x0.75 mm	95A201260
OF-42-HP-20	proximity	high-efficiency	2 m	M6x0.75 mm	95A201270
OF-43-ST-20	through beam	standard	2 m	M4x0.7 mm	95A201350
OF-43-HT-20	through beam	high-temperature	2 m	M4x0.7 mm	95A201280
OF-43-UF-20	through beam	ultra-flexible	2 m	M4x0.7 mm	95A201290
OF-43-HP-20	through beam	high-efficiency	2 m	M4x0.7 mm	95A201300
OF-44-ST-20	coaxial proximity	standard	2 m	M4x0.7 mm	95A201310
OF-44-XF-20	coaxial proximity	extra-flexible	2 m	M4x0.7 mm	95A201320

Note: * a bendable stainless steel extension 90mm long protrudes from the threaded optic head

** the length indicated is approximate; please refer to the mechanical drawings for the exact dimensions

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	SUITABLE FIBRES	CODE N°
AF-1	2 pcs 90° deviating lenses	OF-43-xx	95ACC2690
AF-2	2 pcs long distance collimating lenses (x 10)	OF-43-xx	95ACC2700
AF-3	1 pc focusing lens with 4 mm resolution	OF-44-xx	95ACC2710
AF-4	1 pc focusing lens with 0.4 mm resolution	OF-44-xx	95ACC2720
AF-5	2 pcs adapters Ø 2.2 mm for thin fibres	OF-xx-TN	95ACC2730
AF-7	1 pc metal sheath for M6 x 0.75 fibres	OF-42-xx	95ACC2750
AF-9	1 pc metal sheath for M4 x 07 fibres	OF-43-xx (*)	95ACC2770
AF-11	fibre-cutting tool with Ø 2.2 mm and Ø 1.1 mm holes	all	95ACC2780

Note: 2 sheaths have to be ordered for both the emitter-receiver sections



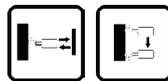
The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

OFA SERIES

The **OFA series** offers advanced fibre optics able to effectively solve critical fibre applications. The fibre array version with parallel beams increases the detection area avoiding vibrations or target position changes. One single fibre array is able to solve applications previously requiring more aligned fibres, such as the detection of small falling objects or casually varying positions.

The fixed focus proximity version can be used as background suppression as it ignores objects outside the focusing distance, even if more reflective than target. Typical applications include small object detection, such as electronic components or mechanical parts. The proximity version with 90° optics is the ideal solution for applications with reduced space where the installation of standard emission fibres results impossible.

All the fibres of the **OFA series** have terminals that can be cut to reduce length and are recommended for use with high-resolution sensors of the S7 series.



HIGHLIGHTS

- Fibre array with parallel beams for proximity or through beam detection
- Fixed focus proximity with axial, radial or lateral optics
- Proximity with 90° optics, self-contained in the 3.8 mm diameter
- Recommended fibres for S7 sensors

APPLICATIONS

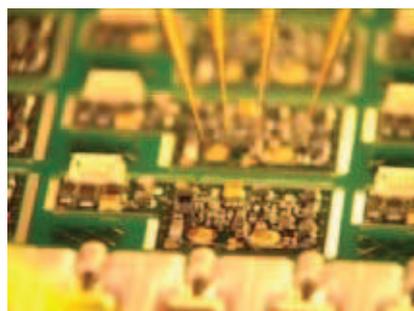
Beverage & Bottling



Packaging lines

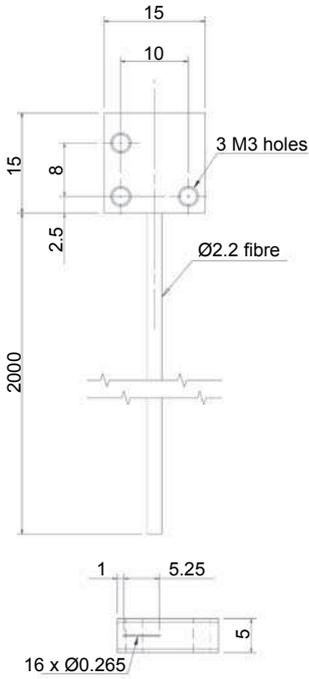


Electronics

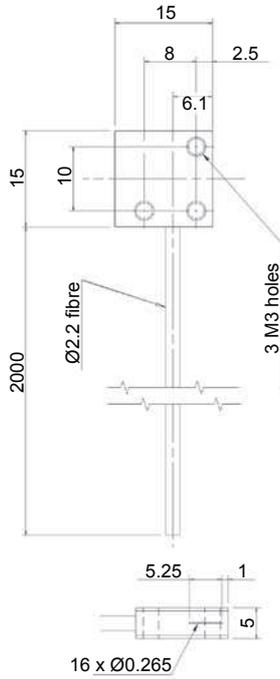


DIMENSIONS

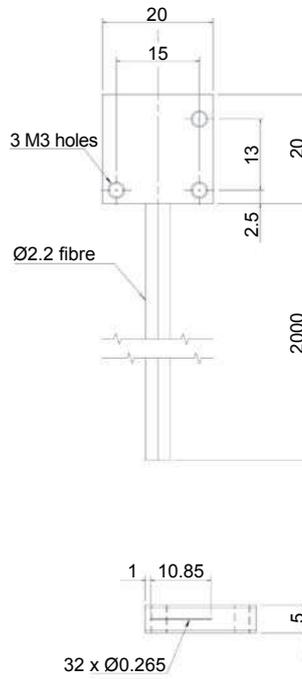
OFA-1-AE-20



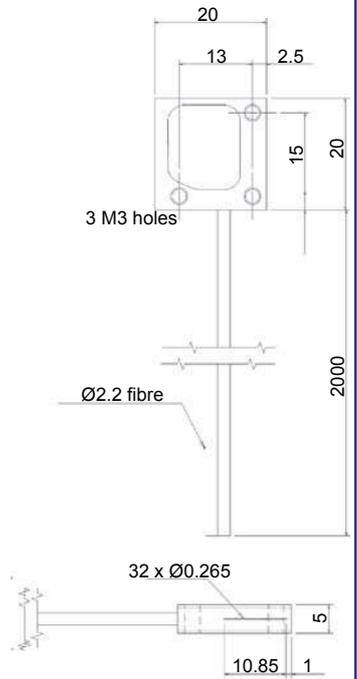
OFA-1-AS-20



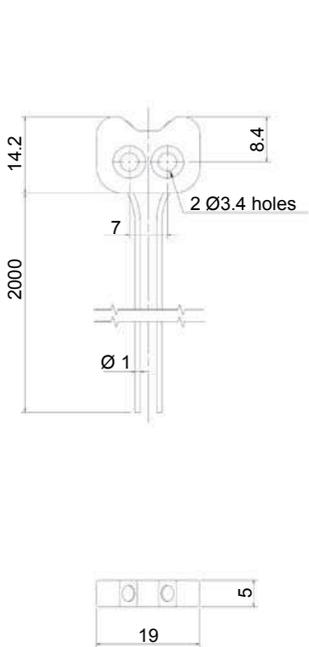
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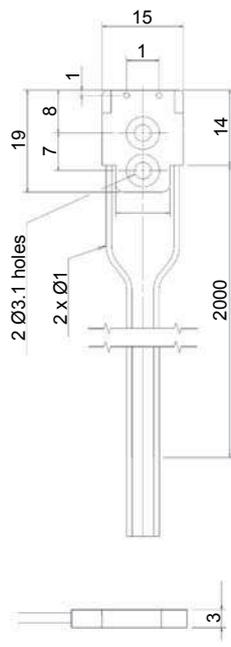
OFA-2-AS-20



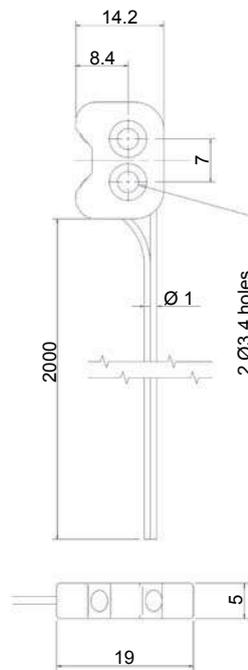
OFA-4-FE-20



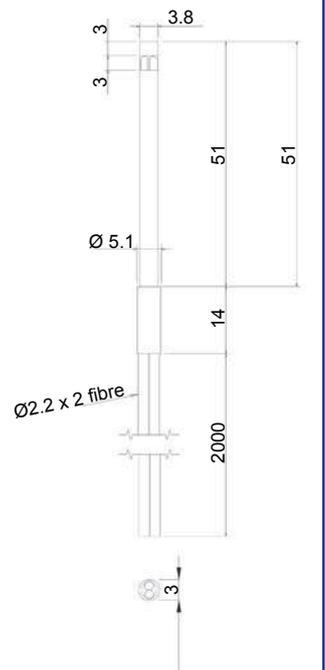
OFA-4-FF-20



OFA-4-FS-20



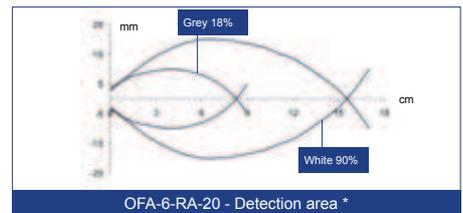
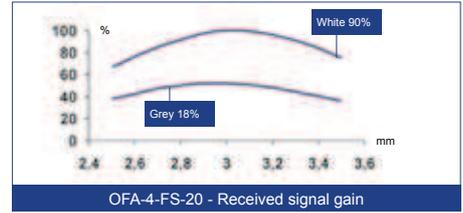
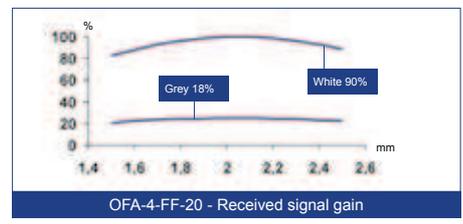
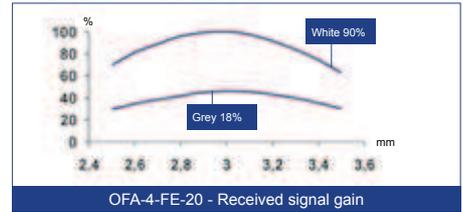
OFA-6-RA-20



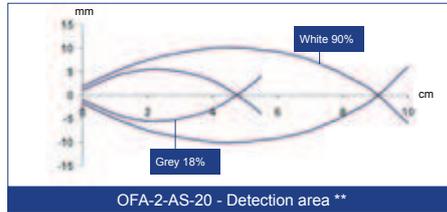
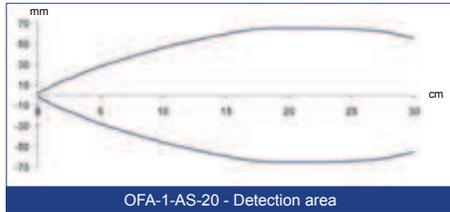
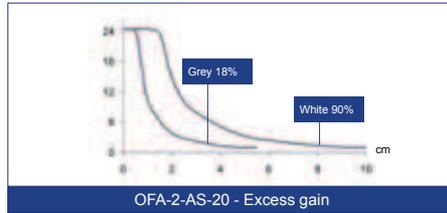
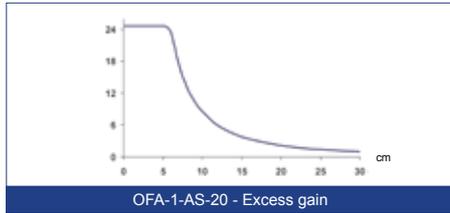
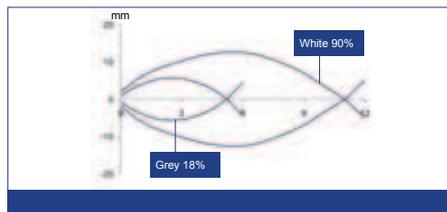
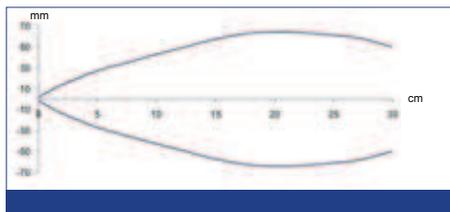
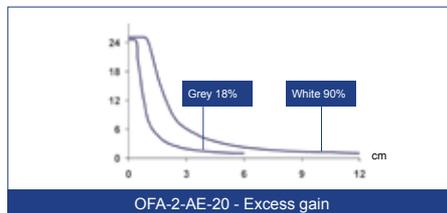
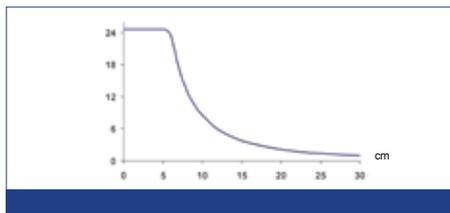
mm

TECHNICAL DATA

		OFA-1-AE-20	OFA-1-AS-20	OFA-2-AE-20	OFA-2-AS-20	OFA-4-FE-20	OFA-4-FF-20	OFA-4-FS-20	OFA-6-RA-20
Optic function:	through beam	•	•						
	proximity			•	•				•
	fixed focus proximity					•	•	•	
Emission type:	axial	•		•		•			
	radial		•		•			•	•
	lateral					•	•		
Number of beams emitted:	1					•	•	•	•
	16 parallel	•	•						
	32 parallel			•	•				
External diameter (sheath):	2.2 mm			•	•				•
	2.2 mm	•	•						
	1 mm					•	•	•	
Internal diameter (core):	1.5 mm								•
	32 x 0.265 mm			•	•				
	16 x 0.265 mm	•	•						
	0,5 mm					•	•	•	
Bending radius:	10 mm					•	•	•	
	25 mm	•	•	•	•				•
Mechanical protection:	IP67	•	•	•	•	•	•	•	•
Core material:	PMMA plastic	•	•	•	•	•	•	•	•
Sheath material:	PE plastic	•	•	•	•	•	•	•	•
Terminal material:	stainless steel								•
	aluminium	•	•	•	•				
	ABS					•	•	•	
Cable length:	2 m	•	•	•	•	•	•	•	•
Operating temperature:	-30...+70°C	•	•	•	•	•	•	•	•



DETECTION DIAGRAMS



TECHNICAL NOTES

The measurements indicated have been obtained using the S7 fibre-optic sensor with 1 kHz switching frequency and EASYtouch™ acquisition.

The values vary according to the sensor used, switching frequency and target movement.

* Object entering perpendicularly in the fibre optic beam.

** Object entering perpendicularly in the fibre array beam.

MODEL SELECTION AND ORDER INFORMATION

MODEL	OPTIC FUNCTION	EMISSION	ORDER N°
OFA-1-AE-20	through beam	axial, 16 beam array	95A201170
OFA-1-AS-20	through beam	radial, 16 beam array	95A201180
OFA-2-AE-20	proximity	axial, 32 beam array	95A201150
OFA-2-AS-20	proximity	radial, 32 beam array	95A201160
OFA-4-FE-20	fixed focus proximity	axial	95A201200
OFA-4-FF-20	fixed focus proximity	lateral	95A201210
OFA-4-FS-20	fixed focus proximity	radial	95A201190
OFA-6-RA-20	proximity	radial	95A201140

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
AF-11	fibre-cutting tool with Ø 2.2 mm and Ø 1.1 mm holes	95ACC2780



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CS SERIES

The **CS** series offers high-quality connectors, developed to guarantee maximum reliability with particularly compact dimensions in the standard M8x1 and M12x1 formats, can be used to connect photoelectric sensors as well as inductive or capacitive proximity sensors. The M8 and M12 connectors offer either an axial or radial shape; wired with a 4-pole normalised configuration, with 3, 5, 7 or 10 metre cable. Moreover, the M12 connectors are available in other versions with a 3-pole normalised configuration for a normally open output, or with a yellow PNP output LED and a green power LED. The connector body is in PUR plastic and the cable in PVC with CEI 20-22 flammability class.

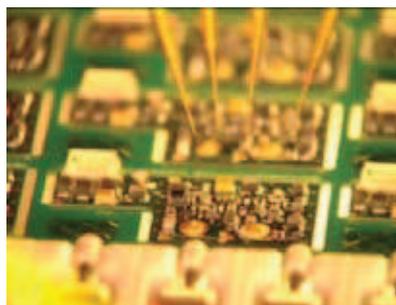


HIGHLIGHTS

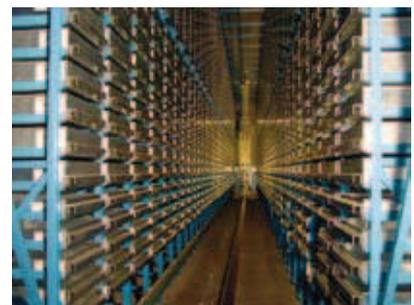
- M8 and M12, axial or radial connectors
- Pre-cabled with cable of various standard lengths
- Configuration normalised to 4-poles and NO 3-poles
- Versions with LED for power and output signalling

APPLICATIONS

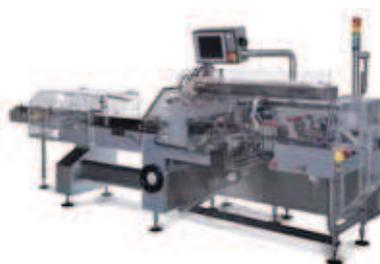
Electronics



Automatic warehouse



Packaging lines



Beverage & Bottling



TECHNICAL DATA

Conductor diameter	42 x 0.10 mm - 0.35 mm≈ (M12 3-pole)
	32 x 0.10 mm - 0.25 mm≈ (M12 4-pole)
	32 x 0.10 mm - 0.25 mm≈ (M8 4-pole)
Conductor colour	refer to table 1 and 2
Cable diameter	5 mm
Cable length	3, 5, 7, 10 m
Cable colour	grey RAL 7035
Cable material	PVC
Conductor material	annealed non-tinned electrolytic copper, with high flexibility
Connector material	housing in PVC, insulation in Nylon 6 30% glass
Contact material	0.3 mm gold-nickel-plated brass
Connector configuration	refer to table 1 and 2
Mechanical protection	IP67, with locked ring
Flammability class	CEI 20-22, IEC 332/3
	flame-retardant and non-propagate
Rated voltage	300 Vdc / 250 Vac
	10-30 Vdc with LED
Maximum current	4 A
Test voltage	1 kV
Operating temperature	-25 ... +80°C
Reference standard	EN 50044, EN 60947-5-2
Certifications	CE

TABLES

TERMINAL	COLOUR	FUNCTION
1	brown	positive (+)
3	blue	negative (-)
4	black	NO output

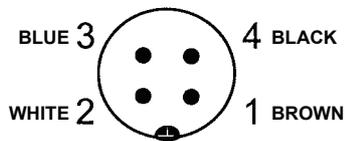
Table 1: NO 3-POLE CONN. CONFIGURATION

TERMINAL	COLOUR	FUNCTION
1	brown	positive (+)
2	white	NC output
3	blue	negative (-)
4	black	NO output

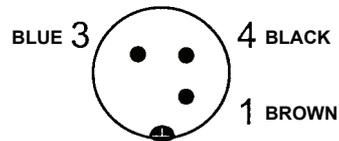
Table 2: NO-NC 4-POLE CONN. CONFIGURATION

CONNECTIONS

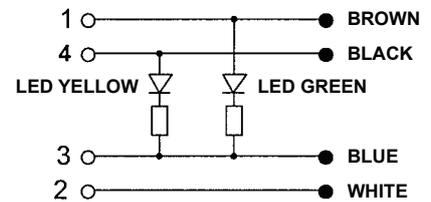
M12 4-POLE CONNECTOR



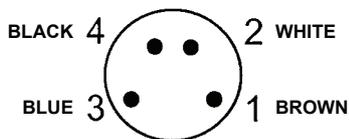
M12 3-POLE CONNECTOR



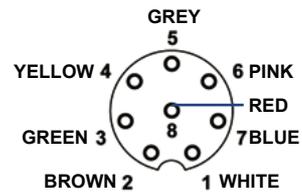
LED CONFIGURATION



M8 4-POLE CONNECTOR

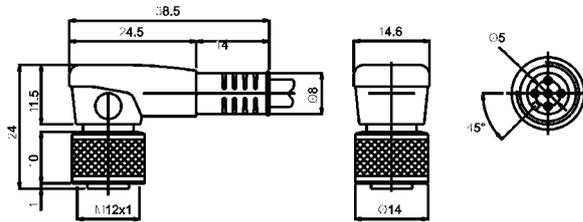


M12 8-POLE CONNECTOR

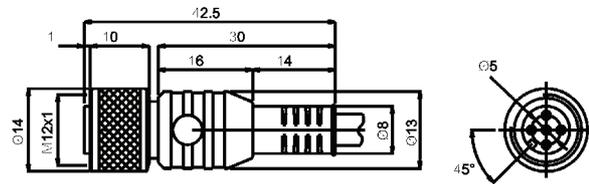


DIMENSIONS

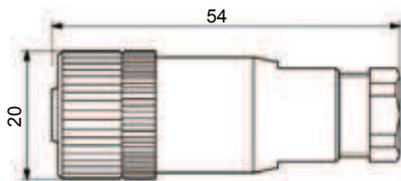
RADIAL M12 CONNECTOR



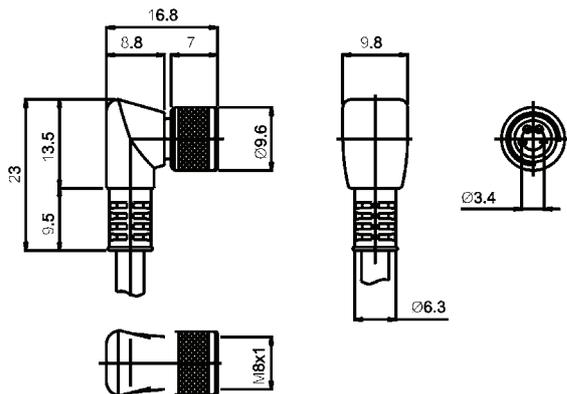
AXIAL M12 CONNECTOR



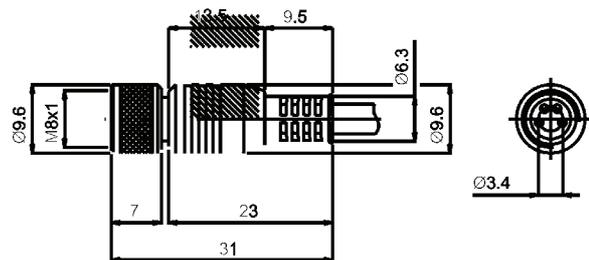
AXIAL M12 8-POLE FEMALE CONNECTOR
accepts conductors with
0.25 ... 0.75mm² sections



RADIAL M8 CONNECTOR



AXIAL M8 CONNECTOR



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	CONNECTOR	CONFIGURATION	CABLE LENGTH	CODE N°
CS-A1-01-G-03	axial M12	NO 3-poles	3 m	95A251290
CS-A1-01-G-05	axial M12	NO 3-poles	5 m	95A251300
CS-A1-01-G-07	axial M12	NO 3-poles	7 m	95A251320
CS-A1-01-G-10	axial M12	NO 3-poles	10 m	95A251340
CS-A1-02-G-03	axial M12	NO-NC 4-poles	3 m	95A251380
CS-A1-02-G-05	axial M12	NO-NC 4-poles	5 m	95A251270
CS-A1-02-G-07	axial M12	NO-NC 4-poles	7 m	95A251280
CS-A1-02-G-10	axial M12	NO-NC 4-poles	10 m	95A251390
CS-A1-03-G-03	axial M12	NO-NC 5-poles	3 m	95ACC2110
CS-A1-03-G-05	axial M12	NO-NC 5-poles	5 m	95ACC2120
CS-A1-03-G-10	axial M12	NO-NC 5-poles	10 m	95ACC2140
CS-A1-06-B-03	axial M12	8-poles	3 m	95ACC2230
CS-A1-06-B-05	axial M12	8-poles	5 m	95ACC2240
CS-A1-06-B-10	axial M12	8-poles	10 m	95ACC2250
CS-A1-06-B-NC	axial M12	8-poles	-	95ACC2550
CS-A2-01-G-03	radial M12	NO 3-poles	3 m	95A251200
CS-A2-01-G-05	radial M12	NO 3-poles	5 m	95A251210
CS-A2-01-G-07	radial M12	NO 3-poles	7 m	95A251220
CS-A2-01-G-10	radial M12	NO 3-poles	10 m	95A251230
CS-A2-02-G-03	radial M12	NO-NC 4-poles	3 m	95A251360
CS-A2-02-G-05	radial M12	NO-NC 4-poles	5 m	95A251240
CS-A2-02-G-07	radial M12	NO-NC 4-poles	7 m	95A251245
CS-A2-02-G-10	radial M12	NO-NC 4-poles	10 m	95A251260
CS-A2-11-G-05	radial M12*	NO 3-poles	5 m	95A251310
CS-A2-11-G-10	radial M12*	NO 3-poles	10 m	95A251330
CS-A2-12-G-03	radial M12*	NO-NC 4-poles	3 m	95A251400
CS-A2-12-G-05	radial M12*	NO-NC 4-poles	5 m	95A251350
CS-A2-12-G-10	radial M12*	NO-NC 4-poles	10 m	95A251370
CS-B1-01-G-03	axial M8	NA 3-poles	3 m	95A251490
CS-B1-01-G-05	axial M8	NA 3-poles	5 m	95A251510
CS-B2-01-G-03	radial M8	NA 3-poles	3 m	95A251500
CS-B2-01-G-05	radial M8	NA 3-poles	5 m	95A251520
CS-B1-02-G-03	axial M8	NO-NC 4-poles	3 m	95A251420
CS-B1-02-G-05	axial M8	NO-NC 4-poles	5 m	95A251430
CS-B1-02-G-07	axial M8	NO-NC 4-poles	7 m	95A251440
CS-B1-02-G-10	axial M8	NO-NC 4-poles	10 m	95A251480
CS-B2-02-G-03	radial M8	NO-NC 4-poles	3 m	95A251450
CS-B2-02-G-05	radial M8	NO-NC 4-poles	5 m	95A251460
CS-B2-02-G-07	radial M8	NO-NC 4-poles	7 m	95A251470
CS-B2-02-G-10	radial M8	NO-NC 4-poles	10 m	95A251530

Note: sul connettore è presente un LED giallo di segnalazione per l'uscita PNP ed un LED verde per l'alimentazione.

NON-CABLED CONNECTORS

MODELLO	DESCRIZIONE	N° ORDINE
CS-A1-02-B-NC	M12 4-pole axial female connector	G5085002
CS-A2-02-B-NC	M12 4-pole radial female connector	G5085003



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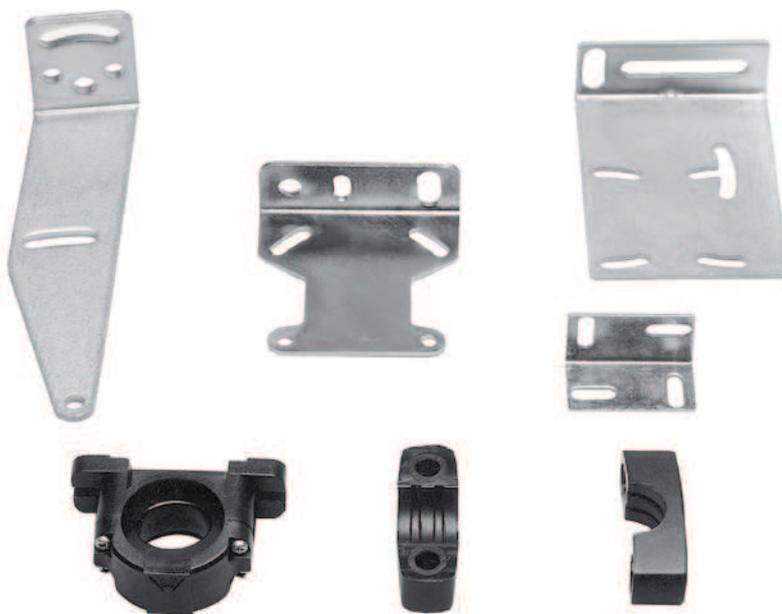
ST SERIES

The **ST** series includes all the fixing brackets and supports available for the fixing of photoelectric sensors.

The 'L' shaped fixing brackets are in metal and present dimensions that guarantee the best sensor fixing, offering the maximum resistance against shocks and vibrations that can alter the positioning.

The holes are multiple or slotted in order to offer the best fixing versatility, even in place of other sensors.

Plastic supports are available for tubular sensors: a fixed and an adjustable support with which the inclination of the sensor's optic axis can be regulated right up to a 15° angle in every direction for a 360° arch.

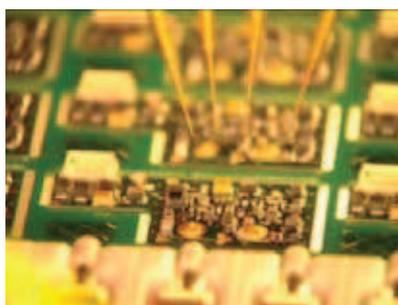


HIGHLIGHTS

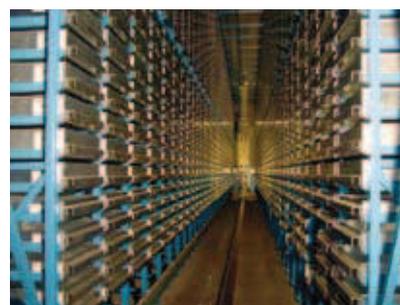
- Fixing brackets for universal sensors
- Fixed supports for tubular M18 sensors
- Supports with optic axis regulation
- Good shock and vibration resistance

APPLICATIONS

Electronics



Automatic warehouse



Packaging lines



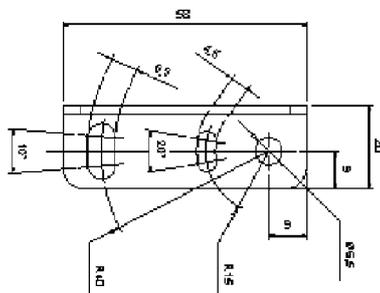
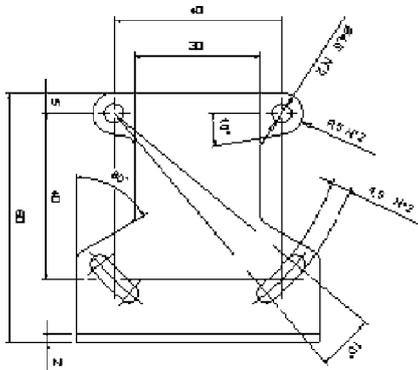
Beverage & Bottling



DIMENSIONS

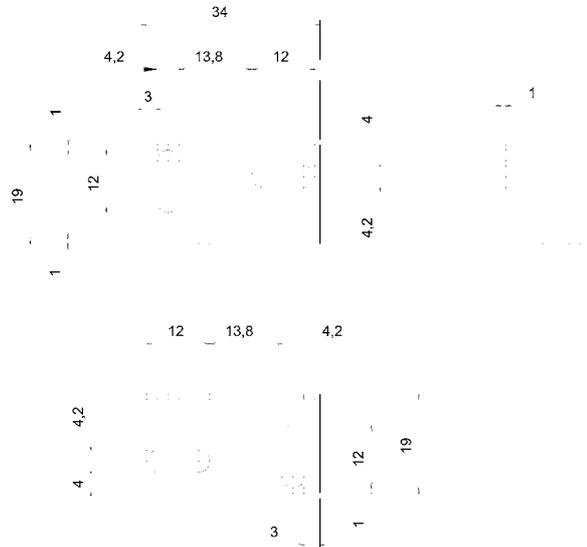
ST-504

S6 fixing brackets
material: yellow zinc-plated steel



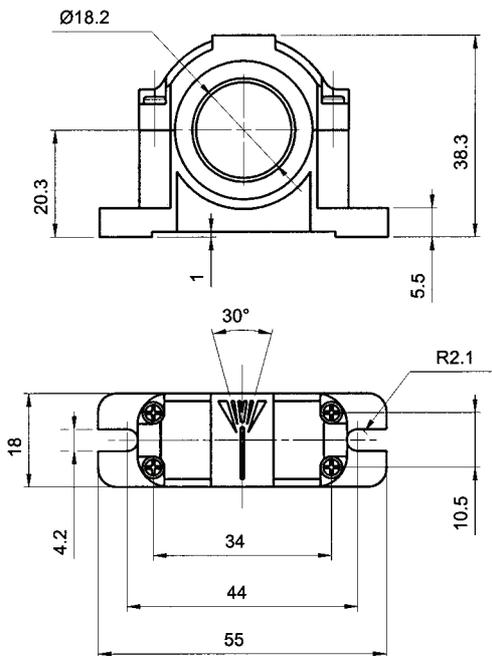
ST-505

S3/S40/S41 fixing bracket
material: yellow zinc-plated steel



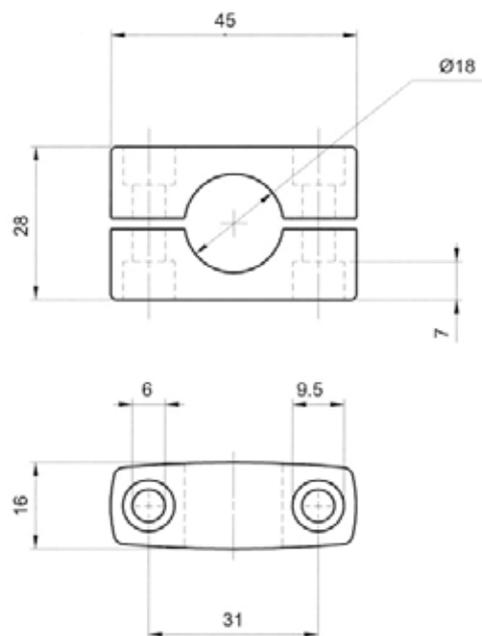
SWING-18

adjustable support for plastic tubular M18 sensors
material: black dilamid



SP-40

fixed support for tubular M18 sensors
material: black durethan



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-505	1 pc fixing bracket for S3/S40/S41	95ACC2800
ST-504	1 pc fixing bracket for S6	95ACC2820
ST-164	1 pc fixing bracket for S20	95ACC1340
ST-5099	FIXED BRACKET	95ACC2830
ST-5100	FIXED BRACKET	95ACC2840
SP-40	2 pcs fixed support for tubular M18 sensors	95ACC1370
SWING-18	1 pc adjustable support for plastic tubular M18 sensors	895000006

Note: the fixing bracket for the **S2/S3/S6** series is supplied with the sensor



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PSCU SERIES

The control units of the **PSCU** series can be used to supply low voltage photoelectric sensors, as well as inductive or capacitive proximity, with the possibility to process the outputs with logic and timing functions.

The input can be configured for 1 or 2 sensors, with NPN or PNP, with relay, or with 0-10 Vdc analog output, which can be controlled with different logic functions: NOT, AND, OR, NAND, NOR.

The signal resulting from the logic operations drives the controller output, which can be processed with timing functions: ON and/or OFF delay, monostable or bistable commutation.

On the **PSCU** control panel, protected by a transparent cover, are present the LEDs for power, inputs and output status indication, as well as the trimmer for the inputs sensitivity and the timer adjustment. The input selection, the logic and the timing functions are easily configured using the dip-switches on the controller side, where the extractable terminal blocks for the connection are also present.

The **PSCU** series is suitable for DIN rail mounting and is available with a 100-240 Vac or 24 Vac/Vdc power supply input and relay SPDT or transistor NO-NC controller output.

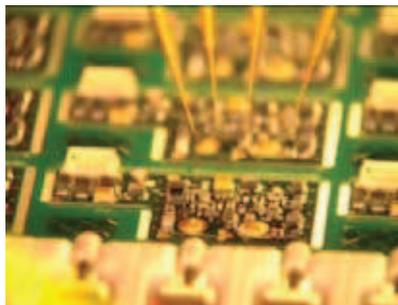


HIGHLIGHTS

- 100-240 Vac or 24 Vac/Vdc power supply
- Single or double input for NPN/PNP, relay or 0-10V analogue sensors
- Boolean logic functions: NOT, AND, OR, NAND, NOR
- Timing functions: ON and/or OFF delay, monostable, bistable

APPLICATIONS

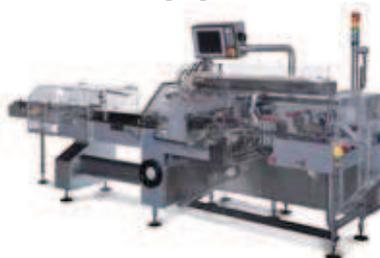
Electronics



Automatic warehouse



Packaging lines



Beverage & Bottling



TECHNICAL DATA

Power supply	24 Vac/Vdc ±10% (PSCU-0x) 100 ... 240 Vac (PSCU-1x)
Consumption	2 VA max.
Sensor power supply	20 Vdc ±10% 100 mA max. fold-back and short-circuit protected
Sensor input	switch selectable, 1 or 2 inputs, relay NPN/PNP (10 kW) or 0...10 Vdc (100 kW)
Logic functions	NOT, AND, OR, NAND, NOR
Output	relay SPDT 250 Vac, 8 A (PSCU-x0) transistor NPN/PNP NO-NC, 100 mA, optoisolated, fold-back short-circuit protected (PSCU-x1)
Response time	10 ms max relay output (PSCU-x0) 100 µs max. transistor output (PSCU-x1)
Timing functions	monostable non-reset, delay on rising edge, delay on falling edge, delay on both edges, bistable (without timing)
Timing period	switch selectable: 0.004...1 s or 0.1...10 s
Setting	input 1 sensitivity trimmer, input 2 sensitivity trimmer, timing trimmer, 4+8 dip-switch for inputs, logic and timing functions selection
Indicators	input 1 green LED, input 2 green LED, output yellow LED, power green LED, short-circuit red LED
Connection	2 extractable terminal blocks with 6+6 screw contacts
Electrical protection	class 1
Mechanical protection	IP20
Housing material	blend PC/ABS (UL94-V0)
Weight	200 g max.
Operating temperature	-10 ... +55 °C
Storage temperature	-20 ... +65 °C
Reference standards	EN 61010-1
Certifications	CE

TABLES

LOGIC FUNCTIONS		
	SENSOR OUTPUT	CONTROLLER OUTPUT
NOT *		
AND **		
OR **		
NAND **		
NOR **		

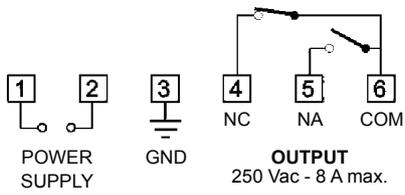
* Logic function on 1 or 2 sensor output

** Logic function between 1 and 2 sensor outputs

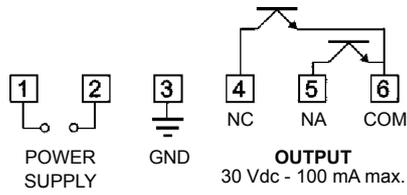
TIMING FUNCTIONS	
	Sensor output after logic functions
	One-shot retriggered on rising edge
	One-shot not retriggered
	ON delay retriggered on rising edge
	OFF delay retriggered on falling edge
	ON/OFF delay retriggered
	Toggle on rising edge T= blanking time

CONNECTIONS

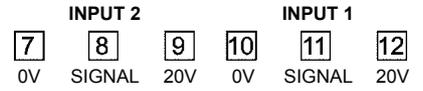
RELAY OUTPUT



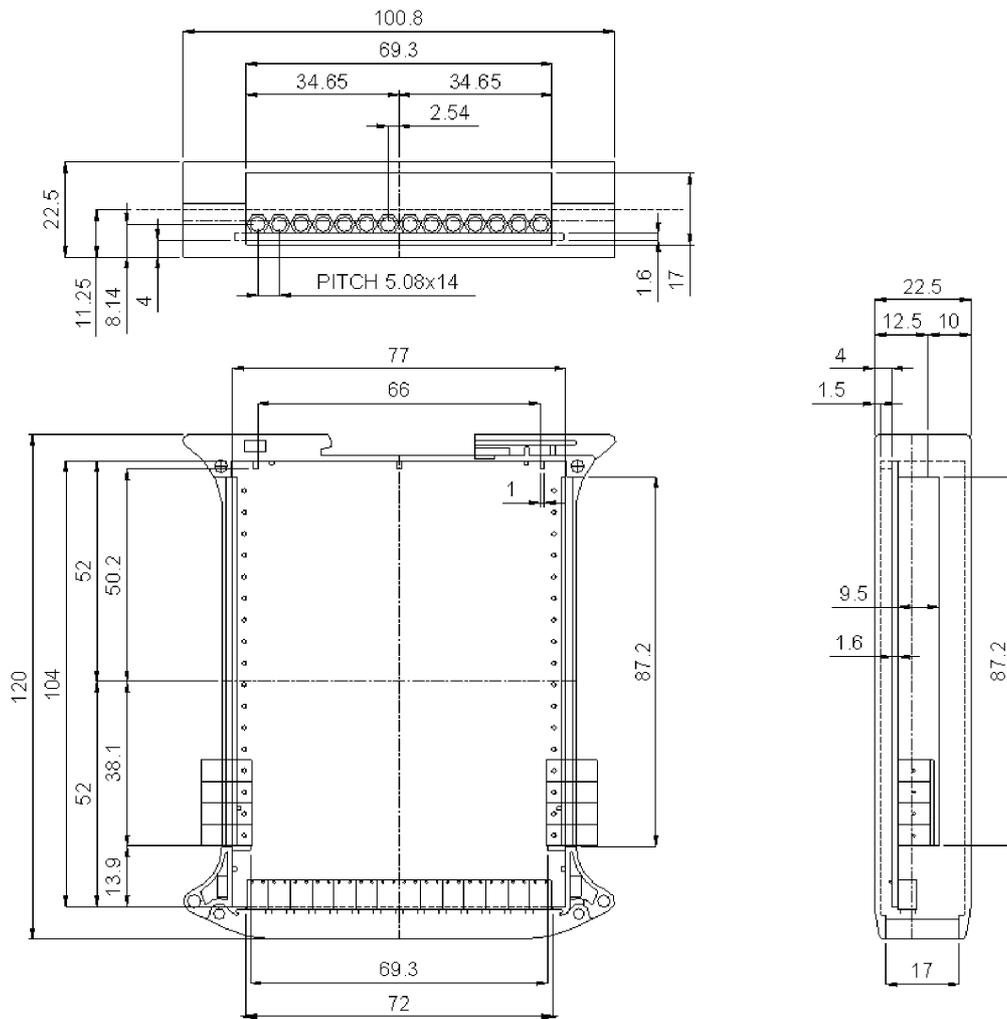
TRANSISTOR OUTPUT



SENSOR INPUT



DIMENSIONS



mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	POWER SUPPLY	OUTPUT TYPE	CODE N°
PSCU-00	24 Vac/Vdc	relay SPDT	95A350100
PSCU-01	24 Vac/Vdc	transistor NPN/PNP NO-NC	95A350110
PSCU-10	100 ... 240 Vac	relay SPDT	95A350120
PSCU-11	100 ... 240 Vac	transistor NPN/PNP NO-NC	95A350130



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THE SERIES

The wide range of auxiliary functions available completes the excellent performances offered by the microprocessor-based controllers of the THE series, with standard 48x96 mm format and single and double display versions.

The main PID control action adjusts itself automatically to the optimum parameters with the AT initial autotuning, or with the ADT permanent autoadaptive function; while the auxiliary outputs can be programmed on 16 different alarm functions or fixed points.

The LFA diagnostic function is able to detect failures along the entire regulation loop, from the sensor to the actuator; moreover the regulation can be either automatic (closed loop) or manual (open loop), setting the output percentual value.

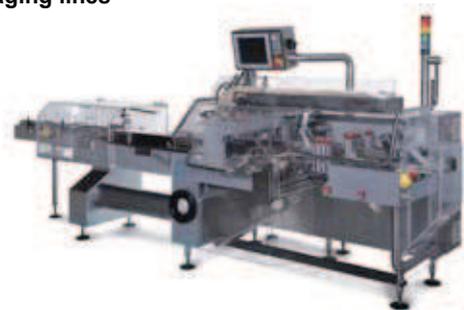
The complete programming of the controllers is made through the front panel, with the possibility of including a 3 level software safety lock.



SENSOR

HIGHLIGHTS

- Main control output with 1 or 2 auxiliary outputs
- PID action with AT autotuning and ADT autoadaptive functions
- Complete diagnostic of the regulation loop
- Automatic or manual regulation of the output

APPLICATIONS**Packaging lines****Process control**

TECHNICAL DATA

Power Supply	12-24 Vac/Vdc $\pm 10\%$ version or 80-240 Vac $\pm 10\%$ version
Consumption	5 VA max.
Sensor input	selectable between E, J, K, L, R, S, T thermocouples and Pt100W/0°C RTDs
Measurement scale	selectable in °C or °F scales with lower and upper limits, refer to table 1
Precision	thermocouple measurement $\pm 0,4\%$ f.s.
	RTD measurement $\pm 0,3\%$ f.s.
	temperature drift 0,01% f.s. / °C of ambient
	temperature setting and indication ± 1 digit
Data updating	input, output and indication every 500 ms
Data retention	non volatile eeprom memory
Keyboard correction indication	from -99,9 to +99,9 °C/°F
1st point control action	on/off or PID automatic or manual selection, maximum or minimum, with AT initial autotuning and ADT permanent autoadaptive function
Proportional band	20°C (sel. from 1 to 999 °C/°F)
Integral time	120 sec. (sel. from 0 to 960 sec.)
Derivative time	30 sec. (sel. from 0 to 240 sec.)
Cycle time	12 sec. (sel. from 1 to 120 sec.)
On/off hysteresis	± 1 °C (sel. from $\pm 0,1$ o $\pm 99,9$ °C/°F)
1st point output type	relay SPDT 250 Vac, 5 A version
	trans. PNP 15 Vdc $\pm 20\%$ version
	20 mA short-circuit protection
2nd/3rd point alarm action	selectable alarm setting from -999 to +999 °C/°F respect to 1st point, or fixed point setting on selected scale, refer to table 2
2nd point output type	relay SPDT 250 Vac, 5 A
3rd point output type	relay SPST 250 Vac, 5 A
Auxiliary functions	LFA Loop Failure Alert diagnostic function, digital filter with an average of 10 measures, SW program LOCK with 3 levels
Setting	PROG, SET, UP, DOWN, AUTO/MAN push-buttons
Indicators	4 digit red display (10mm height), 4 digit green display (7mm height) for ED or 5 LED movement bar (ES), yellow ON1 LED, red ON2 LED, red AUX LED, green LOCK, green MAN LED, green AT LED
Connection	terminal block with 15 screw contacts, electronic block extractable from front panel
Electric protection	class 1
Mechanical protection	IP54 - front panel
	IP20 - housing
	IP10 - contacts
Housing material	ABS
Weight	400 g max.
Operating temperature	-10 ... +55°C
Storage temperature	-20 ... +65°C
Reference standard	EN 61010-1
Certifications	



TABLES

Sensor	°C scale	°F scale
TR int.	-150...450	-200...850
TR dec.	-99,9...450	-99,9...850
TC - E	0...600	0...1100
TC - J	-50...760	-50...1400
TC - K	-100...1250	-150...2300
TC - L	-50...760	-50...1400
TC - S	0...1700	30...3000
TC - R	0...1700	30...3000
TC - T	-100...400	-150...750

Table 1: °C/°F SCALE

Alarm	Fixed pt	Function
ALx0	FPx0	deactivated
ALx1	FPx1	minimum
ALx2	FPx2	maximum
ALx3	FPx3	neutral zone on
ALx4	FPx4	neutral zone off
ALx5	FPx5	minimum*
ALx6	FPx6	maximum*
ALx7	FPx7	neutral zone on*
ALx8	FPx8	neutral zone off*

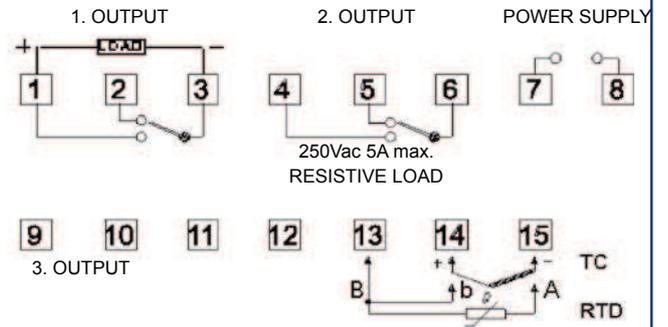
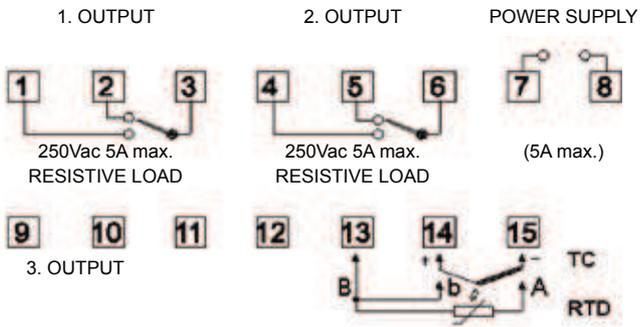
Table 2: ALARM FUNCTION

*stand-by: first intervention inhibition

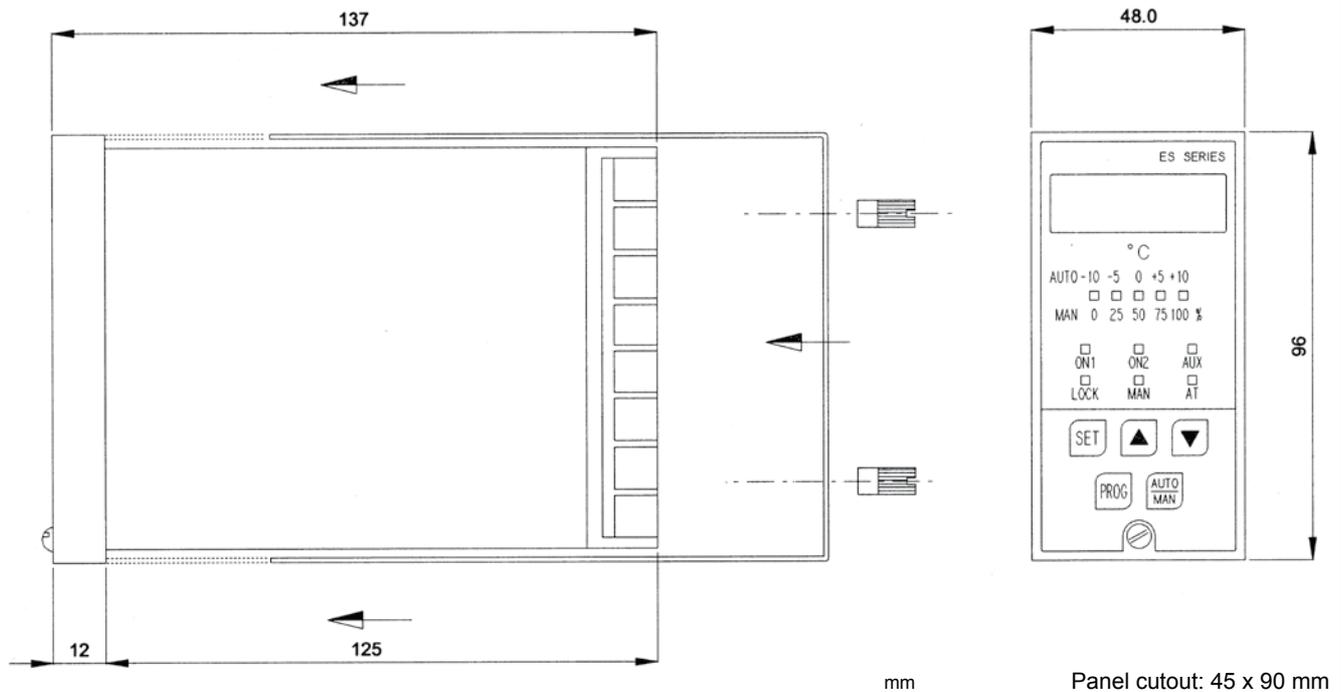
CONNECTIONS

RELAY VERSION

TRANSISTOR VERSION



DIMENSIONS



MODEL SELECTION AND ORDER INFORMATION

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTPUT	POINTS	ORDER N°
ES-000	single	12 ... 24 Vdc/Vac	relay	2	975021000
ES-010	single	12 ... 24 Vdc/Vac	transistor	2	975021010
ES-100	single	80 ... 240 Vac	relay	2	975021020
ES-110	single	80 ... 240 Vac	transistor	2	975021030
ES-001	single	12 ... 24 Vdc/Vac	relay	3	975201060
ES-011	single	12 ... 24 Vdc/Vac	transistor	3	975201070
ES-101	single	80 ... 240 Vac	relay	3	975201110
ES-111	single	80 ... 240 Vac	transistor	3	975201120
ED-000	double	12 ... 24 Vdc/Vac	relay	2	975031000
ED-010	double	12 ... 24 Vdc/Vac	transistor	2	975031010
ED-100	double	80 ... 240 Vac	relay	2	975031020
ED-110	double	80 ... 240 Vac	transistor	2	975031030
ED-001	double	12 ... 24 Vdc/Vac	relay	3	975151070
ED-011	double	12 ... 24 Vdc/Vac	transistor	3	975151080
ED-101	double	80 ... 240 Vac	relay	3	975151120
ED-111	double	80 ... 240 Vac	transistor	3	975151130

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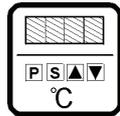
THQ SERIES

The microprocessor-based controllers of the THQ series are characterised by remarkable regulation precision, in particular in heat-sealing and thermoforming operations typical of the automatic packaging.

The AT initial autotuning and the ADT permanent autoadaptive functions can both be activated through the PID control action, responding excellently to frequent or fast system variations, as for example in process start and stop.

The panel with single or double display allows the setting of all the controller's values and configurations, such as sensor input, control action and alarm functions, with the possibility to lock the programming on three different safety levels.

The exclusive LFA diagnostic function is able to detect failures along the entire regulation loop, for example thermocouples short-circuit or heating resistance breaking.



SENSOR



HIGHLIGHTS

- Excellent measurement precision and regulation stability
- 9 sensors, 4 control actions, 16 alarms all keyboard configurable
- PID action with AT autotuning and ADT autoadaptive functions
- LFA diagnostic function of the regulation loop

APPLICATIONS

Packaging lines



Process control



TECHNICAL DATA

Power Supply	12-24 Vac/Vdc $\pm 10\%$ version, or 80-240 Vac $\pm 10\%$ version
Consumption	5 VA max.
Sensor input	selectable between E, J, K, L, R, S, T thermocouples and Pt100W/0°C RTDs
Measurement scale	selectable in °C or °F degrees with lower and upper limits, refer to table 1
Precision	thermocouple measurement $\pm 0,4\%$ f.s.
	RTD measurement $\pm 0,3\%$ f.s.
	temperature drift 0,01% f.s. / °C of ambient
	temperature setting and indication ± 1 digit
Data updating	input, output and indication every 500 ms
Data retention	non volatile eeprom memory
Keyboard correction indication	from -99,9 to +99,9 °C/°F
1st point control action	on/off or PID selection, maximum or minimum, with AT initial autotuning and ADT permanent autoadaptive functions

FUNCTIONS

Proportional band	20°C (sel. from 1 to 999 °C/°F)
Integral time	120 sec. (sel. from 0 to 960 sec.)
Derivative time	30 sec. (sel. from 0 to 240 sec.)
Cycle time	12 sec. (sel. from 1 to 120 sec.)
On/off hysteresis	± 1 °C (sel. from $\pm 0,1$ to $\pm 99,9$ °C/°F)
1st point output type	relay SPDT 250 Vac, 5 A version
	trans. PNP 12 Vcc $\pm 20\%$ version
	20 mA short-circuit protection
2nd point alarm action	selectable alarm setting from -999 to +999 °C/°F respect to 1st point, or fixed point setting on selected scale, refer to table 2
2nd point output type	relay SPST 250 Vac, 3 A
Auxiliary functions	LFA Loop Failure Alert diagnostic function, digital filter with an average of 10 measures, SW program LOCK with 3 levels
Setting	PROG, SET, UP, DOWN push-buttons
Indicators	4 digit red display (10mm height), 4 digit green display (7mm height) QD vers. or 5 LED movement bar (QS), yellow ON1 LED, red ON2 LED, green LOCK LED, green AT LED
Connection	terminal block with 10 screw contacts, electronic block extractable from panel
Electric protection	class 1
Mechanical protection	IP54 - front panel
	IP20 - housing
	IP10 - contacts
Housing material	ABS
Weight	175 g max.
Operating temperature	-10 ... +55°C
Storage temperature	-20 ... +65°C
Reference standard	EN 61010-1
Certifications	CE

TABLES

Sensor	°C scale	°F scale
TR int.	-150...450	-200...850
TR dec.	-99,9...450	-99,9...850
TC - E	0...600	0...1100
TC - J	-50...760	-50...1400
TC - K	-100...1250	-150...2300
TC - L	-50...760	-50...1400
TC - S	0...1700	30...3000
TC - R	0...1700	30...3000
TC - T	-100...400	-150...750

Table 1: °C/°F SCALE

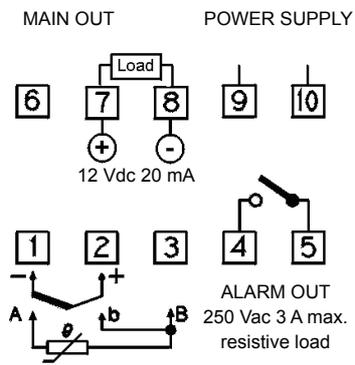
Alarm	Fixed pt	Function
AL20	FP20	deactivate
AL21	FP21	minimum
AL22	FP22	maximum
AL23	FP23	neutral zone on
AL24	FP24	neutral zone off
AL25	FP25	minimum*
AL26	FP26	maximum*
AL27	FP27	neutral zone on*
AL28	FP28	neutral zone off*

Table 2: ALARM FUNCTION

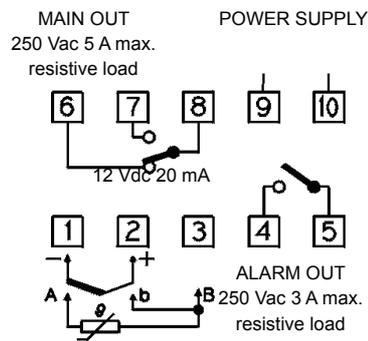
*stand-by: first intervention inhibition

CONNECTIONS

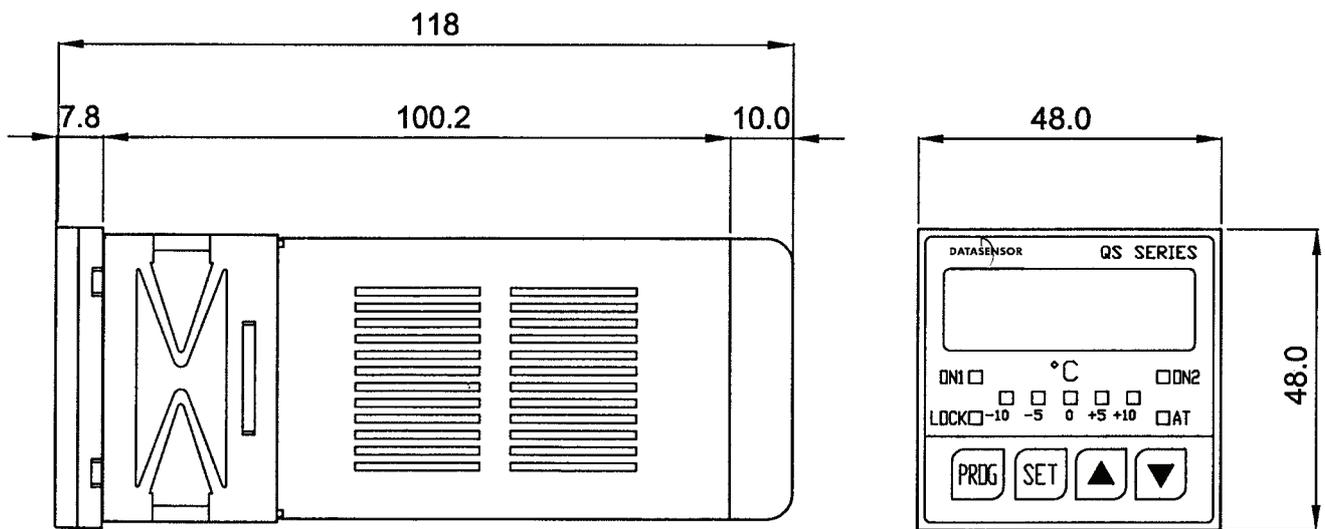
TRANSISTOR VERSION



RELAY VERSION



DIMENSIONS



mm

Panel cutout: 45 x 45 mm

MODEL SELECTION AND ORDER INFORMATION

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTPUT	ORDER N°
QS-00	single	12 ... 24 Vdc/Vac	relay	974021000
QS-01	single	12 ... 24 Vdc/Vac	transistor	974021010
QS-10	single	80 ... 240 Vac	relay	974021020
QS-11	single	80 ... 240 Vac	transistor	974021030
QD-00	double	12 ... 24 Vdc/Vac	relay	974031000
QD-01	double	12 ... 24 Vdc/Vac	transistor	974031010
QD-10	double	80 ... 240 Vac	relay	974031020
QD-11	double	80 ... 240 Vac	transistor	974031030



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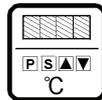
TH-T SERIES

The **TH-T** temperature controller series offers a complete range of solutions able to satisfy many varied industrial automation needs, including basic models suitable for more simple and cost-effective applications and advanced models created specifically for the more evolved control and interface systems.

Programming of the temperature controllers is quick and easy as the most frequently-used configurations can be set with few keyboard operations. Models with a RS485 serial interface can send the parameter configuration and receive the controlled values through an industrial PC that can control different units.

Versions with a current transformer input, available as an accessory for measurements reaching 25 or 100 A, can detect even a partial load failure, as for example due to a broken heating element.

The series includes models with opto-isolated relay and transistor outputs to control static relays, as well as models with 4-20 mA or 0-10 V normalised proportional analogue outputs.

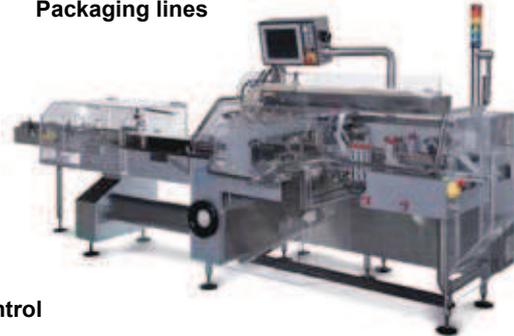


HIGHLIGHTS

- Complete range including basic and advanced control functions
- Relay output, static output for SSR, 4-20 mA and 0-10 V analogue outputs
- Models with current transformer input and HBA function
- Models with RS485 serial interface for MODBUS-RTU protocol

APPLICATION

Packaging lines

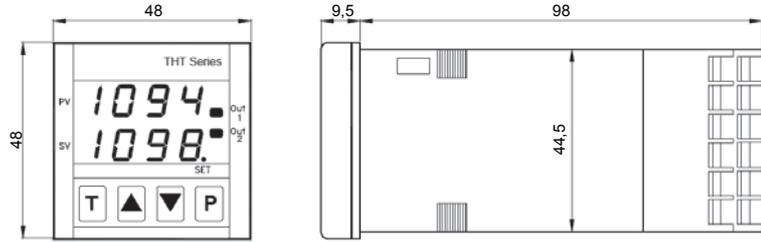


Process control



The temperature controllers are easily programmed by the 4 push-buttons and display indicators present on the front panel, or via the RS485 serial interface. Additionally the accessory device, as compact as a car key, copies the same configuration onto different temperature controllers. The 'T' push-button rapidly activates the Auto-Tuning function when the temperature increases and reaches the set value, alongside the continuous Self-Tuning of the PID control parameters.

DIMENSION



Single-display panel



Double-display panel



Terminal block



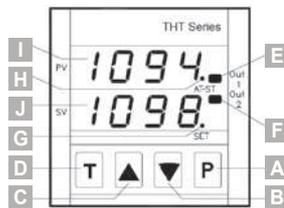
Amperometric transformer



Programming device

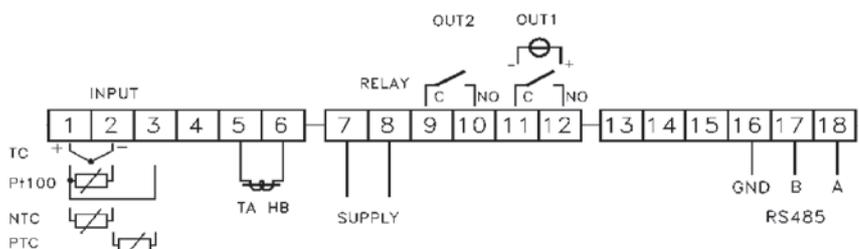


INDICATORS AND SETTINGS



- A** P push-button for programming access and confirmation
- B** Down push-button for value decrease / parameter selection
- C** Up push-button for value increase / parameter selection
- D** T push-button for Auto-Tuning and Self-Tuning activation
- E** Out1 LED for main output 1 ON status indication
- F** Out2 LED for auxiliary output 2 ON status indication
- G** SET LED for programming access indication (blinking)
- H** AT-ST LED Auto-Tuning (blinking) and Self-Tuning (on)
- I** PV display for process value indication
- J** SV display for set value indication (only TH-TD vers.)

CONNECTIONS



Note: For correct installation and use Datasensor SpA can guarantee only the data indicated in the instruction manual supplied with the products.

Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

		BASIC MODELS				ADVANCED MODELS																
		TH-TS-00	TH-TS-10	TH-TS-01	TH-TS-11	TH-TD-00	TH-TD-10	TH-TD-01	TH-TD-11	TH-TD-03	TH-TD-13	TH-TD-04	TH-TD-14	TH-TD-00-RS	TH-TD-10-RS	TH-TD-01-RS	TH-TD-11-RS	TH-TD-00-HB	TH-TD-10-HB	TH-TD-01-HB	TH-TD-11-HB	
Power supply:	24 Vac/Vdc ±10%, 50/60 Hz 100-240 Vac ±10%, 50/60 Hz	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Consumption:	5 VA 9 VA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
TC and RTD sensor input:	J thermocouple; programmable for J/K/S thermocouples, Pt100W/0°C RTDs, J/K I.R. sensors	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
PTC and NTC thermistor input:	PTC KTY81-121 990W/25°C, NTC 103AT-2 10kW/25°C								•	•	•	•	•	•	•	•	•	•	•	•	•	•
Measurement scale:	from -1999 to +9999 °C/°F, programmable lower and upper scale limits, with sensor break detection	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Precision:	±0.5% f.s. ±0.15% f.s.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Refresh time:	every 125 ms, display digital filter programmable from 0 to 20 sec.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Data retention:	non volatile eeprom memory	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Zero and span correction:	0°C; programmable offset from -1999 to +9999 °C/°F, with measurement line rotation from 0000 to 2000 (gain correction)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Set Point number:	1 control point; programmable from 1 to 4 set points	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Setting value:	0°C; programmable from -1999 to +9999 °C/°F	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1st main point function:	control ; programmable also as alarm point (see alarm action)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1st main point action:	inverse PID; programmable as inverse (heating) or direct (cooling), symmetrical or asymmetrical on/off, PID single or double action with Auto-Tuning and Self-Tuning	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
1st main point output type:	SPST-NO relay 250 Vac 5 A transistor 12 Vdc 7 mA 4-20 mA analogue 0-10 V analogue	•	•			•	•							•	•				•	•		•
2nd auxiliary point function:	alarm; programmable also as control point (see control action)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2nd auxiliary point action:	absolute maximum alarm; programmable as minimum, maximum or window, absolute or relative setting, with stand-by, delay and latch functions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
2nd auxiliary point output type:	SPST-NO relay 250 Vac 5 A	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Overshoot control factor:	0.5; programmable from 0.00 to 2.00 (fuzzy control)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Proportional band:	50°C; programmable from 0 to 9999 °C/°F	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Integral time:	200 sec.; programmable from 0 to 9999 sec.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Derivative time:	50 sec.; programmable from 0 to 9999 sec.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Cycle time:	20 sec.; programmable from 0.1 to 130.0 sec.	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
On/off hysteresis:	1°C; programmable from -1999 to 9999 °C/°F	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Set point timing:	inactive; programmable from 0:00 to 99:59 hours:minutes	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Soft Start timing:	inactive; programmable from 0:1 to 7:59 hours:minutes with Soft Start power adjustable from -100 to +100%	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Serial communication interface:	RS485 interface, MODBUS-RTU protocol, 1200-38400 baud													•	•	•	•					
Loop break alarm:	LBA software function for sensor break or short-circuit and load interruption detection, with intervention time setting from 0 to 9999 sec. alarm output activation possibility	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Heater break alarm:	HBA hardware function with 25/0.05 A or 100/0.2 A current transformer input																			•	•	•
Connection:	terminal block with 2.5 mm≈ screw contacts	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Electrical protection:	class II - front panel, installed according to instructions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Mechanical protection:	IP54 - front panel, installed according to instructions	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Housing material:	UL 94 V0 self-extinguishing plastic	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Weight:	225 g	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Operating temperature:	0...+50°C, with 30...95 rH% non condensing humidity	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Storage temperature:	-10...+60°C	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Reference standard:	EN 61010-1	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•



MODEL SELECTION AND ORDER INFORMATION

MODEL	DISPLAY	POWER SUPPLY	MAIN OUTPUT	ADVANCED FUNCTION	ORDER N°
TH-TS-00	single	24 Vac/Vdc	relay	basic	95B030000
TH-TS-10	single	100-240 Vac	relay	basic	95B030010
TH-TS-01	single	24 Vac/Vdc	transistor	basic	95B030020
TH-TS-11	single	100-240 Vac	transistor	basic	95B030030
TH-TD-00	double	24 Vac/Vdc	relay	basic	95B030040
TH-TD-10	double	100-240 Vac	relay	basic	95B030050
TH-TD-01	double	24 Vac/Vdc	transistor	basic	95B030060
TH-TD-11	double	100-240 Vac	transistor	basic	95B030070
TH-TD-03	double	24 Vac/Vdc	4-20 mA	analogue out	95B030080
TH-TD-13	double	100-240 Vac	4-20 mA	analogue out	95B030090
TH-TD-04	double	24 Vac/Vdc	0-10 V	analogue out	95B030100
TH-TD-14	double	100-240 Vac	0-10 V	analogue out	95B030110
TH-TD-00-RS	double	24 Vac/Vdc	relay	RS485	95B030120
TH-TD-10-RS	double	100-240 Vac	relay	RS485	95B030130
TH-TD-01-RS	double	24 Vac/Vdc	transistor	RS485	95B030140
TH-TD-11-RS	double	100-240 Vac	transistor	RS485	95B030150
TH-TD-00-HB	double	24 Vac/Vdc	relay	HBA *	95B030160
TH-TD-10-HB	double	100-240 Vac	relay	HBA *	95B030170
TH-TD-01-HB	double	24 Vac/Vdc	transistor	HBA *	95B030180
TH-TD-11-HB	double	100-240 Vac	transistor	HBA *	95B030190

* Heater Break Alarm: load failure detection (eg. heating elements) through external current transformer, which can be ordered as an accessory.

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
THT-AT-25	25/0.05 A current transformer for HBA function	95A301010
THT-AT-100	100/0.2 A current transformer for HBA function	95A301020
THT-KEY	Device for copying the same programming to different temperature controllers	95A301030



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TC/TR SERIES

The TC/TR series offers thermocouple and RTD temperature sensors for measurements ranging from -100 to +450 °C, or up to 600 °C for the T101-J model.

The J type (Iron/Constantan) or K type (Chromel/Alumel) thermocouples present a tubular stainless steel housing or with brass ring; the measurement junction is grounded in order to obtain the best response speed.

The resistance temperature detectors are made with a Pt100Ω/0°C type platinum sensitive element and are available in different tubular housings, with chamfer point for penetration measurements, or holed for detection in open air; in stainless steel in all cases, with an insulated sensitive element.

The thermocouples and the resistance temperature detectors of the TC/TR series are suitable for applications in automatic packaging, food sector, plastic material printing and wood working.



HIGHLIGHTS

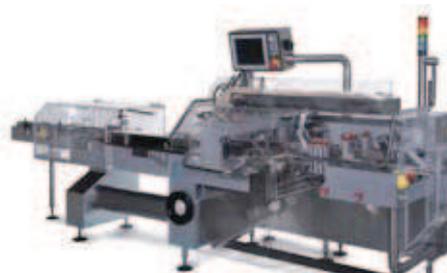
- J and K type thermocouples
- Pt100 type RTDs
- Wide range of operating temperatures
- Housing in AISI 304 stainless steel

APPLICATIONS

Process control



Packaging lines



TECHNICAL DATA

Calibration	J type TC (Fe/Cu-Ni) - DIN 43710
	K type TC (Ni-Cr/Ni-Al) - DIN 43710
	Pt100Ω/0°C RTD - DIN 43760 (refer to table 1)
Tolerance:	thermocouple ± 2°C at 200°C
	RTD ± 0.55°C at 200°C
Connection:	bi-polar 2 m cable
	2 screw terminals (P105 mod.)
	TC polarity and colour - DIN 43713, non-polarised RTD (refer to table 2)
Assembly:	TC with grounded junction
	RTD with insulated element
Housing material:	stainless steel AISI 304
	brass ring (T104-J and T104-K mod.)
Operating temperature:	-100 ... +450°C
	-100 ... +600°C (T101-J and T102-K mod.)

Temp.(°C)	TC-J (mV)	TC-K (mV)	Pt100 (.)
-100	-4,63	-3,55	60,25
-50	-2,43	-1,89	80,31
0	0	0	100
50	2,65	2,02	119,4
100	5,37	4,1	138,5
150	8,15	6,14	157,31
200	10,95	8,14	175,84
250	13,75	10,15	194,07
300	16,56	12,21	212,02
350	19,36	14,29	229,67
400	22,16	16,4	247,03
450	25	18,51	264,11
500	27,85	20,64	280,9

Table 1: SENSOR CALIBRATION

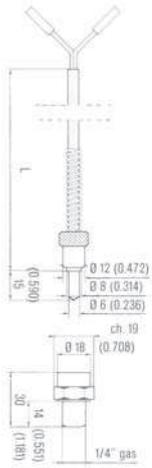
Sensor	Positive	Negative
J type TC	red wire	blue wire
K type TC	red wire	green wire
Pt100 RTD	(non-polarised)	

Table 2: SENSOR CONNECTION

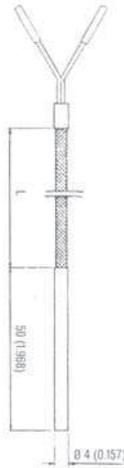


DIMENSIONS

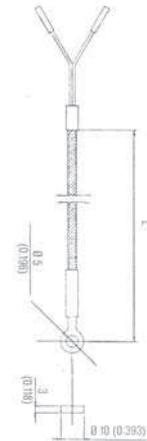
T101-J



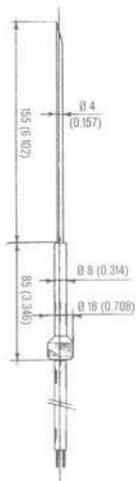
T102-J/K



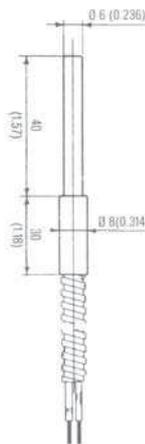
T104-J/K



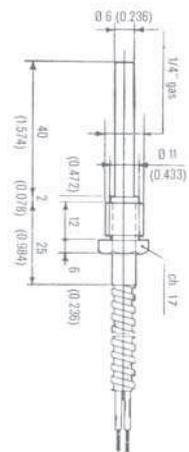
P101



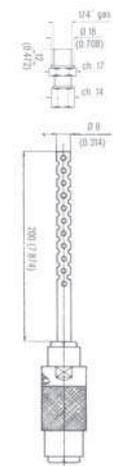
P102



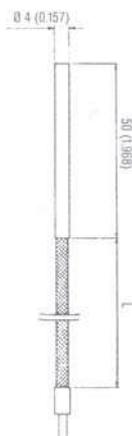
P103



P105



P106



mm

MODEL SELCTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
T101-J	J type thermocouple with bayonet nipple 1/4" gas	T9980000
T102-J	J type thermocouple - tubular head with Ø 4 mm L 50 mm	T9980001
T102-K	K type thermocouple - tubular head with Ø 6 mm L 50 mm	T9981001
T104-J	J type thermocouple with Ø 5 mm eyelet	T9980003
T104-K	K type thermocouple with Ø 5 mm eyelet	T9981003
P101	Pt100 RTD - chamfer point with Ø 4 mm L 155 mm	T9982000
P102	Pt100 RTD - tubular head with Ø 6 mm L 40 mm	T9982001
P103	Pt100 RTD with moveable nipple 1/4 gas	T9982002
P105	Pt100 RTD - holed head with Ø 8 mm L 200 mm	T9982004
P106	Pt100 RTD - tubular head Ø 4 mm L 50 mm	T9982005

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Light arrays, line sensors



OPERATING DISTANCES

SERIES		DS1	DS2	
OPERATING DISTANCES	Light array (controlled height) 	100...300 mm	150...1650 mm	
	Line sensor (controlled height) 			
	Resolution	4...10 mm	6/25 mm	
	Number of beams	16...48	21...231 (res=6mm) 6...66 (res=25mm)	
	Light emission	IR	IR	
	Response time	1...2.75 ms	5...90 ms	
	Serial interface		RS485	
	Setting	Trimmer	Dip-switches Graphic interface	
	Operating distance	0.15...0.8 m 0.15...2.1 m 0.2...4 m	0.3...5 m (res=6mm) 0.3...10 m (res=25mm)	
	Hysteresis			
TECHNICAL DATA	Power supply	Vdc Vac Vac/dc	24   	
	Output	PNP NPN NPN/PNP relay (triac) other	 0...10 V	
	Connection	cable connector terminal block	M12 4-poles for TX / M12 5-poles for RX	
	Approximate dimensions (mm)		20 x 41	
	Housing material		aluminium	
	Mechanical protection		IP65	
				24   
			 0...10 V	
			M12 4-poles for TX / M12 8-poles for RX	
			35 x 40	
		aluminium		
		IP65		



DS3	S65-Z
150...600 mm	
	150 mm
0.5/0.8 mm (crossed beams) 6 mm (parallel beams)	0.9 mm
24...96	0.15 mm
IR	>130 Hz
3...12 ms (crossed beams) 23...92 ms (parallel beams)	IR LED
	RS485
Teach-in	200 mm
0.2...2 m	
24  	10...30  
.	.
	.
0...10 V	4...20 mA
M12 4-poles for TX / M12 8-poles for RX	.
35 x 40	25 x 50 x 50
aluminium	ABS
IP65	IP67

Ultrasonic sensor



OPERATING DISTANCES

SERIES		US18	US30
OPERATING DISTANCES	Operating distance	30 ... 300 mm	200 ... 1000 mm 300 ... 2000 mm
	Resolution	2.5 ms (Fast): 1 mm 30 ms (Slow): 0.5 mm	0.1 % measured distance
	Linearity	2.5 ms (Fast): ±1 mm 30 ms (Slow): ±0.5 mm	0.25 % measured distance
	Repeatability	0,5 mm	1000 mm: 0.1 % of dist. (0.5 mm min.) 2000 mm: 0.1 % of dist. (1 mm min.)
	Ultrasonic frequency	300 KHzburst, rep. rate 2.5 ms	1000 mm : 224 KHz 2000 mm: 174 KHz
	Response time	2,5ms FAST MODE 30ms SLOW MODE	1000 mm : 45 ms (fast), 105 ms (slow) 2000 mm : 92 ms (fast), 222 ms (slow)
	Setting	PUSH BUTTON Teach-in	PUSH BUTTON Teach-in
	Minimum Reading Window	5 mm	10 mm
	Hysteresis	0.7 mm	1000 mm : 2 mm 2000 mm : 3 mm
	Temperature effect	0.02% measured distance/°C	0.02% measured distance/°C

TECHNICAL DATA

TECHNICAL DATA	Power supply	Vdc	10...30	10...30
		Vac		
		Vac/dc		
	Output	PNP		
		NPN	.	.
		NPN/PNP		
		relay (triac)		
		other	4...20mA / 0 ... 10 V	4...20mA / 0 ... 10 V
	Connection	cable		
		connector	M12 5-poles	M12 5-poles
terminal block				
Approximate dimensions (mm)		18x91 (axial) 18x95 (radial)	30 x 63.6 x 45	
Housing material		Polyester	Polyester	
Mechanical protection		IP67	IP67	



US50
200 ... 8000 mm
1 mm
± 0.2% of span from 200 to 8000 mm; ± 0.1% of span from 500 to 8000 mm (1mm min.)
1 mm
75 kHz burst, rep. rate 96 ms
100...2300 ms
PUSH BUTTON Teach-in
20 mm
5 mm
Uncompensated: 0.2% of distance /°C Compensated: 0.02% of distance /°C
10...30
.
4...20mA / 0 ... 10 V
M12 5-poles
74x81,2x67,4
Polyester
IP67

Distance sensors



OPERATING DISTANCES

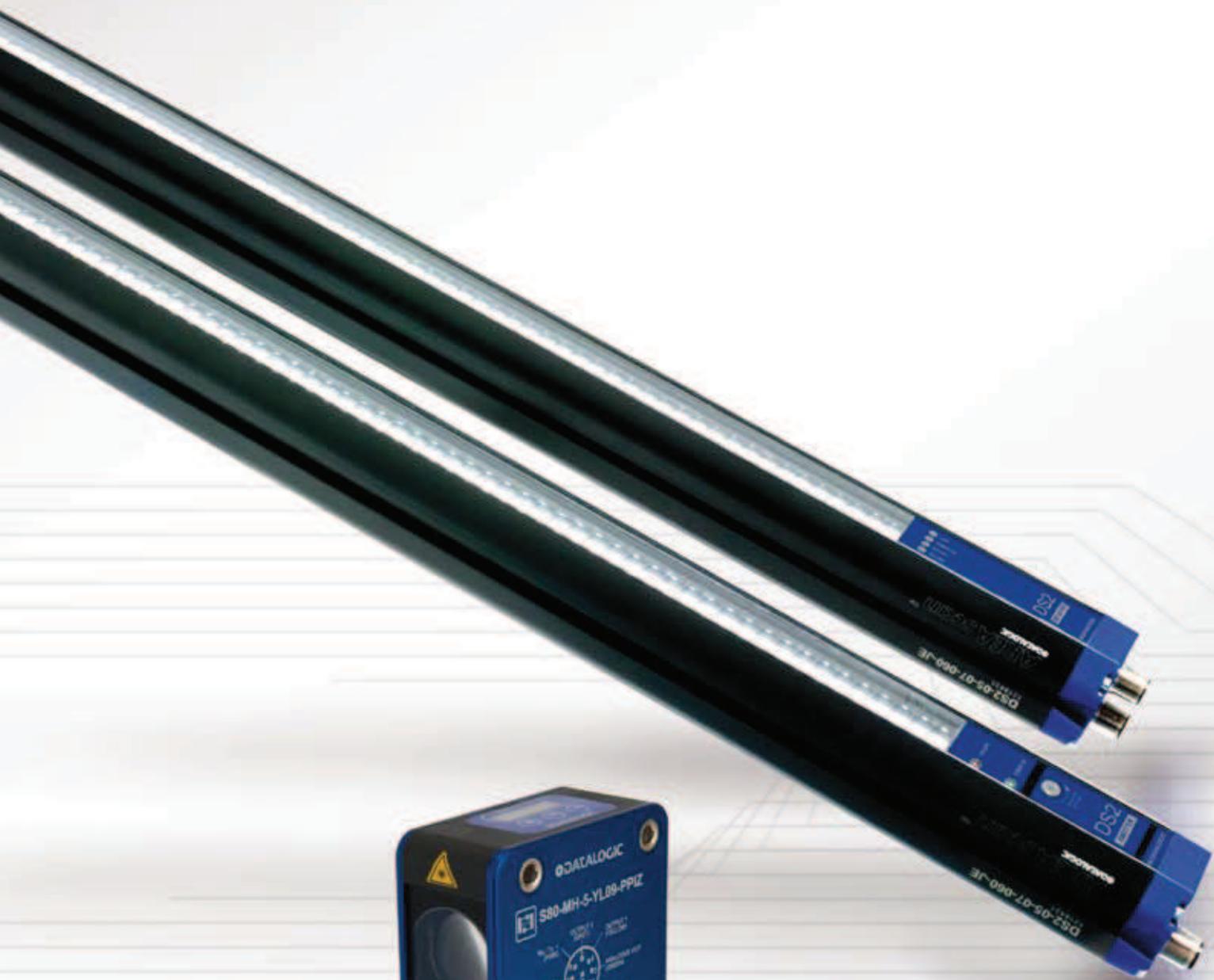
SERIES		S80-Y0	S80-YL0	
Distance sensor		0.3... 4 m	0.3... 7 m	
		Digital resolution	0.9 mm	0.4 mm
		Linearity	0.3 %	0.3 %
		Hysteresis	5 mm	5 mm
		Switching frequency	100 Hz (Normal) 500 Hz (Fast)	100 Hz
		Light emission	red Laser  ^{cl.2}	red Laser  ^{cl.2}
		Response time	5 ms (Normal) 1 ms (Fast)	5 ms
		Serial interface	RS485	RS485
		Setting	Teach-in	Teach-in

TECHNICAL DATA

Power supply	Vdc	15... 30 	15... 30 	
	Vac			
	Vac/dc			
	Output	PNP	.	.
		NPN		
		NPN/PNP		
		relay (triac)		
		other		
	Connection	cable	4...20 mA	4...20 mA
		connector	M12 8-poles	M12 8-poles
terminal block				
Approximate dimensions (mm)		34 x 90 x 73	34 x 90 x 73	
Housing material		aluminium	aluminium	
Mechanical protection		IP67	IP67	



S80-Y1	S80-Y2	S81
0.3... 20.3 m (on R80 reflector)	0.3... 100.3 m (on R80 reflector)	0.3...4 m
0.6 mm	6 mm	0.9 mm
0.25 %	0.15 %	
25 mm	40 mm	30 mm (M models)
100 Hz (Normal) 500 Hz (Fast)	100 Hz (Normal) 500 Hz (Fast)	80 Hz
red Laser  cl.2	red Laser  cl.2	red Laser  cl.2
5 ms (Normal) 1 ms (Fast)	5 ms (Normal) 1 ms (Fast)	6 ms
RS485	RS485	
Teach-in	Teach-in	Teach-in
15... 30  	15... 30  	15...30  
.	.	.
4...20 mA	4...20 mA	0...10 V
M12 8-poles	M12 8-poles	M12 5-poles
34 x 90 x 73	34 x 90 x 73	58 x 31 x 31
aluminium	aluminium	ABS
IP67	IP67	IP67



DS1 SERIES

The **DS1 AREAscan™** series are compact multibeam light grids suitable for the detection and measurement of objects with different shapes and dimensions.

Different models are available with **100, 150 and 300 mm controlled height**, 4 mm resolution and operating distance reaching 4 m.

Versions with trimmer adjustment. The electronics is fully integrated and so no external drivers are required.



MEASUREMENT



HIGHLIGHTS

- Measurement of object dimensions or position
- 4mm resolution and 1ms response time
- Controlled heights ranging from 100 to 300mm
- Operating distance reaching 4m
- PNP and 0-10V analogue output
- Adjustment trimmer
- Fully embedded electronics

APPLICATIONS

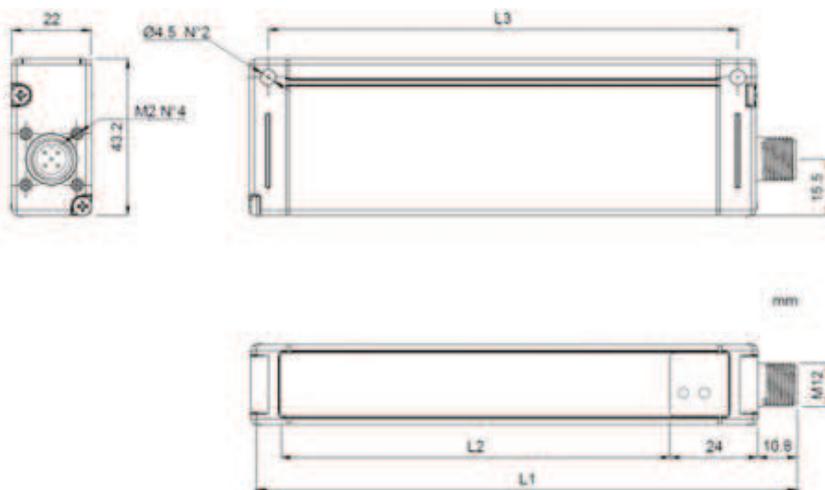
- Object dimension measurement
- Shape or profile detection
- Positioning, spacing, centering, stacking
- Edge guiding
- Object counting



The measurement of the object's position or dimensions, placed inside the sensitive area, is obtained thanks to the 0 - 10V analogue output, which supplies a signal proportional to the number of interrupted beams. The PNP digital output is activated each time that a beam is intercepted by an object; in this case, the yellow OUT LED on the receiving unit panel turns on. The green POWER ON LED, always on this panel, signals also the wrong alignment between the emitting and receiving units as well as the functioning outside or near the maximum operating distance.

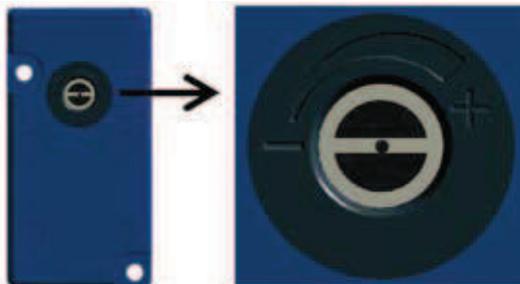


DIMENSIONS



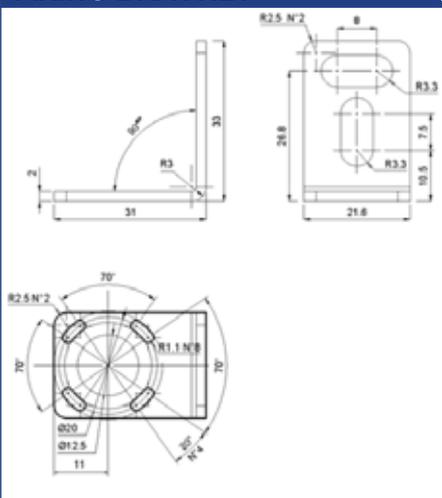
MODEL	L1	L2	L3
DS1-xx-010-xx	150,1	107	129,1
DS1-xx-015-xx	200,1	157	179,1
DS1-xx-030-xx	350,1	307	329,1

INDICATORS AND SETTING (TRIMMER VERSIONS)

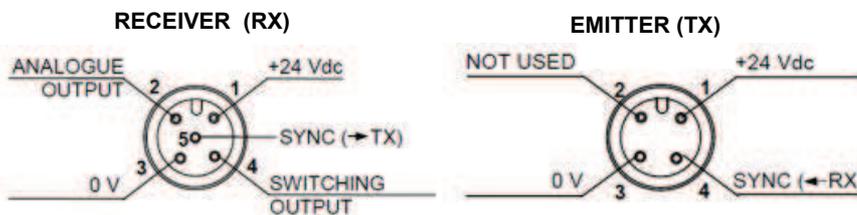


Emitter is equipped with a manual regulation which lets the user change the emission power by means of a screwdriver. The emission power reduction can be particularly useful to lower passive reflections when maximum operating distance is not required.

FIXING BRACKET



CONNECTIONS



- 1 = brown = +24 Vdc
- 2 = white = Analogue output
- 3 = blue = 0 V
- 4 = black = Switching output
- 5 = grey = SYNC

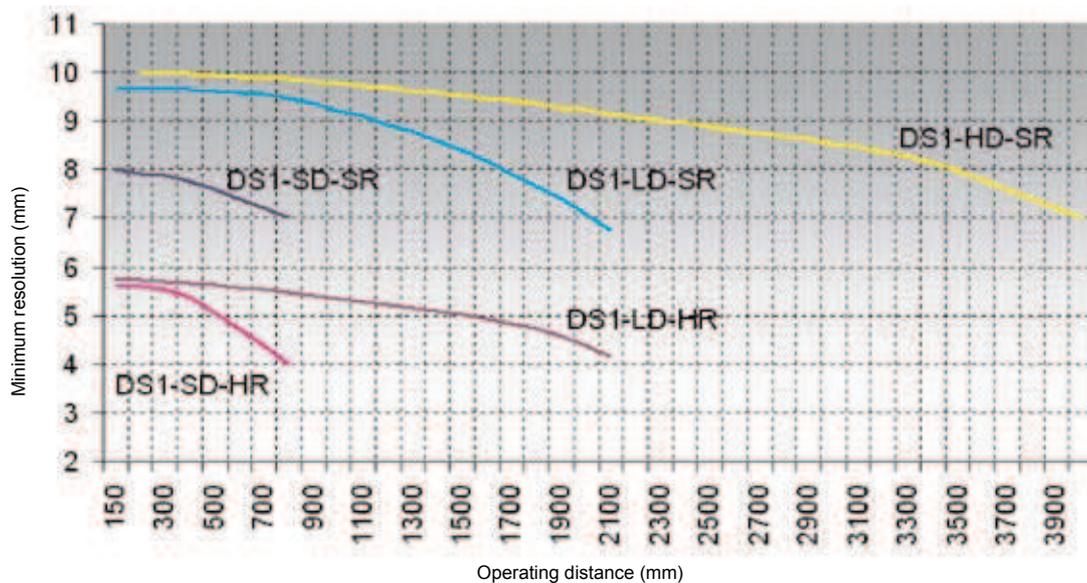
- 1 = brown = +24 Vdc
- 2 = white = not used
- 3 = blue = 0 V
- 4 = black = SYNC

TECHNICAL DATA

Power supply:	24 Vdc ± 15 %
Consumption on emitter unit:	150 mA max.
Consumption on receiver unit:	50 mA max. without load
Outputs:	1 PNP output 1 0 - 10 V analogue output
Load current on PNP output:	100 mA; short circuit protection
Saturation voltage on PNP output:	≤ 11.5V at T=25°C
Response time:	1 ms - 2.75ms
Emission type:	infrared 880nm
Resolution:	4 - 7mm
Measurement precision:	± 3.5 - 7mm
Operating distance:	0.15 - 0.80m (SD vers.) 0.15 - 2.10 m (LD vers.) 0.20 - 4.00m (HD vers.)
Receiver indicators:	green POWER ON LED yellow OUT LED
Emitter indicators:	green POWER ON LED
Operating temperature:	0 ... + 55 °C
Storage temperature:	- 25 ... + 70 °C
Humidity:	15...95 % (non condensing)
Mechanical protection:	IP65
Housing material:	aluminium
Optics material:	PMMA
Connections:	M12 4-pole connector for TX M12 5-pole connector for RX
Weight:	300g (DS1-xx-010-xx vers.) 400g (DS1-xx-015-xx vers.) 600g (DS1-xx-030-xx vers.)



DETECTION DIAGRAMS



Variation of the minimum resolution according to the operating distance between the emitting and receiving units.

MODEL SELECTION AND ORDER INFORMATION

MODEL	RESOLUTION	OPERATING DISTANCE	CONTROLLED HEIGHT	TRIMMER ADJUSTMENT	ORDER N°
DS1-LD-SR-010-JV	standard	0.15 - 2.10m	100mm		957701130
DS1-LD-HR-010-JV	high	0.15 - 2.10m	100mm		957701120
DS1-LD-SR-015-JV	standard	0.15 - 2.10m	150mm		957701150
DS1-LD-HR-015-JV	high	0.15 - 2.10m	150mm		957701140
DS1-LD-SR-030-JV	standard	0.15 - 2.10m	300mm		957701160
DS1-LD-SR-010-PV	standard	0.15 - 2.10m	100mm	•	957701250
DS1-LD-SR-015-PV	standard	0.15 - 2.10m	150mm	•	957701260
DS1-LD-SR-030-PV	standard	0.15 - 2.10m	300mm	•	957701270
DS1-SD-SR-010-JV	standard	0.15 - 0.80m	100mm		957701170
DS1-SD-HR-010-JV	high	0.15 - 0.80m	100mm		957701200
DS1-SD-SR-015-JV	standard	0.15 - 0.80m	150mm		957701180
DS1-SD-HR-015-JV	high	0.15 - 0.80m	150mm		957701210
DS1-SD-SR-030-JV	standard	0.15 - 0.80m	300mm		957701190
DS1-HD-SR-010-JV	standard	0.20 - 4.00 m	100mm		957701220
DS1-HD-SR-015-JV	standard	0.20 - 4.00 m	150mm		957701230
DS1-HD-SR-030-JV	standard	0.20 - 4.00 m	300mm		957701240

Fixing brackets and screws are supplied with the product

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CS-A1-03-G-03	axial M12-5 pole unshielded 3 m connector	95ACC2110
CS-A1-03-G-05	axial M12-5 pole unshielded 5 m connector	95ACC2120
CS-A1-03-G-10	axial M12-5 pole unshielded 10 m connector	95ACC2140
CS-A1-02-G-03	axial M12-4 pole unshielded 3 m connector	95A251380
CS-A1-02-G-05	axial M12-4 pole unshielded 5 m connector	95A251270
CS-A1-02-G-10	axial M12-4 pole unshielded 10 m connector	95A251390



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DS2 SERIES

The **AREAscan™** family of the **DS2** series covers controlled heights ranging from 150 to 2500mm, with 5m operating distances for high resolution versions, or 10m for low resolution versions. Digital resolution is 12mm or 25mm while relative measurement precision is $\pm 6\text{mm}$ or $\pm 22.5\text{mm}$. Models with RS485 serial port or ETHERNET host interface are available; ETHERNET models are only high resolution versions. The device configuration can be set manually thanks to internal dip-switches, or using graphic interface from remote PC for serial models. ETHERNET models can be programmed only from user interface. Once loaded the program on the flash memory, the device functions in the stand-alone mode. The serial or ETHERNET interface transmits the measurement in a binary or ASCII code, the operating status control as well as the setting of the different baud-rate versions. The **DS2** light arrays suits different height or dimensional measurement applications in general, in automatic material handling.



HIGHLIGHTS

- Measurement in automatic material handling
- Versions with 6 or 25mm digital resolution
- Relative measurement precision $\pm 6\text{mm}$ or $\pm 22.5\text{mm}$.
- 150 - 2500 mm controlled height
- Operating distance up to 5m or 10m
- Digital PNP output
- 0-10 V analogue output
- Serial RS485 protocol or ETHERNET host interface

APPLICATIONS

Automotive



Material Handling



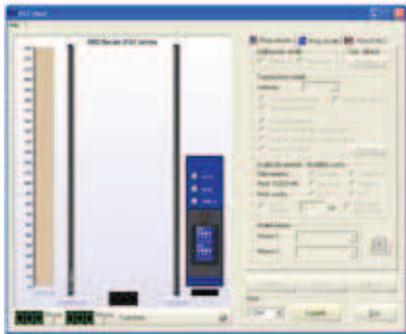
Automatic Warehouse



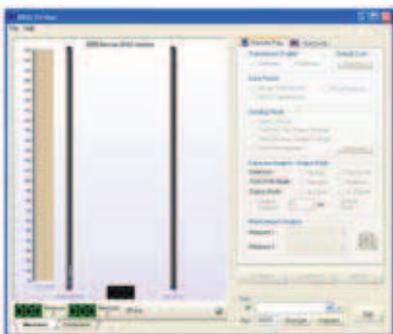
The different configuration parameters of the light grid can be visualised and modified using the extremely easy and intuitive user interface. In particular, the interface allows the access to many different advanced operating modes:

- complete beam status array, where serial output transmits a string of information relative to the status of each single optic;
- top beam, which provides information relative to the last interrupted or free optic;
- bottom beam, which provides information relative to the first interrupted or free optic;
- middle beam, which provides information relative to the central interrupted or free optic;
- total beam, which provides information on the total number of obscured or free optics;
- total contiguous beam, which provides information on the maximum number of adjacent obscured beams;
- number of transitions, provides information on the number of transitions from free to obscured optics or vice versa.

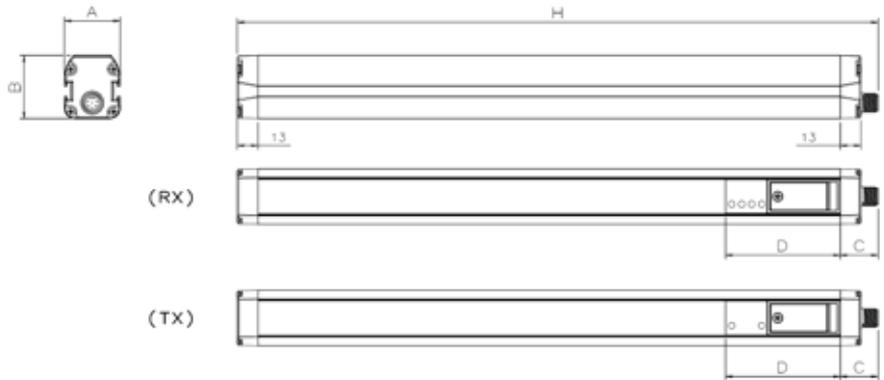
User interface serial version



User interface ethernet version



DIMENSIONS



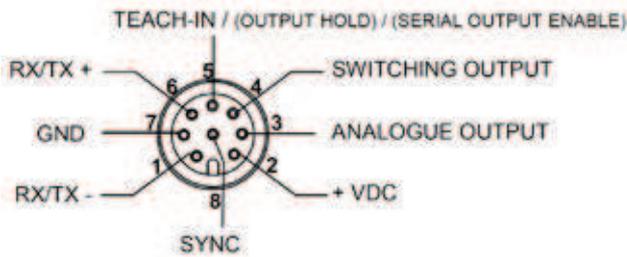
MODEL	A x B (mm)	H (mm)	C (mm)	D (mm)
DS2-05-07-015-XX	35 x 40	256	23.8	72.5
DS2-05-07-030-XX	35 x 40	403	23.8	72.5
DS2-05-07-045-XX	35 x 40	550	23.8	72.5
DS2-05-07-060-XX	35 x 40	697	23.8	72.5
DS2-05-07-075-XX	35 x 40	844	23.8	72.5
DS2-05-07-090-XX	35 x 40	991	23.8	72.5
DS2-05-07-105-XX	35 x 40	1138	23.8	72.5
DS2-05-07-120-XX	35 x 40	1285	23.8	72.5
DS2-05-07-135-XX	35 x 40	1432	23.8	72.5
DS2-05-07-150-XX	35 x 40	1579	23.8	72.5
DS2-05-07-165-XX	35 x 40	1726	23.8	72.5
DS2-05-25-045-XX	35 x 40	562	23.8	72.5
DS2-05-25-060-XX	35 x 40	713	23.8	72.5
DS2-05-25-075-XX	35 x 40	864	23.8	72.5
DS2-05-25-090-XX	35 x 40	1015	23.8	72.5

XX: JV for serial models or JE for ETHERNET models



CONNECTIONS

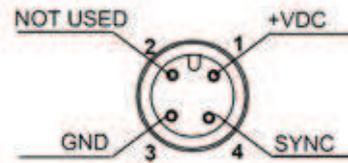
SERIAL VERSION - RX



Main connector: M12 8-pole connector

- 1 = white = RX/TX -
- 2 = brown = +VDC
- 3 = green = ANALOGUE OUT
- 4 = yellow = SWITCHING OUTPUT
- 5 = grey = TEACH-IN / (OUT HOLD) / (SERIAL OUT ENABLE)
- 6 = pink = RX/TX +
- 7 = blue = GND
- 8 = red = SYNC

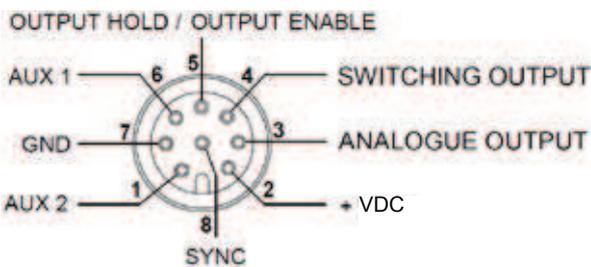
SERIAL VERSION - TX



Main connector: M12 4-pole connector

- 1 = brown = +VDC
- 2 = white = NOT USED
- 3 = blue = GND
- 4 = black = SYNC

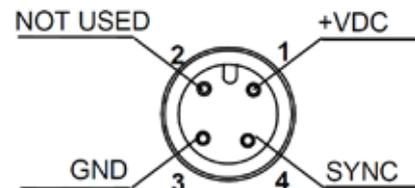
ETHERNET VERSION - RX



Main connector: M12 8-pole connector

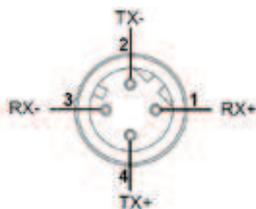
- 1 = white = AUX 2
- 2 = brown = +VDC
- 3 = green = ANALOGUE OUT
- 4 = yellow = SWITCHING OUTPUT
- 5 = grey = OUT HOLD / OUT ENABLE
- 6 = pink = AUX 1
- 7 = blue = GND
- 8 = red = SYNC

ETHERNET VERSION - TX



Main connector: M12 4-pole connector

- 1 = brown = +VDC
- 2 = white = NOT USED
- 3 = blue = GND
- 4 = black = SYNC



Secondary connector: M12 4-pole connector

- 1 = brown = RX +
- 2 = white = TX -
- 3 = blue = RX -
- 4 = black = TX +

TECHNICAL DATA

	DS2-05-07-xxx-JV	DS2-05-25-xxx-JV	DS2-05-07-xxx-JE
Power supply:	24 Vdc ± 20%		24 Vcc ± 20%
Consumption of emitter unit:	250 mA max without load		250 mA max without load
Outputs:	1 switching output; load max 10 kW		1 switching output: load max 10 kW
	load min 100 W		load min 100 W
	1 analogue output ; 0-10 V (DVmax. 2%)		1 analogue output : 0-10 V (DVmax. 2%)
Output current on switching output:	100 mA; short-circuit protection		100 mA; short-circuit protection
Output voltage on switching output:	-1.5 Vmax of the power supply at T=25°C		-1.5 Vmax of the power supply at T=25°C
Response time:	See table "Response time" below		See table "Response time" below
Emission type:	Infrared (880 nm)		Infrared (880 nm)
Resolution:	6 mm	25 mm	6 mm
Relative measurement precision:	± 6 mm	± 22.5 mm	± 6 mm
Absolute measurement precision:	6 mm	22.5 mm	6 mm
Dimensional difference between objects equally detected in absolute Teach-in:	± 6 mm	± 22.5 mm	± 6 mm
Dimensional difference between objects equally detected in relative Teach-in	D = 12 mm	D = 45 mm	D = 12 mm
Operating distance:	0.3 ÷ 5 m	0.3 ÷ 10 m	0.3 ÷ 5 m
Available functions:	See next sections		See next sections
Operating temperature:	0 ... + 50 °C		0... + 50 °C
Storage temperature:	- 25... + 55 °C		- 25... + 55 °C
Electrical protection:	Class I		Class I
Mechanical protection:	IP65 (EN 60529)		IP65 (EN 60529)
Vibrations:	0.5 mm width, 10 ... 55 Hz frequency, (EN 60068-2-6)		0.5 mm width, 10 ... 55 Hz frequency (EN 60068-2-6)
Shock resistance:	11 ms (30 G) 6 shock for each axis (EN 60068-2-27)		11 ms (30 G) 6 shock for each axis (EN 60068-2-27)
Housing material:	Painted aluminium (Pulverit 5121/0085 Black)		Painted aluminium (Pulverit 5121/0085 Black)
Lens material:	PMMA		PMMA
Connections:	TX: M12 4-poles connector RX: M12 8-poles connector		TX: M12 4-poles connector RX: M12 8-poles connector + M12 4-poles type "D"
Weight:	Min. 1.9 kg – Max. 4.6 kg		min 3.3 Kg – max 6.5 Kg (with packing)



TECHNICAL DATA

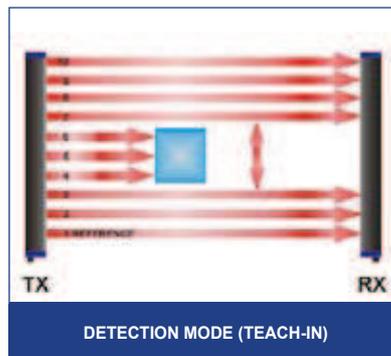
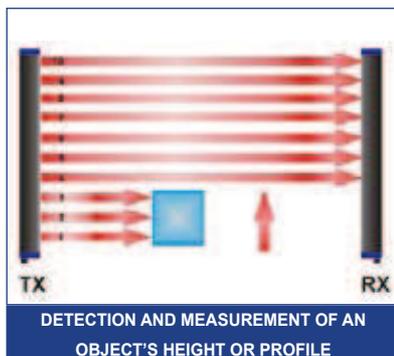
Response time - Serial version

	Tmin (msec)							Tmax (msec)
		T2	T3	T4	T5	T6	T7	
Model	Configuration							
	Top beam	Top beam	Top beam	Top beam	Complete Beams Status	Complete Beams Status	Complete Beams Status	Complete Beams Status
	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud
	binary	binary	ASCII	ASCII	binary	binary	ASCII	ASCII
DS2-05-07-015-JV	5.5	12.5	5.05	13	5.5	15	6.5	10
DS2-05-07-030-JV	7	14	7	14.5	7	18	8.5	21
DS2-05-07-045-JV	8.5	15.5	8.5	16	8.5	21	10	24
DS2-05-07-060-JV	10	17	10	18	10	26	12	38
DS2-05-07-075-JV	11.5	18.5	11.5	19	11.5	31	15	44
DS2-05-07-090-JV	13	20	13	20	13	36	17	54
DS2-05-07-105-JV	14.5	21.5	14.5	22	14.5	40	19	62
DS2-05-07-120-JV	17	24	17	24	17	44	21	70
DS2-05-07-135-JV	18.5	25	19	26	19	48	23	80
DS2-05-07-150-JV	20	26.5	21	28	21	53	25	84
DS2-05-07-165-JV	22	28	23	30	23	56	28	91
DS2-05-25-045-JV	5	11	5	11	5	13	6	18
DS2-05-25-060-JV	5.5	12	5.5	12.5	5.5	14.5	6.5	19.5
DS2-05-25-075-JV	6	13	6	13.5	6	16	7	21
DS2-05-25-090-JV	6.5	13.5	6.5	14.5	6.5	17.5	7.5	22.5

Response time - ETHERNET version

Model	Configuration			
	Top Beam		Complete Beams Status	
	binary	ASCII	binary	ASCII
DS2-05-07-060-JE	10	10	10	12
DS2-05-07-075-JE	11.5	11.5	11.5	15
DS2-05-07-090-JE	13	13	13	17
DS2-05-07-120-JE	17	17	17	21
DS2-05-07-150-JE	20	21	21	25
DS2-05-07-165-JE	22	23	23	28

FUNCTIONING MODE EXAMPLES



And more applications:

- Object height measurement (vertical mounting);
- Object width measurement (horizontal mounting);
- Object distance measurement (horizontal mounting);
- Object volume measurement (vertical and horizontal combination);
- Single or multiple object presence and/or position detection in a given area;
- Missing label detection on multiple lanes;
- Vertical warehouse drawers positioning;
- Box or other objects profiling on conveyors;
- Web edges or center guiding;
- Cartoners, stackers and palletizers.

MODEL SELECTION TABLE

Model	Optics interaxis (mm)	h1 Length of controlled area (mm)	A x B (mm)	h (mm)	N°. beams	Order n°
DS2-05-07-015-JV	6.75	147	35 x 40	256	21	957501040
DS2-05-07-030-JV	6.75	294	35 x 40	403	42	957501050
DS2-05-07-045-JV	6.75	441	35 x 40	550	63	957501060
DS2-05-07-060-JV	6.75	588	35 x 40	697	84	957501000
DS2-05-07-075-JV	6.75	735	35 x 40	844	105	957501070
DS2-05-07-090-JV	6.75	882	35 x 40	991	126	957501010
DS2-05-07-105-JV	6.75	1029	35 x 40	1138	147	957501080
DS2-05-07-120-JV	6.75	1176	35 x 40	1285	168	957501020
DS2-05-07-135-JV	6.75	1323	35 x 40	1432	189	957501090
DS2-05-07-150-JV	6.75	1470	35 x 40	1579	210	957501100
DS2-05-07-165-JV	6.75	1617	35 x 40	1726	231	957501030
DS2-05-25-045-JV	25	453	35 x 40	562	18	957501110
DS2-05-25-060-JV	25	604	35 x 40	713	24	957501140
DS2-05-25-075-JV	25	755	35 x 40	864	30	957501120
DS2-05-25-090-JV	25	912	35 x 40	1015	36	957501130
DS2-05-07-060-JE	6.75	588	35 x 40	697	84	957501150
DS2-05-07-075-JE	6.75	735	35 x 40	844	105	957501160
DS2-05-07-090-JE	6.75	882	35 x 40	991	126	957501170
DS2-05-07-120-JE	6.75	1176	35 x 40	1285	168	957501180
DS2-05-07-150-JE	6.75	1470	35 x 40	1579	210	957501190
DS2-05-07-165-JE	6.75	1617	35 x 40	1726	231	957501200

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CS-A1-02-G-03	axial M12-4 pole unshielded 3 m connector	95A251380
CS-A1-02-G-05	axial M12-4 pole unshielded 5 m connector	95A251270
CS-A1-02-G-10	axial M12-4 pole unshielded 10 m connector	95A251390
CS-A1-06-B-03	axial M12-8 pole unshielded 3 m connector	95ACC2230
CS-A1-06-B-05	axial M12-8 pole unshielded 5 m connector	95ACC2240
CS-A1-06-B-10	axial M12-8 pole unshielded 10 m connector	95ACC2250
CV-A1-22-B-03	axial M12 4-pole shielded 3 m connector	95ACC1480
CV-A1-22-B-05	axial M12 4-pole shielded 5 m connector	95ACC1490
CV-A1-22-B-10	axial M12 4-pole shielded 10 m connector	95ACC1500
CV-A1-26-B-03	axial M12 8-pole shielded 3 m connector	95ACC1510
CV-A1-26-B-05	axial M12 8-pole shielded 5 m connector	95ACC1520
CV-A1-26-B-10	axial M12 8-pole shielded 10 m connector	95ACC1530
DATAVS-CV-RJ45C-03	3 m crossed Ethernet cable	95A901340
DATAVS-CV-RJ45D-03	3 m direct Ethernet cable	95A901350
ST-KSTD	mounting brackets - 4 pcs kit	95ACC1670
ST-K4AV	anti-vibration supports - 4 pcs kit	95ACC1700
ST-K6AV	anti-vibration supports - 6 pcs kit	95ACC1710
ST-K4OR	orientable supports - 4 pcs kit	95ACC1680
ST-K6OR	orientable supports - 6 pcs kit	95ACC1690



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DS3 SERIES

The **AREAscan™** light arrays of the **DS3** series are optoelectronic multibeam devices that can be used to detect, measure and control the position of objects, also transparent and small. Models with 150, 300, 450 or 600 mm detection field height are available, as well as presenting 0.2 - 0.6 m or 0.6 - 1.5 m operating distances.

Internal dip-switches for configuration are available on all models, together with the Teach-in setting button with Remote and self-calibration function, LED indicators for the signalling of the device operating and auto-diagnostic status.

The synchronisation via cable of the emitter and receiver units guarantees high optic and electromagnetic interference immunity. The integrated electronics eliminates the need for an external control unit.

The compact dimensions (35 x 40 mm), easy installation and excellent performances make the **DS3** light grids particularly suitable to the many different applications of automatic packaging and industrial automation in general.



HIGHLIGHTS

- Operating distance reaching 1.5 m and up to 600 mm controlled height
- Digital PNP and 0 - 10 V analogue outputs
- Simple configuration obtained using the internal dip-switches
- Teach-in setting with Remote and self-calibration function

APPLICATIONS

- Control of the correct material positioning (opaque and transparent) during functioning (plastic, metal, paper etc)
- Detection of objects with different shapes in the food industry
- Loop control and positioning (also transparent material)
- Detection of objects with different shapes in the food industry

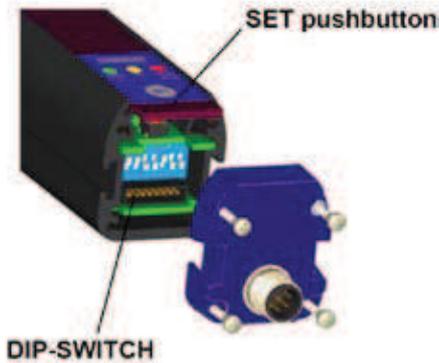


The following operating modes can be selected via internal dip-switches on the receiver unit and the SET and calibration button:

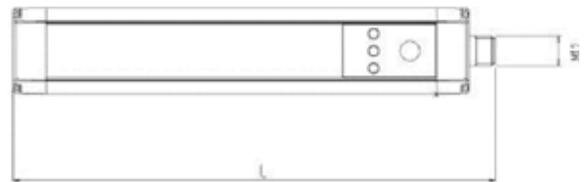
- Scanning with parallel or crossed beams
- Manual calibration or at powering on
- Absolute¹ or relative² measurement
- Absolute³ or relative⁴ detection
- Precise detection or with a tolerance channel
- Light or dark output
- Sensitivity level

Notes:

1. In this mode, the analogue output is proportional to the last obscured optic
2. In this mode, the analogue output is proportional to the total number of obscured optics
3. In this mode, a certain object in a certain position in the sensitive area can be detected through Teach-in. The digital output switches every time the object is in this position
4. In this mode, a certain object can be detected through Teach-in. The digital output switches each time the object is inside the sensitive area in any position



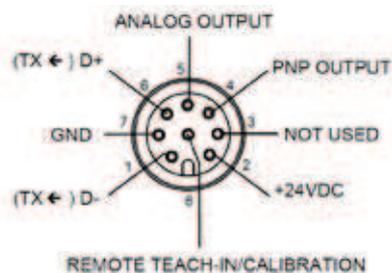
DIMENSIONS



MODEL	a x b (mm)	h (mm)
DS3-SD-015	35 x 40	226
DS3-SD-030	35 x 40	376
DS3-SD-045	35 x 40	526
DS3-SD-060	35 x 40	676
DS3-LD-015	35 x 40	226
DS3-LD-030	35 x 40	376
DS3-LD-045	35 x 40	526
DS3-LD-060	35 x 40	676

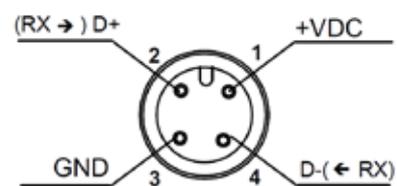
CONNECTIONS

RECEIVER (RX)



- | | |
|------------|--------------------------------|
| 1 = white | = SYNC D- |
| 2 = brown | = +VDC |
| 3 = green | = NOT USED |
| 4 = yellow | = PNP OUTPUT |
| 5 = grey | = Analog OUTPUT |
| 6 = red | = SYNC D+ |
| 7 = blue | = 0 V |
| 8 = red | = REMOTE TEACH-IN /CALIBRATION |

EMITTER (TX)

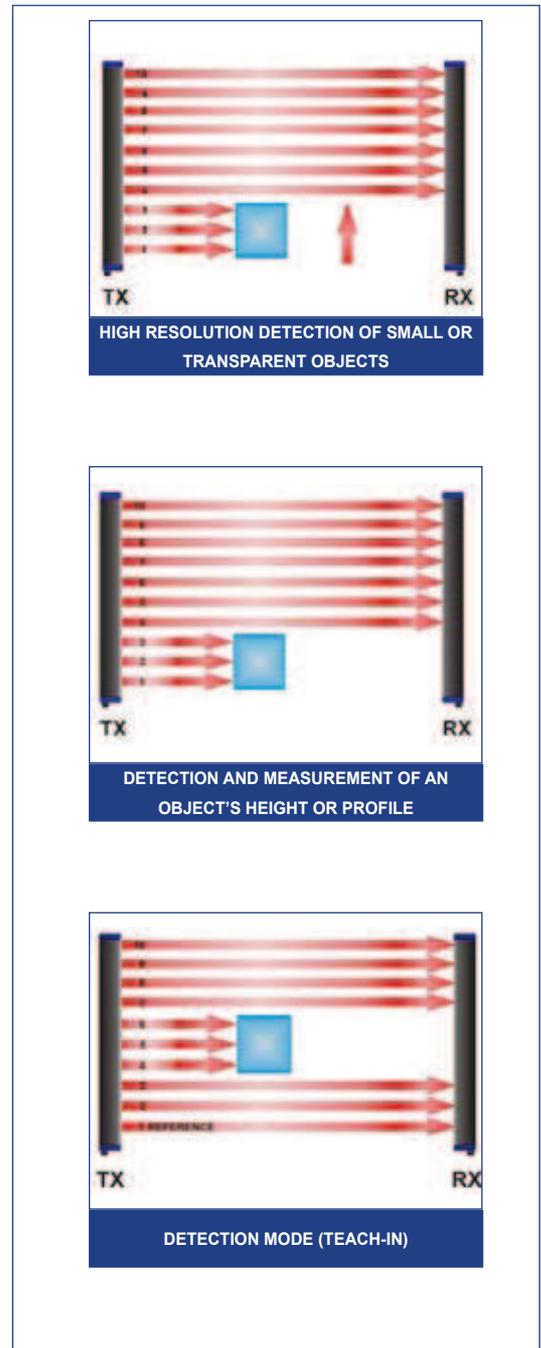


- | | |
|-----------|-----------|
| 1 = brown | = +VDC |
| 2 = white | = SYNC D+ |
| 3 = blue | = 0 V |
| 4 = black | = SYNC D- |

TECHNICAL DATA

Power supply:	24 Vdc ± 15 %
Consumption on emitter unit:	100 mA max.
Consumption on receiver unit:	100 mA max. without load
Outputs:	1 PNP output; max. 10 kW load 1 analog output; 0 - 10 V (D Vmax. 5%)
Load current on PNP output:	100 mA; short circuit protection
Saturation voltage on PNP output:	1 V a T=25°C
Response time:	refer to selection table
Emission type:	infrared 880 nm
Resolution with crossed beams minimum object detectable:	DS3-SD: 0.5 mm DS3-LD: 0.8 mm
Resolution with parallel beams minimum object detectable:	6 mm
Relative measurement precision (parallel beams):	± 6 mm
Absolute measurement precision (parallel beams):	± 3 mm
Dimensional difference between equally detected objects in the absolute teach-in mode:	± 6 mm
Dimensional difference between equally detected objects in the absolute teach-in mode:	Δ = 12 mm
Operating distance:	0.2 - 0.6 m (SD vers. parallel beams) 0.3 - 0.6 m (SD vers. crossed beams) 0.6 - 1.5 m (LD vers.)
Receiver indicators:	green POWER ON LED orange OUT LED red FAILURE/ERROR LED
Emitter indicators:	green POWER ON LED
Operating temperature:	- 10 ... + 55 °C
Storage temperature:	- 25 ... + 70 °C
Humidity:	15...95 % (uncondensed)
Electrical protection:	class 1
Mechanical protection:	IP 65 (EN 60529)
Vibration resistance:	0.7 mm width, 10 ... 55 Hz amplitude, 10 sweep for X, Y, Z axis; 1 octave/min., (EN 60068-2-6)
Shock resistance:	16 ms (about 10 G) 1.000 shock for axis (EN 60068-2-29)
Housing material:	painted aluminium (shiny black RAL9005)
Optics material:	PMMA
Connections:	M12-4 pole connector for TX M12-8 pole connector for RX
Weight:	DS3-015: 310 g. per unit DS3-030: 530 g. per unit DS3-045: 700 g. per unit DS3-060: 980 g. per unit

FUNCTIONING MODE



Note: different operating modes can be selected: absolute or relative measurement respect to a reference by means of internal dip-switches and absolute or relative detection respect to a reference by means of internal dip-switches and SET button



SELECTION TABLE

	DS3-SD-015	DS3-SD-030	DS3-SD-045	DS3-SD-060	DS3-LD-015	DS3-LD-030	DS3-LD-045	DS3-LD-060
total length:	226 mm	376 mm	526 mm	676 mm	226 mm	376 mm	526 mm	676 mm
controlled area length:	150 mm	300 mm	450 mm	600 mm	150 mm	300 mm	450 mm	600 mm
n° beams	24	48	72	96	24	48	72	96
response time of crossed beams:	23 ms.	46 ms.	69 ms.	92 ms.	23 ms.	46 ms.	69 ms.	92 ms.
response time of parallel beams:	3 ms.	6 ms.	9 ms.	12 ms.	3 ms.	6 ms.	9 ms.	12 ms.
operating distance:	0.2 ... 0.6 m	0.6 ... 1.5 m						

MODEL SELECTION AND ORDER INFORMATION

MODEL	DISTANCE	CONTROLLED HEIGHT	ORDER N°
DS3-SD-015	short	150 mm	957600100
DS3-SD-030	short	300 mm	957600110
DS3-SD-045	short	450 mm	957600150
DS3-SD-060	short	600 mm	957600170
DS3-LD-015	long	150 mm	957600120
DS3-LD-030	long	300 mm	957600140
DS3-LD-045	long	450 mm	957600160
DS3-LD-060	long	600 mm	957600180

Fixing brackets and screws are supplied with the product

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-22-B-03	axial M12 4-pole shielded 3 m connector	95ACC1480
CV-A1-22-B-05	axial M12 4-pole shielded 5 m connector	95ACC1490
CV-A1-22-B-10	axial M12 4-pole shielded 10 m connector	95ACC1500
CV-A1-26-B-03	axial M12 8-pole shielded 3 m connector	95ACC1510
CV-A1-26-B-05	axial M12 8-pole shielded 5 m connector	95ACC1520
CV-A1-26-B-10	axial M12 8-pole shielded 10 m connector	95ACC1530

Note: the cabled connectors have to be ordered separately



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S65-Z SERIES

The **S65-Z** series offers a retroreflex line sensor for accurate measurements of the centre or edge position and width of objects. The detection is made on a reflecting tape, supplied with the sensor, positioned behind the object, with a 150 mm maximum measurement field width and a 200 mm operating distance. The 4-20 mA analogue output is proportional to the measurement, while the digital output, PNP or NPN according to the model, is activated when the measured value is included inside the interval fixed by the operator via teach-in. An alarm signal is activated when the luminous intensity received is weak. The setting is accomplished through three push-buttons present on the control panel, together with the output status LED, two LEDs signalling the operating mode, an alarm LED and a 4-digit display for the visualisation of the measurement and sensor configuration messages. Models with the RS485 serial interface offer the remote setting of all the programmable functions as well as the transmission of the measurements to an industrial PC are available.



MEASUREMENT

HIGHLIGHTS

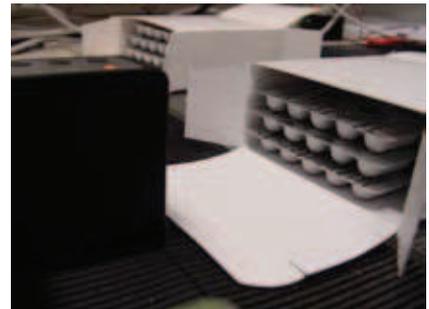
- Line sensors with RS485 serial interface
- PNP or NPN digital output and 4 - 20 mA analogue output
- Teach-in of the measurement limit values for digital output activation
- 3 setting push-buttons and a 4-digit display

APPLICATIONS

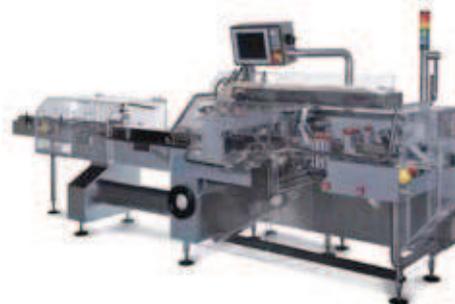
Automatic machines



Pharmaceuticals



Packaging lines

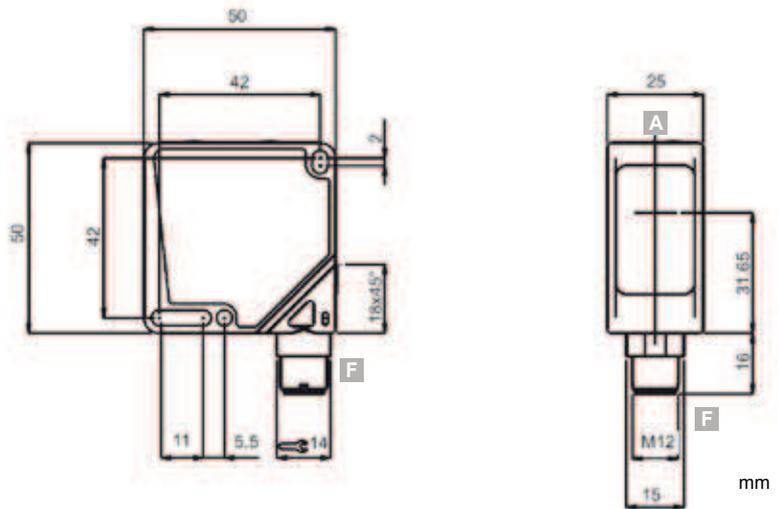


The object to measure is illuminated by the infrared emission cone. The light reflected by the reflector is detected by a photodiode array and analysed according to 3 operating modes:

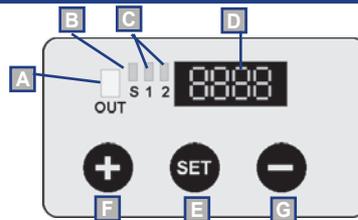
- Edge position: detects the position of the right or left edge of an object or of the first edge beginning from the right or left side in presence of more objects;
- Centre position: detects the centre independently from the object's dimensions;
- Width measurement: in presence of one object it provides the distance between two edges; in presence of different objects it provides the sum of the respective widths;

The analogue output generates a signal proportional to the distance from the reference edge or to the object width; the digital output switches when the detected position or measurement is inside the interval acquired via teach-in.

DIMENSIONS



INDICATORS AND SETTING



- A Output status LED
- B Alarm LED
- C Operating mode LEDs
- D 4-digit display
- E SET push-button
- F +/- selection push-buttons
- G M12 connector output orientable on two positions

ACCESSORIES

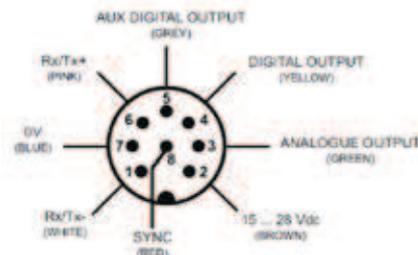
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** and **Fixing Brackets** and **Supports** of the **General Catalogue**.

CONNECTIONS



S65-PA-5



Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

TECHNICAL NOTES

- ¹Limit values
- ²Average life of 100.000 h with T_A = +25 °C
- ³Connector can be blocked on two positions
- ⁴A - reverse polarity protection
- B - overload and short-circuit protection

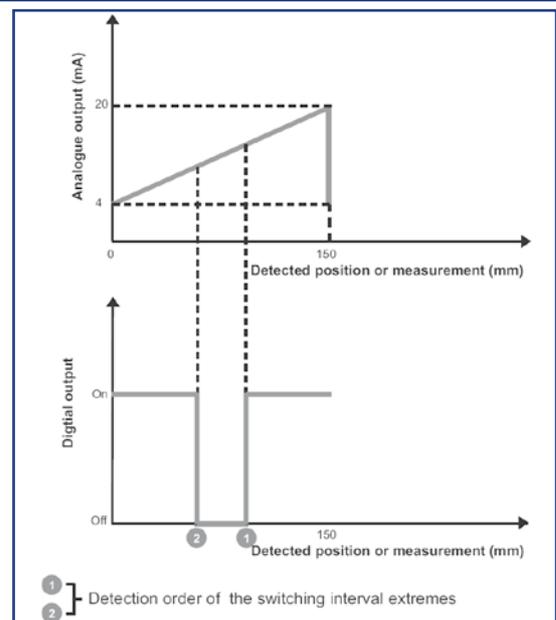
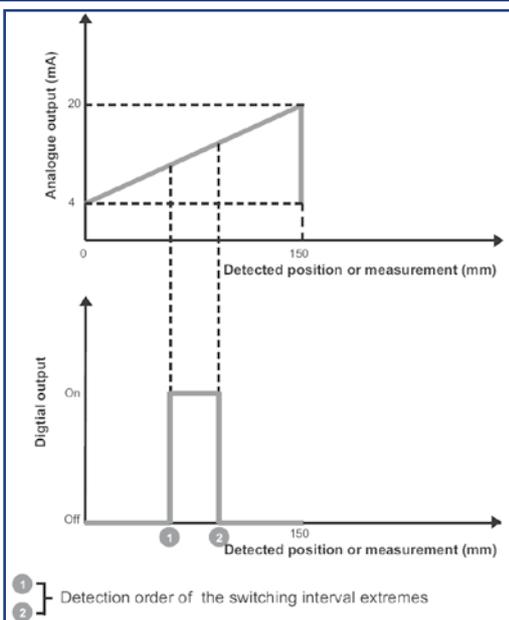
		S65-PA-5-Z03-NNI	S65-PA-5-Z03-NNIZ	S65-PA-5-Z03-PPI	S65-PA-5-Z03-PPIZ
Measurement distance from object:	200 mm	•	•	•	•
Measured width:	150 mm	•	•	•	•
Power supply:	10 ... 30 Vdc ¹	•	•	•	•
Ripple:	2 Vpp	•	•	•	•
Consumption:	< 70 mA	•	•	•	•
Light emission ² :	infrared LED 875 nm	•	•	•	•
Minimum dimension measured:	0.9 mm	•	•	•	•
Resolution:	0.15 mm	•	•	•	•
Linearity error:	≤ 1%	•	•	•	•
Setting:	3 push-buttons	•	•	•	•
Indicators:	4-digit display	•	•	•	•
	2 green operating mode LEDs	•	•	•	•
	green ALARM LED	•	•	•	•
	yellow OUTPUT LED	•	•	•	•
Output type:	PNP, NA				
	NPN, NA	•	•		
	analogue 4-20 mA	•	•	•	•
Output current:	≤ 100 mA at 25°C	•	•	•	•
Saturation voltage:	≤ 1.2 V	•	•	•	•
Switching frequency:	> 130 Hz	•	•	•	•
Auxiliary functions:	RS485 serial interface		•		•
	keylock	•	•	•	•
	delay	•	•	•	•
Connection:	M12 8-pole connector ³	•	•	•	•
Electrical protection:	class 2	•	•	•	•
Mechanical protection	IP67	•	•	•	•
Protection devices:	A, B ⁴	•	•	•	•
Housing material:	ABS	•	•	•	•
Lens material:	glass	•	•	•	•
Weight:	100 g max.	•	•	•	•
Operating temperature	-10 ... +55°C	•	•	•	•
Storage temperature:	-20 ... +70°C	•	•	•	•
Standard reference:	EN 60947-5-2	•	•	•	•

SELECTION TABLE

models with RS485 serial interface			
S65-PA-5-Z03-NNIZ	956251070	NPN	
S65-PA-5-Z03-PPIZ	956251060	PNP	RS485
models without RS485 serial interface			
S65-PA-5-Z03-NNI	956251050	NPN	RS485
S65-PA-5-Z03-PPI	956251040	PNP	



DETECTION DIAGRAMS

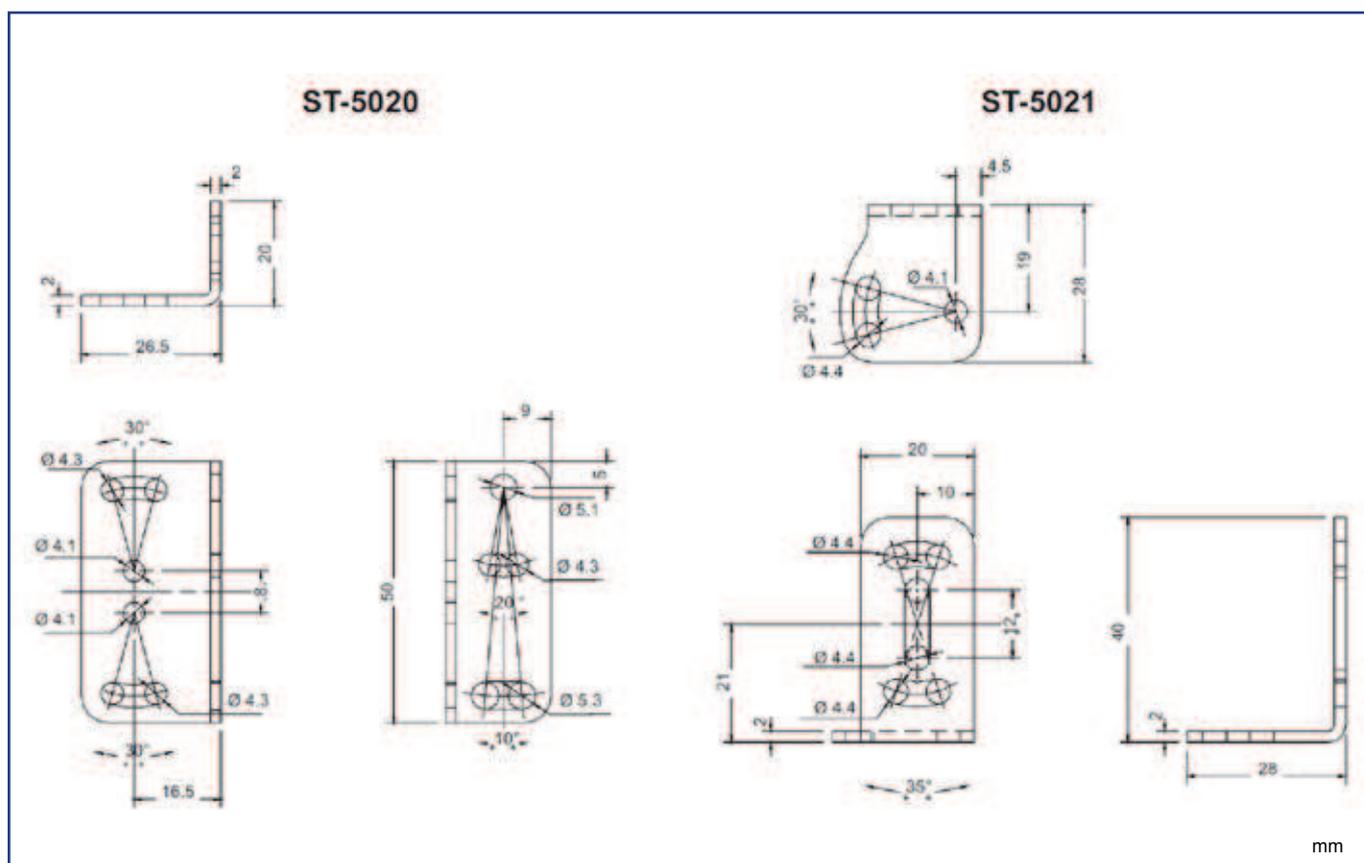


Note: the digital output is activated inside the switching range if the inferior limit is acquired first and then the superior limit. The inverse logic functioning is obtained inverting the acquisition order.

MODEL SELECTION AND ORDER INFORMATION

MODEL	RS485	CONNECTION	OUTPUT	ORDER N°
S65-PA-5-Z03-NNI		M12 connector	NPN	956251050
S65-PA-5-Z03-NNIZ	•	M12 connector	NPN	956251070
S65-PA-5-Z03-PPI		M12 connector	PNP	956251040
S65-PA-5-Z03-PPIZ	•	M12 connector	PNP	956251060

ACCESSORY DIMENSIONS



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5020	fixing bracket 50 x 27 x 20 mm	95ACC5330
ST-5021	fixing bracket 20 x 40 x 28 mm	95ACC5340
TAPE S65-Z	self-adhesive reflective tape 25 x 900 mm	95ACC2290
S65-Z REFLECTOR	20x175 mm reflector with 47x190 mm support	95ACC2390
Refer also to Accessories for Sensors		
CS-A1-06-B-03	M12 8-pole unshielded axial 3 m connector	95ACC2230
CS-A1-06-B-05	M12 8-pole unshielded axial 5 m connector	95ACC2240
CS-A1-06-B-10	M12 8-pole unshielded axial 10 m connector	95ACC2250



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S80 SERIES

The **S80** series, in the compact sturdy metal housing, offers innovative class 2 laser distance sensors with time of flight measurement. This technology, based on the measurement of the time between the emission and receipt of the laser light pulses, effects accurate distance detection.

The **S80-Y0** and **S80-YL0** sensors function as proximity on respectively a 0.3 - 4 m distance, or from 0.3 to 7 m with scalable range, in object positioning or detection applications.

The **S80-Y1** and **S80-Y2** sensors, with operating distances reaching 20 or 100 m, function as retroflex measuring the distance from a reflector mounted on the object to detect. All models have two switching outputs, available in both the NPN and PNP models, that can be set at different distances, while the measurement value is supplied on the 4-20 mA analogue output and RS485 serial interface; the latter can be also used to set all the parameters.

Moreover the **S80-YL0** version offers the possibility to scale the 4-20 mA analogue output. This feature allows to set the minimum and maximum values of the operating distance and link the minimum and maximum current.

A 4-digit display visualises the distance, as well as all the parameters that can be set with the three push-buttons.



HIGHLIGHTS

- High precision and speed
- Proximity measurement range scalable from 0 to 7 m
- Retroreflex measurement range reaching 20 or 100 m on reflector
- 4 digit display and RS485 serial interface

APPLICATIONS

Automatic warehouse



Automotive



Wood



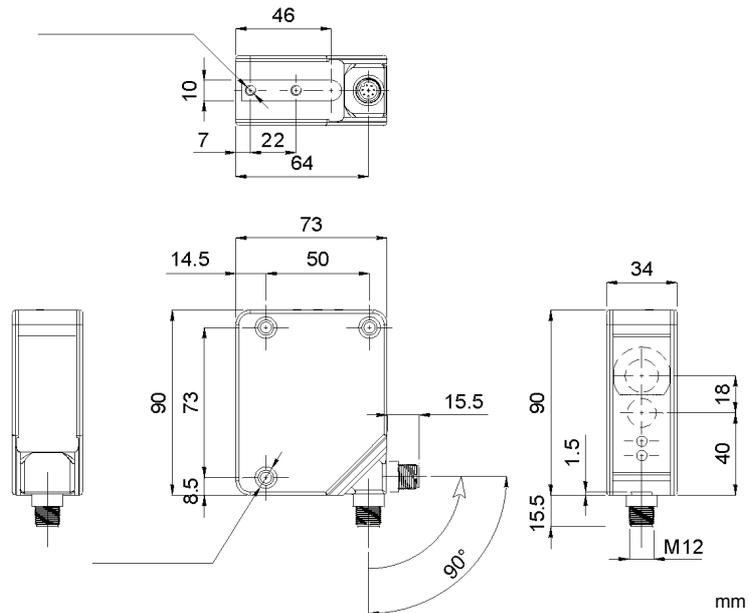
The laser distance sensors with time of flight measurement are suitable for long distance measurements offering constant performances on the entire range.

The linearity indicates the maximum deviation of the analogue output respect to the ideal value and is expressed in percentage of full range.

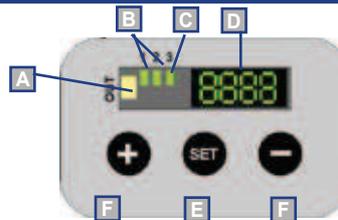
Whereas the temperature drift indicates the maximum deviation in relation to the sensor temperature variation and is expressed in mm/°C.

Lastly, the repeatability represents the variation interval of the measurement made different times on the target at the same distance. The product is not suitable to be used for OUTDOOR application.

DIMENSIONS



INDICATORS AND SETTINGS



- A Output 'OR' function LED
- B Output status LED
- C Response time LED
- D 4-digit display
- E SET push-button
- F +/- selection push-buttons
- G Alarm LED
- H M12 connector output orientable on two positions

ACCESSORIES

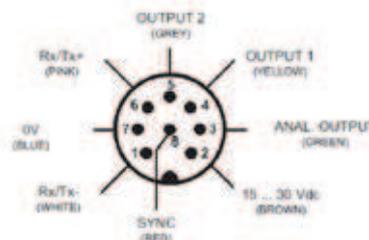
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** and **Fixing Brackets** and **Supports** of the **General Catalogue**.

CONNECTIONS



S80L-Y



NOTE: the wire colours refer to the cables manufactured according to the European standard

Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

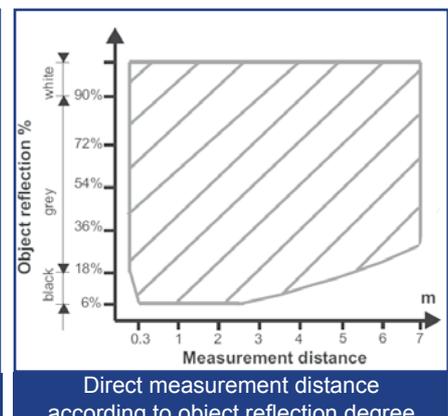
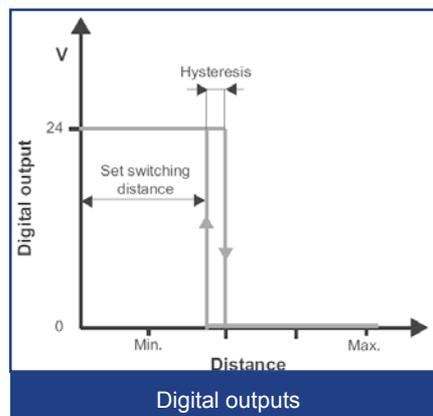
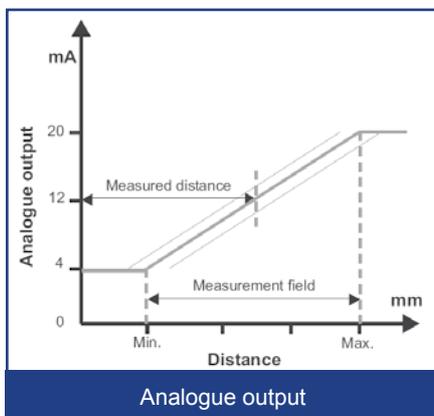
Direct measurement range¹:	0.3 - 4 m (Y0), 0.3 - 7 m scalable (YL0)
Retroreflex measurement range²:	0.3 - 20.3 m (Y1), 0.3 - 100.3 m (Y2)
Linearity:	0.3% (Y0/YL0), 0.75% (Y1), 0.3% (Y2)
Temperature drift:	±0.6 mm/°C (Y0/YL0), <2mm/°C (Y1/Y2)
Warm Up:	20 min for all models
Repeatability³:	<5 mm (Y0 FAST)
	7 mm @ 7 m (YL0), 10 mm @ 20 m (Y1), 10 mm @ 100 m (Y2)
Switching output hysteresis³:	5 mm (Y0/YL0), 25 mm (Y1), 40 mm (Y2)
Power supply:	15 ... 30 Vdc (limit values)
Ripple:	2 Vpp max.
Consumption:	110 mA max. @ 24 Vdc
Light emission:	red Laser 658 nm, class 2
Setting:	SET push-button
	+/- push-button
Indicators (on command panel):	4-digit display
	yellow OUTPUT LED
	green OUTPUT STATUS LED
	green FAST mode LED
Indicators (on front):	yellow OUTPUT LED
	red ALARM LED
Output type:	2 PNP NO or 2 NPN NO
	4 ... 20 mA analogue
Output current:	≤ 100 mA
Saturation voltage:	≤ 2 V
Response time:	5 ms (NORMAL) / 1 ms (FAST)
	6 ms (YL0)
Switching frequency:	100 Hz (NORMAL) / 500 Hz (FAST)
	85 Hz (YL0)
Timing function:	selectable between 5, 10, 20, 30 e 40 ms
Auxiliary functions:	synchronism (SYNC)
	keylock ⁴
	RS485 serial interface
Connection:	M12 8-pole connector ⁵
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B ⁶
Housing material:	aluminium
Lens material:	glass
Weight:	330 g max.
Operating temperature:	-10 ... +50°C
Storage temperature:	-25 ... +70°C
Reference standard:	EN 60947-5-2, EN 60825-1

TECHNICAL NOTES

- ¹On target 90% white to 18% grey
- ²On reflector R80
- ³In Normal mode with 5 ms response time
- ⁴Active with SYNC wire connected to + Vdc for at least 1 s at powering
- ⁵Connector can be blocked in two positions
- ⁶A - reverse polarity protection
B - overload and short-circuit protection



DETECTION DIAGRAMS

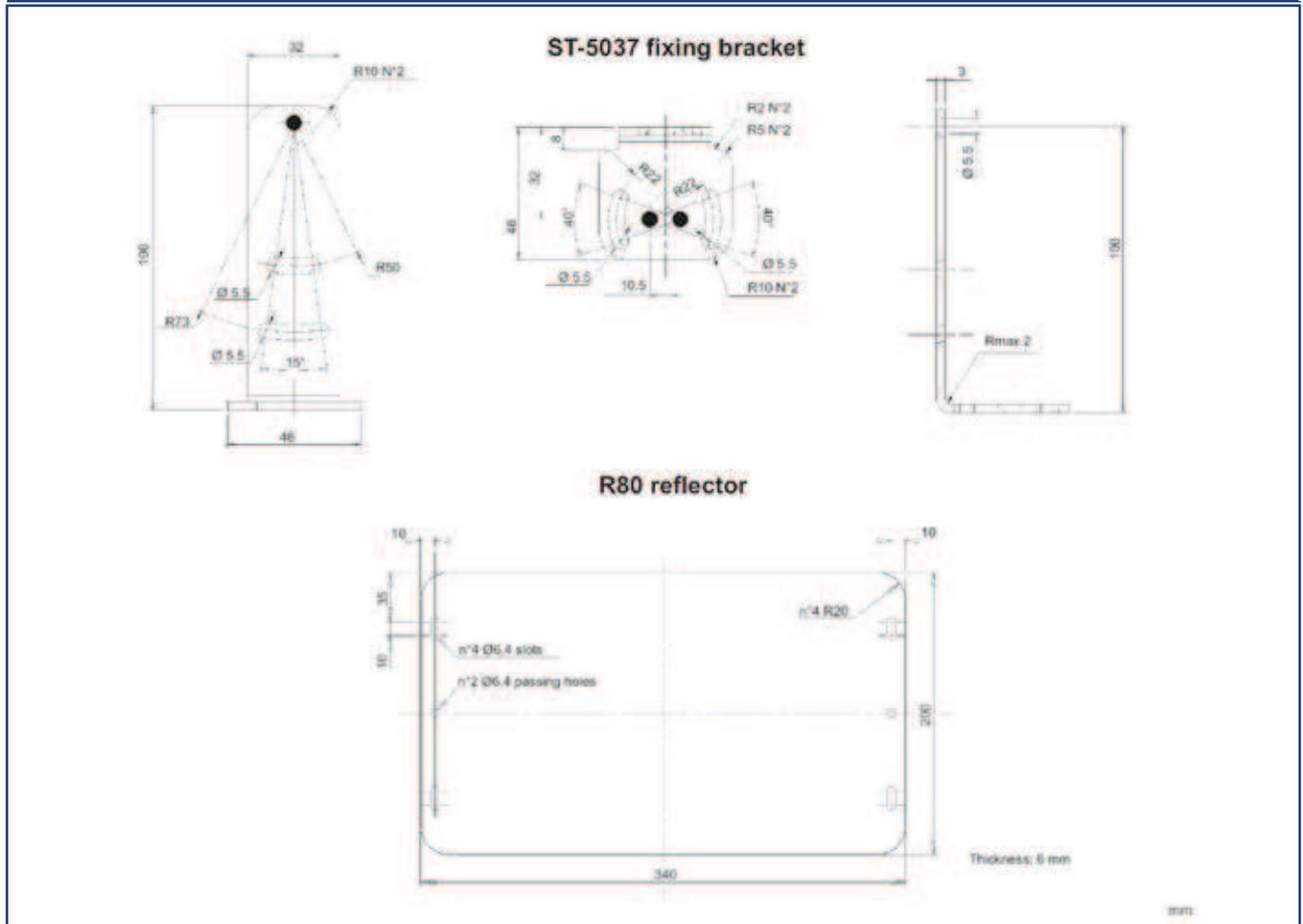


MODEL SELECTION AND ORDER INFORMATION

MODEL	MAX. DISTANCE	REFLECTOR	CONNECTION	OUTPUT	N° ORDER
S80-MH-5-Y09-PPIZ	4 m	no	M12 connector	PNP	951501080
S80-MH-5-Y09-NNIZ	4 m	no	M12 connector	NPN	951501010
S80-MH-5-YL09-PPIZ	7 m	no	M12 connector	PNP	951501060
S80-MH-5-YL09-NNIZ	7 m	no	M12 connector	NPN	951501070
S80-MH-5-Y19-PPIZ	20 m	yes *	M12 connector	PNP	951501020
S80-MH-5-Y19-NNIZ	20 m	yes *	M12 connector	NPN	951501030
S80-MH-5-Y29-PPIZ	100 m	yes *	M12 connector	PNP	951501040
S80-MH-5-Y29-NNIZ	100 m	yes *	M12 connector	NPN	951501050

* supplied with the sensor

ACCESSORY DIMENSIONS



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
ST-5037	'L' shaped fixing bracket	95ACC2260
R80 *	S80 distance sensor reflector	95A151210
Refer also to Accessories for Sensors		
CS-A1-06-B-03	M12 8-pole conn. with 3 m unshielded cable	95ACC2230
CS-A1-06-B-05	M12 8-pole conn. with 5 m unshielded cable	95ACC2240
CS-A1-06-B-10	M12 8-pole conn. with 10 m unshielded cable	95ACC2250

* supplied with the sensor



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S81 SERIES

S81 distance sensor line offers the best solution for all the applications where cost reduction is requested, without compromising the detection or measurement performances. The class 2 Laser emission and the exclusive time of flight measurement of light technology assure extreme precision in the distance measurement, with range up to 4 meters. The high resolution is not a limit for the sensing speed, reaching 5 ms response time and 80 Hz switching frequency. Thanks to only two push-buttons for different distance threshold setting, the automatic sensor setting is very easy and accurate for the two independent NPN or PNP outputs. The sensor is available in two different versions: **S81-...Y** for distance measurement with an additional 0-10 V analogue output, or **S81-...M** as long distance background suppression proximity with an additional alarm output for received signal problems or dirty lens condition. Moreover the **S81-...Y** version offers the possibility to scale the 0-10V analogue output. This feature allows to set the minimum and maximum values of the operating distance and link the minimum and maximum voltage.



MEASUREMENT

HIGHLIGHTS

- Proximity measurement up to 4m
- Easy setting via push-buttons
- 2 PNP or NPN digital outputs
- 0-10V analogue output or alarm output

APPLICATIONS

Automatic warehouse



Automotive



Wood

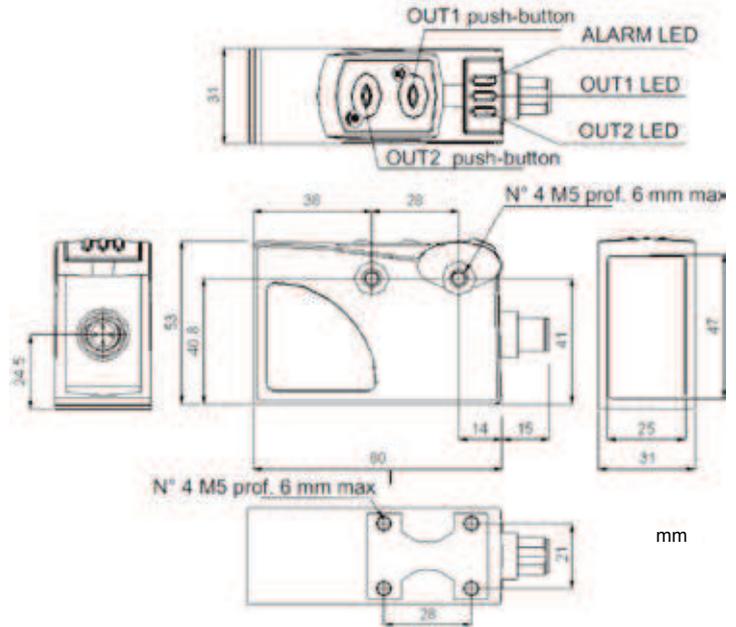


Easy setting:
the switching thresholds are defined separately for each channel, by means of the following procedure:

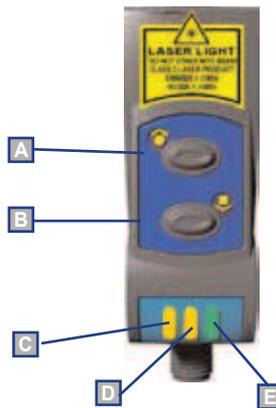
- Set the target object in front of the sensor at the expected distance
- In order to set the switching threshold for the output 1, press the button until the LED1 starts blinking
- In order to set the switching threshold for the output 2, press the button until the LED2 starts blinking



DIMENSIONS



INDICATORS AND SETTINGS



- A Output2 push-button
- B Output1 push-button
- C Output1 LED
- D Output2 LED
- E Power/Alarm LED

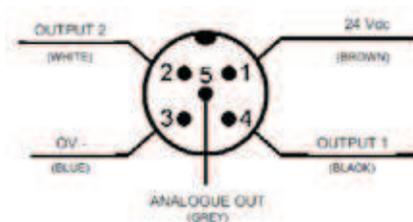
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

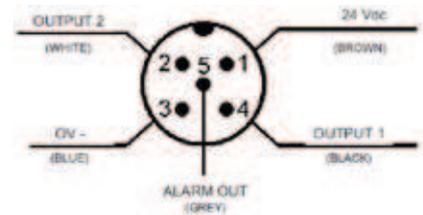
Refer also to **Connectors** and **Fixing Brackets** and Supports of the **General Catalogue**.

CONNECTIONS

S81-xx-x-Yxx-xxx models



S81-xx-x-Mxx-xxx models



NOTE: the wire colours refer to the cables manufactured according to the European standard

TECHNICAL DATA

Measurement range:	300 ... 4000 mm ¹
Linearity:	<1% f.s. (24 Vdc, 25 °C, with white 90% target)
Repeatability:	+/- 4 mm
Temperature drift:	< 1 mm/°C
Hysteresis:	20 mm
Power supply:	24 Vdc +/- 20%, limit values
Ripple:	2 Vpp max.
Consumption:	120 mA max (100 mA at 24V)
Light emission:	red Laser 665 nm, class 2
Spot dimension:	Ø3.5 mm at 0.3 m Ø7 mm at 4 m
Setting:	OUT2  , OUT1 
Indicators:	yellow OUTPUT 1 LED yellow OUTPUT 2 LED green POWER / READY LED
Output type:	2 PNP or NPN outputs 1 PNP or NPN alarm output (only S81...M) 1 analogue 0-10 V output (only S81...Y)
Output current:	100 mA max.
Response time:	5 ms
Switching frequency:	80 Hz
Connections:	5-pole M12 connector
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B ²
Housing material:	ABS
Lens material:	PMMA
Weight:	92 g max.
Operating temperature:	-10 ... 50 °C
Storage temperature:	-20 ... 70 °C
Reference standard:	EN 60947-5-2, EN 60825-11

TECHNICAL NOTES

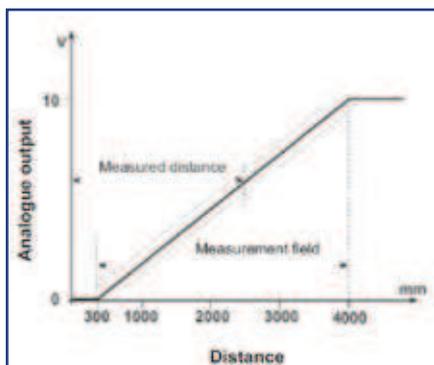
- ¹On target 90% white to 18% grey
- ²A - reverse polarity protection
- B - overload and short-circuit protection

SELECTION TABLE

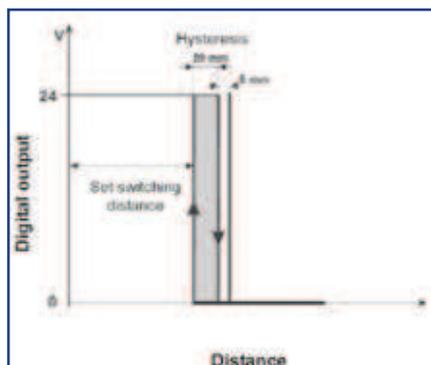
Model	Analogue output 0-10V	Scalable 0-10V Analogue output	Alarm output Switching outputs	2 NPN	2 PNP Switching outputs
S81-PL-5-M03-NNC			•	•	
S81-PL-5-M03-PPC			•		•
S81-PL-5-Y03-NNV	•			•	
S81-PL-5-Y03-PPV	•				•
S81-PL-5-Y03-PPVK		•	•		



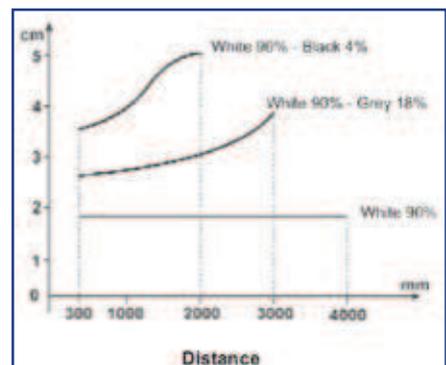
DETECTION DIAGRAMS



Analogue output



Digital outputs



White/Black difference

MODEL SELECTION AND ORDER INFORMATION

MODEL	MAX. DISTANCE	ANALOGUE OUT	alarm output	SWITCHING OUTPUT	N° ORDER
S81-PL-5-M03-NNC	4 m	no	yes	2 NPN	951551100
S81-PL-5-M03-PPC	4 m	no	yes	2 PNP	951551110
S81-PL-5-Y03-NNV	4 m	yes	no	2 NPN	951551120
S81-PL-5-Y03-PPV	4 m	yes	no	2 PNP	951551030
S81-PL-5-Y03-PPVK	4 m	yes	no	2 PNP	951551040

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	N° ORDER
CS-A1-06-B-03	M12 8-pole conn. with 3 m unshielded cable	95ACC2230
CS-A1-06-B-05	M12 8-pole conn. with 5 m unshielded cable	95ACC2240
CS-A1-06-B-10	M12 8-pole conn. with 10 m unshielded cable	95ACC2250



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US18 SERIES

The range of measurement devices is enriched by M18x1 ABS tubular ultrasonic sensors of the **US18** series. Models with axial or radial acoustic emission and with discrete bipolar output (1 NPN and 1 PNP) or with 4-20 mA or 0-10 V analogue output are available. The extremely reduced blind zone and the unequalled 5 ms response speed are only two of the many features that are worth highlighting. The sensors are easily configured through the Teach-in function, while the operating status is visibly signalled by 2 bi-coloured LEDs.

The temperature compensation function corrects the sound speed changes due to temperature variations, so the sensor precision remains unchanged in all situations and a 0.5 mm resolution is guaranteed. The electrical connection is accomplished through standard M12 5-pole connectors. The **US18** ultrasonic sensors detect all objects independent from the non sound-absorbent material, reflectivity, transparency and colour, thus perfectly suiting applications.

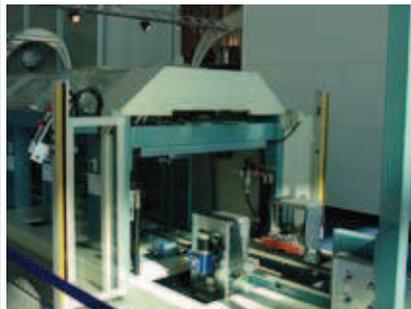


HIGHLIGHTS

- High precision and switching frequency
- Colour independence and transparent object detection
- Easy Teach-in setting and 2 bi-coloured signalling LEDs
- Models with digital NPN - PNP and 0 - 10 V or 4- 20 mA analogue outputs
- Temperature compensation function

APPLICATIONS

Ceramics



Transportation lines



Beverage & Bottling



Packaging lines



MEASUREMENT

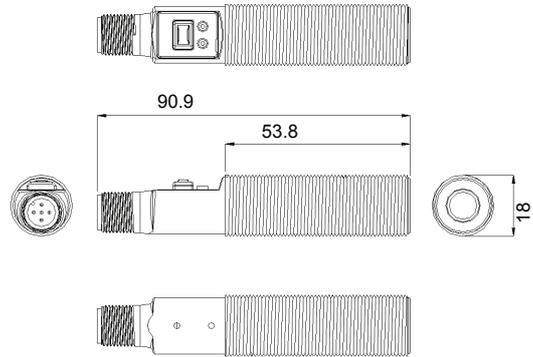
Models with discrete output are excellent foreground and/or background suppressors. The Teach-in procedure allows to fix a switching window with 10 mm width and to detect minimum and maximum values.

The models with analogue output are conceived as distance sensors: the analogue output can be scaled on windows of any width inside the operating range, or positioned at the centre of a detection window with a fixed width of 100 mm.

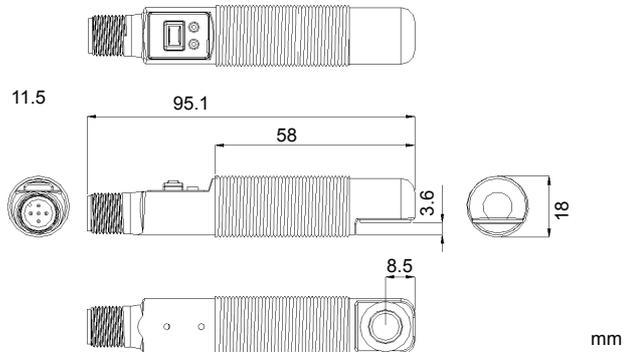


DIMENSIONS

AXIAL VERSION



RADIAL VERSION



mm

INDICATORS AND SETTING



- A** OUT LED
- B** Power / signal intensity LED
- C** Teach-in push-button

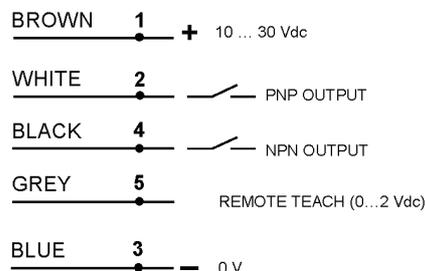
ACCESSORIES

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

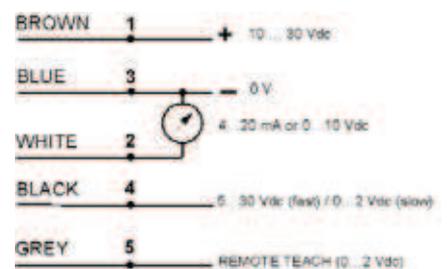
Refer also to **Connectors** and **Fixing Brackets** and **Supports** of the **General Catalogue**.

CONNECTIONS

DIGITAL VERSION



ANALOGUE VERSION



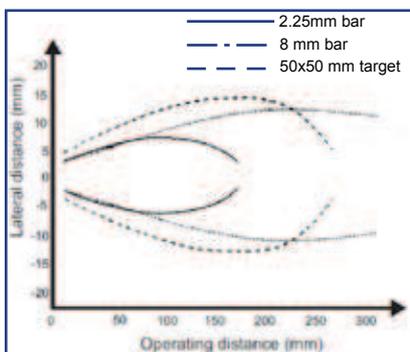
TECHNICAL DATA

	Models with discrete output	Models with analogue output
Operating distance (typical values):	30 ... 300 mm	
Power supply:	10 ... 30 Vdc (limit values), polarity inversion protection	
Ripple:	≤2 Vpp	
Consumption:	65 mA max., 40 mA typical at 25 Vdc	
Output type:	NPN and PNP	0...10 Vdc or 4...20 mA
Output current:	100 mA max., short-circuit protection	
Saturation voltage:	PNP < 1.2 V at 10 mA, < 1.6 V at 100 mA	
	NPN < 200 mV at 10 mA, < 600 mV at 100 mA	
Load resistance:		voltage output: 2.5 kΩ min. current output: 1 kΩ max.
Response time:	5 ms	2.5 ms (black wire at 0-2 Vdc or unconnected) 30 ms (black wire at 5-30 Vdc)
Switching frequency:	100 Hz	200 Hz (black wire at 0-2 Vdc or unconnected) 16 Hz (black wire at 5-30 Vdc)
Delay at powering:	300 ms	
Indicators:	yellow-green bi-coloured OUTPUT LED red POWER LED	
Setting:	Teach-in or remote input	
Ultrasonic emission frequency:	300 KHz, repeated each 2.5 ms	
Temperature drift:	minor than 1.7 % at detection distance	
Repeatability:	0.5 mm	
Minimum detection window:	5 mm	
Hysteresis:	0.7 mm	
Resolution *:	±1 mm with 2.5 ms response time ±0.5 mm with 30 ms response time	
Minimum detection window dimension:	5 mm	
Operating temperature:	-25 ... 55 °C	
Storage temperature:	-25 ... 70 °C	
Electrical protection:	Class 2	
Housing material:	Thermoplastic polyester	
Mechanical protection:	IP67	
Connections:	M12 5-pole connector	
Weight:	25 g	
Standard reference:	EN 60068-2-6, EN 60068-2-27	

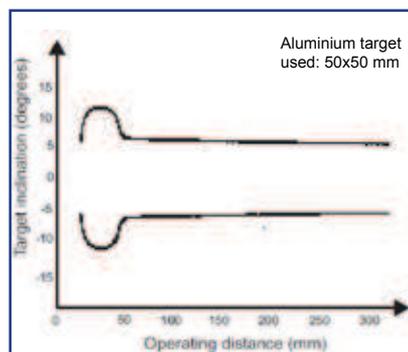
* with 50x50 mm aluminium target at 22°C and constant operating conditions



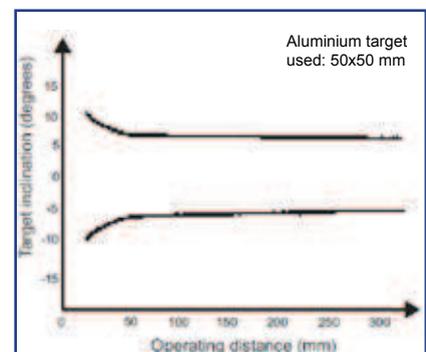
DETECTION DIAGRAMS



Beam - distance variation (typical values)



Maximum target inclination (models with discrete output)

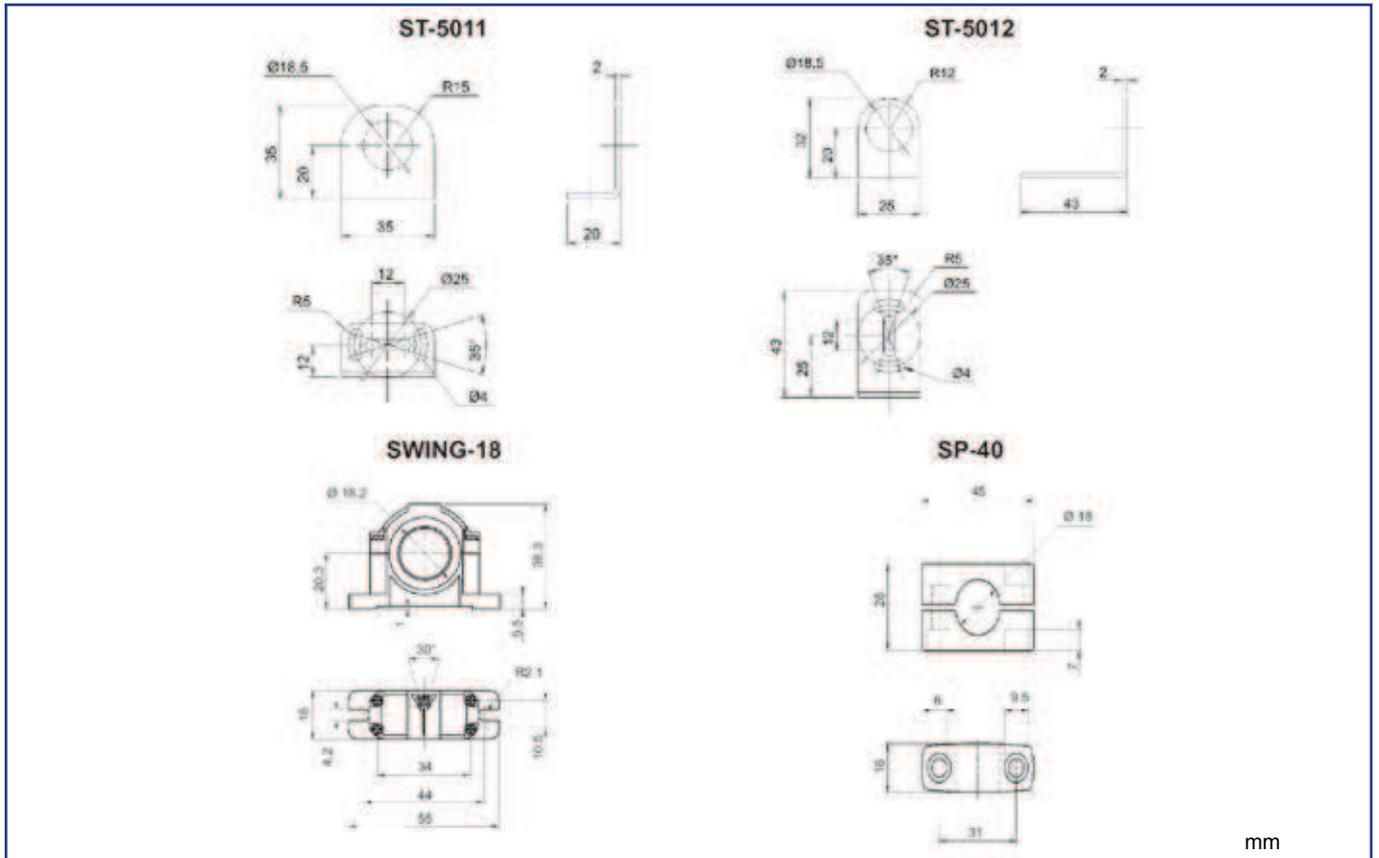


Maximum target inclination (models with analogue output)

MODEL SELECTION AND ORDER INFORMATION

MODEL	HOUSING TYPE	OUTPUT	ORDER N°
US18-PA-5-N03-OH	axial	NPN and PNP	95B040000
US18-PR-5-N03-OH	radial	NPN and PNP	95B040010
US18-PA-5-N03-IH	axial	4-20 mA analogue	95B040020
US18-PR-5-N03-IH	radial	4-20 mA analogue	95B040030
US18-PA-5-N03-VH	axial	0-10 V analogue	95B040040
US18-PR-5-N03-VH	radial	0-10 V analogue	95B040050

ACCESSORY DIMENSIONS



ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
ST-5011	M18 fixing bracket	95ACC5240
ST-5012	M18 fixing bracket	95ACC5250
SWING-18	adjustable support for plastic tubular M18 sensors	895000006
SP-40	fixed support for tubular M18 sensors	95ACC1370
CS-A1-03-G-03	axial M12 5 pole unshielded 3 m connector	95ACC2110
CS-A1-03-G-05	axial M12 5 pole unshielded 5 m connector	95ACC2120



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US30 SERIES

The range of measurement and inspection devices is enriched thanks to the introduction of tubular standard M30x1 sensors of the **US30** series. Models with operating distances reaching 200 cm are available either with bipolar digital output (NPN/PNP NO/NC) or with 4-20 mA or 0-10 V analogue output. The sensors can be easily configured using the Teach-in function, while the operating status is visibly signalled by 3 LEDs. The temperature compensation function corrects the sound speed changes due to temperature variations, so the sensor precision remains unchanged in all situations and guarantees a resolution reaching 0.5 mm. The electrical connection is accomplished through standard M12 4-pole connectors. The **US30** ultrasonic sensors detect all objects independent from the non sound-absorbent material, reflectivity, transparency and colour, thus perfectly suiting applications in the automotive, packaging, machine tool fields and material transformation processes.

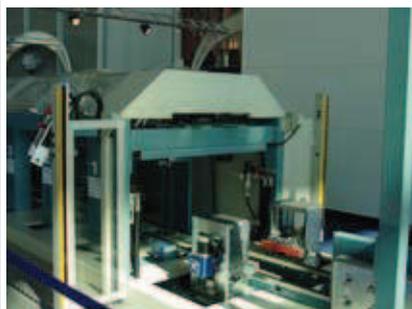


HIGHLIGHTS

- High precision and switching frequency
- Colour independence and transparent object detection
- Easy Teach-in setting and 3 signalling LEDs
- Models with digital NPN - PNP and 0 - 10 V or 4- 20 mA analogue outputs

APPLICATIONS

Ceramics



Beverage & Bottling



Transportation lines

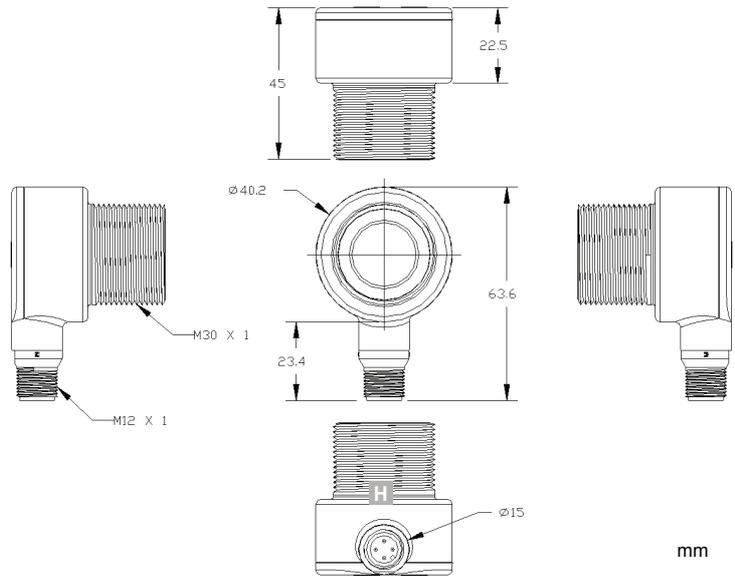


Packaging lines

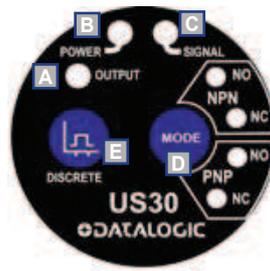


DIMENSIONS

Models with discrete output are excellent foreground and/or background suppressors. The Teach-in procedure allows to fix a switching window with 10 mm width or to detect minimum and maximum values. The models with analogue output are conceived as distance sensors: the analogue output can be scaled on windows of any width inside the operating range, or positioned at the centre of a detection window with a fixed width of 100 mm.



INDICATORS AND PUSH-BUTTONS



- A Output status LED
- B POWER ON LED
- C SIGNAL LED
- D MODE push-button
- E TEACH push-button

ACCESSORIES

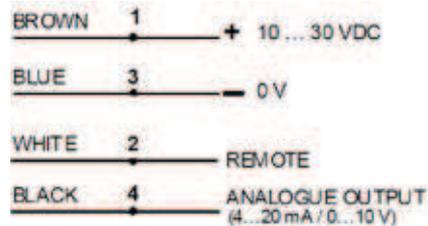
For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Connectors** of the **General Catalogue**.

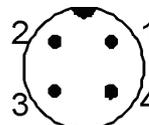
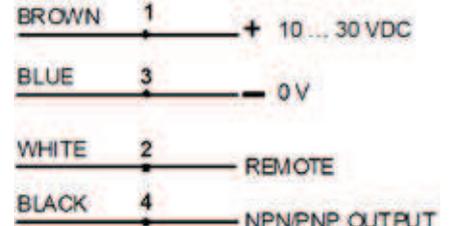
CONNECTIONS

M12 4-POLE CONNECTOR

Analogue



Digital



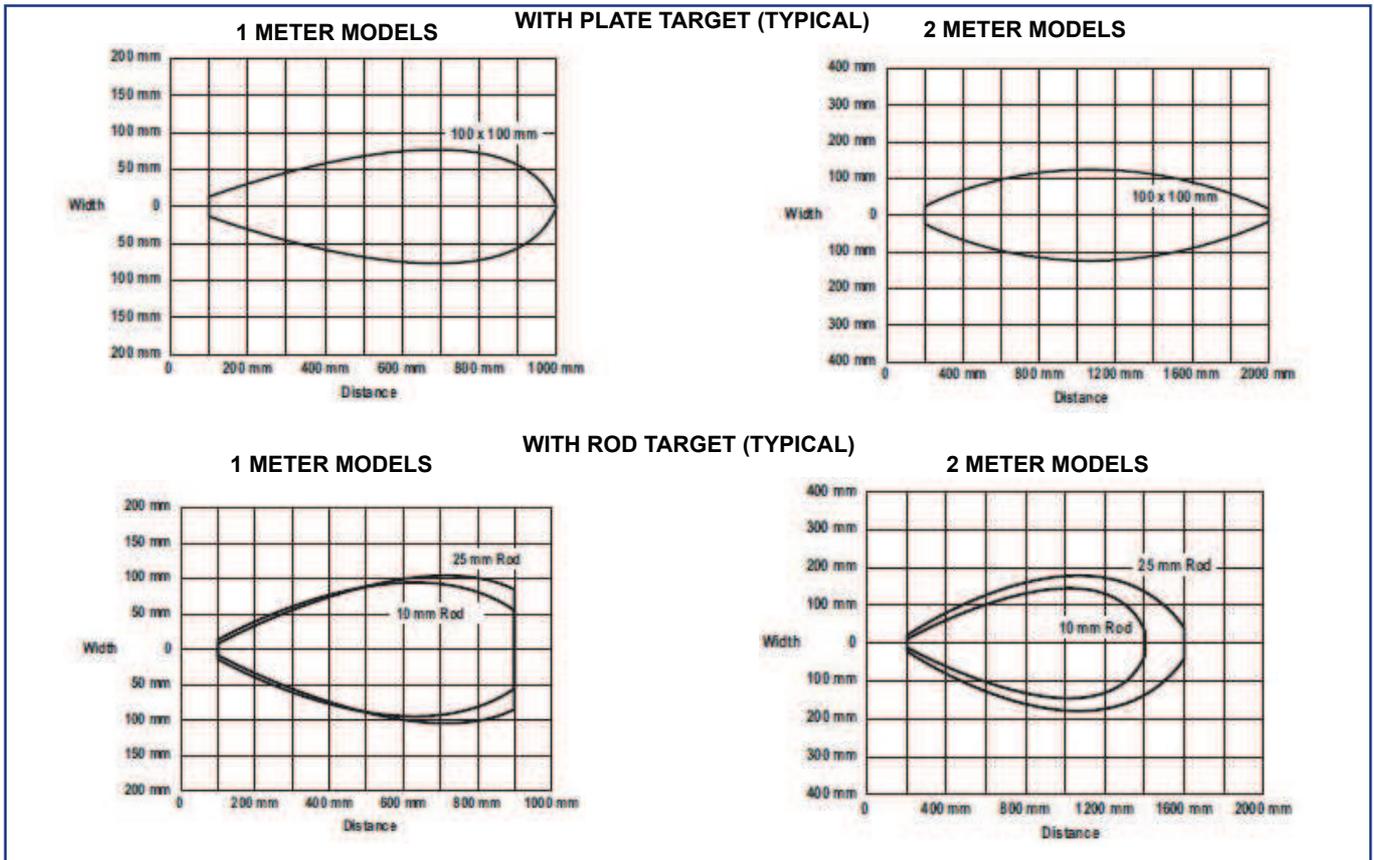
Versions and options: refer to **MODEL SELECTION TABLE**

TECHNICAL DATA

		US30-PR-5-N13-IH	US30-PR-5-N23-IH	US30-PR-5-N13-VH	US30-PR-5-N23-VH	US30-PR-5-N13-OH	US30-PR-5-N23-OH
Operating distance:	100 ... 1000 mm	•		•		•	
	200 ... 2000 mm		•		•		•
Power supply:	10 ... 30 Vdc (limit values),	•	•	•	•	•	•
	polarity inversion protection	•	•	•	•	•	•
Ripple:	≤ 2 Vpp	•	•	•	•	•	•
Consumption:	40 mA max. (output current excluded)	•	•	•	•	•	•
Output type:	bipolar digital NPN and PNP					•	•
	analogue 0...10 Vdc			•	•		
	analogue 4...20 mA	•	•				
Output current:	100 mA max., short-circuit protection					•	•
Saturation voltage:	PNP < 3 V @ 100 mA; NPN < 1.6 V @ 100 mA					•	•
Load resistance:	voltage output: 2,5 kΩmin.			•	•		
	current output: 1 kΩ @ 24 V	•	•				
Response time:	45 ... 92 ms selectable					•	•
	45 ... 105 ms selectable	•	•				
	92 ... 222 ms selectable		•	•			
Switching frequency:	11 ... 5.4 Hz			•	•		
	11 ... 4.7 Hz	•	•				
	5.4 ... 2.2 Hz		•	•			
Delay at powering:	500 ms	•	•	•	•	•	•
Indicators:	yellow OUT LED	•	•	•	•	•	•
	green POWER ON LED	•	•	•	•	•	•
	red SIGNAL LED	•	•	•	•	•	•
Setting:	DISCRETE push-button					•	•
	ANALOG push-button	•	•	•	•		
	MODE push-button	•	•	•	•	•	•
Ultrasonic emission frequency:	174 kHz		•	•		•	
	224 kHz	•	•			•	
Temperature drift:	< 0.02 % reading distance/°C	•	•	•	•	•	•
Repeatability:	0.1% reading distance					•	•
Resolution:	0.1% reading distance	•	•	•	•		
Linearity:	0.25% reading distance	•	•	•	•		
Minimum detection window:	10 mm					•	•
	100 mm	•	•	•	•		
Hysteresis:	2 mm					•	
	3 mm						•
Operating temperature:	-40 ... 70 °C	•	•	•	•	•	•
Storage temperature:	-40 ... 70 °C	•	•	•	•	•	•
Housing material:	PBT	•	•	•	•	•	•
Mechanical protection:	IP67	•	•	•	•	•	•
Connections:	M12 4-pole connector	•	•	•	•	•	•
Weight:	68 g	•	•	•	•	•	•
Standard reference:	EN 60947-5-2	•	•	•	•	•	•



READING DIAGRAMS



ANALOGUE OUTPUT DIAGRAMS



MODEL SELECTION AND ORDER INFORMATION

MODEL	OPERATING DISTANCE	OUTPUT	ORDER N°
US30-PR-5-N13-IH	100 ... 1000 mm	4-20 mA analogue	95B040060
US30-PR-5-N13-OH	100 ... 1000 mm	NPN e PNP	95B040100
US30-PR-5-N13-VH	100 ... 1000 mm	0-10 V analogue	95B040070
US30-PR-5-N23-IH	200 ... 2000 mm	4-20 mA analogue	95B040080
US30-PR-5-N23-OH	200 ... 2000 mm	NPN e PNP	95B040110
US30-PR-5-N23-VH	200 ... 2000 mm	0-10 V analogue	95B040090



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US50 SERIES

Datalogic Automation **US50** is the new series of ultrasonic sensors with M50 plastic tubular housing. All models are provided with a radial emitting head and offer the following versions:

- Digital bipolar **PNP/NPN NO/NC** configurable output;
- Analogue **0-10V / 4-20mA** configurable output.

Operating distance from **200mm to 8m** makes US50 ideal solution for all industrial applications where the target must be detected or measured really far away from the sensor.

The sensor functions are set using DIP-switches located on the rear side. Electrical connection is obtained through a standard **M12 5-pole** connector Euro Style.

These new sensors can be easily configurable thanks to the **TEACH-IN procedure**, performed through two **PUSH-BUTTONS** located on the rear side of the device or through the connector's **REMOTE input**.

New Datalogic Automation US50 ultrasonic sensors can detect all objects independently from the material, transparency and/or colour.



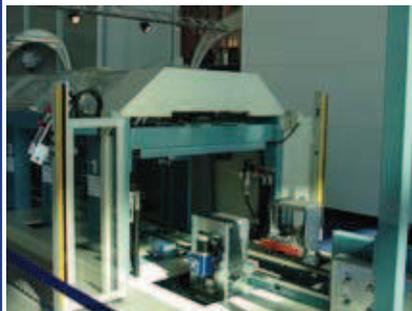
MEASUREMENT

HIGHLIGHTS

- Digital bipolar PNP/NPN NO/NC configurable output model
- Digital and 0-10V / 4-20mA configurable analogue output model
- Operating range of 200mm...8m
- Minimum resolution: 1mm
- Analogue output Linearity: +/- 0.2% of span from 200 to 8000 mm; +/- 0.1% of span from 500 to 8000 mm (1 mm minimum)
- Minimum window size : 20mm
- Repeatability: 1mm
- Hysteresis: 5mm
- Response Time: 100ms to 1600ms
- DIP SWITCH selectable
- Access to bank of 8 DIP switches through sealed cover for superior user functionality
- Fast, easy-to-use REMOTE TEACH-Mode programming; no potentiometer adjustments
- Wide operating range of -20° to +70°C with compensation function
- Rugged encapsulated design for harsh environments
- Unique housing design allows for multiple mounting configurations
- Euro-style quick-disconnect fitting

APPLICATIONS

Ceramics



Beverage & Bottling



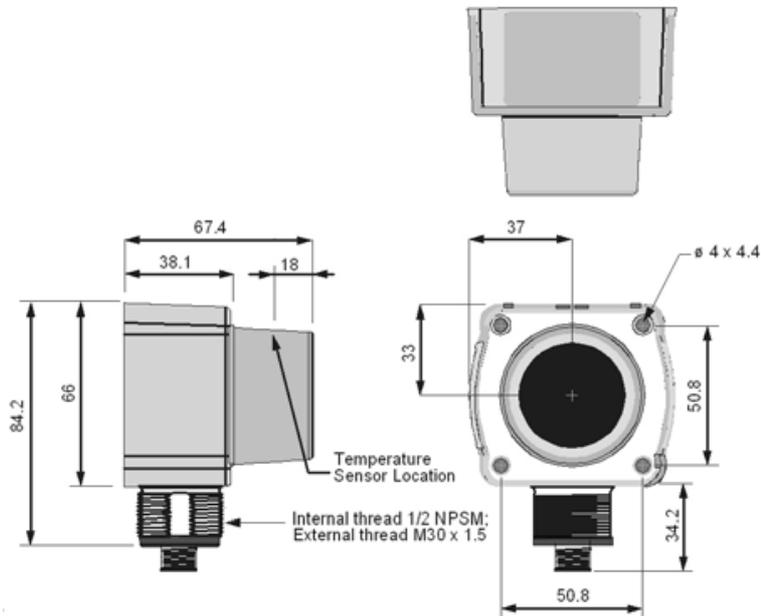
Transportation lines



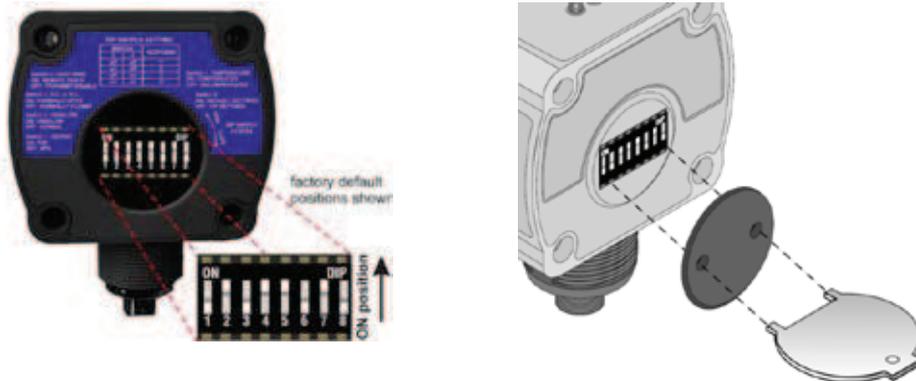
Packaging lines



DIMENSIONS



SENSOR PROGRAMMING



Switch	Digital models - Functions	Analogue model - Functions
1	PNP or NPN select	Voltage/Current mode
2	Window / Fill level	Loss of echo
3	Output operation	Min-max
4	Teach/Disable control	Teach/Enable control
5 and 6	Response (100 ms/cycle) 1 cycle 4 cycles* 8 cycles 16 cycles	Analogue voltage output response for 95% of step change 100 ms with 100 ms update 500 ms with 100 ms update* 1100 ms with 100 ms update 2300 ms with 100 ms update
7	Temperature compensation	Temperature compensation
8	Factory calibration	Factory calibration

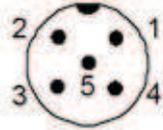
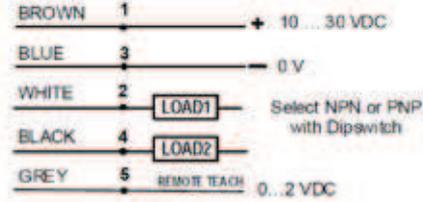
Note: for DIP-switches settings and corresponding factory defaults refer to the user manuals



CONNECTIONS

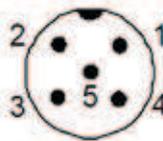
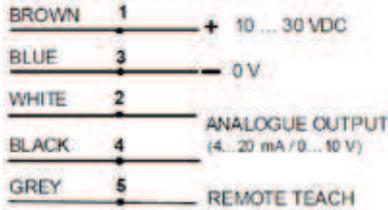
DIGITAL VERSION

5-POLE M12 CONNECTOR



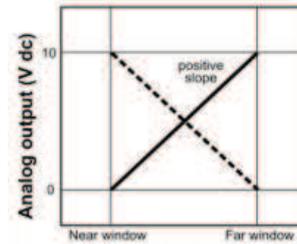
ANALOGUE VERSION

5-POLE M12 CONNECTOR



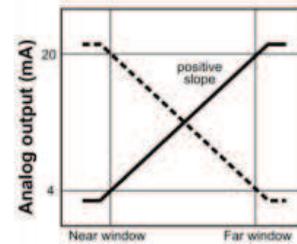
ANALOGUE OUTPUT DIAGRAMS

Voltage-sourcing models



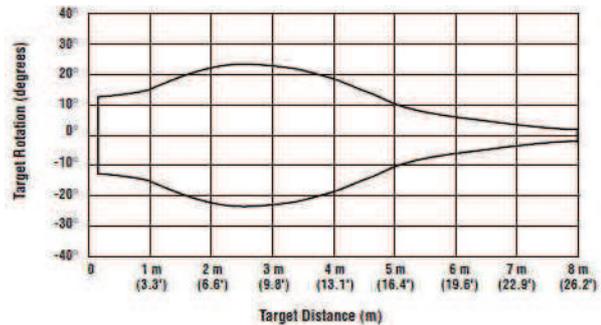
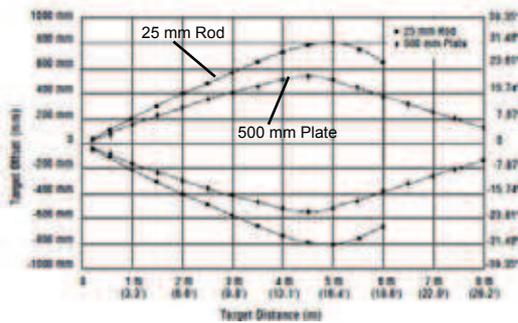
Target position

Current-sourcing models



Target position

READING DIAGRAMS



CONTROLS

DIGITAL CONTROLS



Signal LED (Red) – indicates the strength and condition of the sensor's incoming signal.

Output LEDs (Yellow or Red) – active when the target is inside to the window limits

Power ON LED (Green) – indicates the operating status of the sensor.

ANALOGUE CONTROLS



Signal LED (Red) – indicates the strength and condition of the sensor's incoming signal.

Limit LEDs (Red or Yellow) – indicate the position of the target relative to the window limits

Power ON LED (Green) – indicates the operating status of the sensor.

TECHNICAL DATA

	DIGITAL VERSION	ANALOGUE VERSION
Power supply:	10 ... 30 VDC reverse polarity protection	10 ... 30 VDC reverse polarity protection
Ripple:	≤ 2 VPP	≤ 2 VPP
Consumption (load current excluded):	100mA max. at 10V 40mA max. at 30V	100mA max. at 10V 40mA max. at 30V
Ultrasonic frequency:	75 kHz burst, rep. rate 96 ms	75 kHz burst, rep. rate 96 ms
Output configuration:	NPN or PNP, selectable via DIP switch	Voltage sourcing: 0...10 VDC (Short-circuit protection) Current sourcing: 4...20mA
Output ratings:	150 mA max. OFF-state leakage current: < 5 µA Output saturation NPN: < 200 mV @ 10 mA and <650 mV @ 150 mA Output saturation PNP: < 1.2V @ 10 mA and <1.65V @ 150 mA	-
Response time:	100 ms to 1600 ms	100 ms to 2300 ms
Indicators:	Power ON LED (GREEN), Signal LED (RED), Output LED (bicolour YELLOW/RED)	Power ON LED (GREEN), Signal LED (RED), Output LED (bicolour YELLOW/RED)
Setting:	Teach-in push-button or remotely via TEACH input	ANALOG push-button, remote command input (remote teach). Minimum and maximum detection limits can be programmed using the ANALOG push-button or remote input.
Remote Teach:	Connect grey wire to 0 to +2 VDC; impedance 12KΩ	-
Remote input levels:	-	Connect grey wire to 0 to +2 VDC; impedance 12KΩ
Delay at Power On:	1.5 sec	1.5 sec
Temperature effect:	Uncompensated: 0.2% of distance /°C Compensated: 0.02% of distance /°C	Uncompensated: 0.2% of distance /°C Compensated: 0.02% of distance /°C
Hysteresis:	5 mm	-
Linearity:	-	± 0.2% of span from 200 to 8000 mm; ± 0.1% of span from 500 to 8000 mm (1mm min.)
Resolution:	-	1 mm
Repeatability:	1 mm	-
Minimum reading window size:	20 mm	20 mm
Operating temperature:	-20 ... 70 °C	-20 ... 70 °C
Storage temperature:	-20 ... 70 °C	-20 ... 70 °C
Maximum relative humidity:	100%	100%
Operating distance (typical values):	200...8000 mm	200...8000 mm
Vibrations:	0.5 mm amplitude, 10...55 Hz frequency, for every axis (EN60068-2-6)	0.5 mm amplitude, 10...55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance:	11 ms (30 G) shock for every axis (EN60068-2-27)	11 ms (30 G) shock for every axis (EN60068-2-27)
Reference standard:	EN60947-5-2	EN60947-5-2
Housing material:	ABS polycarbonate	ABS polycarbonate
Push-button material:	Polyester	Polyester
Mechanical protection:	IP67	IP67
Connections:	M12 5-poles connector	M12 5-poles connector
Weight:	260 g	260 g.

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
US50-PR-5-N43-OH	US50-PR-5-N43-OH RIGHT ANGLE B.PNP/NPN	95B040120
US50-PR-5-N43-IVH	US50-PR-5-N43-IVH RIGHT ANGLE B. AN. OUT	95B040130

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	CODE N°
ST-30SC	ST-30SC US50 MOUNT. BRACKET ASSY	95ACC7820
ST-30MM	ST-30MM US50 STAINLESS STEEL BRACKET	95ACC7830





DATAVS1

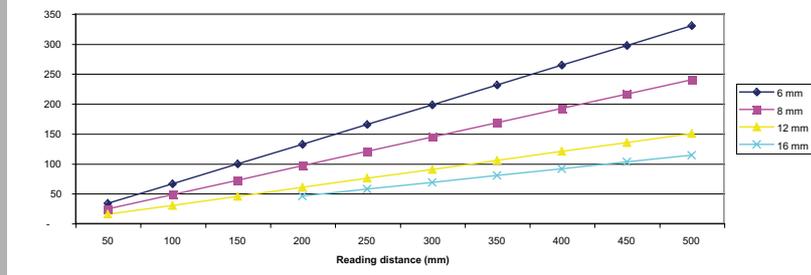


DATAVS2



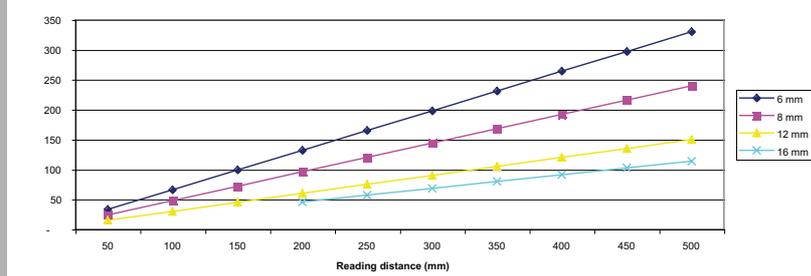
HORIZONTAL FIELD OF VIEW

The Horizontal Field of View refers to the longest side of the image.



Horizontal FOV*

The Horizontal Field of View refers to the longest side of the image.



Horizontal FOV*

Communication I/O	Inspection tools	Mechanical	Configuration	Applications
<ul style="list-style-type: none"> • Two digital inputs • Four digital outputs 	<ul style="list-style-type: none"> • Pattern match • OCV • Brightness / contrast • Measurement 	<ul style="list-style-type: none"> • Dimension: 60x52x40 mm (2.36x2.05x1.57 in) • Weight: 125 g (4.4 oz.) • Case material: Aluminium/Plastic 	Configuration through Vision Sensor Configurator (VSC). No PC needed.	<ul style="list-style-type: none"> • Quality inspection • Part presence verification • Object counting • Measuring • OCV
<ul style="list-style-type: none"> • Two digital inputs • Four digital outputs • Ethernet • RS-232 (ID and PRO models) 	<ul style="list-style-type: none"> • Pattern match • Contour match • 360° pattern match • Brightness / contrast • Measurement • Identification 	<ul style="list-style-type: none"> • Dimension: 60x52x40 mm (2.36x2.05x1.57 in) • Weight: 125 g (4.4 oz.) • Case material: Aluminium/Plastic 	Configuration through PC (the DataVS2 Graphical User Interface software is supplied with the product)	<ul style="list-style-type: none"> • Quality inspection • Part presence verification • Object counting • Measuring • Part orientation • Identification

DATAVS1 SERIES

The **DATAVS1** series is the easiest solution for machine vision applications. The setup is very quick and intuitive thanks to the VSC unit, the external configurator with 3.5" colour display. The sensor setting is carried-out through three simple steps: region of interest definition, control type selection, parameter adjusting. **DATAVS1** is a fully embedded vision sensor able to acquire images, control them and activate digital outputs according to the result. The VSC unit can provide a real time monitoring of the images, but it is not required during the functioning of the sensor and so it can be disconnected and used to setup multiple sensors. **DATAVS1** is able to carry-out 8 different controls: Brightness, Contrast, Position, Width, Edge counting, Pattern match, Pattern match counting, OCV. Its flexibility together with the VSC configurator make the sensor ideal for plants with frequent format changes (packaging, food, cosmetic, bottling, labelling,...).

DataVS1



VISION

HIGHLIGHTS

- Quick setup without PC
- Fully embedded vision sensor
- 3.5" colour display, 8 push-buttons, 8 LEDs
- 8 different controls
- Memorisation of 20 different inspections

APPLICATIONS

DATAVS1 is ideal for the control of text presence in overprinting and logo position on food packages, product completeness before packaging, logo position on cosmetic bottles, correct stamp on post envelopes, liquid level inside a plastic bottle, correct product orientation on a conveyor belt, expiry date or lot number integrity.

Surface control



Part orientation



Expiring date integrity



Level control



Product conformity



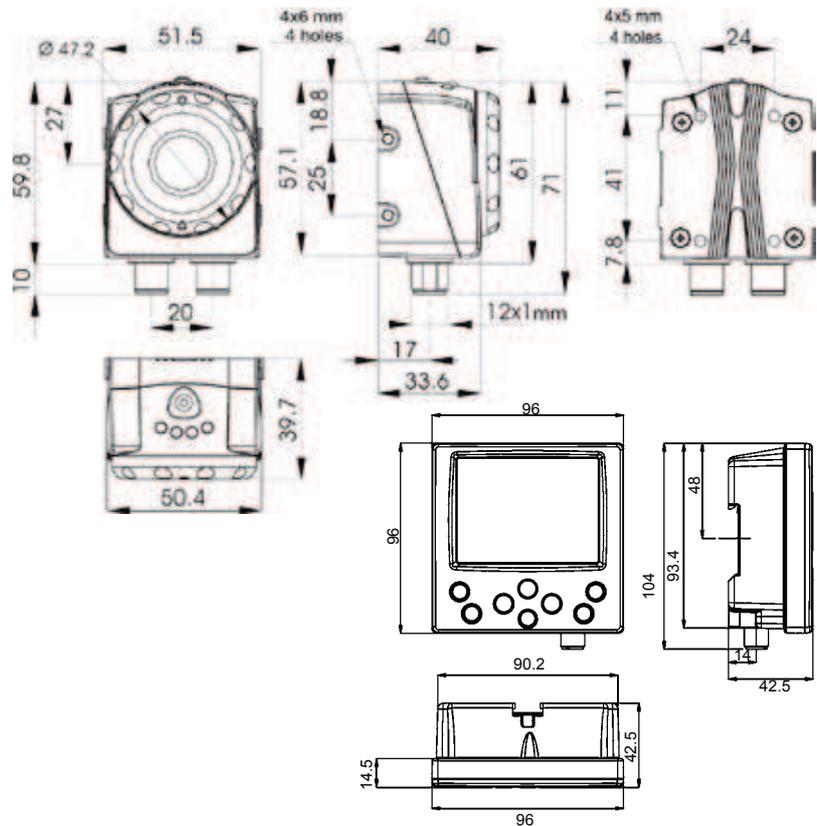
Bottling check



The extremely compact size of the DATAVS1 sensors is not an obstacle for the full integration of all the elements for a reliable image-based control.

- Compact housing
- 640 x 480 image sensor
- VSC configurator with 3.5" colour display, 8 push-buttons, 8 LEDs
- Red light LED illuminator
- Selectable lenses
- Standard M12 connectors
- Configurator preset for DIN rail or panel mounting
- 3 PNP outputs
- 4 signalling LEDs: output1, output2, power supply, communication

DIMENSIONS



INDICATORS AND SETTINGS



- A** Power supply, green
- B** Digital output 2, yellow
- C** Digital output 1, yellow
- D** VSC connection, green



- A** Setting mode, green
- B** Adjust mode, green
- C** Monitor mode, green
- D** Main menu, green
- E** Power supply, green
- F** Digital output 1, yellow
- G** Digital output 2, yellow
- H** Sensor connection, green

CONNECTIONS



M12 8-pole (VSC connection)

- PIN 1 = Ethernet TX+
- PIN 2 = Ethernet RX+
- PIN 3 = Ethernet RX-
- PIN 4 = Not used
- PIN 5 = 24 Vdc
- PIN 6 = Not used
- PIN 7 = Ethernet TX-
- PIN 8 = GND



M12 8-pole (power supply and I/O)

- PIN 1 = white = digital input 1
- PIN 2 = brown = 24 Vdc
- PIN 3 = green = STROBE for external illuminator
- PIN 4 = yellow = output 1
- PIN 5 = grey = output 2
- PIN 6 = pink = output 3
- PIN 7 = blue = GND
- PIN 8 = red = external trigger

TECHNICAL DATA

Power supply:	24 Vcc ±10 %
Ripple:	1 Vpp max with illuminator 2 Vpp without illuminator
Consumption (DATAVS1+VSC):	300 mA @ 24 Vdc (illuminator excluded)
Output type:	3 PNP
Output current:	100 mA max
Saturation voltage:	< 2 V
VSC connection:	M12 8-pole A-code
External illuminator interface:	Strobe signal (24 V PNP N.O.)
Frame rate:	60 fps
Optics:	integrated (6 mm / 8 mm / 12 mm / 16 mm)
Setting:	VSC configurator
Sensor indicators:	4 LEDs
VSC indicators:	8 LEDs
Connections:	2 x M12 8-pole A-code
Mechanical protection:	IP50 (DATAVS1) IP40 (VSC)
Protection devices:	A, B ²
Housing material:	aluminium alloy / ABS
Sensor weight:	125 g
VSC weight:	170 g
Operating temperature:	-10 ... +50°C
Storage temperature:	-25 ... +70°C

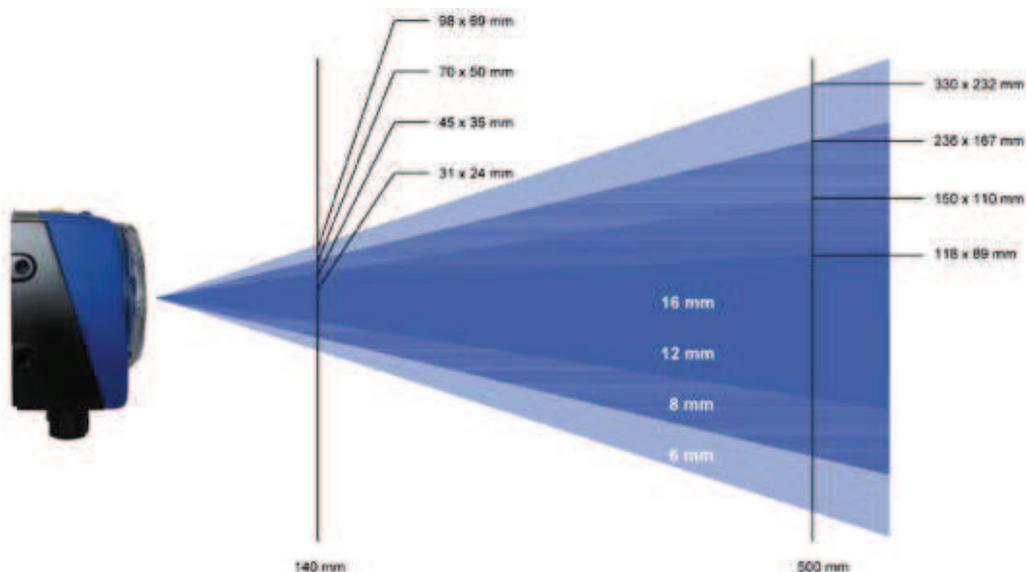
TECHNICAL NOTES

¹Limit values
²A - reverse polarity protection
B - overload and short-circuit protection



FIELD OF VIEW

OPERATING DISTANCE (mm)	FIELD OF VIEW (Width x Height) in mm			
	DATAVS1-16-C-S	DATAVS1-12-DC-S	DATAVS1-08-DC-X	DATAVS1-06-DC-S
50	-	17 x 12	25 x 20	42 x 30
80	-	25 x 20	40 x 30	60 x 41
110	-	33 x 25	55 x 40	80 x 55
140	31 x 24	45 x 35	70 x 50	98 x 69
170	39 x 29	53 x 38	85 x 60	118 x 83
200	46 x 34	60 x 50	100 x 70	138 x 92
300	70 x 53	90 x 65	145 x 103	201 x 140
400	94 x 71	121 x 82	186 x 132	265 x 189
500	118 x 89	150 x 110	236 x 167	330 x 232
600	143 x 107	185 x 130	282 x 232	385 x 270



DATAVS1 CONFIGURATOR



The configuration of DATAVS1 sensors is obtained exclusively via VSC unit. No PC is necessary and thus sensor setting is easy and quick. Once the configuration has been completed, the VSC display can be used to visualise inspection results in real time or to configure a new sensor.

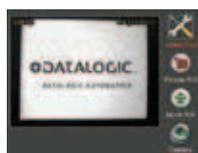
The interface available on the configurator, composed of 8 signalling LEDs and 8 push-buttons, allows the operator to quickly and intuitively set the sensor functioning parameters.

PUSH-BUTTONS

Push-button label	Main functions
Status	Go to next configuration step
Teach	Setting memorisation Acquisition of a new reference image
Set	Confirmation of option selected Confirmation of parameter value
Esc	Exit without saving Return to previous panel Return to previous configuration step
Arrows	Change of option selected Movement/resizing of ROI Parameter change



Step 1: Image adjustment and control definition



In the first configuration step, the user has to set the sensor parameters in order to obtain a good image quality in terms of focus, brightness and contrast. The control type and the part to inspect have to be then defined.

Step 2: Parameter setting



The second configuration step consists in setting the functioning parameters of the control previously selected and the acceptance thresholds.

Step 3: Inspection check and memorisation



The third step consists in the control of the correct inspection functioning and the saving on the sensor memory. Once completed, the sensor can operate in a stand-alone mode.

EXCELLENT FLEXIBILITY

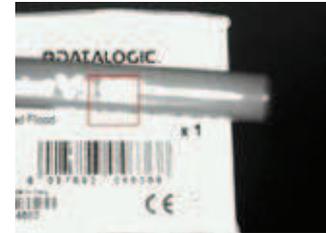
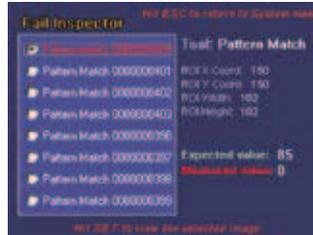
Password

A Password that prevents the access to the configuration parameters to unauthorised personnel can be defined.

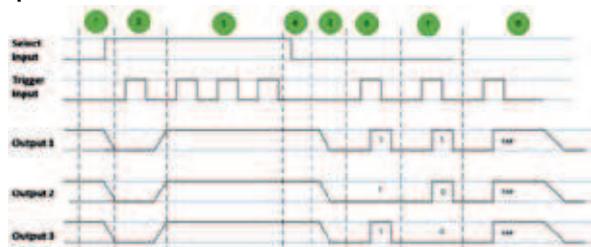


Fail inspector

The latest 8 inspected parts that have caused a control failure can be recalled by the Fail Inspector. This tool provides an immediate control of the production non-conformities.



Inspection selection



Each inspection is composed of a template and parameters. A specific inspection can be thus referred to different products in progress on the same production line. The different inspections can be recalled using digital pulses. Different inspection selection protocols with or without acknowledge are available.

The inspection change can be carried-out also directly by the operator using the bankset manager panel.

MONITORING USE OF THE VSC

Standard mode



Camera mode



Zoom mode



Fail mode

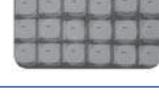


Production statistics



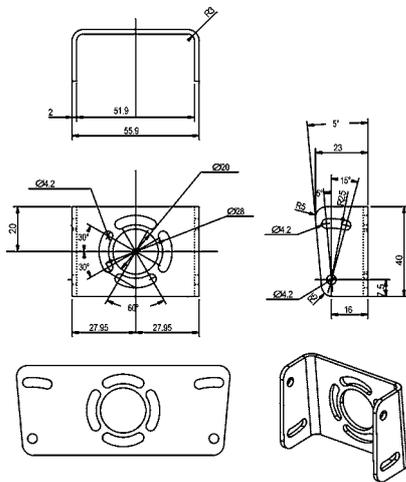
Besides the four monitoring modes, indicated above, the VSC configurator can visualise some production statistics, such as the number of inspected items and percentage of non-conformities.

Object Recognition

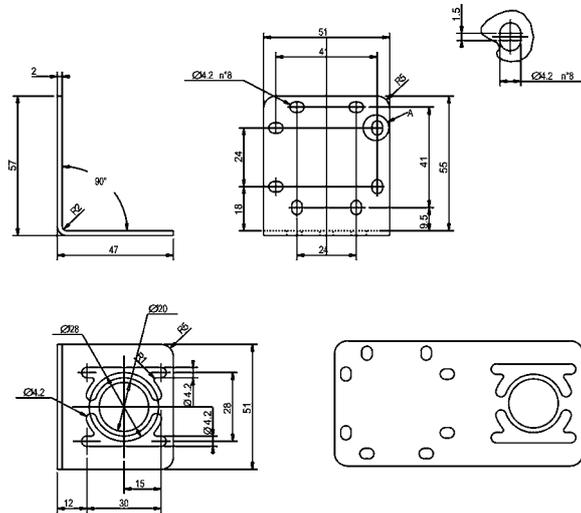
Eight different controls able to cover the most varied applications.			
Control	Functioning	Applications	Image
Pattern Match	Searches a sample inside a specific area	<ul style="list-style-type: none"> • Packaging: logo check • Assembling: product orientation • Post automation: stamp check 	
OCV	Verifies the readability of printed characters	<ul style="list-style-type: none"> • Packaging: production lot control • Food: expiry date control 	
Position	Checking of object border position	<ul style="list-style-type: none"> • Bottling: liquid level control: • Food: label position control 	
Width	Measures object width	<ul style="list-style-type: none"> • Assembling: plastic part control • Wood industry: branch thickness measurement 	
Counting	Counts the objects along a line	<ul style="list-style-type: none"> • Electronics: component counting • Pharmaceutical: blister stack counting 	
Contrast	Contrast calculation	<ul style="list-style-type: none"> • Food: date and lot presence control • Metal working: laser marking control 	
Brightness	Brightness calculation	<ul style="list-style-type: none"> • Bottling: cap presence control • Packaging: object counting 	
Pattern match count	Count the number of templates inside a specific area	<ul style="list-style-type: none"> • Bottling: bottle count • Packaging: object counting 	

ACCESSORIES

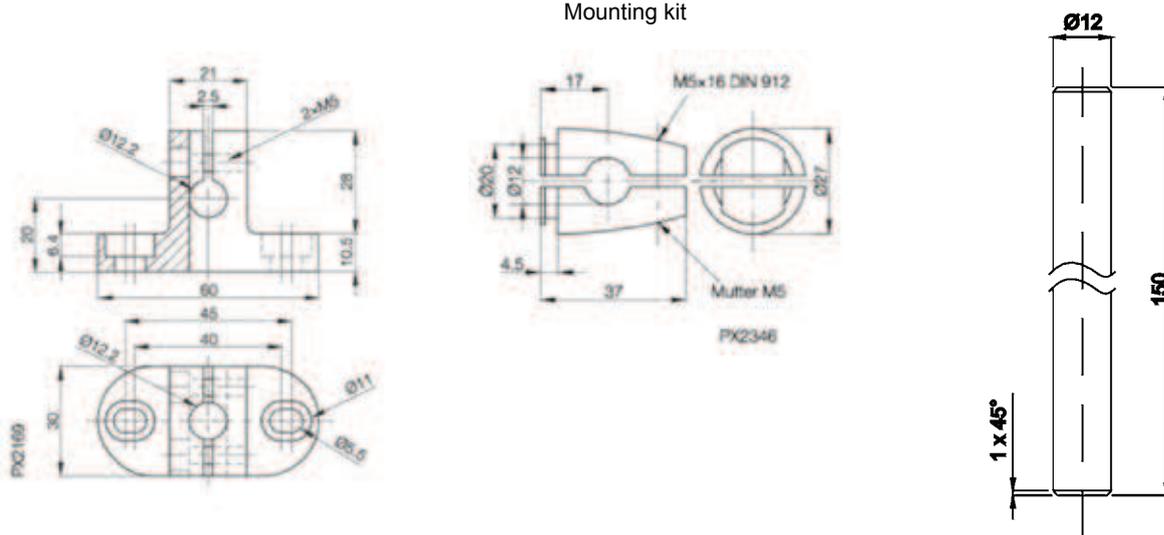
ST-5066
U-shaped fixing bracket for angle adjustment



ST-5068
L-shaped fixing bracket for 90° mounting



Mounting kit



MODEL SELECTION TABLE

MODEL	OPTIC	VSC INCLUDED	POWER SUPPLY CABLES	DIGITAL INPUT	DIGITAL OUTPUT	ORDER N°
DATAVS1-08-DC-K	8 mm	•	•	2	4	959941000
DATAVS1-06-DC-S	6 mm			2	4	959941010
DATAVS1-08-DC-S	8 mm			2	4	959941020
DATAVS1-12-DC-S	12 mm			2	4	959941030
DATAVS1-16-DC-S	16 mm			2	4	959941050

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-36-B-03	M12 8-pin shielded cable 3m	95A255430
CV-A1-36-B-05	M12 8-pin shielded cable 5m	95A255440
CV-A1-36-B-10	M12 8-pin shielded cable 10m	95A255450
DATAVS-CV-VSC-02	DATAVS-VSC connection cable 2 m	95A901360
DATAVS-CV-VSC-04	DATAVS-VSC connection cable 4 m	95A901370
DATAVS1-VSC	VSC configurator	959941040
DATAVS1 UPDATING KIT	Updating kit	95A901540
DATAVS-ST-5068	L-shaped fixing bracket for 90° mounting	95A901320
DATAVS-ST-5068	U-shaped fixing bracket for angle adjustment	95A901330
DATAVS-MK-01	Mounting kit	95A901380



The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.

DATAVS2

The **DataVS2** vision sensor series presents all the characteristics to solve artificial machine vision applications in a flexible and intuitive way.

DataVS2 is a completely embedded device: the optic, the red LED illuminator and the electronics are included in an extremely compact housing. The sensor is configured via PC through Ethernet communication. The configuration software is included in the product and it has been developed in order to lead the customer through the configuration process step by step.

DataVS2 is available in four different versions according to the installed control tools: Object Recognition (OBJ), Advanced Object Recognition (AOR), Identification (ID) and Professional (PRO).

Many different control typologies are available: brightness, contrast, position, width, count, pattern match, countour match, 360° pattern match, barcode and datamatrix reader, OCV, 360° contour match & counter, 360° defect finder.



VISION



HIGHLIGHTS

- Flexible and intuitive setup via PC through Ethernet
- Memorisation of 20 inspections
- 14 different controls
- 360° pattern match for Advanced models
- Logical operators: AND, OR, NOT, NAND, NOR, ecc.
- TURBO mode to double elaboration speed
- VSM compatibility
- Inspection & Identification functionalities together available on Professional models

APPLICATIONS

DataVS2 is ideal for the control of text presence in overprinting and logo position on food packages, product completeness before packaging, logo position on cosmetic bottles, correct stamp on post envelopes, liquid level inside a plastic bottle, correct product orientation on a conveyor belt, barcode and datamatrix reading.

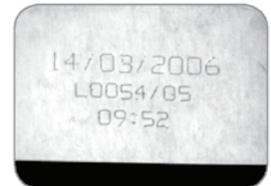
Stamp control



Part orientation



Overprinting



Level control



Logo control



Barcode & Datamatrix

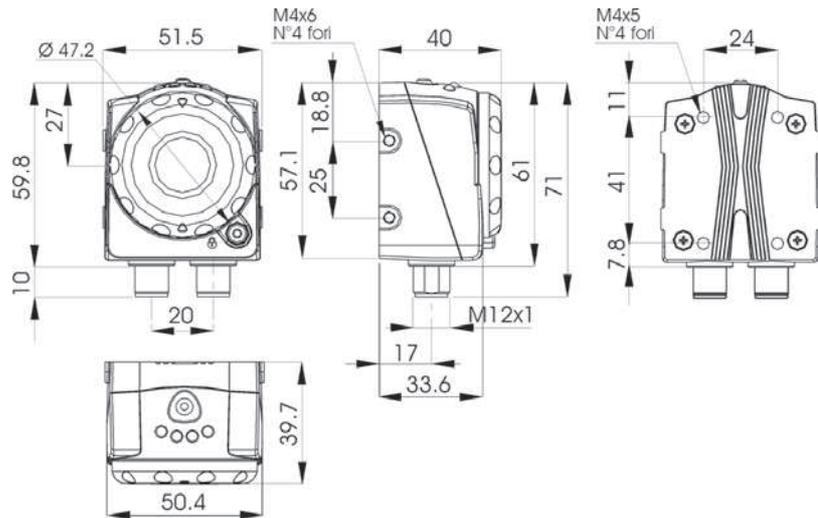


The extremely compact size of the DATAVS sensors is not an obstacle for the full integration of all the elements for a reliable image-based control.

- Compact housing
- Red light LED illuminator
- Selectable lenses
- Focus knob
- Standard M12 connectors
- Ethernet communication
- 3+1 PNP outputs
- 4 signalling LEDs: output1, output2, power supply, communication
- Teach push-button
- 640x480 pixel greyscale image sensor



DIMENSIONS



INDICATORS AND SETTINGS

Teach push-button with double function:

- reference image update
- recovery mode



- A** Power supply, green
- B** Digital output 1, orange
- C** Digital output 2, orange
- D** Network connection, green

CONNECTIONS

M12 4-pole Ethernet



- 1 = white/orange = RX+
- 2 = white/green = TX+
- 3 = orange = RX-
- 4 = green = TX-

M12 8-pole (power supply and I/O)



OBJ and AOR models

- 1 = white = digital input 1
- 2 = brown = 24 Vdc
- 3 = green = configurable output
- 4 = yellow = output 1
- 5 = grey = output 2
- 6 = pink = output 3
- 7 = blue = GND
- 8 = red = external trigger

ID and PRO models

- 1 = white = RS232 RX
- 2 = brown = 24 Vdc
- 3 = green = configurable output
- 4 = yellow = output 1
- 5 = grey = output 2
- 6 = pink = RS232 TX
- 7 = blue = GND
- 8 = red = external trigger

TECHNICAL DATA

Power supply:	24 Vcc ±10 %
Ripple:	1 Vpp max with illuminator 2 Vpp without illuminator
Consumption:	100 mA at 24 Vdc (without illuminator)
Output type:	3+1 PNP
Output current:	100 mA max
Saturation voltage:	< 2 V
Network interface:	M12 4-poli Ethernet 10/100 Mbs
Serial interface:	RS232 (only ID and PRO models)
External illuminator interface:	Strobe signal (24 V PNP N.O.)
Frame rate:	60 fps
Optics:	integrated (6 mm / 8 mm / 12 mm / 16 mm)
Setting:	TEACH push-button
Indicators:	4 LED
Connections:	M12 8 pole A-code M12 4 pole D-code
Mechanical protection:	IP50
Protection devices:	A, B
Housing material:	aluminium alloy / ABS
Weight:	125 g
Operating temperature:	-10 ... +50°C
Storage temperature:	-25 ... +70°C

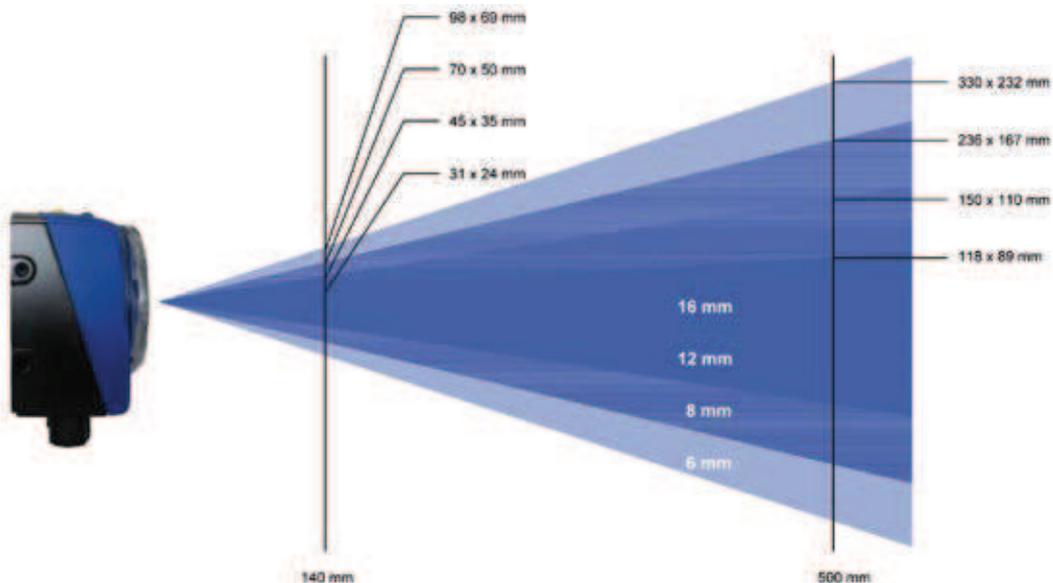
TECHNICAL NOTES

- ¹Limit values
- ²A - reverse polarity protection
- B - overload and short-circuit protection



FIELD OF VIEW

OPERATING DISTANCE (MM)	FIELD OF VIEW (WIDTH X HEIGHT) IN MM			
	DATAVS2-16-xx-xxx	DATAVS2-12-xx-xxx	DATAVS2-08-xx-xxx	DATAVS2-06-xx-xxx
50	-	17 x 12	25 x 20	42 x 30
80	-	25 x 20	40 x 30	60 x 41
110	-	33 x 25	55 x 40	80 x 55
140	31 x 24	45 x 35	70 x 50	98 x 69
170	39 x 29	53 x 38	85 x 60	118 x 83
200	46 x 34	60 x 50	100 x 70	138 x 92
300	70 x 53	90 x 65	145 x 103	201 x 140
400	94 x 71	121 x 82	186 x 132	265 x 189
500	118 x 89	150 x 110	236 x 167	330 x 232
600	143 x 107	185 x 130	282 x 232	385 x 270



SOFTWARE PC

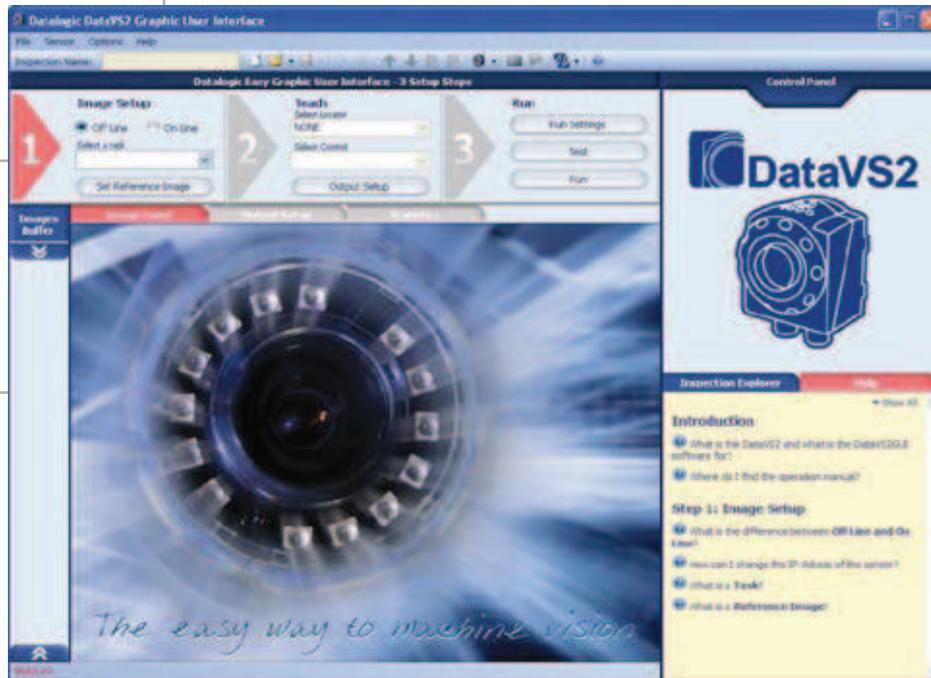
Main menu

Control panel

Wizard set up

Image buffer

Help online



Status bar

Step 1: Image Setup



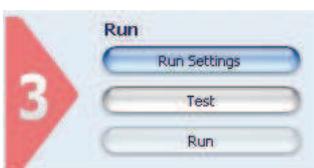
The first step consists in connecting the sensor and configuring the image quality parameters. When the desired results are obtained, the user can memorise the image that will be used as a template during sensor functioning.

Step 2: Teach



The second step establishes the acceptance criteria to distinguish objects from wastes. One or more controls can be selected according to the task to carry-out.

Step 3: Run



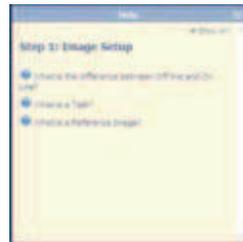
The third step configures the sensor digital outputs, simulates sensor functioning on the PC to verify the controls chosen and activates the operating phase on the sensor using the PC only to control the diagnostics.

MAXIMUM SIMPLICITY



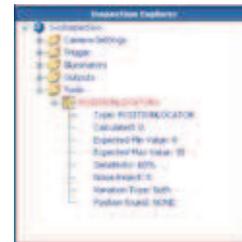
Discovery

The Discovery function finds all the sensors connected to the network.



Help

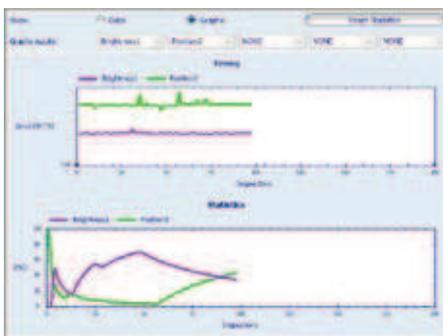
A Help is available for each step, supplying useful suggestions on the options available.



Inspection explorer

All the parameters connected to the inspection are grouped together and can be easily reached by the user.

Statistics



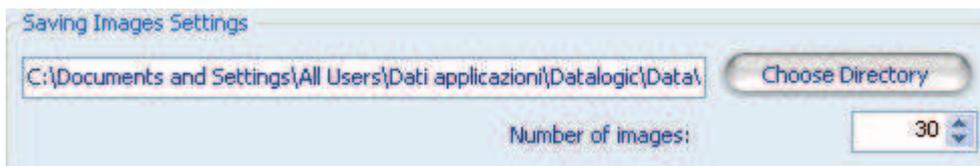
Show: Data Graphs Reset Statistics

Graphs inputs: NONE NONE NONE NONE NONE

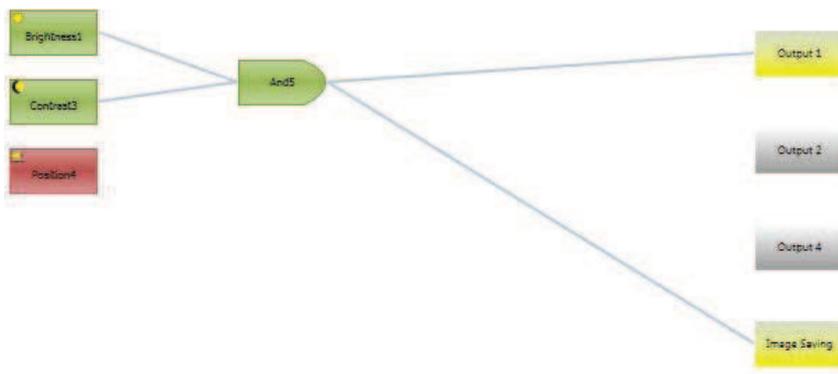
Operator	Execution Time	Total PASSED	Total FAILED	Executed
Image acquisition time	16,42 ms			
Brightness1	0,11 ms	215 (100%)	0 (0%)	215
Contrast3	0,83 ms	215 (100%)	0 (0%)	215
Position4	0,79 ms	0 (0%)	215 (100%)	215
Output delay time:	0,00 ms			
Output duration time:	0,00 ms			
Total execution time:	18,16 ms	0 (0%)	215 (100%)	215
Insp. per second:				55,06 Inspe...

The statistics panel displays all the information about inspection results and execution time. Data can be shown also in a graph.

Image saving

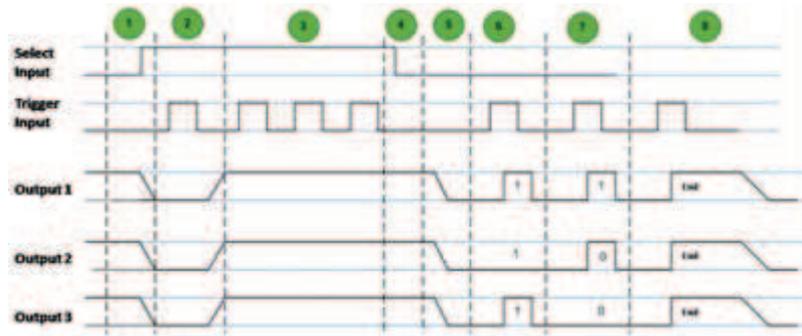


The image saving panel allows to set a folder where the acquired pictures are stored. An image saving condition can be also specified through a dedicated panel.



EXCELENT FLEXIBILITY

Inspection selection



Each inspection is composed of a template and parameters. The user can store up to 20 different inspections on the sensor memory in order to manage different items on the same production line.

The different inspections can be recalled in several different ways:

- (1) using digital pulses on OBJ and AOR models
- (2) through an Ethernet command on AOR, ID and PRO models
- (3) through a Serial command on ID and PRO models

VSM COMPATIBILITY

All DataVS2 models (i.e. OBJ, AOR, ID and PRO) are compatible with VSM, the monitoring device that allows to display elaborated images together with inspection results. The unit also offers the possibility to change the running inspection as well as to fine-tune the vision sensor functioning parameters on-the-fly.

The device integrates a 3.5" LCD color display and 8 push buttons. It features a standard TCP/IP Ethernet interface thus it can be connected either directly to a specific vision sensor or to a Local Area Network (LAN) where more DataVS2 have been previously installed.



CONTROL TABLE

Object Recognition

Seven different controls able to cover the most varied applications.			
Control	Functioning	Applications	Image
Pattern Match	Searches a sample inside a specific area	<ul style="list-style-type: none"> • Packaging: logo check • Assembling: product orientation • Post automation: stamp check 	
Contour Match	Shape control	<ul style="list-style-type: none"> • Metal working: integrity control • Food: coffee waffle shape control 	
Position	Check of object border position	<ul style="list-style-type: none"> • Bottling: liquid level control: • Food: label position control 	
Width	Measures object width	<ul style="list-style-type: none"> • Assembling: plastic part control • Wood industry: branch thickness measurement 	
Counting	Counts the objects along a line	<ul style="list-style-type: none"> • Electronics: component counting • Pharmaceutical: blister stack counting 	
Contrast	Contrast calculation	<ul style="list-style-type: none"> • Food: date and lot presence control • Metal working: laser marking control 	
Brightness	Brightness calculation	<ul style="list-style-type: none"> • Bottling: cap presence control • Packaging: object counting 	

ADVANCED MODELS (AOR)

The Advanced Object Recognition (AOR) models integrate new important functionalities, including:



360° Pattern Match Locator
Object detection independent from rototranslations.



Logical tools
Possibility to combine the results of the single tools through boolean operator (AND, OR, NOT, etc.)



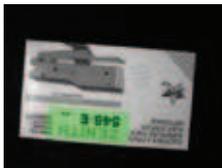
Advanced Ethernet
Current inspection results available also on Ethernet communication.



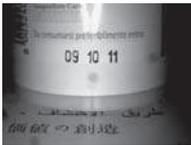
Speed-up
High execution speed thanks to the management of reduced resolution and TURBO mode.

360° Pattern match

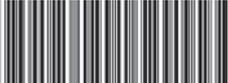
The Advanced Object Recognition (AOR) models include all the controls and locators available on Object Recognition models as well as the new 360° Geometric Pattern Match Locator.



IDENTIFICATION MODELS (ID)

Control	Functioning	Image
Barcode reader	<p>Decode: read and decode one (or more) barcode in the Region Of Interest.</p> <p>String match: read and decode one (or more) barcode and compare it with a set of reference strings.</p> <p>Counter: count the number of barcodes in the Region Of Interest.</p>	
Datamatrix reader	<p>Decode: read and decode one (or more) datamatrix in the Region Of Interest.</p> <p>String match: read and decode one (or more) datamatrix and compare it with a set of reference strings.</p> <p>Counter: count the number of datamatrix in the Region Of Interest.</p>	
OCV	Verify the readability of printed characters.	

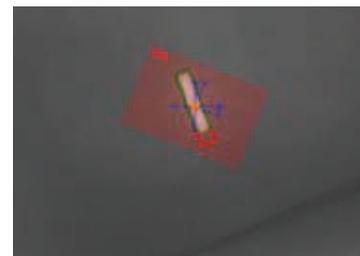
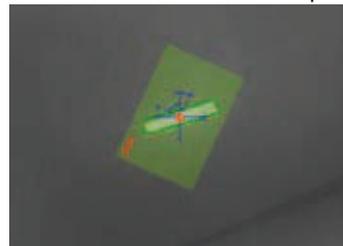
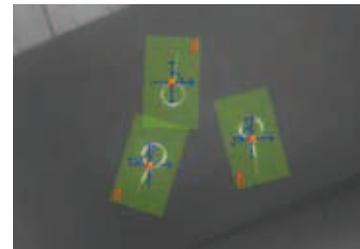
Symbologies

	Codabar		UPC-E
	Code 39		PDF417
	Code 128		Pharmacode
	EAN-8 EAN-13 EAN-128		Postnet
	Interleaved 2 of 5		IMB
	UPC-A		ECC200

PROFESSIONAL MODELS (PRO)

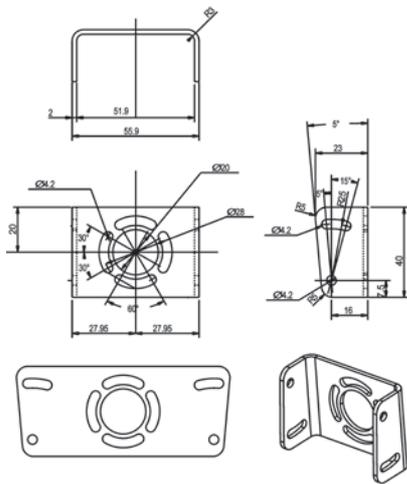
The professional model includes in the same software all the functionalities already available on Advanced and Identification versions. Moreover it features 5 new software tools: 3 locators and 2 controls.

Locators	Functioning	
Barcode	Finds a barcode in the Region Of Interest and re-locates all the other inspection controls accordingly.	
Datamatrix	Finds a datamatrix code in the Region Of Interest and re-locates all the other inspection controls accordingly.	
360° Contour Match	Finds a reference template in the Region Of Interest and re-locates all the other inspection controls accordingly.	
Controls	Functioning	
360° Contour Counter	Counts how many times a reference contour is present in the Region Of Interest.	
360° Defect Finder	Detects even smallest defects on a part.	

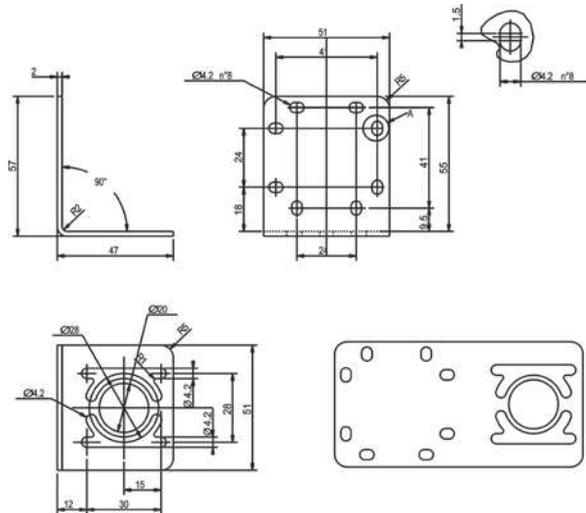


ACCESSORIES

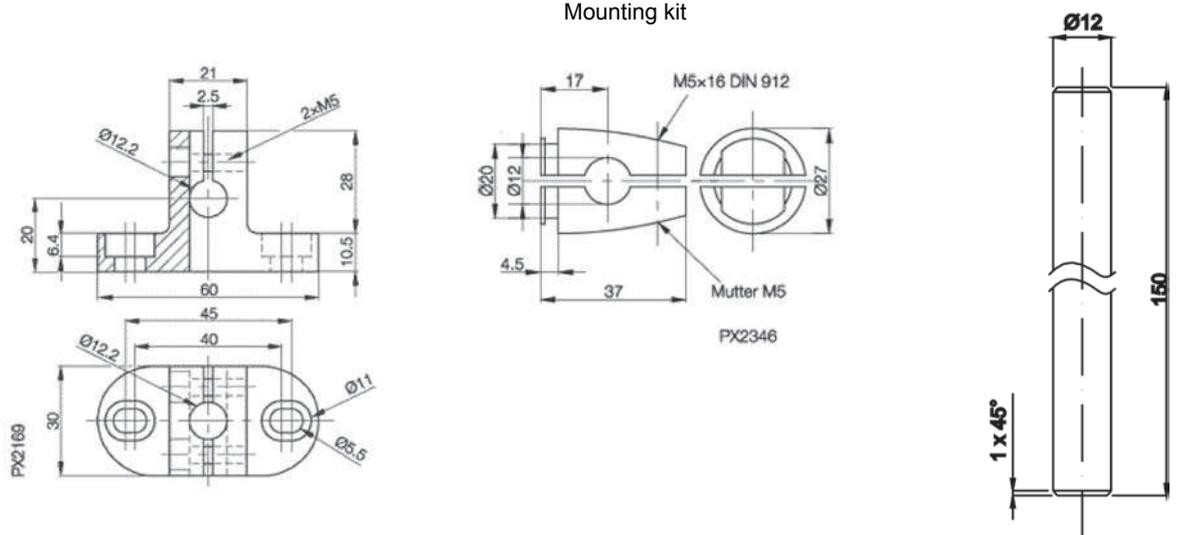
ST-5066
U-shaped fixing bracket for angle adjustment



ST-5068
L-shaped fixing bracket for 90° mounting



Mounting kit



MODEL SELECTION TABLE

MODEL	SOFTWARE	LOGICAL TOOLS	ETHERNET	RS232	I/O	OPTIC	ORDER N°
DATAVS2-06-DE-OBJ	Object Rec.		Base		2IN; 4 OUT	6mm	959951050
DATAVS2-08-DE-OBJ	Object Rec.		Base		2IN; 4 OUT	8mm	959951060
DATAVS2-12-DE-OBJ	Object Rec.		Base		2IN; 4 OUT	12mm	959951070
DATAVS2-16-DE-OBJ	Object Rec.		Base		2IN; 4 OUT	16mm	959951030
DATAVS2-06-DE-AOR	Adv. Obj. Rec.	•	Advanced		2IN; 4 OUT	6mm	959951000
DATAVS2-08-DE-AOR	Adv. Obj. Rec.	•	Advanced		2IN; 4 OUT	8mm	959951010
DATAVS2-12-DE-AOR	Adv. Obj. Rec.	•	Advanced		2IN; 4 OUT	12mm	959951020
DATAVS2-16-DE-AOR	Adv. Obj. Rec.	•	Advanced		2IN; 4 OUT	16mm	959951040
DATAVS2-06-RE-ID	Identification	•	Advanced	•	1 IN; 3 OUT	6mm	959951130
DATAVS2-08-RE-ID	Identification	•	Advanced	•	1 IN; 3 OUT	8mm	959951140
DATAVS2-12-RE-ID	Identification	•	Advanced	•	1 IN; 3 OUT	12mm	959951120
DATAVS2-16-RE-ID	Identification	•	Advanced	•	1 IN; 3 OUT	16mm	959951190
DATAVS2-06-RE-PRO	Professional	•	Advanced	•	1 IN; 3 OUT	6mm	959951220
DATAVS2-08-RE-PRO	Professional	•	Advanced	•	1 IN; 3 OUT	8mm	959951230
DATAVS2-12-RE-PRO	Professional	•	Advanced	•	1 IN; 3 OUT	12mm	959951240
DATAVS2-16-RE-PRO	Professional	•	Advanced	•	1 IN; 3 OUT	16mm	959951250

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-36-B-03	M12 8-pin shielded cable 3m	95A255430
CV-A1-36-B-05	M12 8-pin shielded cable 5m	95A255440
CV-A1-36-B-10	M12 8-pin shielded cable 10m	95A255450
DATAVS-ST-5068	L-shaped fixing bracket for 90° mounting	95A901320
DATAVS-ST-5066	U-shaped fixing bracket for angle adjustment	95A901330
DATAVS-CV-RJ45C-03	3 m crossed Ethernet cable	95A901340
DATAVS-CV-RJ45D-03	3 m direct Ethernet cable	95A901350
DATAVS-MK-01	Mounting kit	95A901380



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DATAVS2 - VSM

VSM is a monitoring device compatible with all DataVS2 vision sensor models. The device integrates a 3.5" LCD color display and 8 push buttons. It also embeds a standard TCP/IP Ethernet interface thus it can be connected either directly to a specific vision sensor or to a LAN where more sensors have been previously installed.

VSM allows to display images and results as well as to change the running inspection or also to adjust the vision sensor functioning parameters.

Thanks to this wide range of functionalities, the device represents an excellent and complete HMI interface ideal for automated production lines attended by operators.

 **DataVS2 - VSM**



VISION

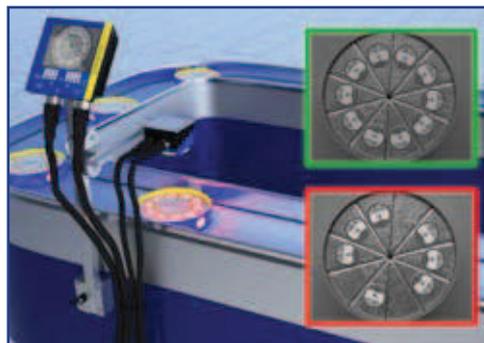


HIGHLIGHTS

- 3.5" LCD color display and 8 push buttons
- 20 additional memory slots
- Images and results visualization
- Parameter fine tuning
- DIN rail or panel mounting
- 2 industrial M12 connectors

APPLICATIONS

Packaging & Food



Bottling & Beverages



PRODUCT DESCRIPTION



1. Display
2. Status LEDs
3. STATUS button
4. TEACH button
5. Power connector
6. ARROWS button
7. ETHERNET connector
8. ESC button
9. SET button
10. Power, OUT, ETH Link LEDs

MAIN FEATURES



Monitoring

VSM displays the pictures acquired by the connected DataVS2. The results of each tool are shown in a graphical way (GREEN = OK, RED = FAILURE). Several different monitoring options are available (e.g. standard, display on condition, zoom mode).



Inspection switching

VSM allows to change the running inspection in a quick and easy way. Moreover, the unit has 20 additional memory slots that extend the DataVS2 capability to manage different items on the same production line.



Parameter fine-tuning

All the vision sensor functioning parameters can be adjusted directly with the VSM. There is no need to use the PC to change the configuration of the camera any more since all the settings and the thresholds can be adjusted on-the-fly.



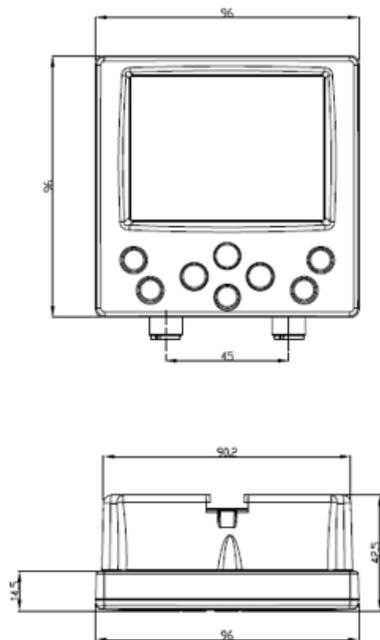
Account management

VSM is able to manage up to three different user accounts. This allows to protect the device configuration and to assign different rights to different groups of users.

TECHNICAL DATA

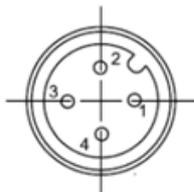
Power supply:	24 Vcc ± 10%
Ripple:	2 Vpp max
Consumption:	140 mA @ 24 Vcc
Dimensions:	96 x 96 x 39 mm
Indicators:	8 LEDs + 3.5" LCD color display
Setup:	DataVS2 GUI
Data retention:	Non-volatile FLASH memory
Operating temperature:	-10 °C ... +55 °C
Storage temperature:	-25 °C ... +70 °C
Vibration:	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance:	11 ms (30 G) 6 shocks for every axis (EN60068-2-27)
Housing material:	ABS
Mechanical protection:	IP40
Connections:	2 x M12 4 poles
Weight:	170 g

DIMENSIONS



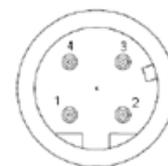
mm

CONNECTIONS



M12 4 Poles
(Power supply)

PIN 1: + 24 Vdc
PIN 2: Reserved
PIN 3: Ground
PIN 4: Reserved



M12 4 Poles
(Ethernet)

PIN 1: Ethernet RX+
PIN 2: Ethernet TX+
PIN 3: Ethernet RX-
PIN 4: Ethernet TX-

MODEL SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
DataVS2-VSM	VSM monitor for DataVS2 series	95A901480

ACCESSORY SELECTION AND ORDER INFORMATION

MODEL	DESCRIPTION	ORDER N°
CV-A1-32-B-03	3m M12 4pin shielded power supply cable	95A252790
CV-A1-32-B-05	5m M12 4pin shielded power supply cable	95A252800
DataVS-CV-VSM-02	2m point-to-point DataVS2-VSM connection cable	95A901700
DataVS-CV-VSM-04	4m point-to-point DataVS2-VSM connection cable	95A901710
DataVS-CV-RJ45C-03	3m ethernet crossed cable	95A901340
DataVS-CV-RJ45D-03	3m ethernet straight cable	95A901350



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