

# CATALOG



>Photoelectric  
Sensors







# DATALOGIC: SOLUTIONS FOR INDUSTRIAL AUTOMATION

Datalogic Industrial Automation is an industry-leader in products and solutions for material handling, traceability, inspection and detection applications.

With the acquisitions of Accu-Sort and PPT Vision in 2012, the company offers a comprehensive portfolio of products, technologies and solutions delivered by a team of skilled professionals dedicated in providing superior service to customers.

Datalogic is the partner of choice for organizations in the Industrial Automation market.

## Factory Automation

- AUTOMOTIVE
- ELECTRONICS
- FOOD & BEVERAGE
- GENERAL MANUFACTURING
- HEALTHCARE - PHARMACEUTICAL

## Transportation & Logistics

- AIRPORTS
- COURIER, EXPRESS PARCEL (CEP)
- POSTAL
- RETAIL DISTRIBUTION

## Product portfolio

Datalogic Industrial Automation has the most comprehensive offering of products and solutions for traceability, inspection and detection applications in factory automation and logistics processes: industrial LASER scanners, cameras and vision systems, sensors, machine safety devices and LASER markers.

## Identification

Even the most demanding and efficient automation of identification processes can leverage Datalogic Industrial Automation's leadership in the market. We manufacture the world's most comprehensive family of fixed-mount line and omnidirectional scanners.

We also offer the latest CCD vision technology with the world's largest installed base of CCD systems for bar code reading and dimensioning.

All of our AUTO-ID products and solutions leverage the broadest decoding library that has been developed through the years. Datalogic's comprehensive AUTO-ID portfolio is used in a wide range of applications and machines which are behind many of the everyday processes that keeps the global economy running.

## Sensors & Safety

Datalogic Industrial Automation offers a best-in-class, comprehensive product portfolio of photoelectric and proximity sensors, rotary encoders, temperature controllers and measurement devices, as well as type 2 and type 4 safety light curtains.

These product lines provide solutions for applications involving color, contrast and luminescence, label detection, dimensional and distance measurement, in addition to machine safeguarding and access control in dangerous areas.

## Machine Vision

The Datalogic Industrial Automation machine vision product line encompasses both hardware and software while covering a wide range of performance and price point requirements. The vision portfolio of products and solutions ranges from simple vision sensors to smart cameras and embedded vision systems.

## Laser Marking

Laser Marking sources and systems provide value driven marking solutions for automotive, metal tools, medical, electronics and packaging. Datalogic Industrial Automation offers an extensive range of state-of-the-art technology, excellent performance and high reliability marking equipment.



# PHOTOELECTRIC SENSORS

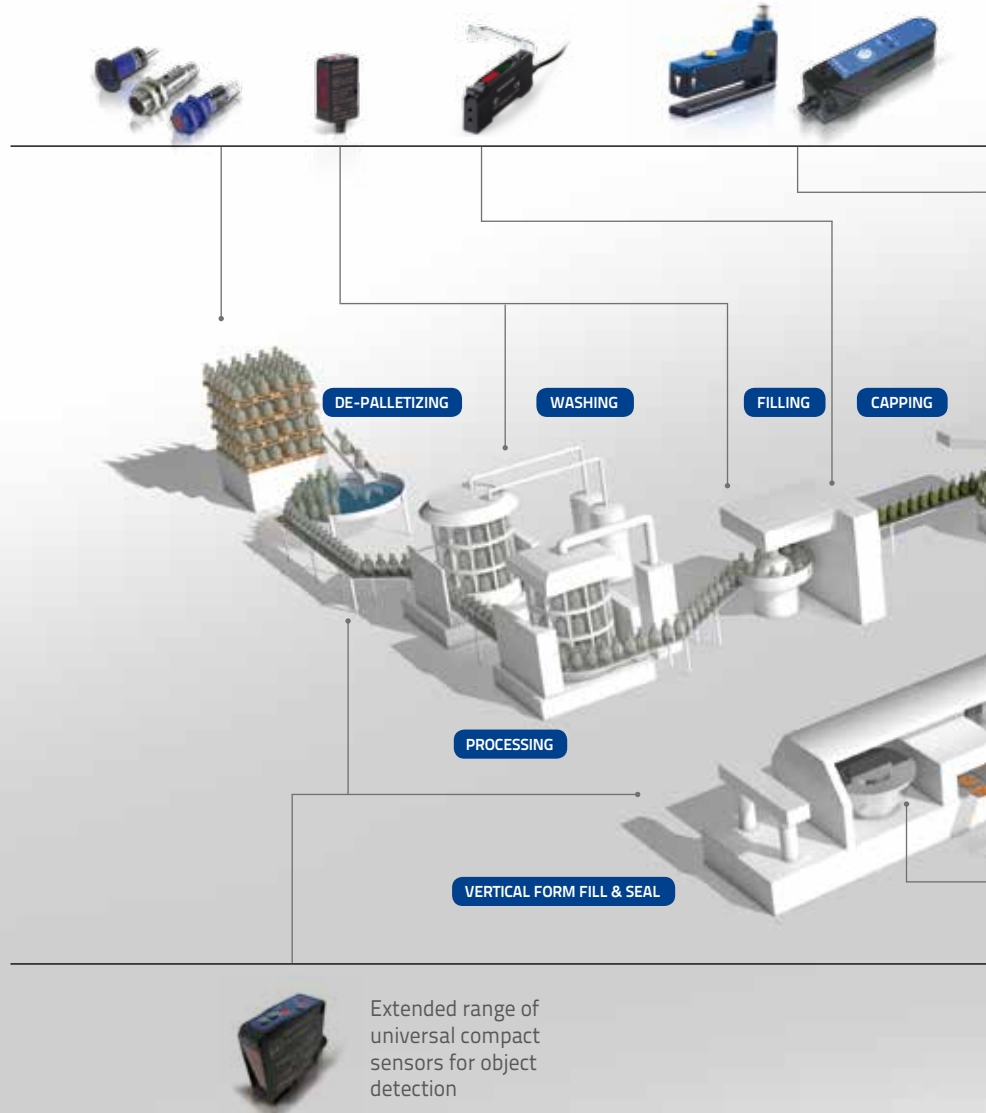
**Datalogic** has more than 40 years of experience in the sensors and safety sector, developing their first product, a **Photoelectric Sensor**, in 1972. Today, Datalogic is one of the largest manufacturers of sensor and safety products worldwide.

**Datalogic** is the market leader in Italy for photoelectric sensors and safety light curtains, ranking among the **top-10 manufacturers** in Europe by market share.

Datalogic's **Sensors and Safety** portfolio solves customer applications in **Factory Automation**, specializing in Processing and Packaging machinery, and Automated Material Handling Systems related to manufacturing industries such as Automotive, Electronics, Pharmaceutical, Food & Beverage, Paper and Printing, Wood-working, Ceramics, Glass, and Textiles.

Tubular, Miniature and Fiber Optic sensors for object detection in reduced space

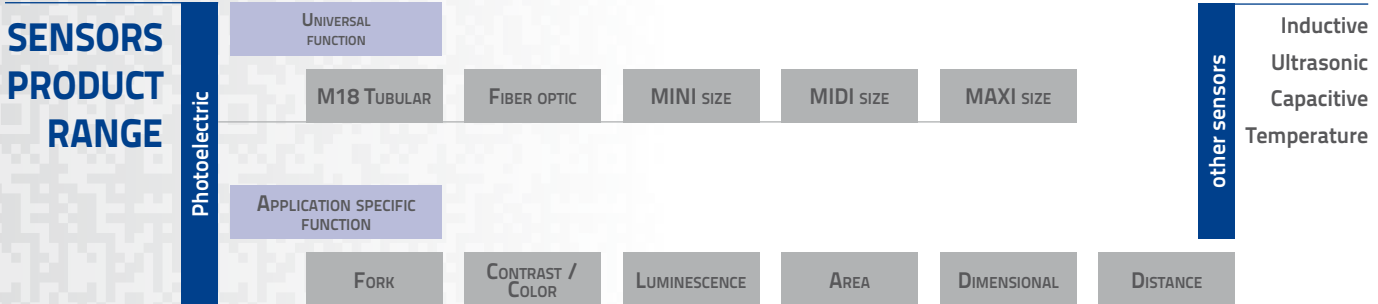
Fork sensors for label detection



- APPLICATIONS**
- De-Palletizing
  - Washing
  - Filling
  - Capping
  - Labeling
  - Case Packing
  - Stretch-wrapping
  - Palletizing
  - Storage & Retrieval
  - Cartoning
  - Wrapping
  - Vertical Form Fill & Seal
  - Processing

Extended range of universal compact sensors for object detection

## SENSOR PRODUCTS



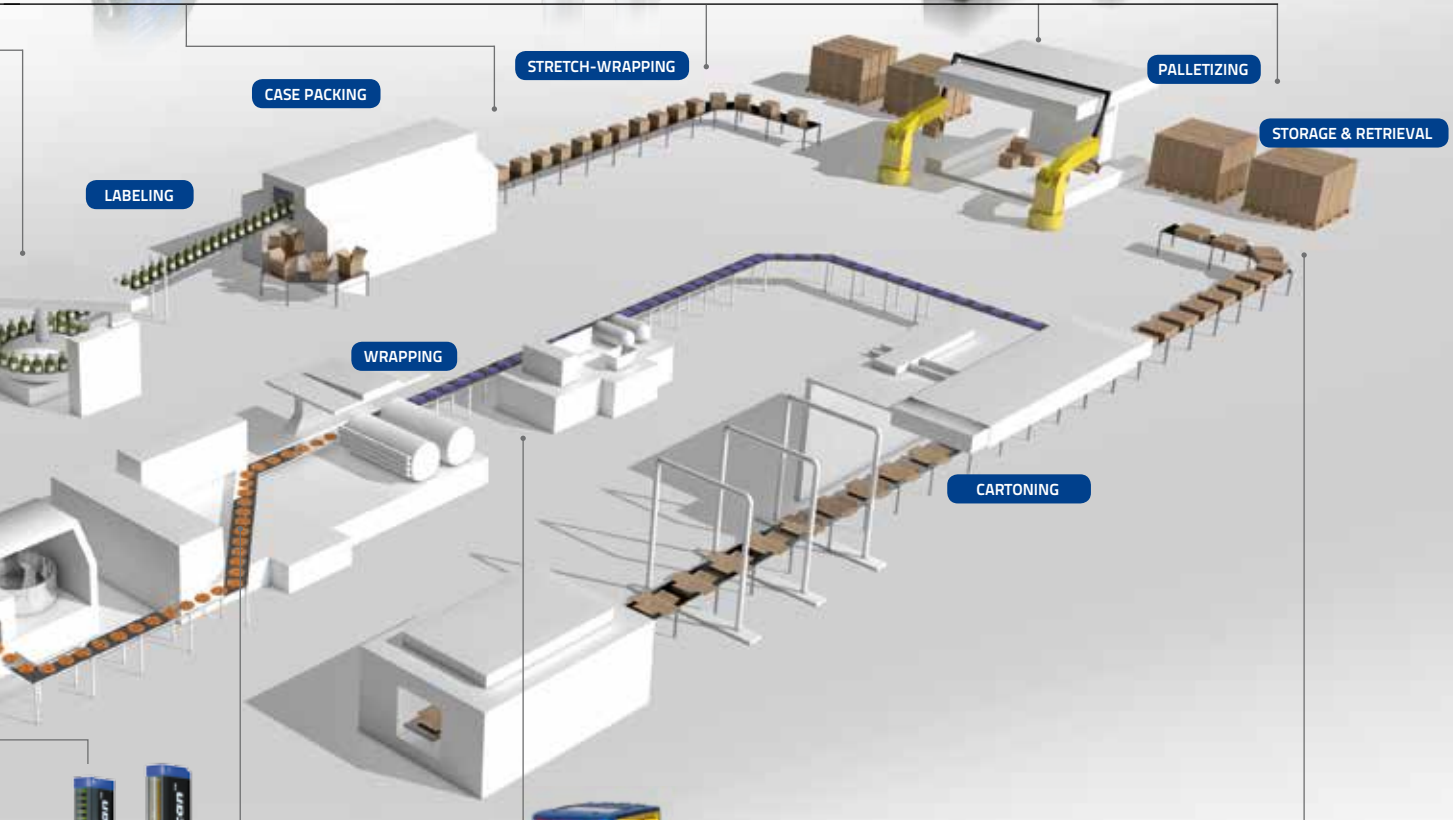
Contrast and Luminescence sensors for registration marks detection



Area sensors for the detection of objects with different shape and dimensions



Maxi and Compact sensors for object detection



Dimensional sensors for height/width measurement and object positioning



TOF distance sensors for measurement and object positioning



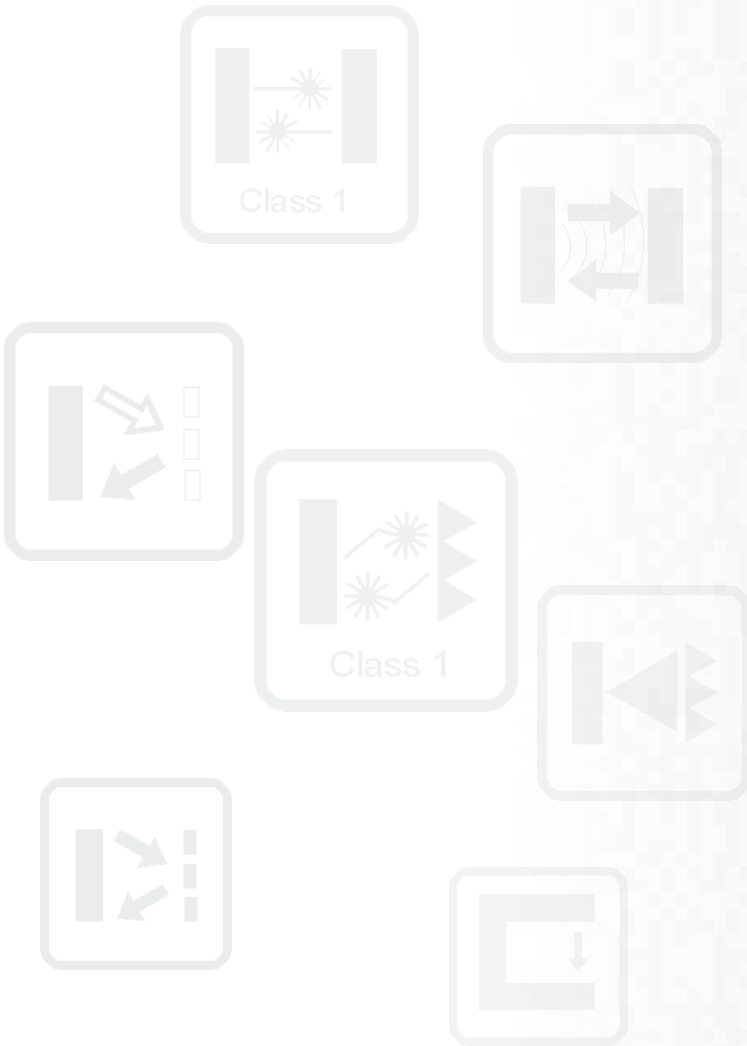




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A Photoelectric sensor is a device used to detect the distance, absence or presence of an object, as well as to distinguish different items on the basis of their light absorption and reflection properties.

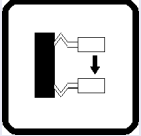
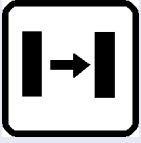
A photoelectric sensor consists of an emitter and receiver unit, coupled by either a modulated LED or LASER light beam. Photoelectric sensors are available in three different functional types depending the environment and the detection objects physical properties: through beam, retroreflective, and proximity. These sensors are ideal for generic industrial applications such as counting, presence control, or automatic positioning.

In addition, Datalogic offers solutions in a variety of applications such as contrast reading, distance and area measuring, as well as luminescence and color detection.

# PHOTOELECTRIC SENSORS

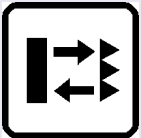
# PHOTOELECTRIC SENSORS

## THROUGH BEAM



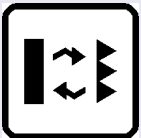
The light emitter and receiver are contained in two different housings and installed facing each other. The light beam released by the emitter directly hits the receiver; every object interrupting the beam is therefore detected. This system is used to obtain significant signal differences (when the light directly hits the receiver and when the object interrupts the beam) with the highest Excess Gain and the largest operating distance (up to 60 m). Moreover, these sensors can operate in the harshest working conditions, such as dirty or dusty environments. The through beam optic function typically operates in the dark mode: the output is activated when the object interrupts the light beam between emitter and receiver.

## RETROREFLECTIVE



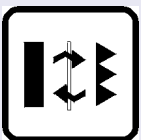
Both emitter and receiver are located inside the same housing for retro-reflective photoelectric sensors. Utilizing a prismatic reflector, the emitted light beam is reflected onto the receiver, detecting the object when it interrupts the light beam.

## POLARIZED RETROREFLECTIVE



In polarized retroreflective sensors, the emitted light is polarized on a vertical plane through a polarization filter. The prismatic reflector rotates the light plane by 90°. A polarization filter placed on the receiver selects only the horizontal plane reflected by the prismatic reflector, ignoring the light reflected by other light sources. This technique guarantees a reliable signal reception, reaching significant distances.

## RETROREFLECTIVE FOR TRANSPARENT



For the detection of transparent objects, such as PET bottles or Mylar sheets, a low-hysteresis polarized retroreflective model (which detects small signal differences) can be used.

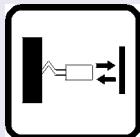
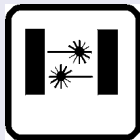
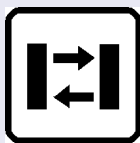
These sensors elaborate the slight signal differences received when the light beam passes through a transparent object, avoiding false detections due to the nature of this kind of targets.

This technique mostly suits applications for the detection of objects positioned at considerable distances, where a prismatic reflector can be installed.

Typically, the operating distance proportionally increases with the reflector's dimensions.

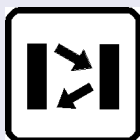


## DIFFUSE PROXIMITY



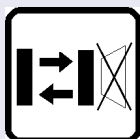
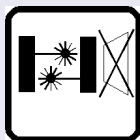
In photoelectric sensors with this optic function, both emitter and receiver are placed inside the same housing. These sensors work with weaker signals because the emitted light beam is reflected to the receiver by the object. As a consequence, the excess gain and the operating distance are reduced. However objects are detected without a prismatic reflector, making installations quick and easy.

## FIXED FOCUS PROXIMITY



Fixed focus proximity sensors have a simple fixed background suppression distance, beyond which no objects are detected. The fixed triangulation of the optics greatly reduces the detection distance of reflective objects. The visible red emission simplifies the sensor's installation.

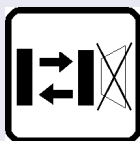
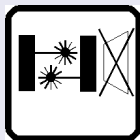
## BACKGROUND SUPPRESSION



Background suppression sensors detect objects while avoiding reflections from the background. When the sensor is used for the first time, the proper background suppression distance has to be set through a distance adjustment trimmer. Once the background has been acquired, the objects can be detected regardless of their color. Background suppression sensors are not very reliable with highly clear, transparent or shiny objects.

## BACKGROUND SUPPRESSION

### FOR CLEAR DETECTION



Background suppression technology often has difficulty reliably detecting transparent, clear, or shiny objects. These objects generate false detections due to their highly reflective surfaces. Datalogic's patented background suppression technology guarantees reliable and repeatable detection, ignoring the false detections. Models are available with LED emission, ideal for reflections caused by moving surfaces such as conveyor belts, or with LASER emission for the detection of small objects on fixed or highly reflective backgrounds. Since background suppression sensors do not require a prismatic reflector, these sensors can substitute for a polarized retroreflective sensor for transparent objects for shorter distances.

# PHOTOELECTRIC SENSORS

## CONTRAST



Contrast sensors distinguish the received light beams on the basis of their degrees of intensity, which depend on the color or material of the detected surfaces. A typical application of these sensors is the detection of colored registration marks used in packaging machines to synchronize the folding, cutting and welding phases. In presence of colored surfaces, the contrast is highlighted using a LED with colored light emission, typically a selectable red, green or blue LED. The white light emission allows to detect very slight contrasts in similar materials and colors.

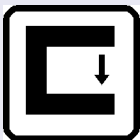
## LUMINESCENCE



Luminescence sensors emit invisible ultraviolet light, which is reflected at a higher wavelength (minor energy) on the fluorescent and phosphorescent surface, shifting into the visible light spectrum.

The ultraviolet emission is modulated and the visible light reception is synchronized. The maximum immunity against external interferences, like reflections caused by very shiny surfaces, is obtained and fluorescent targets, invisible to the human eye, can be detected. Luminescence sensors are used in several industrial fields to detect items containing phosphorous such as labels on glass or mirrors, fluorescent marks marked on tiles, fluorescent glues on paper, cutting and sewing guides, as well as fluorescent paints or lubricants.

## FORK



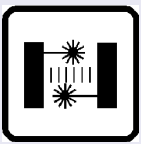
A fork sensor, is based on a particular model of the through beam sensor, where emitter and receiver are placed opposite to each other on the internal sides of an 'U-shaped' housing. Any target passing through the internal slot interrupts the beam and is detected. The most typical fork sensor applications are hole/teeth detection on wheels, label detection on thin supports, and control of edge and continuity of sheets of labels or tapes. The emission is generally infrared or red light in order to detect colored registration marks on translucent films.

## COLOR



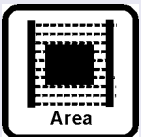
The color of an object is identified according to the different reflection coefficients obtained with the red (R), green (G) and blue (B) light emissions. For instance, yellow is characterized by R=50% G=50% B=0% reflections, orange by R=75% G=25% B=0%, pink by R=50% G=0% B=0%, the combinations are infinite. Color sensors cover a wide variety of applications, ranging from quality and process controls to automatic material handling for the identification, orientation, and selection of objects according to their color.

## DISTANCE



Datalogic distance sensors are based on Time of Flight (T.O.F.): the distance is calculated on the basis of the time between the moment the LASER pulse is generated and the moment the emitted light is reflected off the object, back to the sensor. These sensors are generally used to measure an object's distance within a selected range, while the output is linearly scaled to the analog signal (4...20mA). This technology provides high precision and fast measurements in many applications, such as automatic warehousing (to drive industrial vehicles and avoid collisions), packaging and material handling.

## AREA/DIMENSION LIGHT GRIDS



Area and Dimension light grids utilize several light beams for area or dimensional measurements of objects. An object's area and size are measured using parallel cross-beams, which identify obscured beams, providing accurate information to a host GUI or PC. Models of light grids vary by length to match each application requirements.

# SELECTION CHART

## UNIVERSAL PHOTO

	TUBULAR		MINIATURE				
	S15	S50/S51	SMall	S3Z	S40	S41	S45
<b>MAX OPERATING DISTANCE</b>							
Through beam 	0...20 m	0...30 m  0...60 m	0...2 m	0...15 m 0...30 m 		0,1...6 m	0...15 m 0...20 m 
Retroreflective 	0,1...5 m	0,1...5 m	0,05...1,5 m				
Polarized retroreflective 	0,1...4 m	0,1...4,5 m 0,1...16 m 	0,1...1 m	0,05...4 m 0,3...10 m 	0,1...2,5 m 0,1...6 m 	0,1...2,5 m	0,1...7 m 0...2 m (coaxial) 0,1...15 m 
Retroreflective for transparent 	0,1...0,8 m	0,1...1,7 m		0...2 m	100...700 mm	100...700 mm	0...2 m
Diffuse proximity 	1...100 mm 1...350 mm 1...1000 mm	0...100 mm 0...400 mm 0...700 mm 0...350 m 		5...150 mm 0...700 mm	5...300 mm 5...150 m 	2...350 mm	0...800 mm 1...250 m 
Fixed focus 	0...50 mm	100 mm	3...15 mm 3...20 mm 3...30 mm 3...50 mm			110 mm	
Background suppression 	40...120 mm	0...100 mm		0...300 mm 0...300 m 	15...100 mm 15...60 mm 		1...200 mm 3...400 mm 4...120 m 
Fiber optic 		0...100 mm (through beam) 0...30 mm (diffuse proximity)					
Contrast 		10 ±2 mm					10 ±2 mm
Luminescence 		0...20 mm					
Page	20	28	46	50	58	64	70

(\*) The maximum operating distance is determined by the optic fiber and accessory lens used and the response speed selected in the specific model

The table shows the maximum operating distance reached by different sensors models. Some measures indicate only the highest performances obtained by the corresponding sensor. Other operating distance values might be available for the same series and some optic functions might be carried out through LED or LASER emission, reaching different distances. For more information refer to the dedicated product page in this guide or download datasheets and manuals from our website ([www.datalogic.com](http://www.datalogic.com))



# ELECTRIC SENSORS

	COMPACT					MAXI		FIBER OPTIC	
	S8	S6	S60	S62	S90	S300 PA	S300 PR	S7	S70
									
0...12 m	0...25 m	20 m	0...20 m 0...60 m 	0...25 m	0...60 m 	0...50 m	0...60 m	0...300 mm (*)	0...1740 mm (*)
0,01...8 m		0,1...6 m		0,1...13 m		0,1...15 m			
0,01...3 m 0,01...5,5 m	0...5 m 0...10 m 	0,1...5 m	0,1...8 m 0...4 m (coaxial) 0,1...20 m 	0,1...8 m 0,3...20 m 	0...3 m 0,1...6 m 0,1...20 m 	0,1...10 m	0,1...22 m		
	0...0,8 m 0...2 m		0...2 m (coaxial)		0...1,5 m				
2...300 mm 2...500 mm	0...500 mm	10...900 mm 10...2000 mm	0...100 cm 0...200 cm (long range) 0...60 cm 	0...900 mm 0...2000 mm 0...900 mm 	10...1000 mm 50...2000 mm 0...600 mm 	50...2000 m	0...5000 mm	0...100 mm (*)	0...550 mm (*)
70 mm									
0...100 mm	50...300 mm 20...200 mm 	10...100 mm 30...250 mm 100...500 mm	7...20 cm 5...10 cm 	30...300 mm 60...600 mm 60...1200 mm 200...2000 mm 30...1500 mm 	20...200 mm 5...100 mm 	0,2...2 m	400...2500 mm		
	9 ±2 mm		19 mm +/-2 mm (white)		19 ±2 mm				
	10...20 mm		0...40 mm		0...40 mm				
78	86	94	100	110	118	128	134	140	144

r. Other  
e specific

# SELECTION CHART

## APPLICATION PHOTOELECTRIC

		FORK				CONTRAST	
		SR21	SR23	SRF	SRX3	TLμ	TL46
MAX OPERATING DISTANCE							
Slot (width)		2 mm	5 mm	30, 50, 80, 120 mm	4 mm		
Contrast						6...60 mm (*)	9 ±3 mm (*)
Luminescence							
Color & Contrast							
Area							
Dimensional							
Distance							
Page		162	166	170	174	178	184




(\*) The maximum operating distance is determined by the lens used in the specific model

The table shows the maximum operating distance reached by different sensors models. Some measures indicate only the highest performances obtained by the corresponding sensor. Other operating distance values might be available for the same series and some optic functions might be carried out through LED or LASER emission, reaching different distances. For more specific information refer to the dedicated product page in this guide or download datasheets and manuals from our website ([www.datalogic.com](http://www.datalogic.com))

# RIC SENSORS

LUMINESCENCE	COLOR & CONTRAST	AREA	DIMENSION LIGHT GRIDS		DISTANCE		
LD-46	S65	AS1	DS1	DS2	S80	S81	S85
							
	12...20 mm						
10...50 mm (*)							
	5...45 mm						
		0,3...3 m					
			0,15...4 m	0,3...10 m			
					0,3...100,3 m	0,3...4 m	0,2...20 m
190	194	200	204	208	212	216	220

## ACCESSORIES

	FIBER OPTIC	CONNECTORS	REFLECTORS
	OF/OFA	CS	R
			
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# REFERENCE GUIDE



Tubular  
Miniature  
Compact  
Maxi

Fiber optic

Fork

Contrast

Luminescence

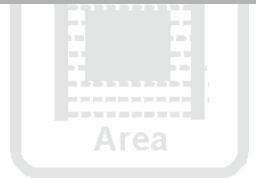
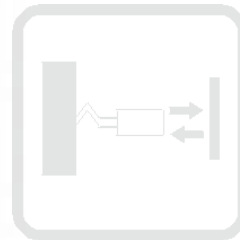
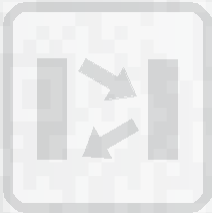
Color & Contrast

Area

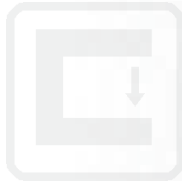
Dimension light grids

Distance

Accessories







# REFERENCE GUIDE

# TUBULAR SENSORS

## S15

*Plastic and stainless steel tubular M18 photoelectric sensors every environment*

- Short case models for cost and space savings
- Plastic and stainless steel case with IP69K protection
- All optic functions at optimal operating distances
- Models with fixed settings or adjustment trimmer
- Cable, M12 connector and pig-tail models



### APPLICATIONS

- Processing and Packaging machinery
- Assembling and Conveyor lines



(\*) Stainless steel models.  
ATEX II 3DG

S15		
Through beam		0...20 m
Retroreflective (on R2 reflector)		0,1...5 m
Polarized retroreflective		0,1...4 m
Retroreflective for transparent (on R2 reflector)		0,1...0,8 m
Diffuse proximity		short distance 0...100 mm medium distance 0...350 mm long distance 1 m
Fixed focus		0...50 mm
Background suppression		40...120 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	▪
Approximate dimensions (mm)		M18x44/48
Housing material		ABS, INOX AISI 316L
Mechanical protection		IP65 - IP67 - IP69K

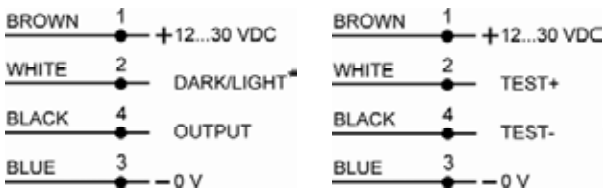
## TECHNICAL DATA

Power supply	12 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption	25 mA max.
Light emission	red LED 660 nm (mod. S15...B/D/T/M) IR LED 880 nm (mod. S15...A/C/G)
Setting	mono-turn trimmer (mod. S15...A01/B01/Cx1/T01/F01) and 4 turns (mod. S15...M01)
Operating mode	white wire or pin 2 not connected: LIGHT mode (mod. S15...C/D/M)/DARK mode (mod. S15...A/B/T/F) white wire or pin 2 connected to: 0 V DARK mode, +Vcc LIGHT mode
Indicators	yellow OUTPUT LED green STABILITY LED, POWER LED (mod. S15...G)
Output	PNP or NPN
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	1 ms (mod. S15...A/B/C/T/M) 2 ms (mod. S15...F) 500 µs (mod. S15...D)
Switching frequency	500 Hz (mod. S15...A/B/C/T/M) 250 Hz (mod. S15...F) 1 kHz (mod. S15...D)
Connection	M12 4-pole connector, 2 m cable Ø 4 mm, 150 mm length Ø 4 mm cable with M12 4-pole connector (pig-tail vers.)
Dielectric strength	500 Vac 1 min., between electronics and housing
Insulation resistance	>20 MΩ 500 Vdc, between electronics and housing
Mechanical protection	IP65, IP67, IP69K
Ambient light rejection	according to EN 60947-5-2
Vibrations	0.5 mm amplitude, 10 ... 55 Hz frequency, for each axis (EN60068-2-6)
Housing material	ABS TERLURAN, INOX AISI 316L (mod. S15-PA) - (mod. S15-NA)
Lens material	plastic PMMA
Operating temperature	-25 ... 55°C
Storage temperature	-25 ... 70°C
Weight	40 g max. conn. vers., 55 g max. cable vers., 35 g max. pig-tail vers.

## CONNECTIONS

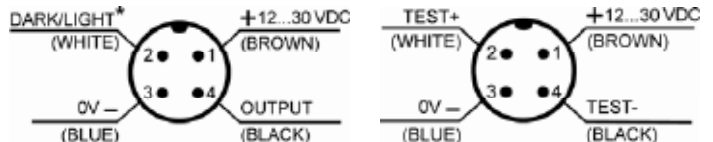
### CABLE AND PIG-TAIL

Through beam emitter



### M12 CONNECTOR

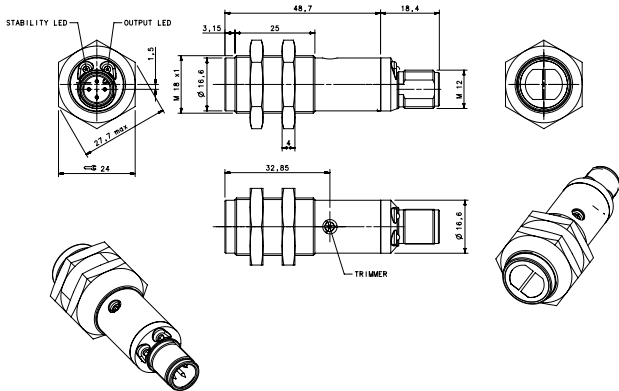
Through beam emitter



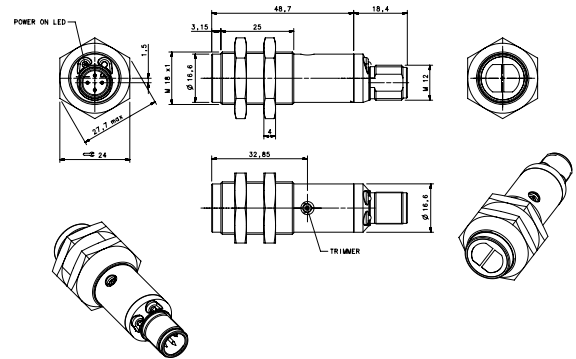


## STAINLESS STEEL

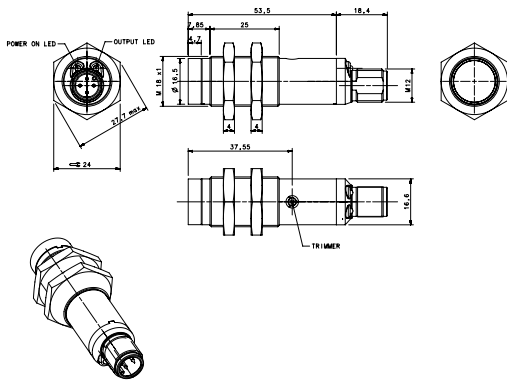
M12 connector version



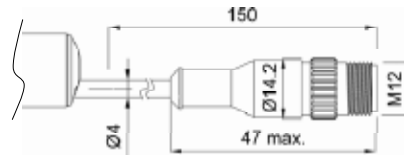
Through beam emitter - M12 connector version



Background suppression - M12 connector version

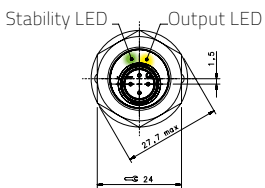


Pig-tail version

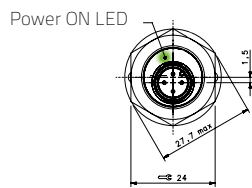


## INDICATORS AND SETTINGS

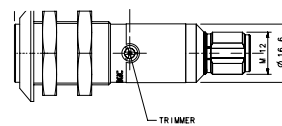
Plastic/metal case with trimmer, M12 connector



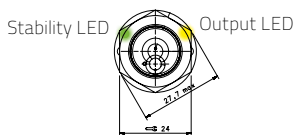
A01, B01, C11, C31, T01, F01, M01



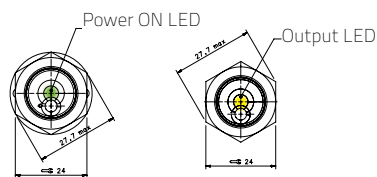
G01



Plastic, no trimmer, Cable, Pig Tail

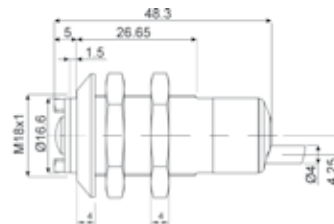


A00, B00, C10, C00, T01, D50



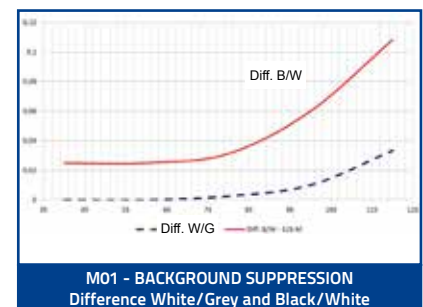
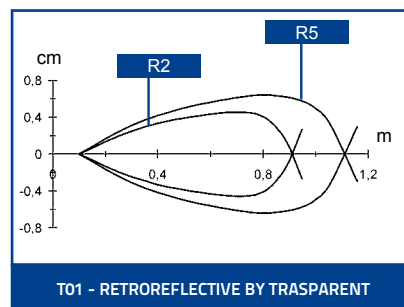
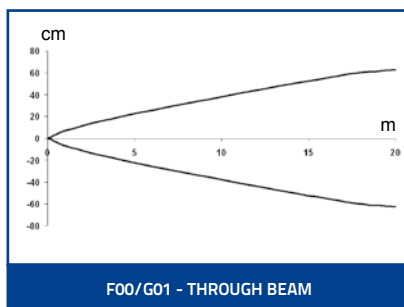
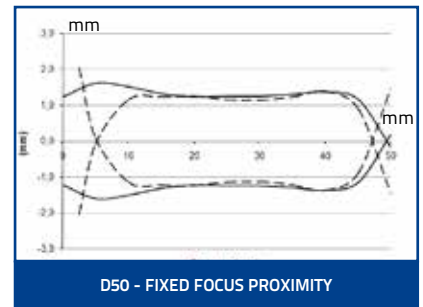
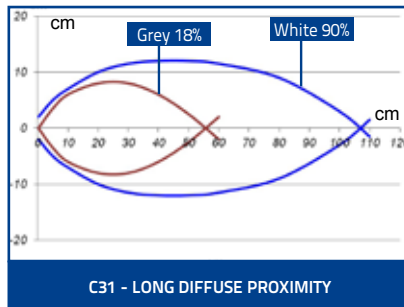
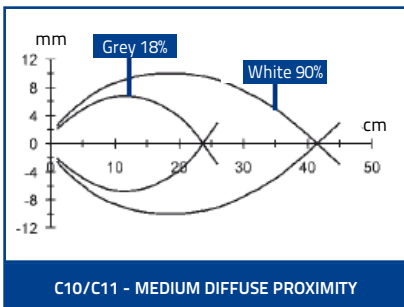
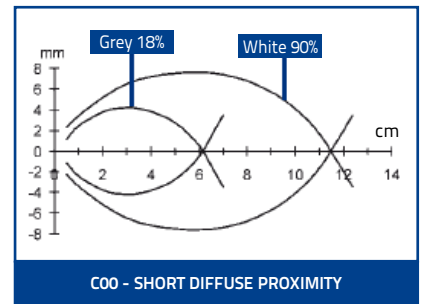
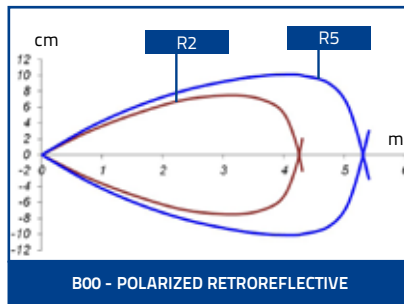
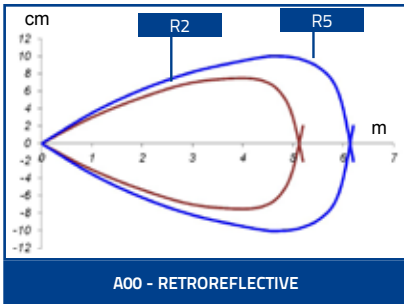
G00

F00



# TUBULAR SENSORS

## DETECTION DIAGRAMS



## MODEL SELECTION AND ORDER INFORMATION

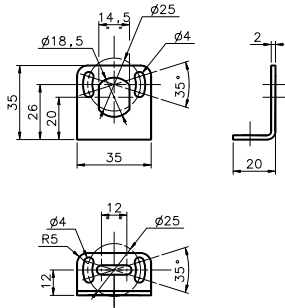
OPTIC FUNCTION	HOUSING	CONNECTION	OUTPUT	MODEL	ORDER No.
Retroreflective	Plastic	2 m cable	NPN	S15-PA-2-A00-NK	952301051
			PNP	S15-PA-2-A00-PK	952301001
		M12 connector	NPN	S15-PA-5-A01-NK	952301300
			PNP	S15-PA-5-A01-PK	952301220
		pig-tail	NPN	S15-PA-3-A00-NK	952301161
			PNP	S15-PA-3-A00-PK	952301111
	Stainless Steel	M12 connector	NPN	S15-NA-5-A01-NK	952301450
			PNP	S15-NA-5-A01-PK	952301370
Polarized Retroreflective	Plastic	2 m cable	NPN	S15-PA-2-B00-NK	952301061
			PNP	S15-PA-2-B00-PK	952301011
		M12 connector	NPN	S15-PA-5-B01-NK	952301310
			PNP	S15-PA-5-B01-PK	952301230
		pig-tail	NPN	S15-PA-3-B00-NK	952301171
			PNP	S15-PA-3-B00-PK	952301121
	Stainless Steel	M12 connector	NPN	S15-NA-5-B01-NK	952301460
			PNP	S15-NA-5-B01-PK	952301380
Diffuse proximity (short distance)	Plastic	2 m cable	NPN	S15-PA-2-C00-NK	952301071
			PNP	S15-PA-2-C00-PK	952301021
		pig-tail	NPN	S15-PA-3-C00-NK	952301181
			PNP	S15-PA-3-C00-PK	952301131
Diffuse proximity (medium distance)	Plastic	2 m cable	NPN	S15-PA-2-C10-NK	952301081
			PNP	S15-PA-2-C10-PK	952301031
		M12 connector	NPN	S15-PA-5-C11-NK	952301330
			PNP	S15-PA-5-C11-PK	952301250
		pig-tail	NPN	S15-PA-3-C10-NK	952301191
			PNP	S15-PA-3-C10-PK	952301141
	Stainless Steel	M12 connector	NPN	S15-NA-5-C11-NK	952301480
			PNP	S15-NA-5-C11-PK	952301400
Diffuse proximity (long distance)	Plastic	M12 connector	NPN	S15-PA-5-C31-NK	952301340
			PNP	S15-PA-5-C31-PK	952301260
	Stainless Steel		NPN	S15-NA-5-C31-NK	952301490
			PNP	S15-NA-5-C31-PK	952301410
Fixed focus	Plastic	2 m cable	NPN	S15-PA-2-D50-NK	952301530
			PNP	S15-PA-2-D50-PK	952301520
		pig-tail	NPN	S15-PA-3-D50-NK	952301550
			PNP	S15-PA-3-D50-PK	952301540
Through beam receiver	Plastic	2 m cable	NPN	S15-PA-2-F00-NK	952301091
			PNP	S15-PA-2-F00-PK	952301041
		M12 connector	NPN	S15-PA-5-F01-NK	952301360
			PNP	S15-PA-5-F01-PK	952301280
		pig-tail	NPN	S15-PA-3-F00-NK	952301201
			PNP	S15-PA-3-F00-PK	952301151
	Stainless Steel	M12 connector	NPN	S15-NA-5-F01-NK	952301510
			PNP	S15-NA-5-F01-PK	952301430
Through beam emitter	Plastic	2 m cable	-	S15-PA-2-G00-XG	952301101
		M12 connector	-	S15-PA-5-G01-XG	952301290
		pig-tail	-	S15-PA-3-G00-XG	952301211
	Stainless Steel	M12 connector	-	S15-NA-5-G01-XG	952301440
Background suppression	Plastic	M12 connector	NPN	S15-PA-5-M01-NK	952301350
			PNP	S15-PA-5-M01-PK	952301270
	Stainless Steel		NPN	S15-NA-5-M01-NK	952301500
			PNP	S15-NA-5-M01-PK	952301420
Transparent	Plastic	M12 connector	NPN	S15-PA-5-T01-NK	952301320
			PNP	S15-PA-5-T01-PK	952301240
	Stainless Steel		NPN	S15-NA-5-T01-NK	952301470
			PNP	S15-NA-5-T01-PK	952301390



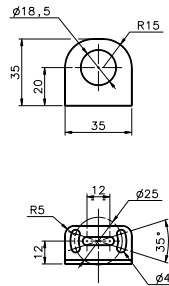
# TUBULAR SENSORS

## ACCESSORIES

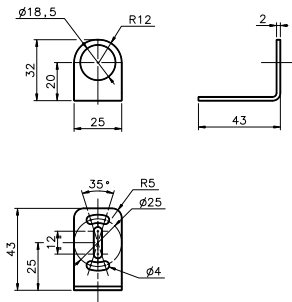
ST-5010



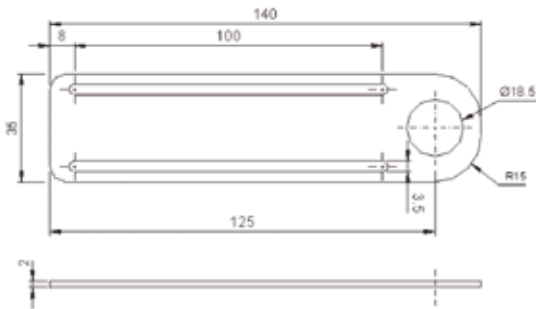
ST-5011



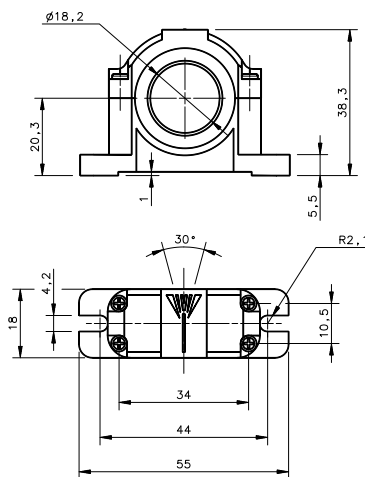
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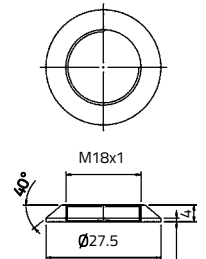
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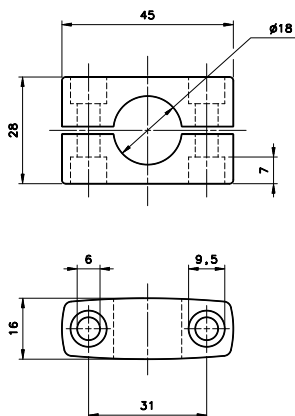
SWING-18



PLASTIC NUT



SP-40



mm

MODEL	DESCRIPTION	ORDER No.
ST-5010	M18/14 mounting bracket	95ACC5230
ST-5011	M18 mounting bracket short	95ACC5240
ST-5012	M18 mounting bracket long	95ACC5250
ST-5017	M18 mounting bracket	95ACC5270
ST1218	M12/M18 mounting brackets	95ACC3340
ST1830	M18/M30 mounting brackets	95ACC3350
SP-40	mounting bracket tubular	95ACC1370
SWING-18	Adjustable support for M18 tubular sensors	895000006
PLASTIC NUT	flared mounting nut	95ACC2630

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003

# TUBULAR SENSORS

## S50/S51

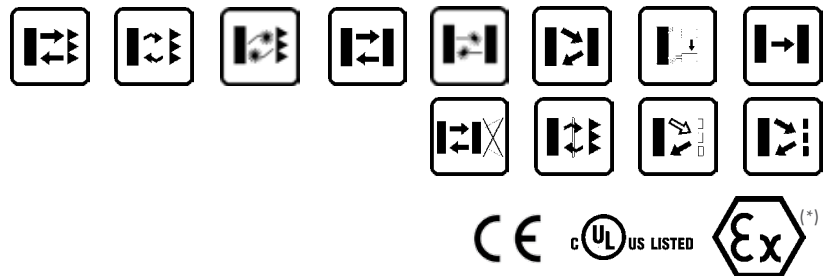
Extended range of standard "One for All" photoelectric tubular M18 sensors

- All optic functions and LASER models
- M18 flat plastic with universal mounting
- Available in M18 metal housing
- Axial or radial optics, cable or connector
- Standard 4-wire NO-NC NPN or PNP output



### APPLICATIONS

- Processing and Packaging machinery
- Conveyor lines, material handling
- Ceramics intralogistics
- Automated warehousing



(\*) Axial models.  
ATEX II 3DG

S50/S51		
Through beam		0...20 m 0...60 m (class 1 LASER) (S50)
Retroreflective (on R2 reflector)		0,1...4 m
Polarized retroreflective		0,1...4 m (S50) 0,1...3 m (S51) 0,1...16 m (class 1 LASER) (S50)
Retroreflective for transparent (on R2 reflector)		0,1...1,3 m (S50)
Diffuse proximity		short distance 0...100 mm medium distance 0...400 mm (S50) 0...450 mm (S51) long distance 0...700 mm long distance LASER 0...350 mm
Fixed focus		100 mm (S50)
Background suppression		50...100 mm (S50)
Through beam with fiber optic		0...100 mm (S50)
Diffuse proximity with fiber optic		0...30 mm (S50)
Contrast sensor		10 ±2 mm
Luminescence sensor		0...20 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		M18x 55/68
Housing material		PBT, nickel plated brass
Mechanical protection		IP67

TECHNICAL DATA

Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	35 mA max. (mod. S50...A00/B01/C01/C10/C21/D00/E01/T01) 30 mA max. (mod. S50...F01/M03, S51...A00/B01/C01/C10/C20/F00) 25 mA max. (mod. S50...W03/U03)
Light emission	red LED 630 nm (mod. S50...D00/E01, S50-PA/MA...M03) red LED 660 nm (mod. S50...B01/T01, S51...B01) red LED 670 nm (mod. S50-PS/MS...M03) IR LED 880 nm (mod. S50/51...A00/C01/C10/C20/C21/G00) white LED 400-700 nm (mod. S50...W03) UV LED 370 nm (mod. S50...U03) red Laser 650 nm (mod. S50...G00/F01/B01/C01)
Setting	sensitivity trimmer (mod. B01/C01/C21/E01/F01/T01) teach-in push-button (mod. M03/W03/U03)
Operating mode	LIGHT mode on N.O. output / DARK mode on N.C. output (mod.S50...C01/C10/C21/D00/M03/U03) DARK mode on N.O. output / LIGHT mode on N.C. output (mod.S50...A00/B01/E01/F01/T01/W03) white wire or pin 2 connected to +10...30V LIGHT mode/ to 0V DARK mode (mod. S51) white wire or pin 2 not connected LIGHT mode (mod. S51...C01/C10/C20)/ DARK mode (mod. S51...A00/B01/F00)
Indicators	yellow OUTPUT LED (S50, S51, excl. mod. G00) green STABILITY LED (mod. S50...B01/C01/C21/E01/F01), POWER LED (mod. S50...G00, S51) green/red READY/ERROR LED (mod. S50...M03/W03/U03)
Output	PNP or NPN; NO; NC (mod. S50)
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	0,5 ms (mod. S50...A00/B01/T01/C10/C21/C01/D00/E01/U03) 2 ms (mod. S50...F01/G00) 1 ms (mod. S50...M03, S51...A00/B01/C01/C10/G00) 4 ms (mod. S51...F00) 100 µs (mod. S50...W03) 333 µs (Laser mod. S50)
Switching frequency	1 kHz (mod. S50...A00/B01/T01/C10/C21/C01/D00/E01/U03) 250 Hz (mod. S50...F01/G00) 500 Hz (mod. S50...M03, S51...A00/B01/C01/C10/G00) 120 Hz (mod. S51...F00) 5 kHz (mod. S50...W03) 1,5 kHz (Laser mod. S50)
Connection	2 m cable Ø 4 mm, M12 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	Plastic version PBT Metal version nickel plated brass
Lens material	PMMA
Operating temperature	-25 ... 55 °C (Laser mod.) -10 ... 50 °C
Storage temperature	-25 ... 70 °C
Weight	Plastic version 75 g max. cable vers. (90 g max. mod. M03), 25 g max. conn. vers. (40 g max. mod. M03) Metal version 110 g max. cable vers. (125 g max. mod. M03), 60 g max. conn. vers. (75 g max. mod. M03)

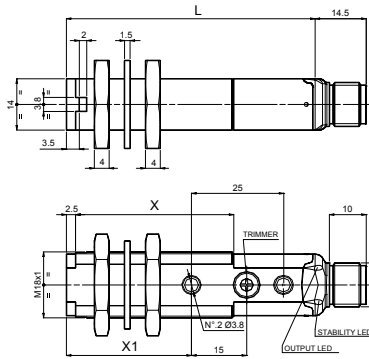
# TUBULAR SENSORS

## S50

### DIMENSIONS

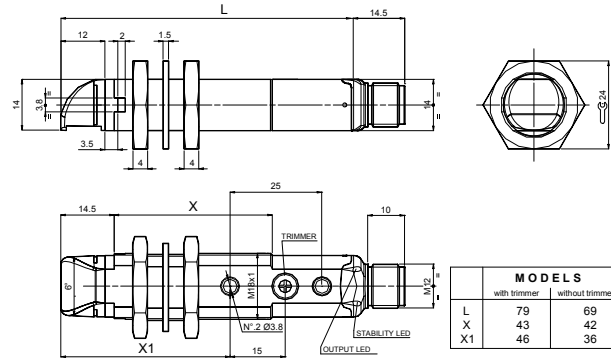
#### PLASTIC

##### AXIAL VERSION



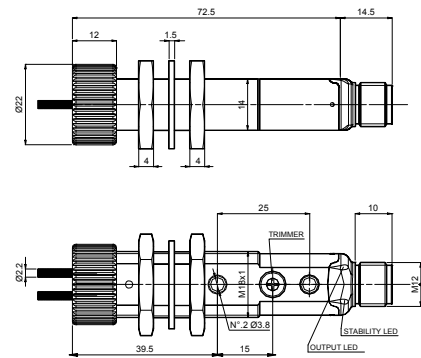
	MODELS	
	with trimmer	without trimmer
L	67	57
X	43	42
X1	34	24

##### RADIAL VERSION



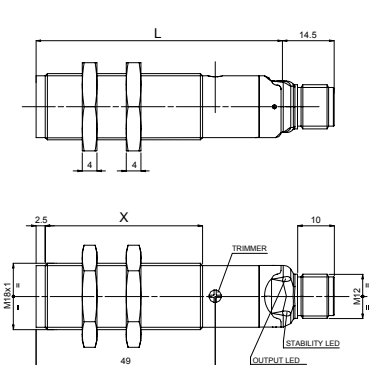
	MODELS	
	with trimmer	without trimmer
L	79	69
X	43	42
X1	46	36

##### FIBRE OPTIC VERSION



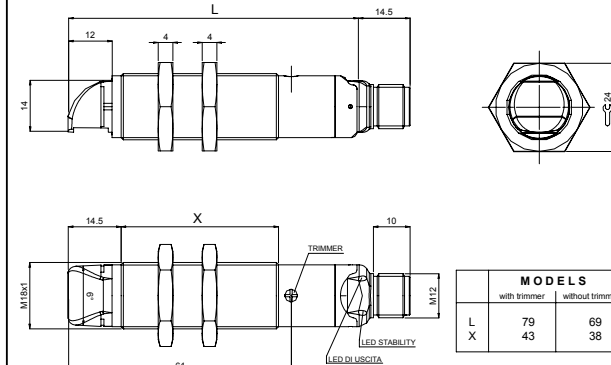
#### METAL

##### AXIAL VERSION



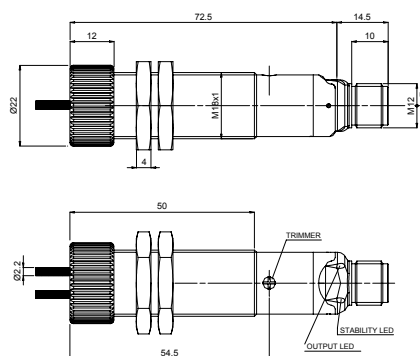
	MODELS	
	with trimmer	without trimmer
L	67	57
X	43	38

##### RADIAL VERSION



	MODELS	
	with trimmer	without trimmer
L	79	69
X	43	38

##### FIBRE OPTIC VERSION





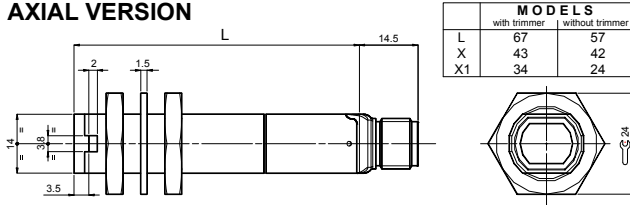
# TUBULAR SENSORS

## S51

### DIMENSIONS

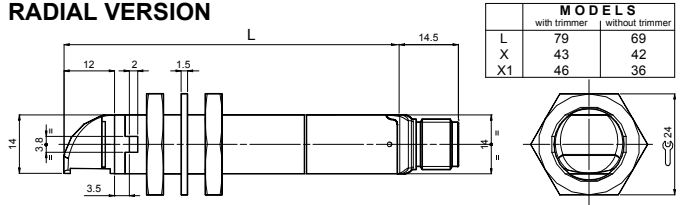
#### PLASTIC

##### AXIAL VERSION

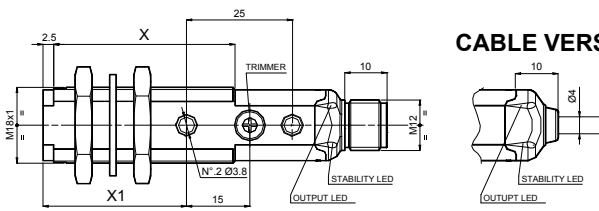


MODELS		
	with trimmer	without trimmer
L	67	57
X	43	42
X1	34	24

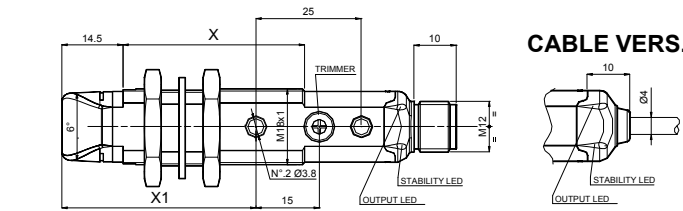
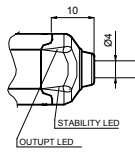
##### RADIAL VERSION



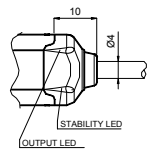
MODELS		
	with trimmer	without trimmer
L	79	69
X	43	42
X1	46	36



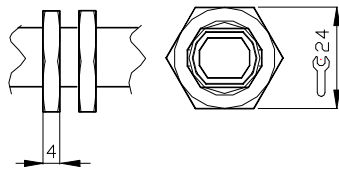
##### CABLE VERS.



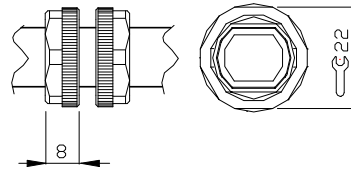
##### CABLE VERS.



##### CH.24 PLASTIC NUTS

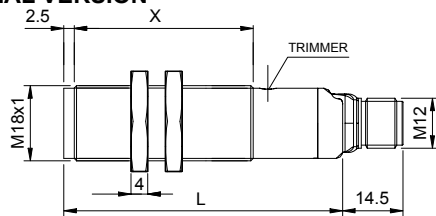


##### CH.22 PLASTIC NUTS



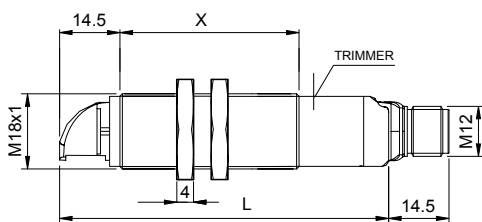
#### METAL

##### AXIAL VERSION



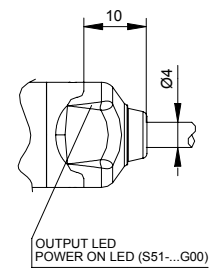
MODELS		
	B01/C01/F00	A00/C10/G00
L	67	57
X	43	38

##### RADIAL VERSION



MODELS		
	B01/C01/F00	A00/C10/G00
L	79	69
X	43	38

##### CABLE VERSION



#### CONNECTIONS

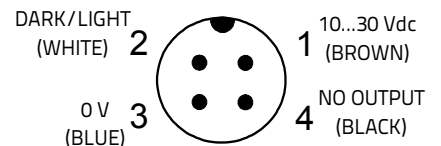
##### CABLE

BROWN	1	+	10 ... 30 Vdc
WHITE	2		DARK- / LIGHT+
BLACK	4		N.O. OUTPUT
BLUE	3	-	0 V

##### Through beam emitter

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

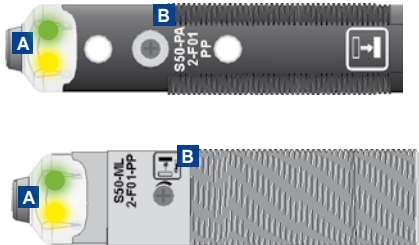
##### M12 CONNECTOR



# S50/S51

## INDICATORS AND SETTINGS

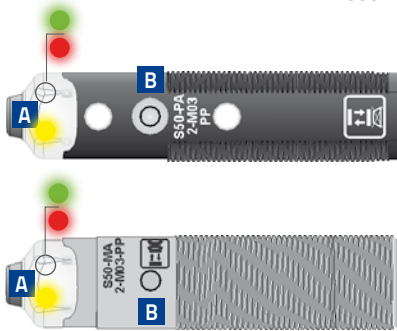
S50-XX...A00/B01/C01/C21/E01/F01/T01  
S51-XX...B01/C01



- A** OUTPUT status LED Yellow  
STABILITY LED Green (Only Receiver)  
POWER ON LED Green (Only Emitter)
- B** Adjustment trimmer (receiver)

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

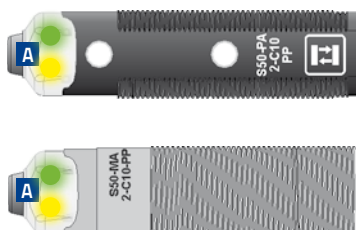
S50-XX-M03/W03/U03



- A** OUTPUT status LED Yellow  
READY LED Green  
ERROR LED Red
- B** Teach-in push-button

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.

S50-XX-C10  
S51-XX-A00/C10/C20/F00/G00



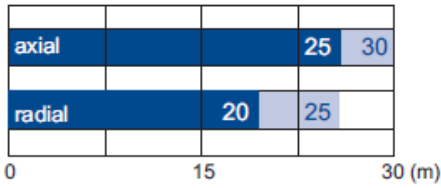
- A00/C10/C20/F00
  - A** OUTPUT status LED Yellow  
STABILITY LED green
- G00  
OUTPUT status LED yellow (Only Emitter G00)



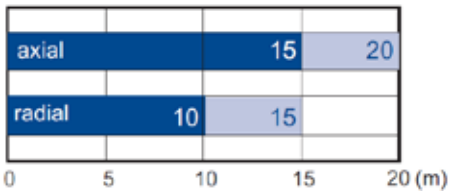
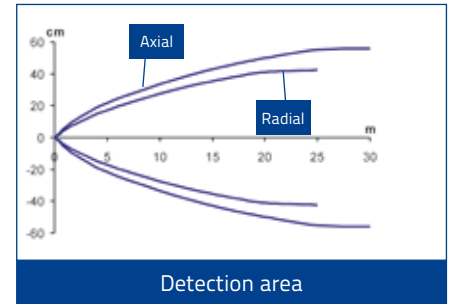
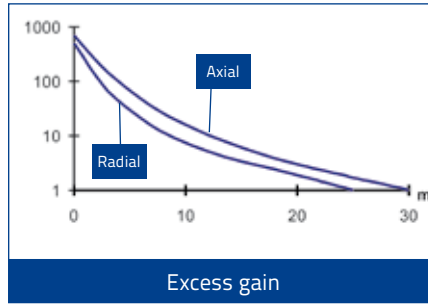
# TUBULAR SENSORS

## S50 DETECTION DIAGRAMS

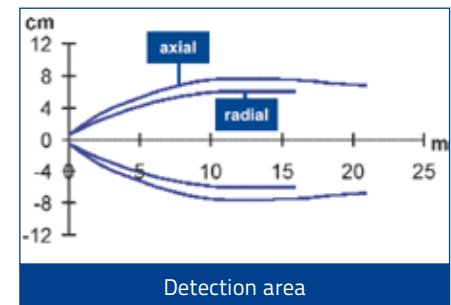
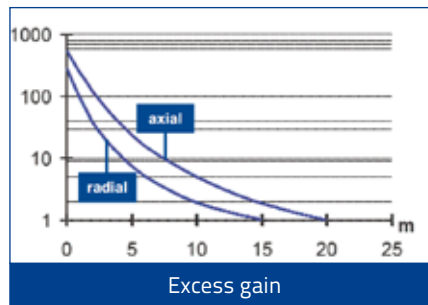
### G/F INFRARED EMISSION



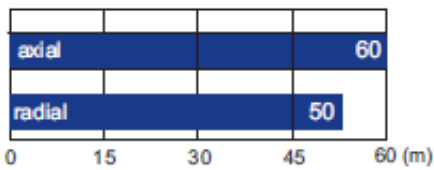
■ Recommended operating distance  
 ■ Maximum operating distance



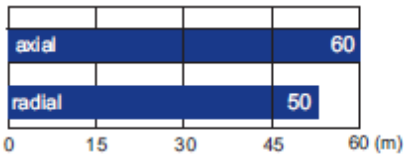
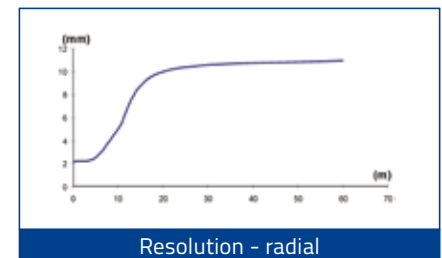
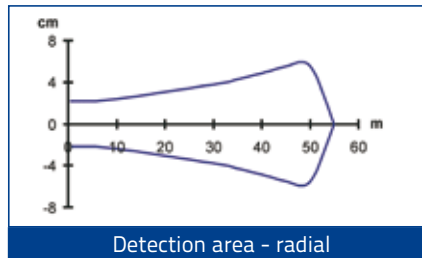
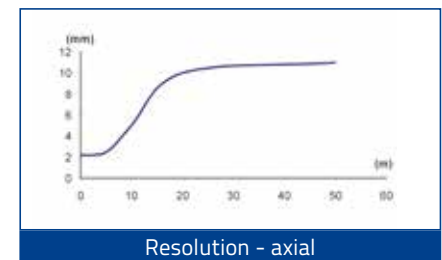
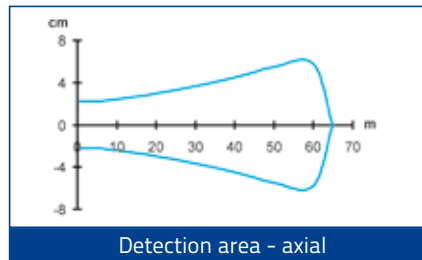
■ Recommended operating distance  
 ■ Maximum operating distance



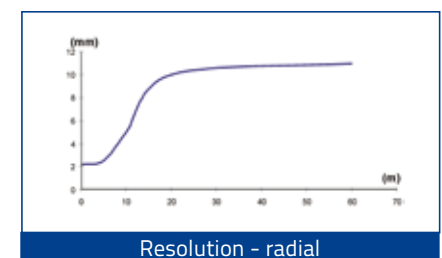
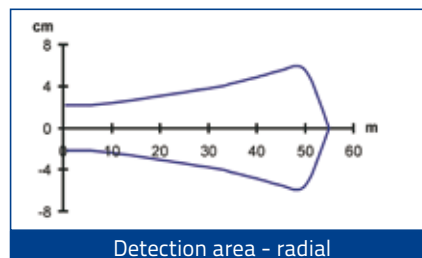
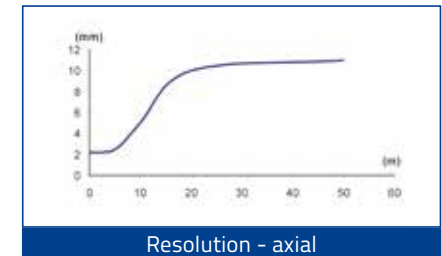
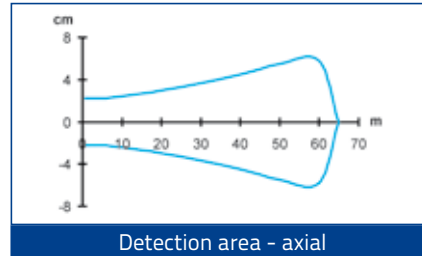
### G/F LASER RED EMISSION



■ Operating distance



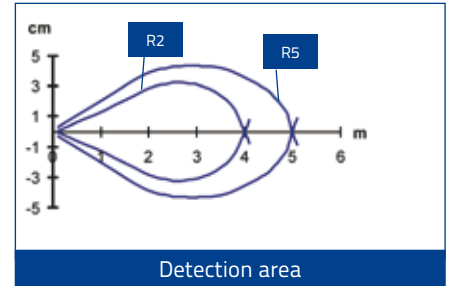
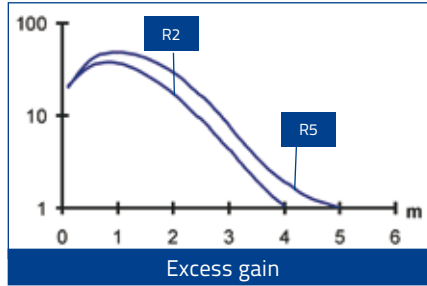
■ Operating distance



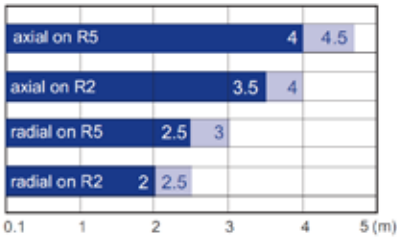
### A INFRARED EMISSION



Operating distance

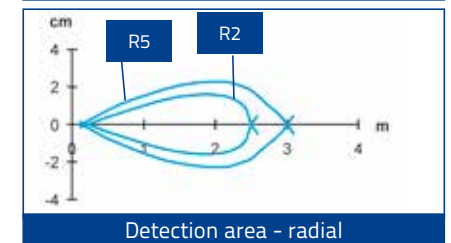
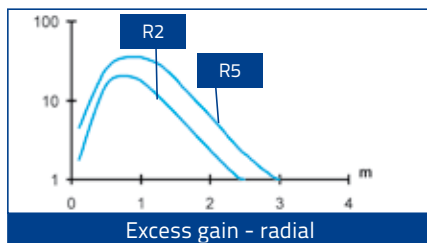
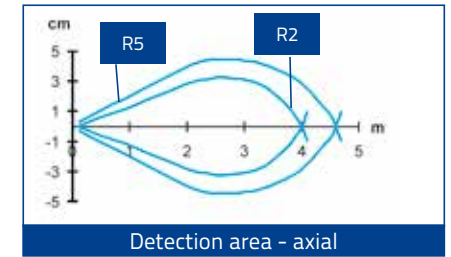
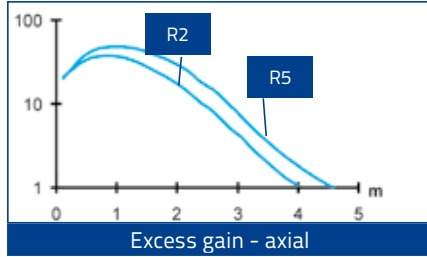


### B INFRARED EMISSION

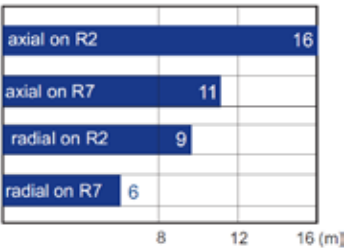


Recommended operating distance  
Maximum operating distance

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

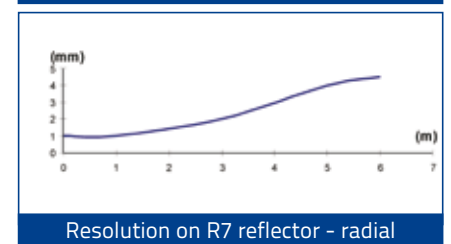
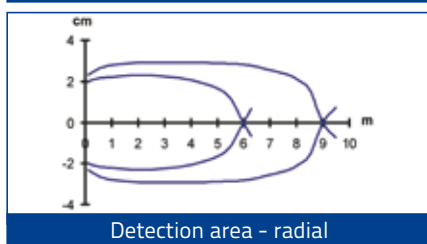
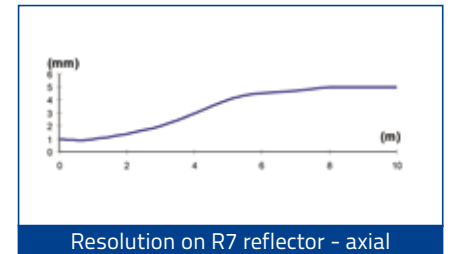
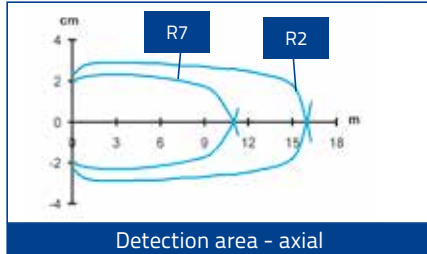


### B LASER RED EMISSION

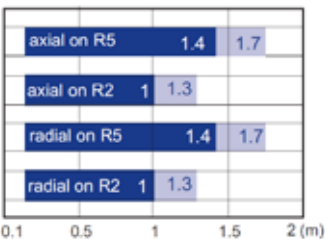


Operating distance

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

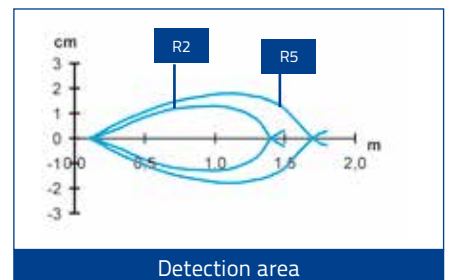
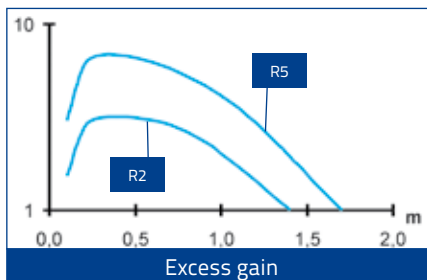


### T RED EMISSION



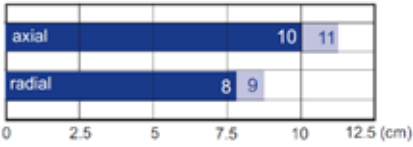
Recommended operating distance  
Maximum operating distance

High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors**.

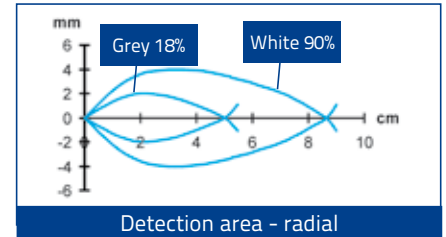
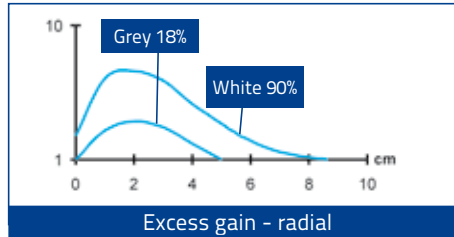
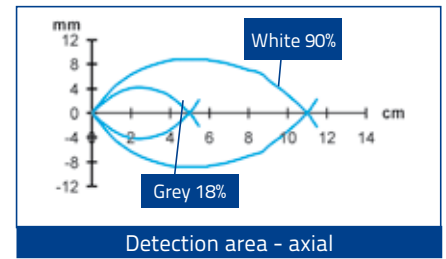
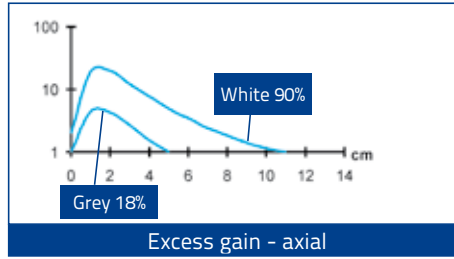


# TUBULAR SENSORS

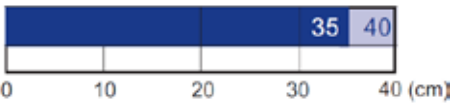
## C SHORT INFRARED EMISSION



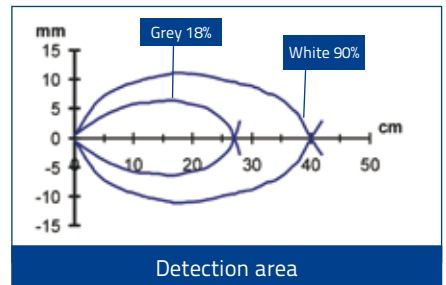
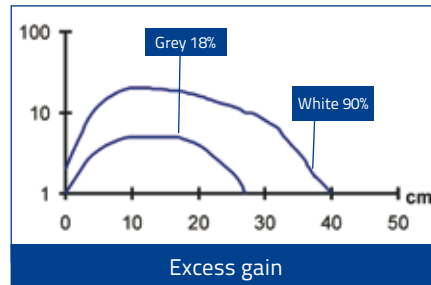
- Recommended operating distance
- Maximum operating distance



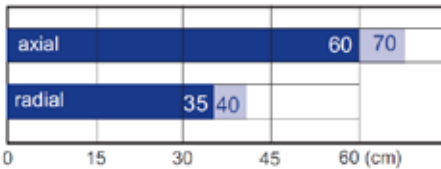
## C MID INFRARED EMISSION



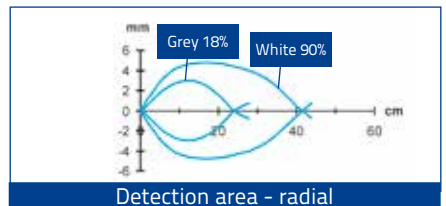
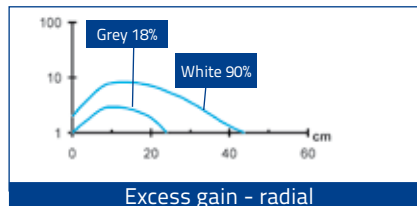
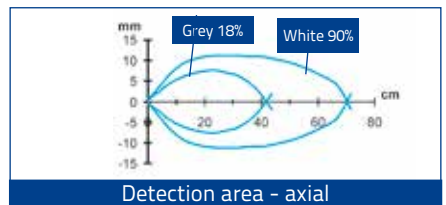
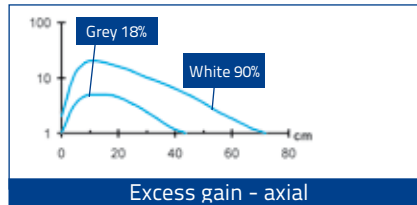
- Recommended operating distance
- Maximum operating distance



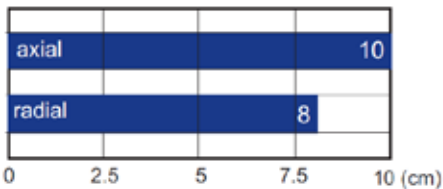
## C LONG INFRARED EMISSION



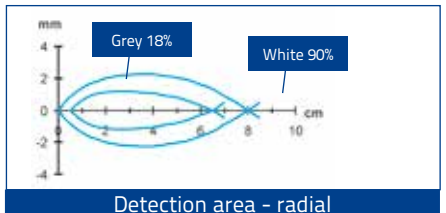
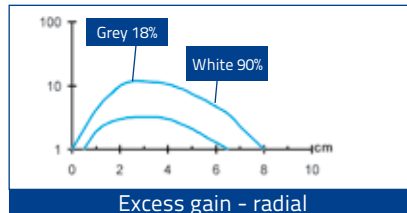
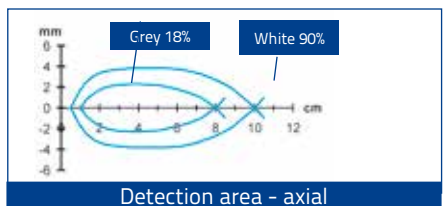
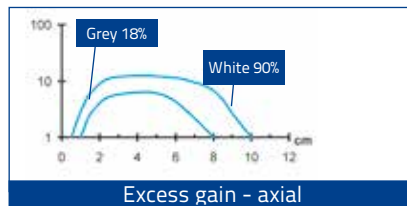
- Recommended operating distance
- Maximum operating distance



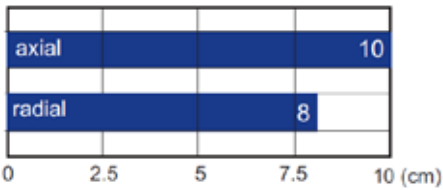
## D RED EMISSION



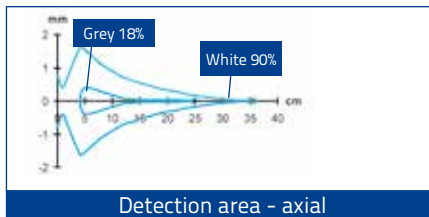
- Operating distance



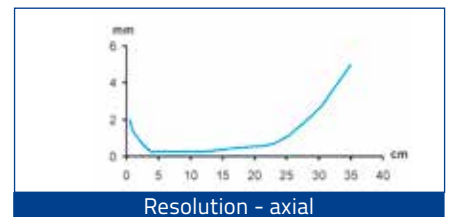
**C LASER RED EMISSION**



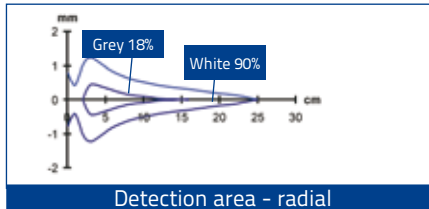
■ Operating distance



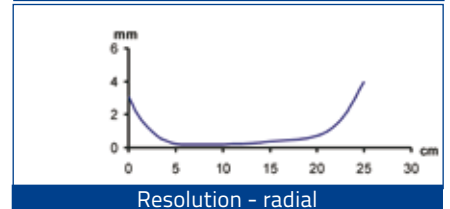
Detection area - axial



Resolution - axial

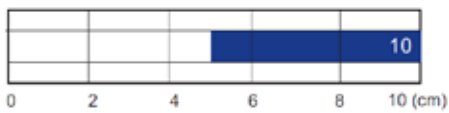


Detection area - radial

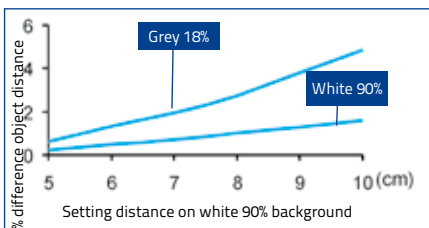


Resolution - radial

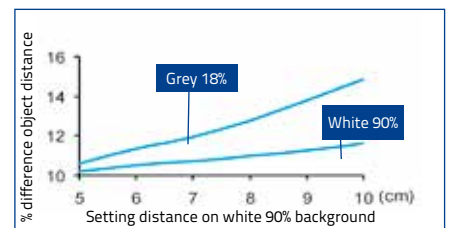
**M AXIAL RED EMISSION**



■ Operating distance

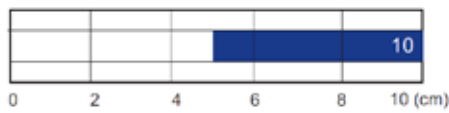


Detection difference with EASYtouch™ acquisition

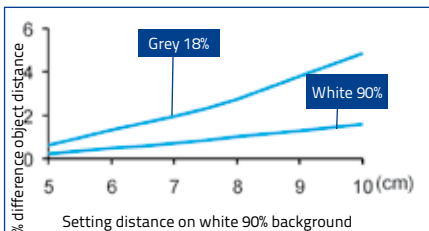


Detection difference with fine acquisition

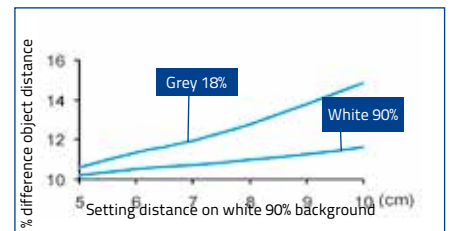
**M RADIAL RED EMISSION**



■ Operating distance

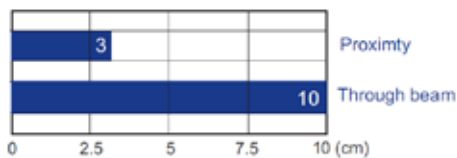


Detection difference with EASYtouch™ acquisition



Detection difference with fine acquisition

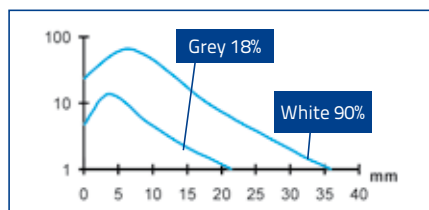
**E RED EMISSION**



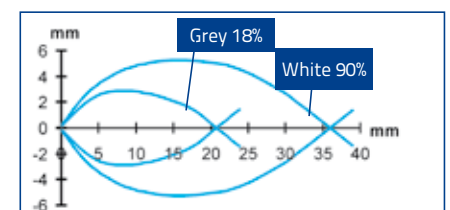
■ Operating distance with standard fibers

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

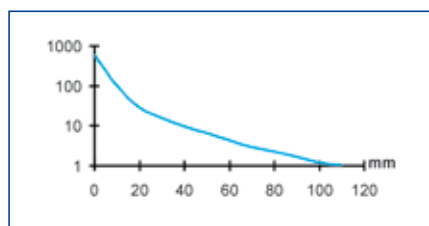
High efficiency fiber-optics or accessory lenses can be used to obtain larger operating distances.



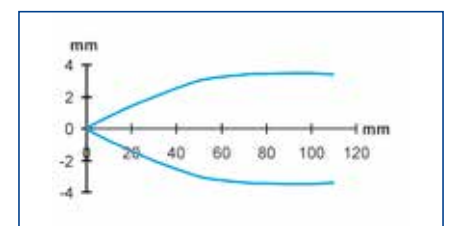
Excess gain - proximity \*



Detection area - proximity \*



Excess gain - through beam \*

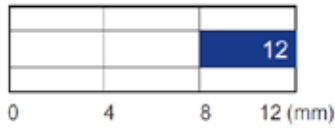


Detection area - through beam \*

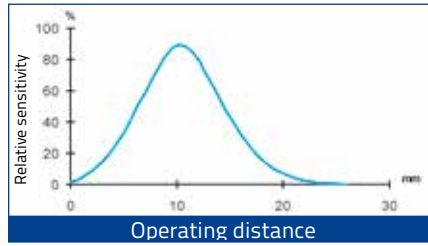
\* standard Fiber-optics

# TUBULAR SENSORS

## W WHITE EMISSION



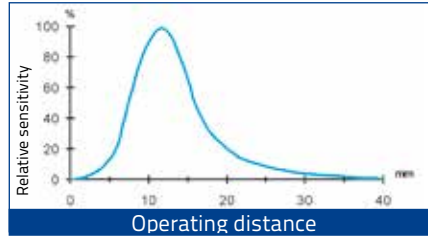
Operating distance



## U UV EMISSION

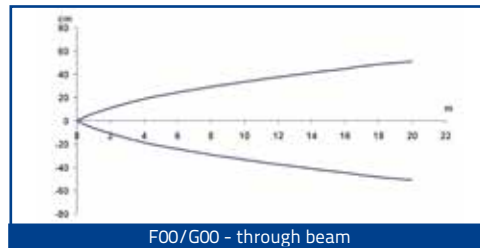
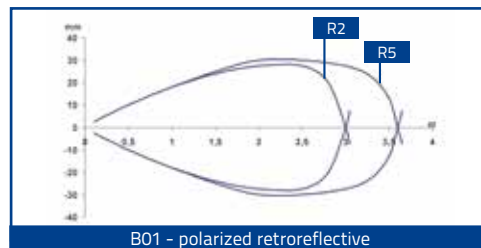
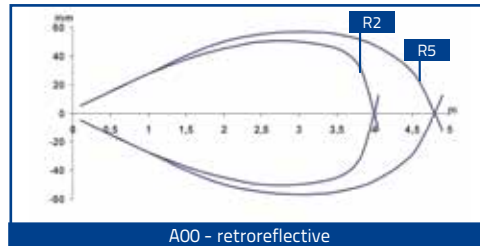
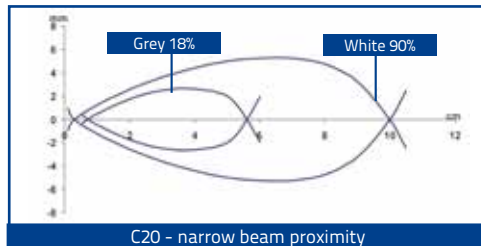
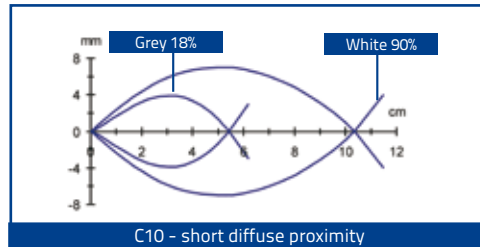
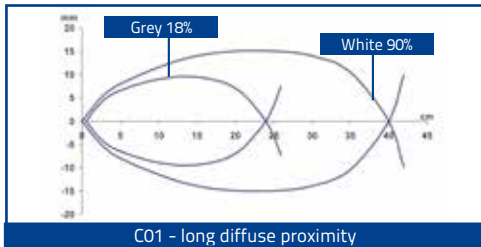


Operating distance



## S51 DETECTION DIAGRAMS

### M18 STANDARD



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

A00	3,5	4
Actual on R2		
A00	4	4,5
Actual on R5		
A00	2,5	3
Radial on R2		
A00	3	3,5
Radial on R5		

0 2,5 5 (m)

B01	2,5	3
Actual on R2		
B01	3	3,5
Actual on R5		
B01	2	2,5
Radial on R2		
B01	2,5	3
Radial on R5		

0 2 4 (m)

F/G	18	20
Actual		
F/G	15	18
Radial		

0 10 20 (m)

C01	40	55
Actual		
C01	30	35
Radial		

0 25 50 (cm)

C10/C20	10
Actual	
C10	8
Radial	

0 5 10 (cm)

Recommended operating distance  
Maximum operating distance

## MODEL SELECTION AND ORDER INFORMATION

S50 PLASTIC MODELS						
OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.	
Retroreflective	LED, Axial optic	2m Cable	NPN	S50-PA-2-A00-NN	952002090	
			PNP	S50-PA-2-A00-PP	952002080	
		M12 Connector	NPN	S50-PA-5-A00-NN	952002110	
			PNP	S50-PA-5-A00-PP	952002100	
Polarized retroreflective	LED, Axial optic	2m Cable	NPN	S50-PA-2-B01-NN	952001610	
			PNP	S50-PA-2-B01-PP	952001010	
		M12 Connector	NPN	S50-PA-5-B01-NN	952001500	
			PNP	S50-PA-5-B01-PP	952001020	
	LED, Radial optic	2m Cable	NPN	S50-PR-2-B01-NN	952001780	
			PNP	S50-PR-2-B01-PP	952001030	
		M12 Connector	NPN	S50-PR-5-B01-NN	952001720	
			PNP	S50-PR-5-B01-PP	952001040	
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-B01-NN	952001870	
			PNP	S50-PL-2-B01-PP	952001360	
		M12 Connector	NPN	S50-PL-5-B01-NN	952001840	
			PNP	S50-PL-5-B01-PP	952001370	
LASER, Radial optic	2m Cable	NPN	S50-PH-2-B01-NN	952001950		
		PNP	S50-PH-2-B01-PP	952001940		
	M12 Connector	NPN	S50-PH-5-B01-NN	952001970		
		PNP	S50-PH-5-B01-PP	952001960		
Long Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C01-NN	952001620	
			PNP	S50-PA-2-C01-PP	952001050	
		M12 Connector	NPN	S50-PA-5-C01-NN	952001510	
			PNP	S50-PA-5-C01-PP	952001060	
	LED, Radial optic	2m Cable	NPN	S50-PR-2-C01-NN	952001790	
			PNP	S50-PR-2-C01-PP	952001070	
		M12 Connector	NPN	S50-PR-5-C01-NN	952001730	
			PNP	S50-PR-5-C01-PP	952001080	
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-C01-NN	952001880	
			PNP	S50-PL-2-C01-PP	952001380	
		M12 Connector	NPN	S50-PL-5-C01-NN	952001850	
			PNP	S50-PL-5-C01-PP	952001390	
	LASER, Radial optic	2m Cable	NPN	S50-PH-2-C01-NN	952001990	
			PNP	S50-PH-2-C01-PP	952001980	
		M12 Connector	NPN	S50-PH-5-C01-NN	952002010	
			PNP	S50-PH-5-C01-PP	952002000	
Short Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C10-NN	952001630	
			PNP	S50-PA-2-C10-PP	952001240	
		M12 Connector	NPN	S50-PA-5-C10-NN	952001520	
	PNP		S50-PA-5-C10-PP	952001250		
	LED, Radial optic	2m Cable	NPN	S50-PR-2-C10-NN	952001800	
			PNP	S50-PR-2-C10-PP	952001490	
M12 Connector		NPN	S50-PR-5-C10-NN	952001740		
Medium Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-PA-2-C21-NN	952002170	
			PNP	S50-PA-2-C21-PP	952002160	
		M12 Connector	NPN	S50-PA-5-C21-NN	952002190	
	PNP		S50-PA-5-C21-PP	952002180		
	Fixed focus	LED, Axial optic	2m Cable	NPN	S50-PA-2-D00-NN	952001640
				PNP	S50-PA-2-D00-PP	952001090
M12 Connector			NPN	S50-PA-5-D00-NN	952001530	
		PNP	S50-PA-5-D00-PP	952001100		
LED, Radial optic		2m Cable	NPN	S50-PR-2-D00-NN	952001810	
			PNP	S50-PR-2-D00-PP	952001110	
	M12 Connector	NPN	S50-PR-5-D00-NN	952001750		
Fiber optic	LED, Axial optic	2m Cable	NPN	S50-PA-2-E01-NN	952001650	
			PNP	S50-PA-2-E01-PP	952001130	
		M12 Connector	NPN	S50-PA-5-E01-NN	952001540	
			PNP	S50-PA-5-E01-PP	952001140	

# TUBULAR SENSORS

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Through beam receiver	LED, Axial optic	2m Cable	NPN	S50-PA-2-F01-NN	952001660
			PNP	S50-PA-2-F01-PP	952001150
		M12 Connector	NPN	S50-PA-5-F01-NN	952001550
			PNP	S50-PA-5-F01-PP	952001160
	LED, Radial optic	2m Cable	NPN	S50-PR-2-F01-NN	952001820
			PNP	S50-PR-2-F01-PP	952001170
		M12 Connector	NPN	S50-PR-5-F01-NN	952001760
			PNP	S50-PR-5-F01-PP	952001180
	LASER, Axial optic	2m Cable	NPN	S50-PL-2-F01-NN	952001890
			PNP	S50-PL-2-F01-PP	952001400
		M12 Connector	NPN	S50-PL-5-F01-NN	952001860
			PNP	S50-PL-5-F01-PP	952001410
LASER, Radial optic	2m Cable	NPN	S50-PH-2-F01-NN	952002030	
		PNP	S50-PH-2-F01-PP	952002020	
	M12 Connector	NPN	S50-PH-5-F01-NN	952002050	
		PNP	S50-PH-5-F01-PP	952002040	
Through beam emitter	LED, Axial optic	2m Cable	-	S50-PA-2-G00-XG	952001190
		M12 Connector	-	S50-PA-5-G00-XG	952001200
	LED, Radial optic	2m Cable	-	S50-PR-2-G00-XG	952001210
		M12 Connector	-	S50-PR-5-G00-XG	952001220
	LASER, Axial optic	2m Cable	-	S50-PL-2-G00-XG	952001420
		M12 Connector	-	S50-PL-5-G00-XG	952001430
	LASER, Radial optic	2m Cable	-	S50-PH-2-G00-XG	952002060
		M12 Connector	-	S50-PH-5-G00-XG	952002070
Background suppression	LED, Axial optic	2m Cable	NPN	S50-PA-2-M03-NN	952001670
			PNP	S50-PA-2-M03-PP	952001230
		M12 Connector	NPN	S50-PA-5-M03-NN	952001560
			PNP	S50-PA-5-M03-PP	952001000
	LED, Radial optic	2m Cable	NPN	S50-PS-2-M03-NN	952001900
		M12 Connector	PNP	S50-PS-2-M03-PP	952001910
Retroreflective for transparent	LED, Axial optic	2m Cable	NPN	S50-PA-2-T01-NN	952001690
			PNP	S50-PA-2-T01-PP	952001260
		M12 Connector	NPN	S50-PA-5-T01-NN	952001580
			PNP	S50-PA-5-T01-PP	952001270
	LED, Radial optic	2m Cable	NPN	S50-PR-2-T01-NN	952001830
			PNP	S50-PR-2-T01-PP	952001280
		M12 Connector	NPN	S50-PR-5-T01-NN	952001770
			PNP	S50-PR-5-T01-PP	952001290
Luminescence	LED, Axial optic	2m Cable	NPN	S50-PA-2-U03-NN	952001700
			PNP	S50-PA-2-U03-PP	952001300
		M12 Connector	NPN	S50-PA-5-U03-NN	952001590
			PNP	S50-PA-5-U03-PP	952001310
Contrast	LED, Axial optic	2m Cable	NPN	S50-PA-2-W03-NN	952001710
			PNP	S50-PA-2-W03-PP	952001320
		M12 Connector	NPN	S50-PA-5-W03-NN	952001600
			PNP	S50-PA-5-W03-PP	952001330



S50 METAL MODELS

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Retroreflective	LED, Axial optic	2m Cable	NPN	S50-MA-2-A00-NN	952022090
			PNP	S50-MA-2-A00-PP	952022080
		M12 Connector	NPN	S50-MA-5-A00-NN	952022110
			PNP	S50-MA-5-A00-PP	952022100
Polarized retroreflective	LED, Axial optic	2m Cable	NPN	S50-MA-2-B01-NN	952021500
			PNP	S50-MA-2-B01-PP	952021000
		M12 Connector	NPN	S50-MA-5-B01-NN	952021660
			PNP	S50-MA-5-B01-PP	952021200
	LED, Radial optic	2m Cable	NPN	S50-MR-2-B01-NN	952021600
			PNP	S50-MR-2-B01-PP	952021140
		M12 Connector	NPN	S50-MR-5-B01-NN	952021760
			PNP	S50-MR-5-B01-PP	952021340
	LASER, Axial optic	2m Cable	NPN	S50-ML-2-B01-NN	952021820
			PNP	S50-ML-2-B01-PP	952021400
		M12 Connector	NPN	S50-ML-5-B01-NN	952021850
			PNP	S50-ML-5-B01-PP	952021440
	LASER, Radial optic	2m Cable	NPN	S50-MH-2-B01-NN	952021950
			PNP	S50-MH-2-B01-PP	952021940
		M12 Connector	NPN	S50-MH-5-B01-NN	952021970
			PNP	S50-MH-5-B01-PP	952021960
Long Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-MA-2-C01-NN	952021510
			PNP	S50-MA-2-C01-PP	952021010
		M12 Connector	NPN	S50-MA-5-C01-NN	952021670
			PNP	S50-MA-5-C01-PP	952021210
	LED, Radial optic	2m Cable	NPN	S50-MR-2-C01-NN	952021610
			PNP	S50-MR-2-C01-PP	952021150
		M12 Connector	NPN	S50-MR-5-C01-NN	952021770
			PNP	S50-MR-5-C01-PP	952021350
	LASER, Axial optic	2m Cable	NPN	S50-ML-2-C01-NN	952021830
			PNP	S50-ML-2-C01-PP	952021410
		M12 Connector	NPN	S50-ML-5-C01-NN	952021860
			PNP	S50-ML-5-C01-PP	952021450
	LASER, Radial optic	2m Cable	NPN	S50-MH-2-C01-NN	952021990
			PNP	S50-MH-2-C01-PP	952021980
		M12 Connector	NPN	S50-MH-5-C01-NN	952022010
			PNP	S50-MH-5-C01-PP	952022000
Short Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-MA-2-C10-NN	952021520
			PNP	S50-MA-2-C10-PP	952021020
		M12 Connector	NPN	S50-MA-5-C10-NN	952021680
			PNP	S50-MA-5-C10-PP	952021220
	LED, Radial optic	2m Cable	NPN	S50-MR-2-C10-NN	952021620
			PNP	S50-MR-2-C10-PP	952021490
		M12 Connector	NPN	S50-MR-5-C10-NN	952021780
			PNP	S50-MR-5-C10-PP	952021480
Medium Diffuse proximity	LED, Axial optic	2m Cable	NPN	S50-MA-2-C21-NN	952022130
			PNP	S50-MA-2-C21-PP	952022120
		M12 Connector	NPN	S50-MA-5-C21-NN	952022150
			PNP	S50-MA-5-C21-PP	952022140
Fixed focus	LED, Axial optic	2m Cable	NPN	S50-MA-2-D00-NN	952021530
			PNP	S50-MA-2-D00-PP	952021030
		M12 Connector	NPN	S50-MA-5-D00-NN	952021690
			PNP	S50-MA-5-D00-PP	952021230
	LED, Radial optic	2m Cable	NPN	S50-MR-2-D00-NN	952021630
			PNP	S50-MR-2-D00-PP	952021160
		M12 Connector	NPN	S50-MR-5-D00-NN	952021790
			PNP	S50-MR-5-D00-PP	952021360
Fiber optic	LED, Axial optic	2m Cable	NPN	S50-MA-2-E01-NN	952021880
			PNP	S50-MA-2-E01-PP	952021040
		M12 Connector	NPN	S50-MA-5-E01-NN	952021890
			PNP	S50-MA-5-E01-PP	952021240



# TUBULAR SENSORS

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Through beam receiver	LED, Axial optic	2m Cable	NPN	S50-MA-2-F01-NN	952021540
			PNP	S50-MA-2-F01-PP	952021050
		M12 Connector	NPN	S50-MA-5-F01-NN	952021700
			PNP	S50-MA-5-F01-PP	952021250
	LED, Radial optic	2m Cable	NPN	S50-MR-2-F01-NN	952021640
			PNP	S50-MR-2-F01-PP	952021170
		M12 Connector	NPN	S50-MR-5-F01-NN	952021800
			PNP	S50-MR-5-F01-PP	952021370
	LASER, Axial optic	2m Cable	NPN	S50-ML-2-F01-NN	952021840
			PNP	S50-ML-2-F01-PP	952021420
		M12 Connector	NPN	S50-ML-5-F01-NN	952021870
			PNP	S50-ML-5-F01-PP	952021460
LASER, Radial optic	2m Cable	NPN	S50-MH-2-F01-NN	952022030	
		PNP	S50-MH-2-F01-PP	952022020	
	M12 Connector	NPN	S50-MH-5-F01-NN	952022050	
		PNP	S50-MH-5-F01-PP	952022040	
Through beam emitter	LED, Axial optic	2m Cable	-	S50-MA-2-G00-XG	952021060
		M12 Connector	-	S50-MA-5-G00-XG	952021260
	LED, Radial optic	2m Cable	-	S50-MR-2-G00-XG	952021180
		M12 Connector	-	S50-MR-5-G00-XG	952021380
	LASER, Axial optic	2m Cable	-	S50-ML-2-G00-XG	952021430
		M12 Connector	-	S50-ML-5-G00-XG	952021470
	LASER, Radial optic	2m Cable	-	S50-MH-2-G00-XG	952022060
		M12 Connector	-	S50-MH-5-G00-XG	952022070
Background suppression	LED, Axial optic	2m Cable	NPN	S50-MA-2-M03-NN	952021550
			PNP	S50-MA-2-M03-PP	952021070
	M12 Connector	PNP	S50-MA-5-M03-PP	952021270	
		PNP	S50-MS-2-M03-PP	952021910	
LED, Radial optic	2m Cable	PNP	S50-MS-5-M03-PP	952021930	
		M12 Connector			
Retroreflective for transparent	LED, Axial optic	2m Cable	NPN	S50-MA-2-T01-NN	952021570
			PNP	S50-MA-2-T01-PP	952021090
		M12 Connector	NPN	S50-MA-5-T01-NN	952021730
			PNP	S50-MA-5-T01-PP	952021290
	LED, Radial optic	2m Cable	NPN	S50-MR-2-T01-NN	952021650
			PNP	S50-MR-2-T01-PP	952021190
		M12 Connector	NPN	S50-MR-5-T01-NN	952021810
			PNP	S50-MR-5-T01-PP	952021390
Luminescence	LED, Axial optic	M12 Connector	PNP	S50-MA-5-U03-PP	952021300
Contrast	LED, Axial optic	2m Cable	PNP	S50-MA-2-W03-PP	952021110
		M12 Connector	NPN	S50-MA-5-W03-NN	952021750
			PNP	S50-MA-5-W03-PP	952021310

## S51 MODELS

OPTIC FUNCTION	HOUSING/OPTIC	CONNECTION	OUTPUT	MODEL	ORDER No.
Retroreflective	Nickel Plated Brass, Axial	2m Cable	NPN	S51-MA-2-A00-NK	952701601
			PNP	S51-MA-2-A00-PK	952701541
		M12 Connector	NPN	S51-MA-5-A00-NK	952701801
			PNP	S51-MA-5-A00-PK	952701531
	Nickel Plated Brass, Radial	2m Cable	NPN	S51-MR-2-A00-NK	952701711
			PNP	S51-MR-2-A00-PK	952701651
		M12 Connector	NPN	S51-MR-5-A00-NK	952701911
			PNP	S51-MR-5-A00-PK	952701851
	Plastic, Axial	2m Cable	NPN	S51-PA-2-A00-NK	952701071
			PNP	S51-PA-2-A00-PK	952701001
		M12 Connector	NPN	S51-PA-5-A00-NK	952701331
			PNP	S51-PA-5-A00-PK	952701261
	Plastic, Radial	2m Cable	NPN	S51-PR-2-A00-NK	952701201
			PNP	S51-PR-2-A00-PK	952701131
		M12 Connector	NPN	S51-PR-5-A00-NK	952701461
			PNP	S51-PR-5-A00-PK	952701391

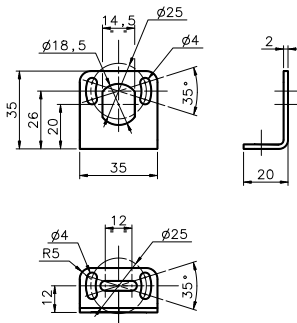
OPTIC FUNCTION	HOUSING/OPTIC	CONNECTION	OUTPUT	MODEL	ORDER No.	
Polarized retroreflective	Nickel Plated Brass, Axial	2m Cable	NPN	S51-MA-2-B01-NK	952701611	
			PNP	S51-MA-2-B01-PK	952701551	
		M12 Connector	NPN	S51-MA-5-B01-NK	952701811	
			PNP	S51-MA-5-B01-PK	952701761	
	Nickel Plated Brass, Radial	2m Cable	NPN	S51-MR-2-B01-NK	952701721	
			PNP	S51-MR-2-B01-PK	952701661	
		M12 Connector	NPN	S51-MR-5-B01-NK	952701921	
			PNP	S51-MR-5-B01-PK	952701861	
	Plastic, Axial	2m Cable	NPN	S51-PA-2-B01-NK	952701081	
			PNP	S51-PA-2-B01-PK	952701011	
		M12 Connector	NPN	S51-PA-5-B01-NK	952701341	
			PNP	S51-PA-5-B01-PK	952701271	
	Plastic, Radial	2m Cable	NPN	S51-PR-2-B01-NK	952701211	
			PNP	S51-PR-2-B01-PK	952701141	
		M12 Connector	NPN	S51-PR-5-B01-NK	952701471	
			PNP	S51-PR-5-B01-PK	952701401	
	Medium diffuse proximity	Nickel Plated Brass, Axial	2m Cable	NPN	S51-MA-2-C01-NK	952701621
				PNP	S51-MA-2-C01-PK	952701561
M12 Connector			NPN	S51-MA-5-C01-NK	952701821	
			PNP	S51-MA-5-C01-PK	952701771	
Nickel Plated Brass, Radial		2m Cable	NPN	S51-MR-2-C01-NK	952701731	
			PNP	S51-MR-2-C01-PK	952701671	
		M12 Connector	NPN	S51-MR-5-C01-NK	952701931	
			PNP	S51-MR-5-C01-PK	952701871	
Plastic, Axial		2m Cable	NPN	S51-PA-2-C01-NK	952701091	
			PNP	S51-PA-2-C01-PK	952701021	
		M12 Connector	NPN	S51-PA-5-C01-NK	952701351	
			PNP	S51-PA-5-C01-PK	952701281	
Plastic, Radial		2m Cable	NPN	S51-PR-2-C01-NK	952701221	
			PNP	S51-PR-2-C01-PK	952701151	
		M12 Connector	NPN	S51-PR-5-C01-NK	952701481	
			PNP	S51-PR-5-C01-PK	952701411	
Short diffuse proximity		Nickel Plated Brass, Axial	2m Cable	NPN	S51-MA-2-C10-NK	952701631
				PNP	S51-MA-2-C10-PK	952701571
			M12 Connector	NPN	S51-MA-5-C10-NK	952701831
				PNP	S51-MA-5-C10-PK	952701521
		Nickel Plated Brass, Radial	2m Cable	NPN	S51-MR-2-C10-NK	952701741
				PNP	S51-MR-2-C10-PK	952701681
			M12 Connector	NPN	S51-MR-5-C10-NK	952701941
				PNP	S51-MR-5-C10-PK	952701881
	Plastic, Axial	2m Cable	NPN	S51-PA-2-C10-NK	952701101	
			PNP	S51-PA-2-C10-PK	952701031	
		M12 Connector	NPN	S51-PA-5-C10-NK	952701361	
			PNP	S51-PA-5-C10-PK	952701291	
	Plastic, Radial	2m Cable	NPN	S51-PR-2-C10-NK	952701231	
			PNP	S51-PR-2-C10-PK	952701161	
		M12 Connector	NPN	S51-PR-5-C10-NK	952701491	
			PNP	S51-PR-5-C10-PK	952701421	
	Narrow beam proximity	Nickel Plated Brass, Axial	M12 Connector	PNP	S51-MA-5-C20-PK	952701961
	Through beam receiver	Nickel Plated Brass, Axial	2m Cable	NPN	S51-MA-2-F00-NK	952701641
				PNP	S51-MA-2-F00-PK	952701581
			M12 Connector	NPN	S51-MA-5-F00-NK	952701841
				PNP	S51-MA-5-F00-PK	952701781
		Nickel Plated Brass, Radial	2m Cable	NPN	S51-MR-2-F00-NK	952701751
				PNP	S51-MR-2-F00-PK	952701691
			M12 Connector	NPN	S51-MR-5-F00-NK	952701951
PNP				S51-MR-5-F00-PK	952701891	
Plastic, Axial		2m Cable	NPN	S51-PA-2-F00-NK	952701121	
			PNP	S51-PA-2-F00-PK	952701051	
		M12 Connector	NPN	S51-PA-5-F00-NK	952701381	
			PNP	S51-PA-5-F00-PK	952701311	
Plastic, Radial	2m Cable	NPN	S51-PR-2-F00-NK	952701251		
		PNP	S51-PR-2-F00-PK	952701181		
	M12 Connector	NPN	S51-PR-5-F00-NK	952701511		
		PNP	S51-PR-5-F00-PK	952701441		
Through beam emitter	Nickel Plated Brass, Axial	2m Cable	-	S51-MA-2-G00-XG	952701591	
		M12 Connector	-	S51-MA-5-G00-XG	952701791	
	Nickel Plated Brass, Radial	2m Cable	-	S51-MR-2-G00-XG	952701701	
		M12 Connector	-	S51-MR-5-G00-XG	952701901	
	Plastic, Axial	2m Cable	-	S51-PA-2-G00-XG	952701061	
		M12 Connector	-	S51-PA-5-G00-XG	952701321	
	Plastic, Radial	2m Cable	-	S51-PR-2-G00-XG	952701191	
		M12 Connector	-	S51-PR-5-G00-XG	952701451	

# TUBULAR SENSORS

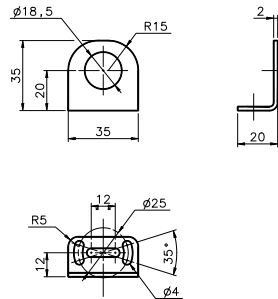
## S50/S51

### ACCESSORIES

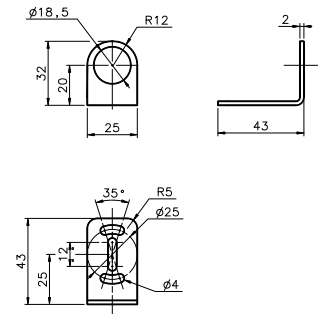
ST-5010



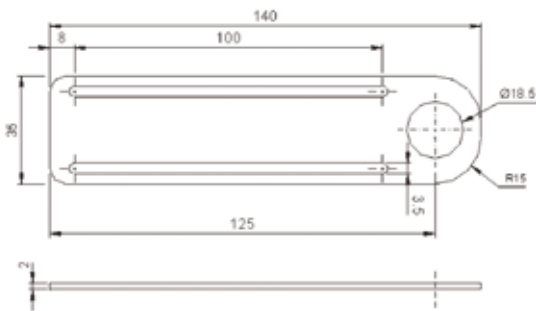
ST-5011



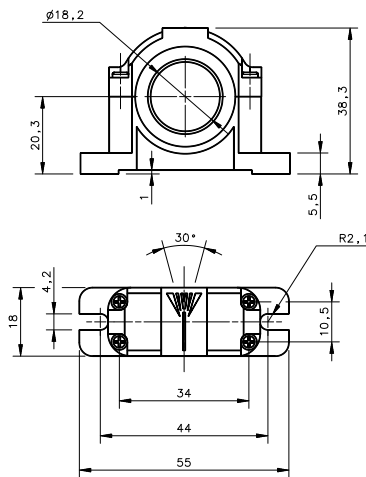
ST-5012



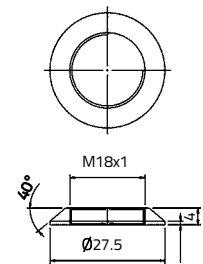
ST-5017



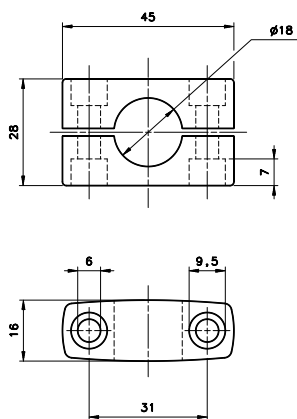
SWING-18



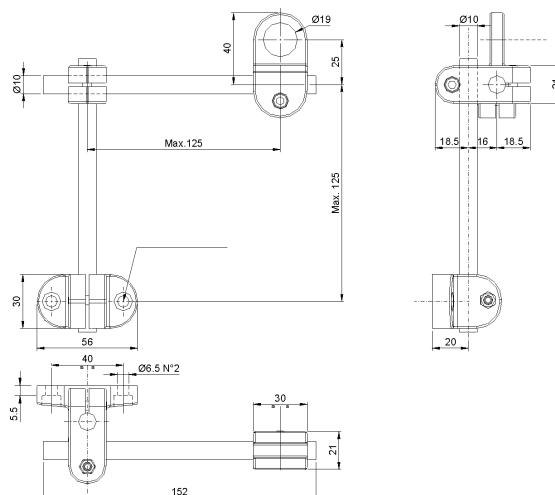
PLASTIC NUT



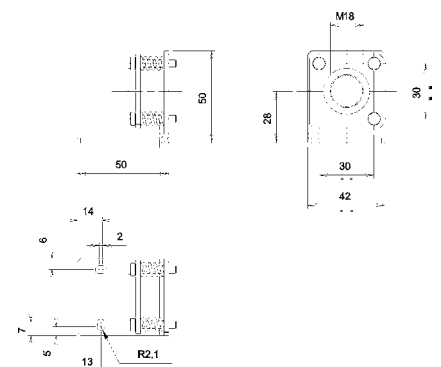
SP-40



JOINT 18



MICRO 18



mm

MODEL	DESCRIPTION	ORDER No.
ST-5010	M18/14 mounting bracket	95ACC5230
ST-5011	M18 mounting bracket short	95ACC5240
ST-5012	M18 mounting bracket long	95ACC5250
ST-5017	M18 mounting bracket	95ACC5270
S50 EASY -IN	M18/14 EASY in™ adjustable mounting support	95ACC 5300
JOINT -18	M18 jointed support	95ACC 5220
MICRO -18	support with micrometric regulation for tubular M18 sensors	95ACC 1380
ST1218	M12/M18 mounting brackets	95ACC3340
ST1830	M18/M30 mounting brackets	95ACC3350
SP-40	mounting bracket tubular	95ACC1370
SWING-18	adjustable support for M18 tubular sensors	895000006
PLASTIC NUT	flared mounting nut	95ACC2630
MEK -PROOF	front protection (only for metal models)	G5000001

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
Radial M12 Connector	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
		10 m	CS-A1-02-R-10	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
Radial M12 Connector with LED (for PNP N.O. sensors)	4-pole, grey, P.V.C.	3 m	CS-A2-12-G-03	95A251400
		5 m	CS-A2-12-G-05	95A251350
		10 m	CS-A2-12-G-10	95A251370
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, black	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003

## SMall

*Complete line of amplified subminiature photoelectric sensors*

- 15mm, 20mm, 30mm and 50mm fixed focus proximity
- 1,5m retroreflective and 1m polarized retroreflective
- 2m through beam models
- Amplified NPN or PNP output with NO-NC output



### APPLICATIONS

- Processing and Packaging machinery
- Automotive
- Beverage & Bottling
- Vending machines

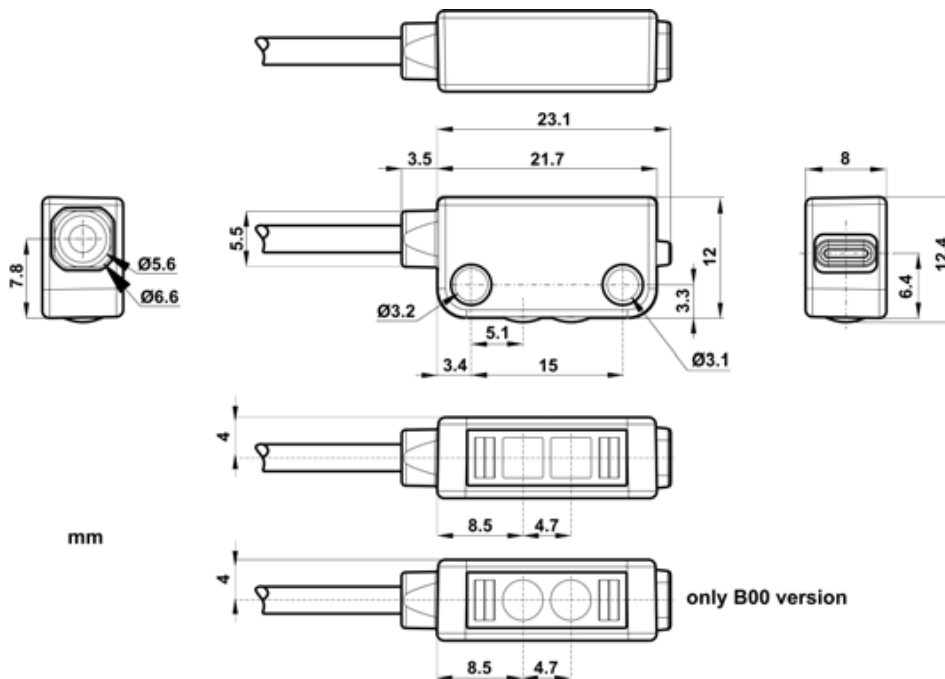


SM-all		
Through beam		0...2 m
Retroreflective (on R2 reflector)		0,05...1,5 m
Polarized retroreflective		0,1...1 m
Fixed focus		3...15 mm
		3...20 mm
		3...30 mm
		3...50 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	
	pig-tail	
Approximate dimensions (mm)		8x23x12
Housing material		Polycarbonate
Mechanical protection		IP67

TECHNICAL DATA

Power supply	10 ... 30 Vdc (limit values)
Ripple	10% max.
Consumption (output current excluded)	20 mA max.
Light emission	red LED 640 nm
Operating mode	LIGHT mode on N.O. output/DARK mode on N.C. output
Indicators	yellow OUTPUT LED excl. mod. G00 green POWER LED
Output	PNP or NPN; NO; NC
Output current	50 mA max.
Saturation voltage	1,25 V max. (NPN), 1,45 V max. (PNP)
Response time	700 $\mu$ s 1,3 ms (mod. SM...F00/G00)
Switching frequency	700 Hz 385 Hz (mod. SM...F00/G00)
Connection	2 m cable $\varnothing$ 2,5 mm
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 M $\Omega$ , 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	Polycarbonate
Lens material	PMMA, glass (mod. B00)
Operating temperature	-20 ... 55 °C
Storage temperature	-30 ... 75 °C
Weight	22 g

DIMENSIONS



# MINIATURE SENSORS

## CONNECTIONS

### CABLE

Through beam emitter

BROWN 1 + 10 ... 30 Vdc

WHITE 2 N.C. OUTPUT

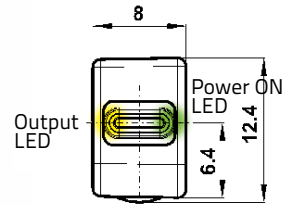
BLACK 4 N.O. OUTPUT

BLUE 3 0 V

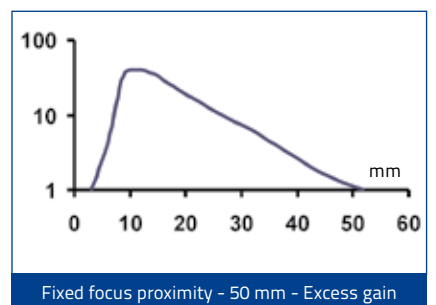
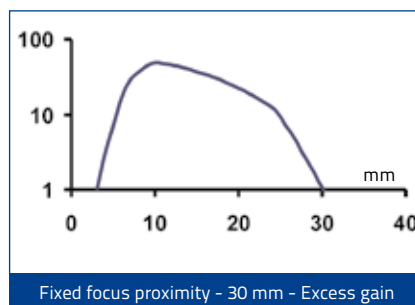
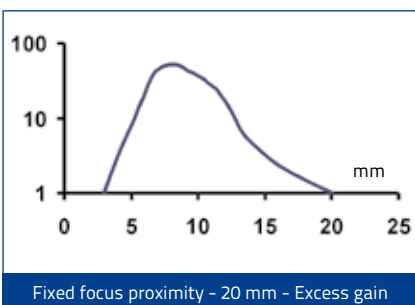
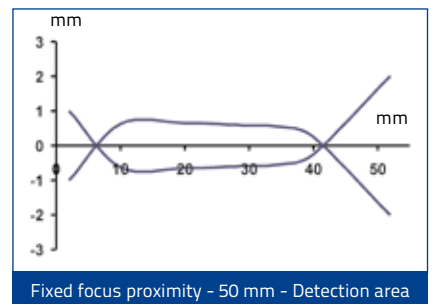
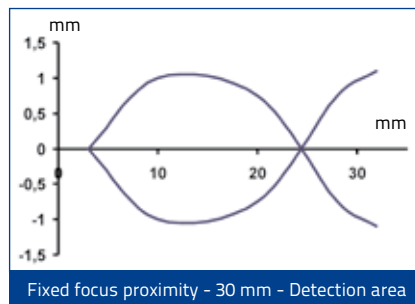
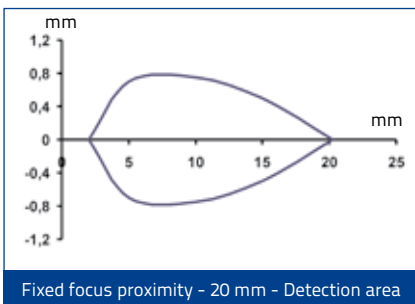
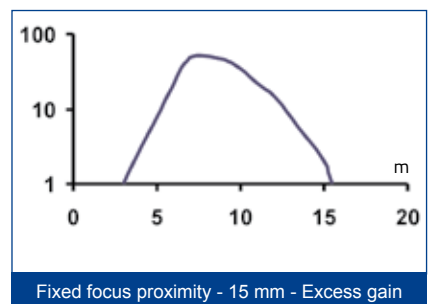
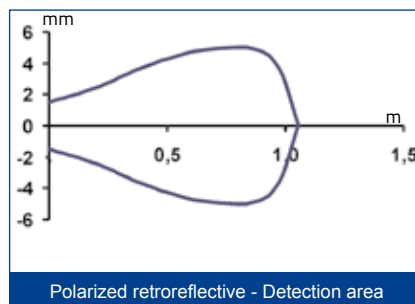
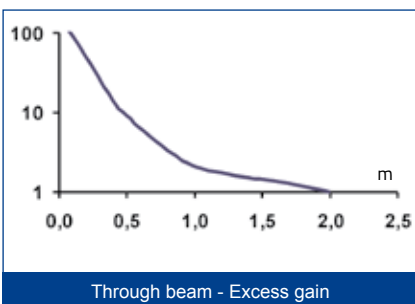
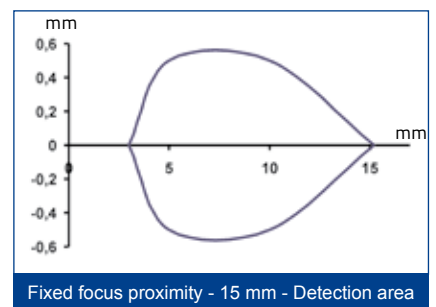
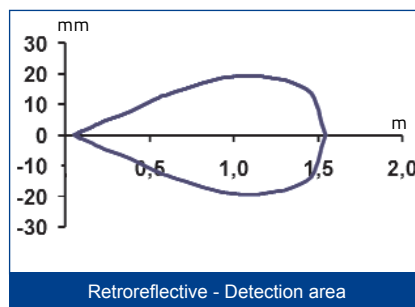
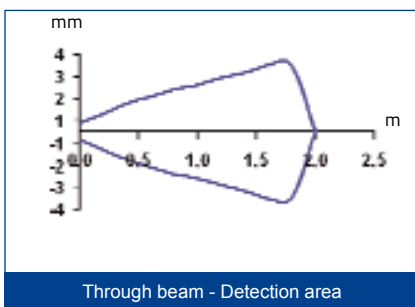
BROWN 1 + 10 ... 30 Vdc

BLUE 3 0 V

### INDICATORS AND SETTINGS



## DETECTION DIAGRAMS

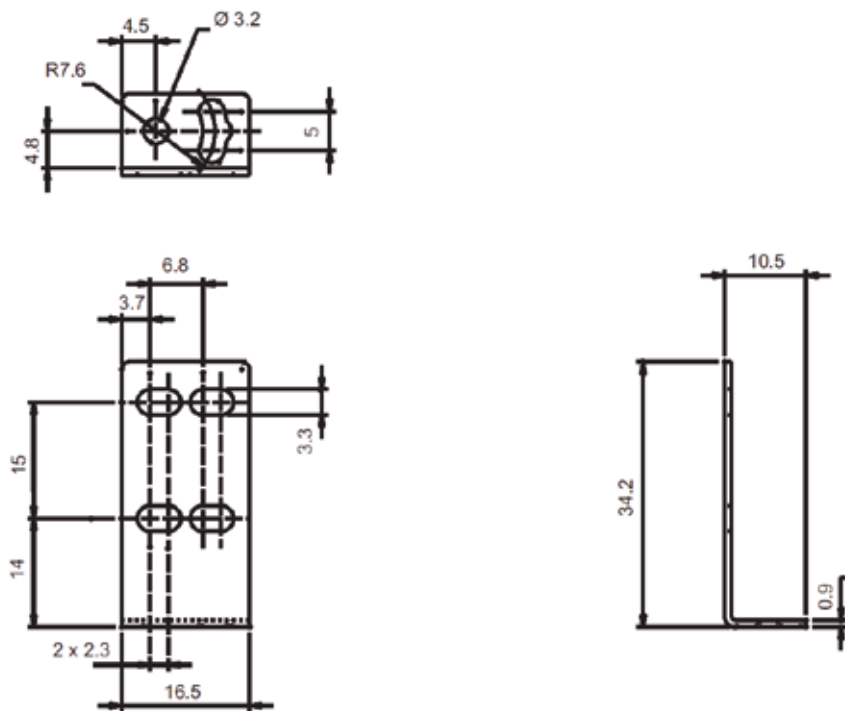


## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	CONNECTION	OUTPUT	MODEL	ORDER No.	
Retroreflective	0,05...1,5 m	2m Cable	PNP	SM-PR-2-A00-PP	95B000060	
			NPN	SM-PR-2-A00-NN	95B000070	
Polarized retroreflective	0,1...1 m	2m Cable	PNP	SM-PR-2-B00-PP	95B000080	
			NPN	SM-PR-2-B00-NN	95B000090	
Fixed focus (short distance)	15 mm	2m Cable	PNP	SM-PR-2-D00-PP	95B000020	
			NPN	SM-PR-2-D00-NN	95B000030	
Fixed focus (normal distance)	20 mm		PNP	SM-PR-2-D10-PP	95B000140	
			NPN	SM-PR-2-D10-NN	95B000150	
Fixed focus (medium distance)	30 mm		PNP	SM-PR-2-D20-PP	95B000040	
			NPN	SM-PR-2-D20-NN	95B000050	
Fixed focus (long distance)	50 mm		PNP	SM-PR-2-D30-PP	95B000000	
			NPN	SM-PR-2-D30-NN	95B000010	
Through beam receiver	0...2 m		2m Cable	PNP	SM-PR-2-F00-PP	95B000120
				NPN	SM-PR-2-F00-NN	95B000130
		-		SM-PR-2-G00-XG	95B000160	

## ACCESSORIES

### ST-5049



mm

MODEL	DESCRIPTION	ORDER NO.
ST-5049	right angle bracket	95ACC6650



# MINIATURE SENSORS

## S3Z

### Advanced line of miniature Asian style of photoelectric sensors

- 50-250 mm background suppression
- 0.7 m proximity, 150 mm with narrow beam
- 4 m polarized retroreflective
- 15 m through beam
- Standard 3-wire output configuration



#### APPLICATIONS

- Processing and Packaging machinery
- Electronics assembling

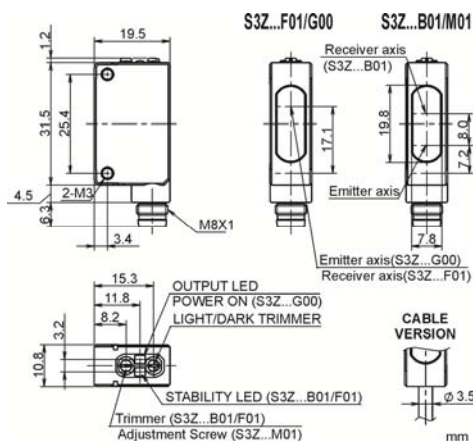
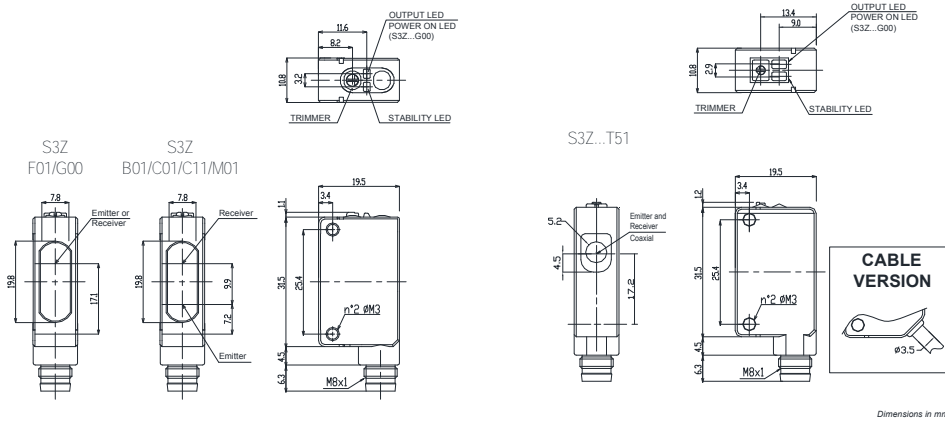


S3Z		
Through beam		0...15 m 0...30 m (class 1 LASER)
Polarized retroreflective		0.05...4 m 0,3...10 m (class 1 LASER)
Retroreflective for transparent (on R2 reflector)		0...2 m
Diffuse proximity		0...700 mm 50...150 mm (narrow beam)
Background suppression		50...250 mm 40...300 mm (class 1 LASER)
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		11x31x19
Housing material		PC/PBT
Mechanical protection		IP67

TECHNICAL DATA

Consumption (output current excluded)	30 mA max. (LED mod.) 35 mA max. (Laser mod.)
Light emission	red LED 650 nm (mod. S3Z...T51) red LED 665 nm (mod. S3Z...B01/C01) red LED 670 nm (mod. S3Z...M01) IR LED 850 nm (mod. S3Z...C11) IR LED 870 nm (mod. S3Z...F01/G00) red Laser 650 nm (mod. S3Z...B01/F01/G00/M01)
Setting	sensitivity trimmer, 6 turns screw (mod. S3Z...M01)
Operating mode	LIGHT/DARK trimmer (Laser mod.), LIGHT (mod. S3Z...-PL, -NL), DARK (mod. S3Z...-PD, -ND)
Indicators	yellow OUTPUT LED, green STABILITY LED (mod. S3Z...B01/C01/C11/F01), POWER ON LED (mod. S3Z...G00)
Output	PNP or NPN (short circuit protection)
Output current	100 mA max.
Saturation voltage	2 V max. (LED mod.) 1,5 V max. (Laser mod.)
Response time	1 ms max. (LED mod.) 250 µs max. (Laser mod.)
Switching frequency	500 Hz max. (LED mod.) 2 kHz max. (Laser mod.)
Connection	2 m cable Ø 3,5 mm, M8 4-pole connector
Dielectric strength	500 Vac 1 min., between electronics and housing
Insulating resistance	>20 MΩ 500 Vdc, between electronics and housing
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibration	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	body PBT, indicators cover PC
Lens material	PMMA, PC (mod. S3Z...B01)
Operating temperature	-25 ... 55 °C (LED mod.), -10 ... 55 °C (Laser mod.)
Storage temperature	-40 ... 70 °C (LED mod.), -25 ... 70 °C (Laser mod.)
Weight	50 g max. cable vers. , 10 g max. conn. vers.

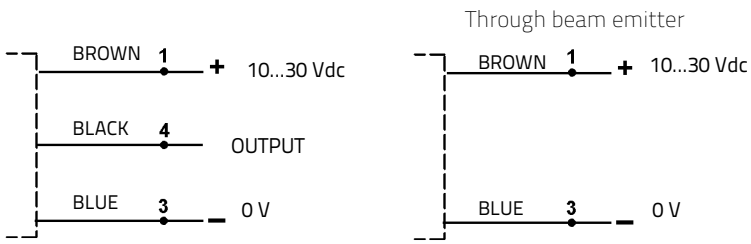
DIMENSIONS



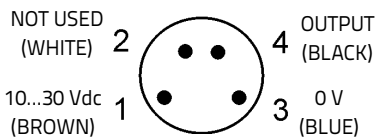
# MINIATURE SENSORS

## CONNECTIONS

### CABLE

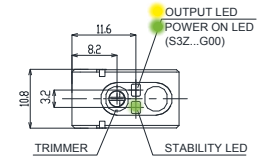


### M8 CONNECTOR

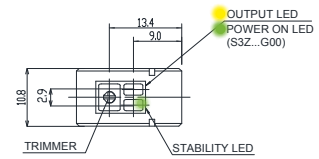


## INDICATORS AND SETTINGS

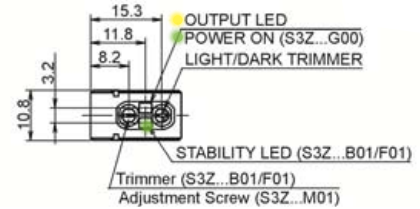
### S3Z...F01/G00/B01/C01/M01



### S3Z...T51

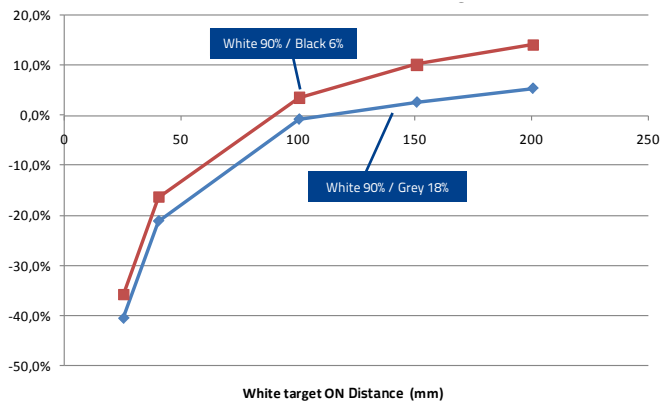


### S3Z...F01/G00/B01/M01

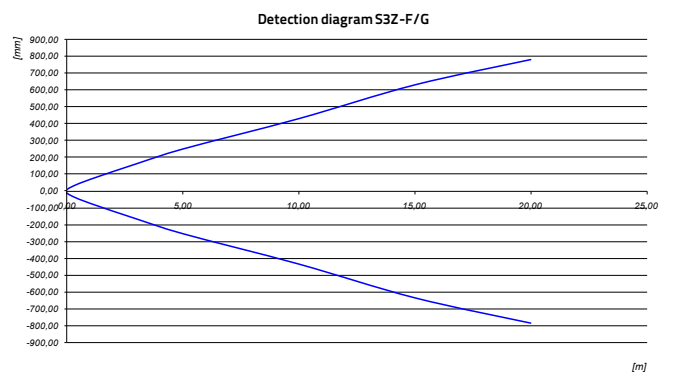


## DIAGRAM LED MODELS

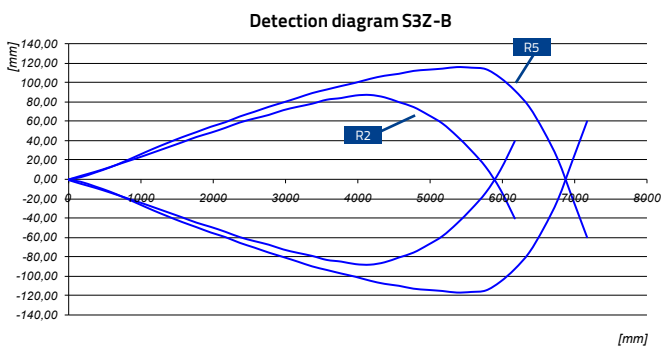
### BACKGROUND SUPPRESSION - DISTANCE DIFFERENCE VS REFLECTANCE TARGET



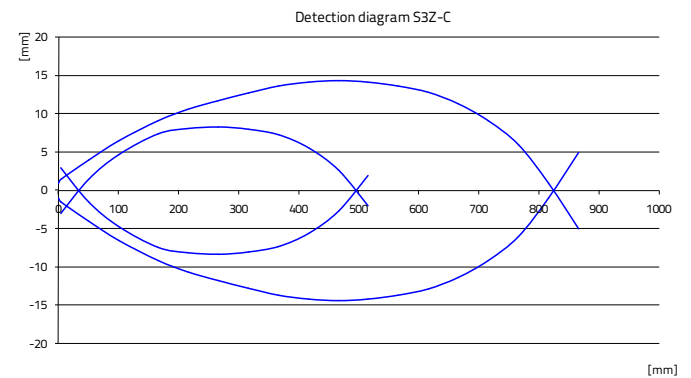
### THROUGH BEAM - DETECTION AREA



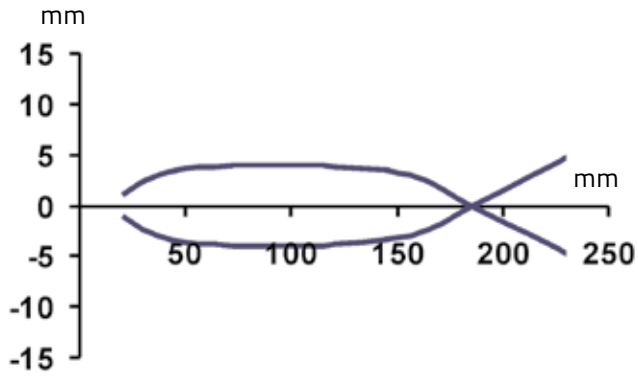
### POLARIZED RETROREFLECTIVE - DETECTION AREA



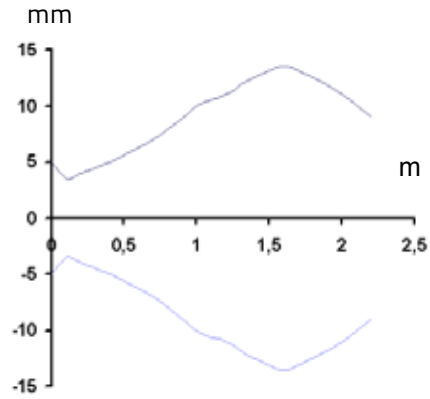
### DIFFUSE PROXIMITY - DETECTION AREA



**NARROW BEAM PROXIMITY - DETECTION AREA**

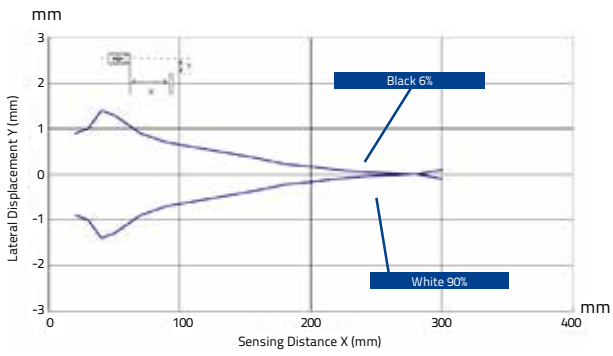


**POLARIZED RETROREFLECTIVE FOR TRANSPARENT - DETECTION AREA**

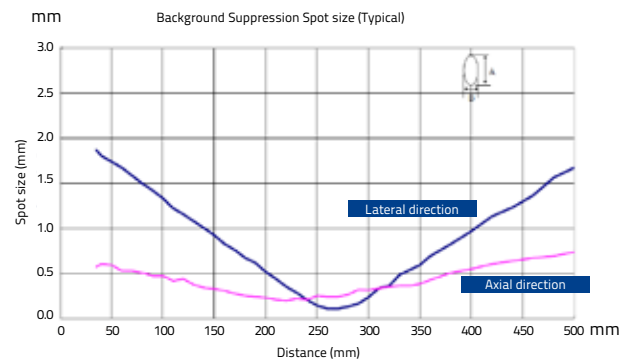


**DIAGRAMS LASER MODELS**

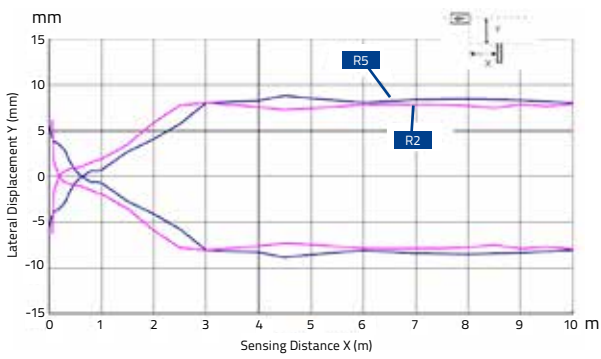
**BACKGROUND SUPPRESSION - DETECTION AREA**



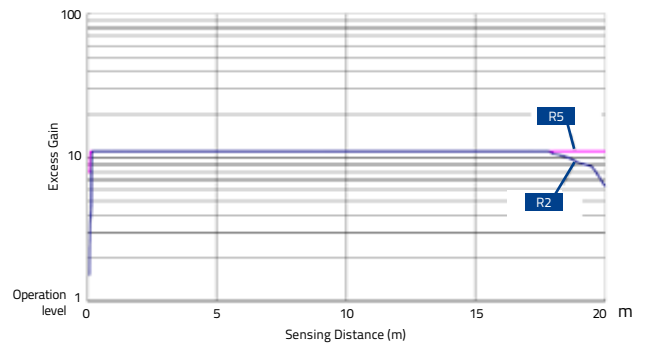
**BACKGROUND SUPPRESSION - SPOT DIMENSION**



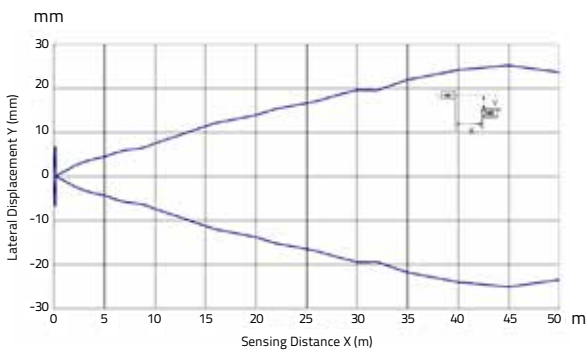
**POLARIZED RETROREFLECTIVE - DETECTION AREA**



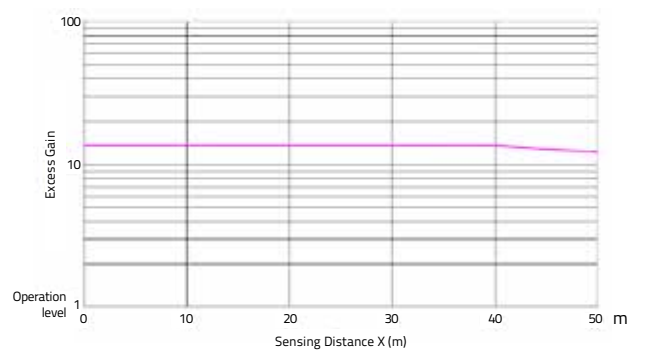
**POLARIZED RETROREFLECTIVE - EXCESS GAIN**



**THROUGH BEAM - DETECTION AREA**



**THROUGH BEAM - EXCESS GAIN**



# MINIATURE SENSORS

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Narrow beam diffuse proximity	LED	2 m Cable	PNP - LIGHT	S3Z-PR-2-C01-PL	95B010040
		M8 Connector	PNP - LIGHT	S3Z-PR-5-C01-PL	95B010050
		2 m Cable	PNP - DARK	S3Z-PR-2-C01-PD	95B010060
		M8 Connector	PNP - DARK	S3Z-PR-5-C01-PD	95B010070
		2 m Cable	NPN - LIGHT	S3Z-PR-2-C01-NL	95B010200
		M8 Connector	NPN - LIGHT	S3Z-PR-5-C01-NL	95B010210
Long diffuse proximity	LED	2 m Cable	NPN - DARK	S3Z-PR-2-C01-ND	95B010220
		M8 Connector	NPN - DARK	S3Z-PR-5-C01-ND	95B010230
		2 m Cable	PNP - LIGHT	S3Z-PR-2-C11-PL	95B010001
		M8 Connector	PNP - LIGHT	S3Z-PR-5-C11-PL	95B010011
		2 m Cable	PNP - DARK	S3Z-PR-2-C11-PD	95B010021
		M8 Connector	PNP - DARK	S3Z-PR-5-C11-PD	95B010031
Polarized retroreflective	LED	2 m Cable	NPN - LIGHT	S3Z-PR-2-C11-NL	95B010161
		M8 Connector	NPN - LIGHT	S3Z-PR-5-C11-NL	95B010171
		2 m Cable	NPN - DARK	S3Z-PR-2-C11-ND	95B010181
		M8 Connector	NPN - DARK	S3Z-PR-5-C11-ND	95B010191
		2 m Cable	PNP - LIGHT	S3Z-PR-2-B01-PL	95B010081
		M8 Connector	PNP - LIGHT	S3Z-PR-5-B01-PL	95B010091
Through beam	LED	2 m Cable	PNP - DARK	S3Z-PR-2-B01-PD	95B010101
		M8 Connector	PNP - DARK	S3Z-PR-5-B01-PD	95B010111
		2 m Cable	NPN - LIGHT	S3Z-PR-2-B01-NL	95B010241
		M8 Connector	NPN - LIGHT	S3Z-PR-5-B01-NL	95B010251
		2 m Cable	NPN - DARK	S3Z-PR-2-B01-ND	95B010261
		M8 Connector	NPN - DARK	S3Z-PR-5-B01-ND	95B010271
Background suppression	LASER	2 m Cable	PNP - DARK/LIGHT	S3Z-PH-2-B01-PP	95B010440
		M8 Connector	PNP - DARK/LIGHT	S3Z-PH-5-B01-PP	95B010460
		2 m Cable	NPN - DARK/LIGHT	S3Z-PH-2-B01-NN	95B010450
		M8 Connector	NPN - DARK/LIGHT	S3Z-PH-5-B01-NN	95B010470
		2 m Cable	PNP - LIGHT	S3Z-PR-2-FG01-PL	95B010121
		M8 Connector	PNP - LIGHT	S3Z-PR-5-FG01-PL	95B010131
Polarized retroreflective for transparent	LED	2 m Cable	PNP - DARK	S3Z-PR-2-FG01-PD	95B010141
		M8 Connector	PNP - DARK	S3Z-PR-5-FG01-PD	95B010151
		2 m Cable	NPN - LIGHT	S3Z-PR-2-FG01-NL	95B010281
		M8 Connector	NPN - LIGHT	S3Z-PR-5-FG01-NL	95B010291
		2 m Cable	NPN - DARK	S3Z-PR-2-FG01-ND	95B010301
		M8 Connector	NPN - DARK	S3Z-PR-5-FG01-ND	95B010311
Background suppression	LASER	2 m Cable	PNP - DARK/LIGHT	S3Z-PH-2-FG01-PP	95B010520
		M8 Connector	PNP - DARK/LIGHT	S3Z-PH-5-FG01-PP	95B010540
		2 m Cable	NPN - DARK/LIGHT	S3Z-PH-2-FG01-NN	95B010530
		M8 Connector	NPN - DARK/LIGHT	S3Z-PH-5-FG01-NN	95B010550
		2 m Cable	PNP - LIGHT	S3Z-PR-2-M01-PL	95B010331
		M8 Connector	PNP - LIGHT	S3Z-PR-5-M01-PL	95B010351
Background suppression	LED	2 m Cable	NPN - LIGHT	S3Z-PR-2-M01-NL	95B010321
		M8 Connector	NPN - LIGHT	S3Z-PR-5-M01-NL	95B010341
		2 m Cable	PNP - DARK/LIGHT	S3Z-PH-2-M01-PP	95B010480
		M8 Connector	PNP - DARK/LIGHT	S3Z-PH-5-M01-PP	95B010500
		2 m Cable	NPN - DARK/LIGHT	S3Z-PH-2-M01-NN	95B010490
		M8 Connector	NPN - DARK/LIGHT	S3Z-PH-5-M01-NN	95B010510
Polarized retroreflective for transparent	LED	2 m Cable	NPN - DARK	S3Z-PR-2-T51-ND	95B010390
		2 m Cable	PNP - DARK	S3Z-PR-2-T51-PD	95B010380
		M8 Connector	NPN - DARK	S3Z-PR-5-T51-ND	95B010370
		M8 Connector	PNP - DARK	S3Z-PR-5-T51-PD	95B010360



# MINIATURE SENSORS

MODEL	DESCRIPTION	ORDER NO.
ST-505	lateral mounting	95ACC2800
ST-5039	L-shaped fixing bracket	95ACC2270
ST-5040	protection bracket with vertical fixing (only for cable versions)	95ACC2280
ST-5046	protection bracket with horizontal fixing	95ACC2370
S3Z-SLIT1	∅ 0,5 mm slit for through beam	95ACC2470
S3Z-SLIT2	∅ 1 mm slit for through beam	95ACC2480
S3Z-SLIT3	∅ 2 mm slit for through beam	95ACC2490
S3Z-SLIT4	0,5x18 mm slit for through beam	95ACC2500
S3Z-SLIT5	1x18 mm slit for through beam	95ACC2510
S3Z-SLIT6	2x18 mm slit for through beam	95ACC2520
ST-S3Z-M18	S3Z FIX BRK M18 THREADED NOSE	95ACC7850

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650





# MINIATURE SENSORS

## S40

### High performance miniature European style photoelectric sensors

- High-performance models with Teach-in function
- Background suppression and LASER retroreflective models
- Polarized retroreflective for transparent objects
- 4-wire NO/NC output or Remote teach input



#### APPLICATIONS

- Processing and Packaging machinery
- Conveyor lines, material handling
- Automated warehousing



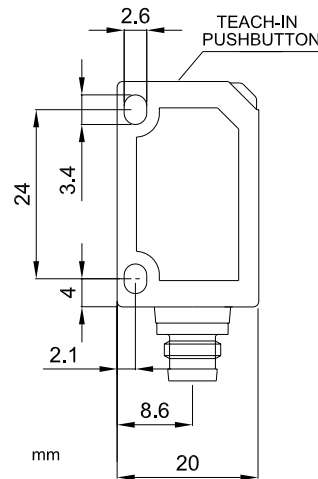
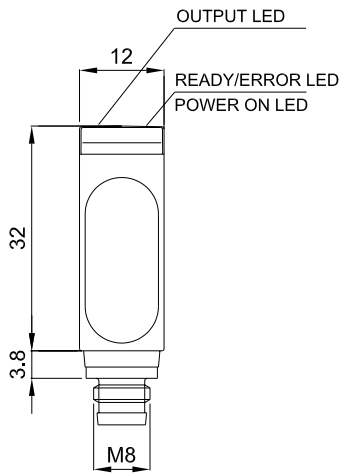
S40		
Polarized retroreflective		0,1...2,5 m
Retroreflective for transparent (on R2 reflector)		0,1...6 m (class 2 LASER)
Diffuse proximity		100...700 mm
Background suppression		5...300 mm
		40...150 mm (class 2 LASER)
		15...100 mm
		20...60 mm (class 2 LASER)
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		12x32x20
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

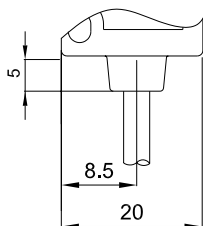
Power supply	10 ... 30 Vdc (reverse polarity protection)
Ripple	10% max.
Consumption (output current excluded)	35 mA max.
Light emission	red LED 660 nm, 640 nm (mod. S40...M03) red Laser 650 nm
Setting	teach-in push-button and remote by cable
Indicators	yellow OUTPUT LED green READY/ERROR LED
Output	NPN or PNP, 22 kΩ pull down/up resistance (short-circuit protection)
Output current	100 mA max.
Saturation voltage	2,4 V max.
Response time	0,5 ms 125 μs (Laser mod. S40...B03/C03)
Switching frequency	1 kHz 4 kHz (Laser mod. S40...B03/C03)
Connection	M8 4-pole connector, 2 m cable 3,5 mm
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS UL 94V-0
Lens material	Methacrylic PMMA
Operating temperature	-20 ... +60 °C
Storage temperature	-20 ... +80 °C
Weight	40 g max. cable vers., 10 g max. conn. vers.

DIMENSIONS

M8 CONNECTOR VERSION



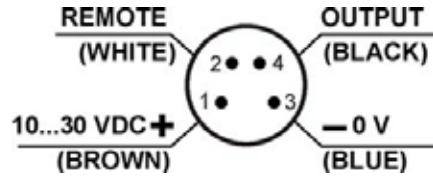
CABLE VERSION



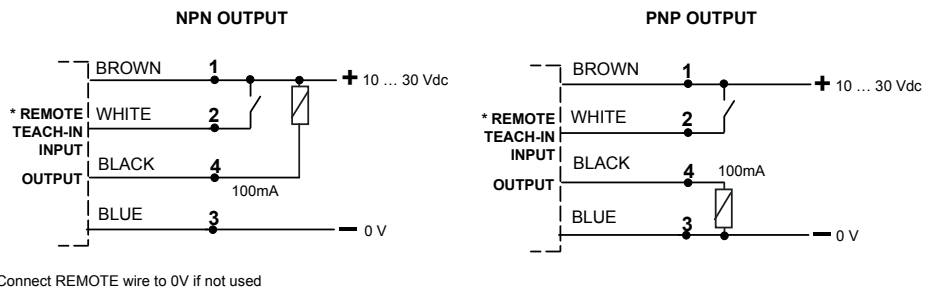
# MINIATURE SENSORS

## CONNECTIONS

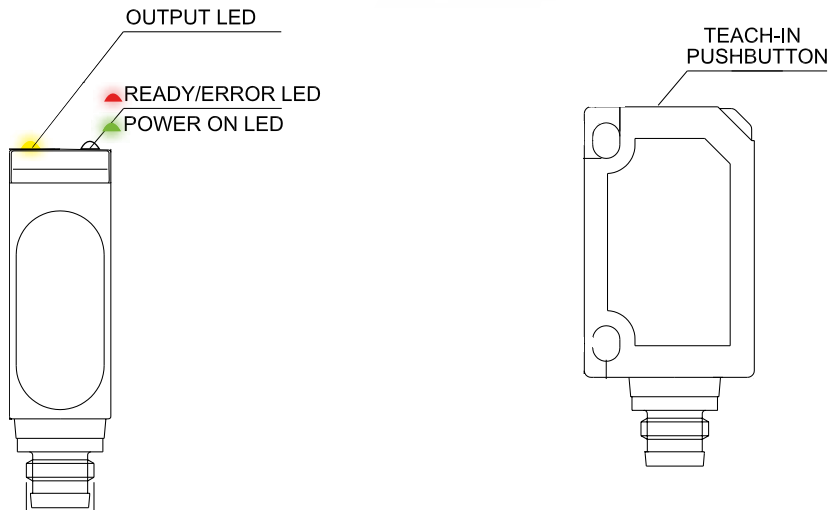
### M8 CONNECTOR



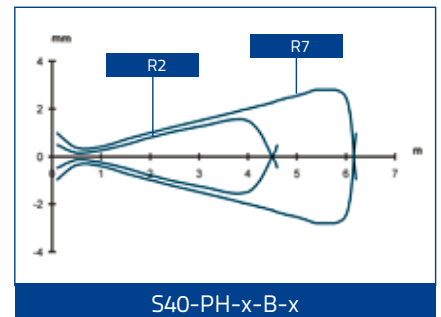
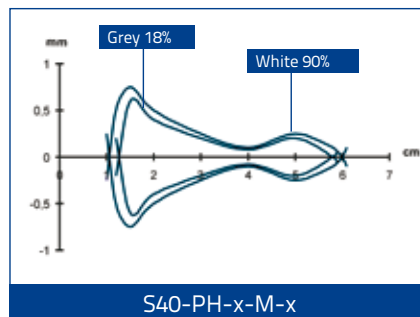
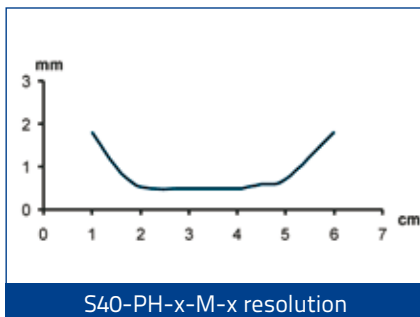
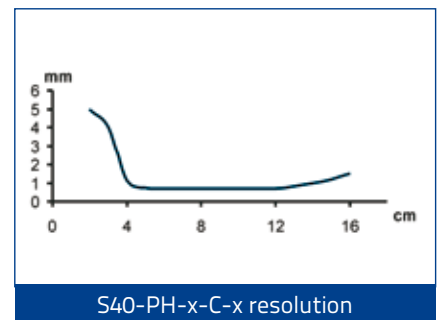
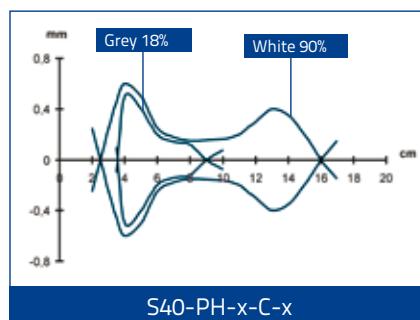
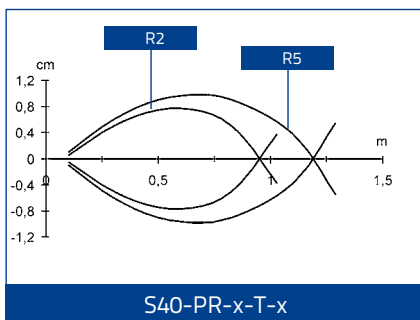
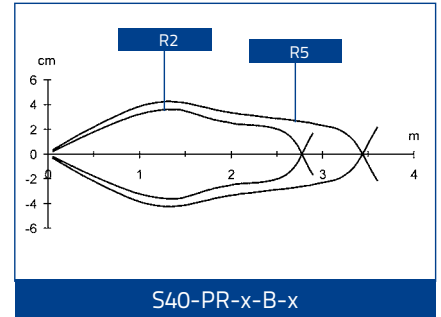
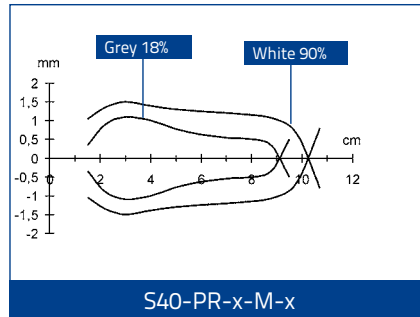
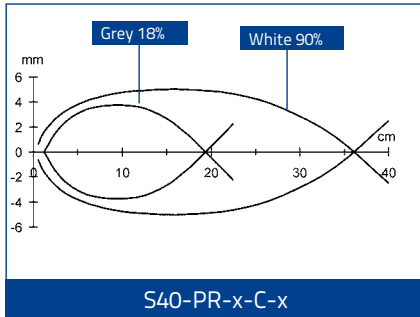
### CABLE



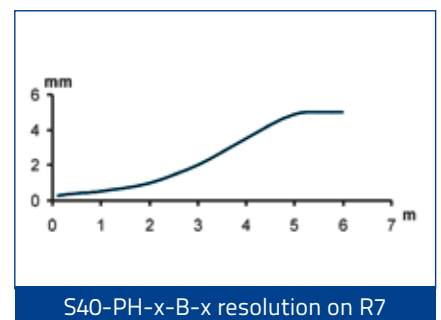
## INDICATORS AND SETTINGS



## DETECTION DIAGRAMS



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

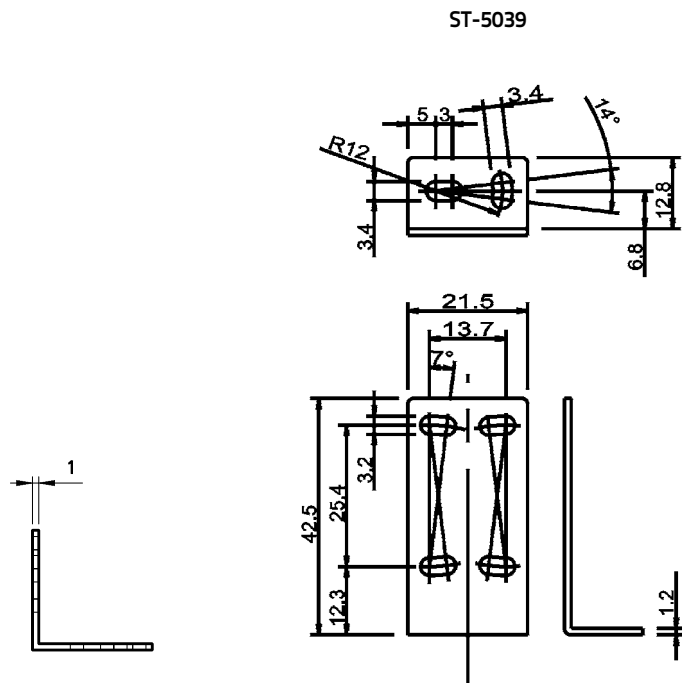
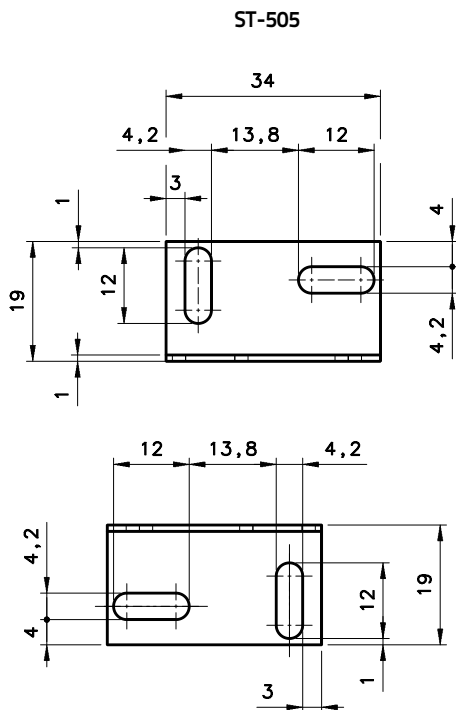


# MINIATURE SENSORS

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Polarized retroreflective	LASER	M8 connector	NPN	S40-PH-5-B03-NH	950401240
			PNP	S40-PH-5-B03-PH	950401250
	LED	2m Cable	NPN	S40-PR-2-B03-NH	950401360
			PNP	S40-PR-2-B03-PH	950401300
		M8 connector	NPN	S40-PR-5-B03-NH	950401480
			PNP	S40-PR-5-B03-PH	950401420
Diffuse proximity	LASER	M8 connector	NPN	S40-PH-5-C03-NH	950401260
			PNP	S40-PH-5-C03-PH	950401270
	LED	2m Cable	NPN	S40-PR-2-C03-NH	950401370
			PNP	S40-PR-2-C03-PH	950401310
		M8 connector	NPN	S40-PR-5-C03-NH	950401490
			PNP	S40-PR-5-C03-PH	950401430
Background suppression	LASER	2m Cable	PNP	S40-PH-2-M03-PH	950401540
		M8 connector	NPN	S40-PH-5-M03-NH	950401280
			PNP	S40-PH-5-M03-PH	950401290
	LED	2m Cable	NPN	S40-PR-2-M03-NH	950401380
		M8 connector	PNP	S40-PR-2-M03-PH	950401320
			NPN	S40-PR-5-M03-NH	950401500
Retroreflective for transparent	LED	2m Cable	NPN	S40-PR-2-T03-NH	950401410
			PNP	S40-PR-2-T03-PH	950401350
		M8 connector	NPN	S40-PR-5-T03-NH	950401530
			PNP	S40-PR-5-T03-PH	950401470

## ACCESSORIES



MODEL	DESCRIPTION	ORDER NO.
ST-505	lateral mounting	95ACC2800
ST-5039	L-shaped fixing bracket	95ACC2270

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650

# MINIATURE SENSORS

## S41

### Basic line of miniature European style photoelectric sensors

- Cost-effective universal models with adjustment trimmer
- Polarized retroreflective for transparent objects
- 4-wire connection NO/NC output or Remote teach



#### APPLICATIONS

- Processing and Packaging machinery
- Conveyor lines, material handling
- Automated warehousing



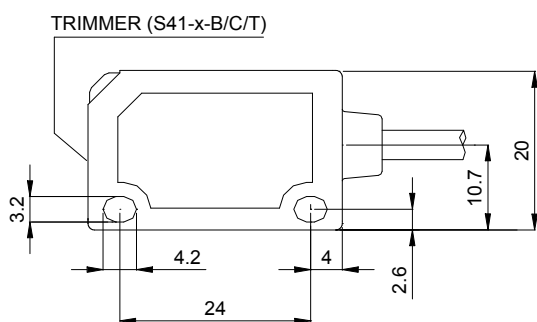
S41		
Through beam		0,1...6 m
Polarized retroreflective (on R2 reflector)		0,1...2,5 m
Retroreflective for transparent (on R2 reflector)		100...700 mm
Diffuse proximity		2...350 mm
Fixed focus		110 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		12x32x20
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

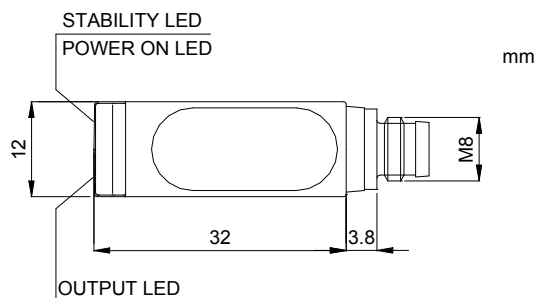
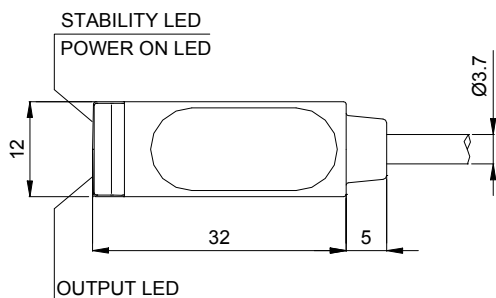
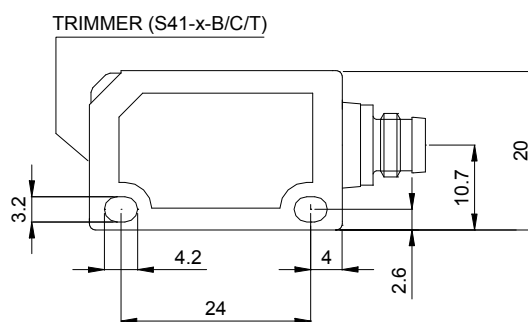
Power supply	10 ... 30 Vdc (reverse polarity protection)
Ripple	10% max.
Consumption (output current excluded)	35 mA max.
Light emission	red LED 660 nm (mod. S41...B/D/P/T) IR LED 880 nm (mod. S41...C/G/H)
Setting	sensitivity trimmer (mod. S41...B/C/T)
Operating mode	LIGHT mode (mod. S41...C/D); DARK mode (mod. S41...B/F/P/T)
Indicators	yellow OUTPUT LED green STABILITY LED (mod. S41...B/D/C/F/P), POWER LED (mod. S41...G/H)
Output	NPN or PNP, NO; NC
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	1 ms
Switching frequency	500 Hz max.
Connection	M8 4-pole connector, 2 m cable Ø 3,5 mm
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP66 (mod. S41...B/C/T), IP67 (mod. S41...D/F/G/P/H)
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS UL 94V-0
Lens material	PMMA plastic
Operating temperature	-25 ... +55 °C
Storage temperature	-25 ... +70 °C
Weight	40 g max. cable vers., 10 g max. conn. vers.

DIMENSIONS

CABLE VERSION



M8 CONNECTOR VERSION

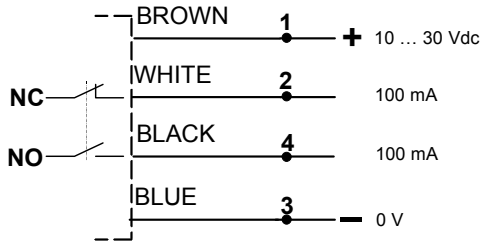




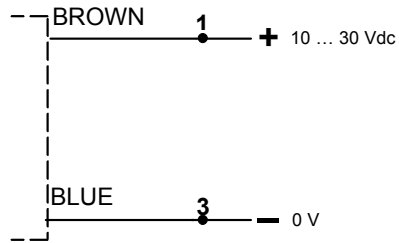
# MINIATURE SENSORS

## CONNECTIONS

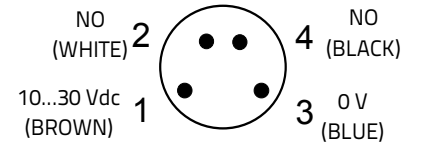
### CABLE



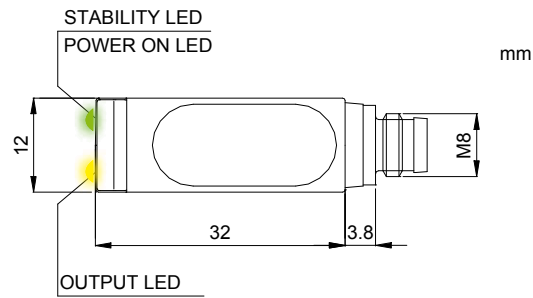
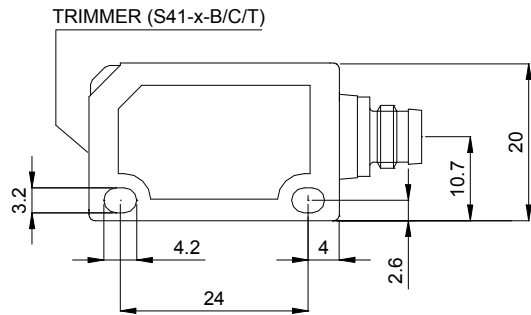
Through beam emitter



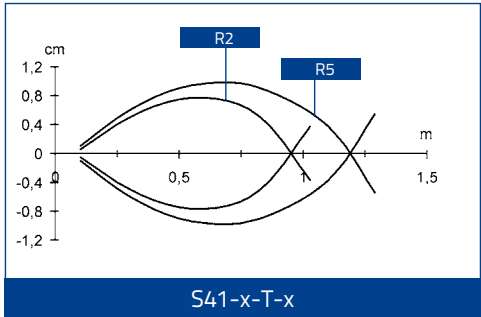
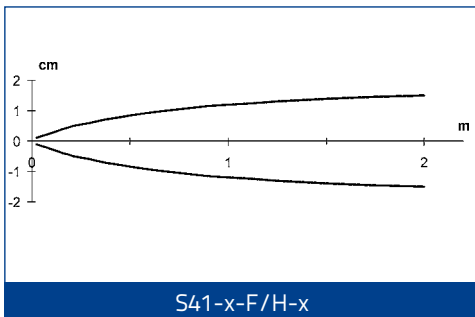
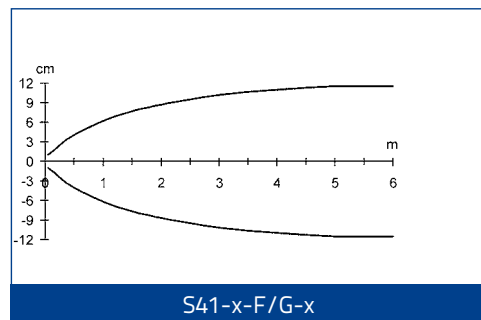
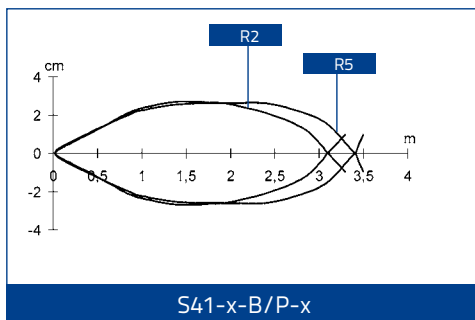
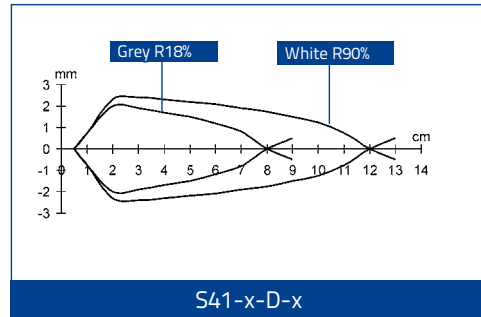
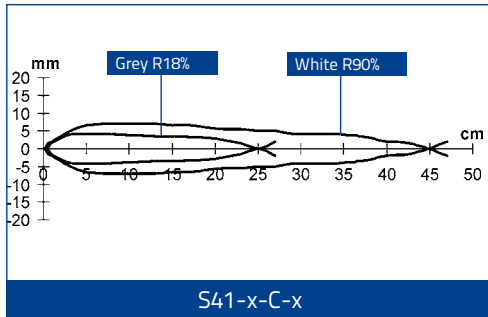
### M8 CONNECTOR



## INDICATORS AND SETTINGS



## DETECTION DIAGRAMS



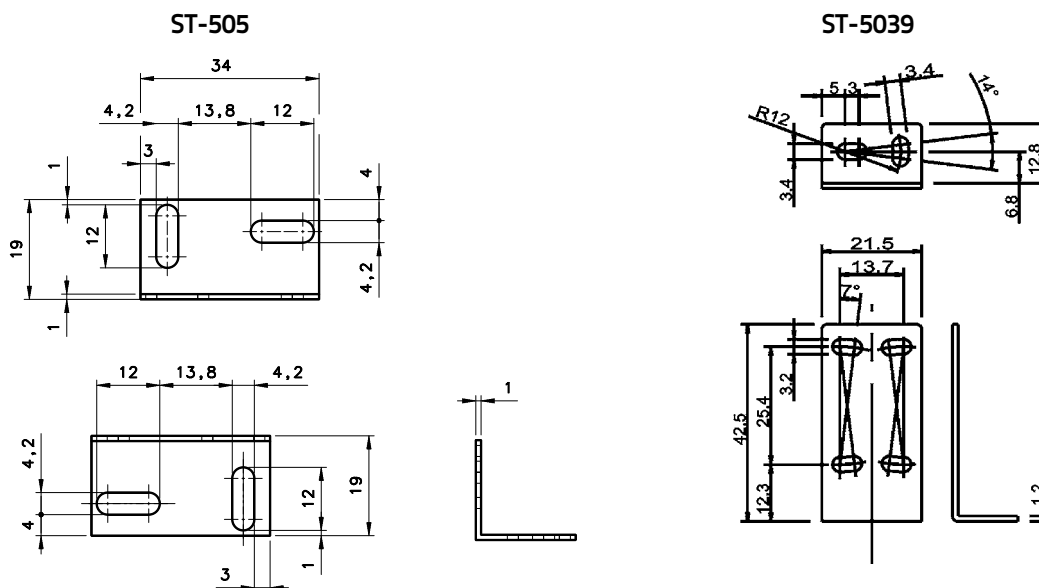
The detection diagrams indicate the typical operating distance with excess gain 1.

# MINIATURE SENSORS

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	ADJUSTMENT TRIMMER	CONNECTION	OUTPUT	MODEL	ORDER No.
Polarized retroreflective	Present	2m Cable	NPN	S41-2-B-N	950701150
			PNP	S41-2-B-P	950701000
		M8 Connector	NPN	S41-5-B-N	950701210
			PNP	S41-5-B-P	950701050
Polarized retroreflective	Absent	2m Cable	NPN	S41-2-P-N	950701190
			PNP	S41-2-P-P	950701100
		Connector	NPN	S41-5-P-N	950701250
			PNP	S41-5-P-P	950701110
Diffuse proximity	Present	2m Cable	NPN	S41-2-C-N	950701160
			PNP	S41-2-C-P	950701010
		M8 Connector	NPN	S41-5-C-N	950701120
			PNP	S41-5-C-P	950701060
Fixed focus	Absent	2m Cable	NPN	S41-2-D-N	950701170
			PNP	S41-2-D-P	950701020
		M8 Connector	NPN	S41-5-D-N	950701230
			PNP	S41-5-D-P	950701070
Through beam receiver	Absent	2m Cable	NPN	S41-2-F-N	950701180
			PNP	S41-2-F-P	950701030
		M8 Connector	NPN	S41-5-F-N	950701240
			PNP	S41-5-F-P	950701080
Through beam emitter	Absent	2m Cable	-	S41-2-G	950701040
Through beam emitter with narrow beam	Absent	M8 Connector	-	S41-5-G	950701090
		M8 Connector	-	S41-2-H	950701045
Retroreflective for transparent	Present	2m Cable	NPN	S41-2-T-N	950701200
			PNP	S41-2-T-P	950701130
		M8 Connector	NPN	S41-5-T-N	950701260
			PNP	S41-5-T-P	950701140

## ACCESSORIES



MODEL	DESCRIPTION	ORDER NO.
ST-505	lateral mounting	95ACC2800
ST-5039	L-shaped fixing bracket	95ACC2270

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650

# MINIATURE SENSORS

## S45

*High Performance european style miniature sensor all-in-one family*

- Red LED and Laser emissions
- Precise risk free laser class 1 emission
- Diffused LED proximity 800mm
- Background Suppression 400mm
- Retroreflective Class 1 Laser 15m/Red LED 7m
- Through beam Class 1 Laser 20m/Red LED 15m
- IP69K housing
- 2m Cable or metal M8 4 pole version
- PNP or NPN output with remote teach in input
- High speed RGB and white emission contrast sensor
- High precision distance sensor up to 200 mm



### APPLICATIONS

- Processing and Packaging machinery
- Cosmetic and Pharmaceutical industry
- Electronics assembling
- Conveyor lines, material handling
- Automotive industry
- Print and paper industry
- Small part detection with maximum accuracy

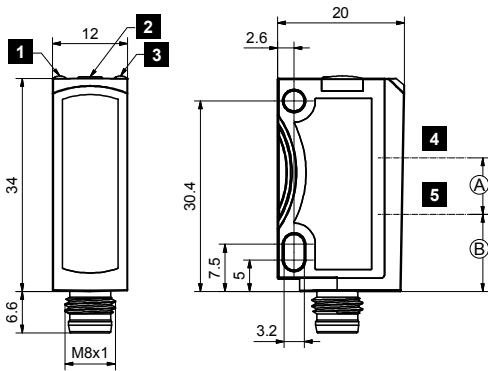


S45		
Through beam		20m. (Laser Class1) 15m. (Red Led)
Polarized Retroreflective		15m. (Laser Class1) 7m. (Red Led)
Autocollimated Retroreflective for Transparent objects		2m. (Red Led)
Autocollimated Retroreflective		2m. (Red Led)
Diffused proximty		250mm. (Laser Class1) 800mm. (Red Led)
Background suppressor		120mm. (Laser Class 1) 200mm. (Red Led) 400mm. (Red Led)
Distance sensor		80mm. (Red Led) 200mm. (Red Led)
Contrast Sensor		12mm. (White) 12mm. (RGB)
Pwer Supply	Vdc	10...30 V
	Vac	
	Vac/Vdc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	Push Pull (Wxx, Yxx), Analog 0...10 V (Yxx)
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		34mm. x 20mm. X 12mm.
Housing material		ABS(Housing), PMMA (Optics)
Mechanical protection		IP67 & IP69K

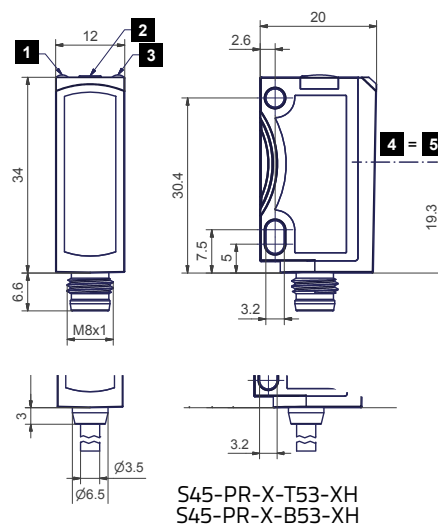
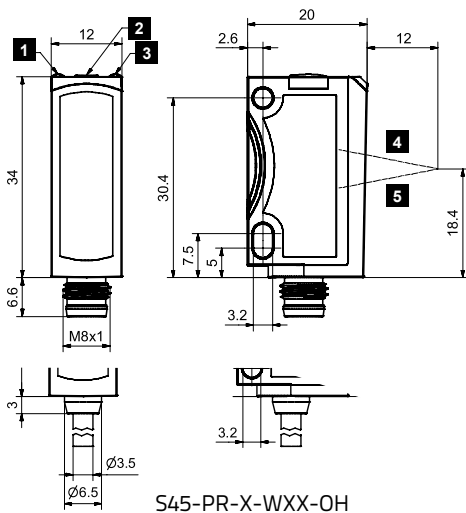
### TECHNICAL DATA

Power supply	10...30 Vdc
Ripple	10% max.
Consumption (Load current excluded)	≤ 30 mA
Light emission	Red LED 632 nm, Red Laser 650 nm
Setting	Push Button TEACH-IN
Indicators	LED Green, Operating Voltage LED Yellow Output Status
Output	NPN, PNP, Push Pull
Output current	100 mA
Saturation voltage	2 V max
Response time	500 μs 333 μs (CO3 Laser) 250 μs (F/G Laser) 50 μs (W03, W33) 20 μs (W13, W43)
Switching frequency	≤ 1000Hz ≤ 1500Hz (CO3 Laser) ≤ 2000 Hz (F/G Laser) ≤ 10 kHz (W03, W33) ≤ 25 kHz (W13, W43)
Connection	Plastic M8 4-pole connector, Metal M8 4-pole connector 2 m cable
Dielectric strength	500 Vac, 1min between electronic and housing
Insulating resistance	>20M OHM, 500 Vdc between electronic and housing
Electrical protection	class 2
Mechanical protection	IP67 & IP69K
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5mm amplitude, 10...55Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS
Lens material	PMMA
Operating temperature	-20...+60 °C
Storage temperature	-20...+80 °C
Weight	10g. with connector, 40g. with cable

### DIMENSIONS



	S45-PR-2(5)-M03 S45-PR-5-Y03	S45-PR-2(5)-M13 S45-PR-5-Y13	S45-PR-2(5)-C03 S45-PR-B03	S45-PH-5-M03	S45-PH-5-C03 S45-PH-B03	S45-PR-G00	S45-PH-G00	S45-PR(PH)-F03
<b>A</b>	9	11.75	10.8	8.8	8.8	11.5	13.5	
<b>B</b>	12.3	11	11.5	12.5	13.5			22.3



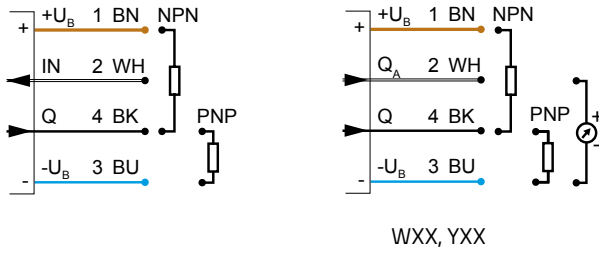
<b>1</b>	Yellow LED 1)
<b>2</b>	Button
<b>3</b>	Green LED 2)
<b>4</b>	Receiver axis
<b>5</b>	Emitter axis

- 1) switching output indicator
- 2) operating voltage indicator

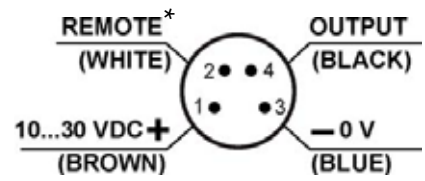
# MINIATURE SENSORS

## CONNECTIONS

### CABLE

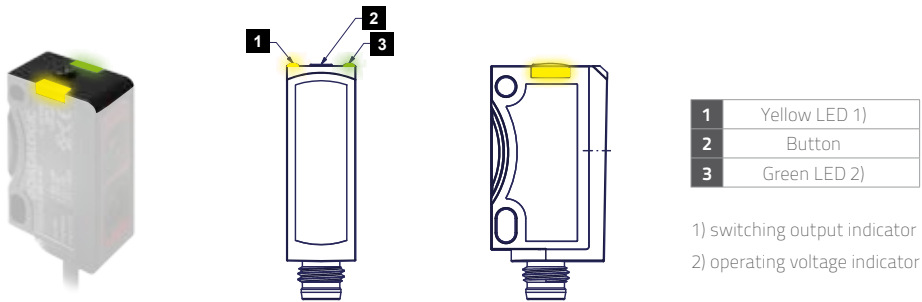


### M8 CONNECTOR



\* Analog out YXX

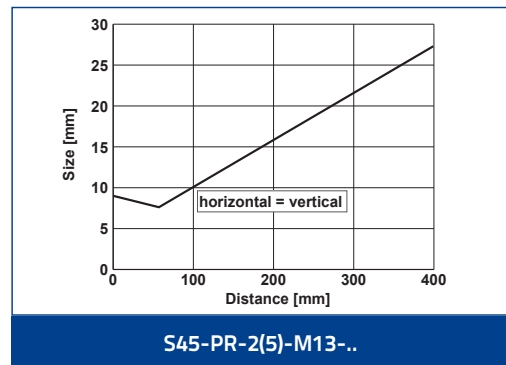
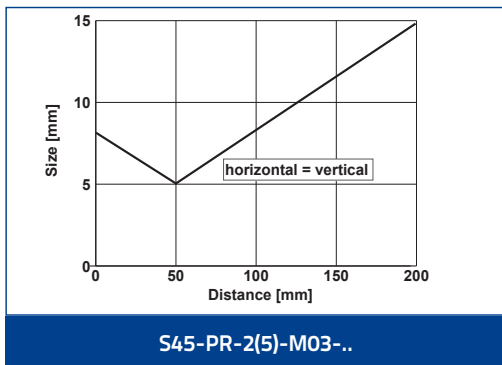
## INDICATORS AND SETTINGS



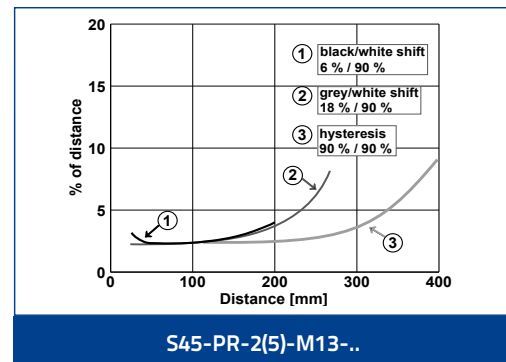
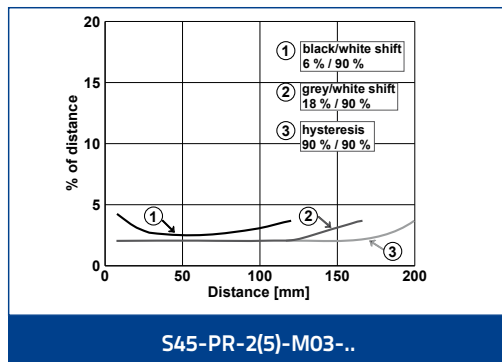
## DETECTION DIAGRAMS

### BACKGROUND SUPPRESSOR

#### DETECTION SPOT SIZE

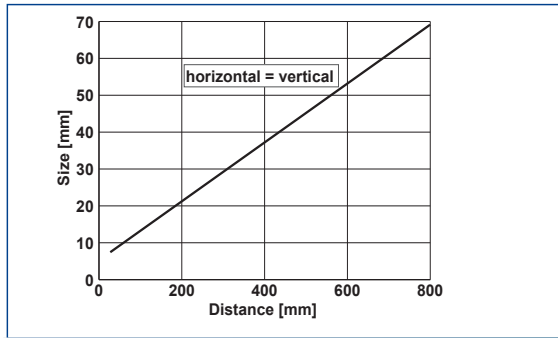


#### B/W SHIFT



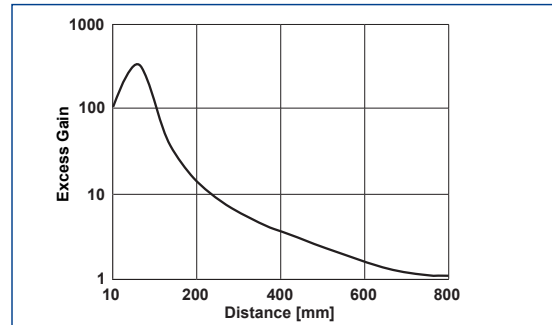
## ENERGETIC DIFFUSED

DETECTION SPOT SIZE



S45-PR-2(5)-C03-..

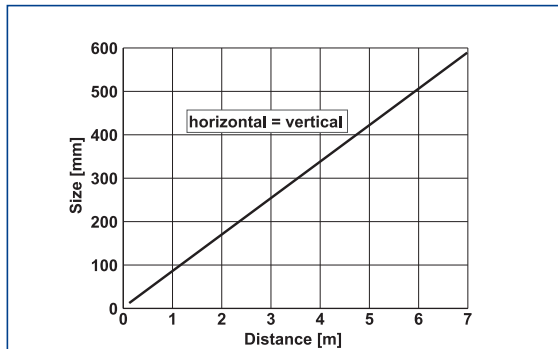
EXCESS GAIN



S45-PR-2(5)-C03-..

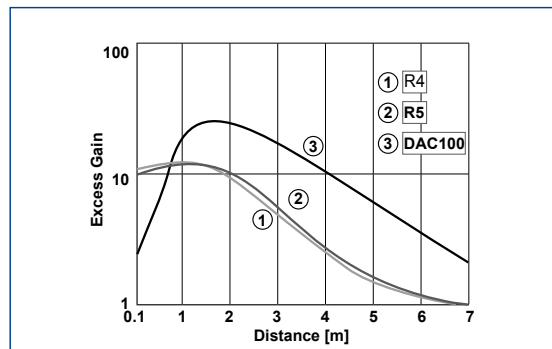
## RETROREFLECTIVE POLARIZED

DETECTION SPOT SIZE



S45-PR-2(5)-B03-..

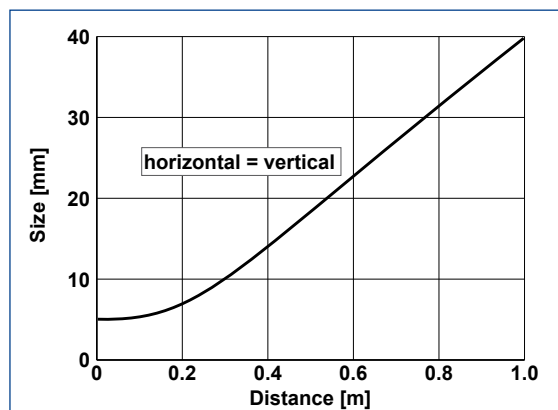
EXCESS GAIN



S45-PR-2(5)-B03-..

## COAXIAL RETROREFLECTIVE POLARIZED

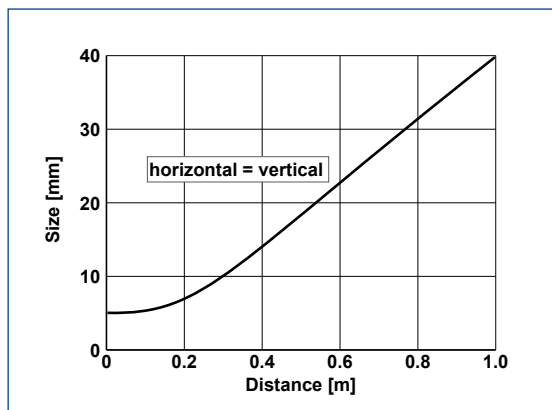
DETECTION SPOT SIZE



S45-PR-5-B53-..

## RETROREFLECTIVE FOR TRANSPARENT

DETECTION SPOT SIZE



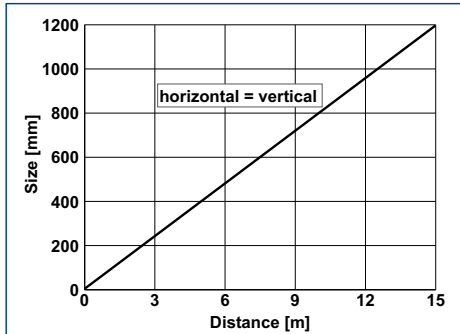
S45-PR-2(5)-T53-..



# MINIATURE SENSORS

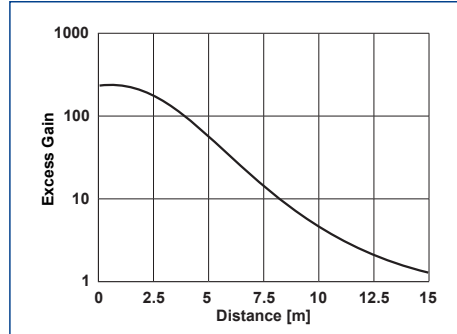
## THROUGH BEAM

DETECTION SPOT SIZE



S45-PR-2(5)-F03-../S45-PR-2(5)-G00-XE

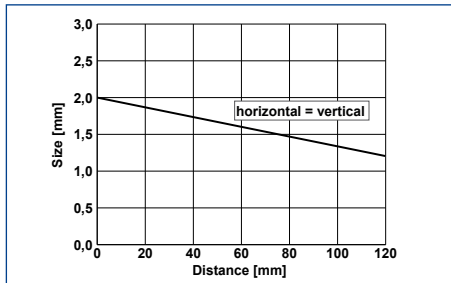
EXCESS GAIN



S45-PR-2(5)-F03-../S45-PR-2(5)-G00-XE

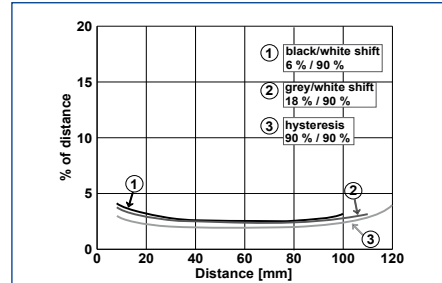
## LASER BACKGROUND SUPPRESSOR

DETECTION SPOT SIZE



S45-PH-5-M03-..

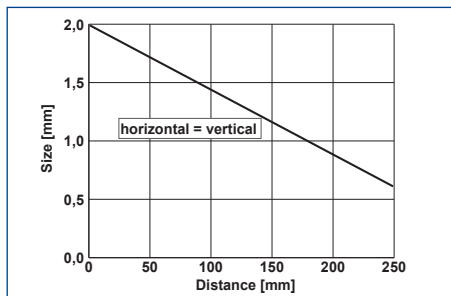
B/W SHIFT



S45-PH-5-M03-..

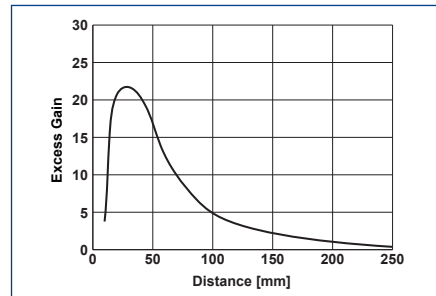
## LASER ENERGETIC DIFFUSED

DETECTION SPOT SIZE



S45-PH-5-C03-..

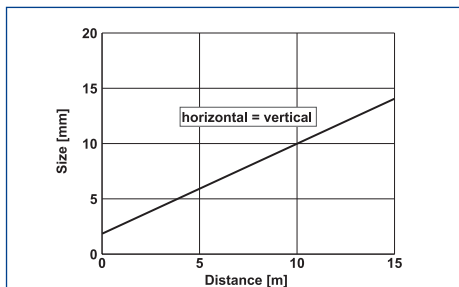
EXCESS GAIN



S45-PH-5-C03-..

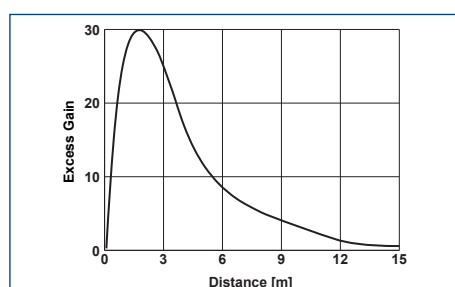
## LASER RETROREFLECTIVE POLARIZED

DETECTION SPOT SIZE



S45-PH-5-B03-..

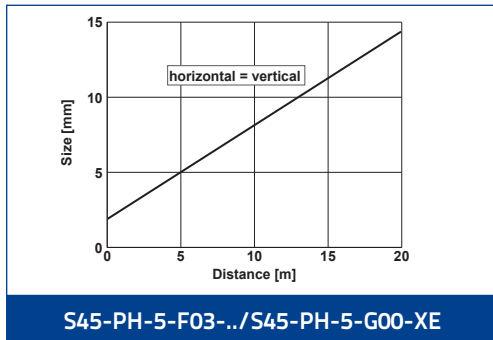
EXCESS GAIN



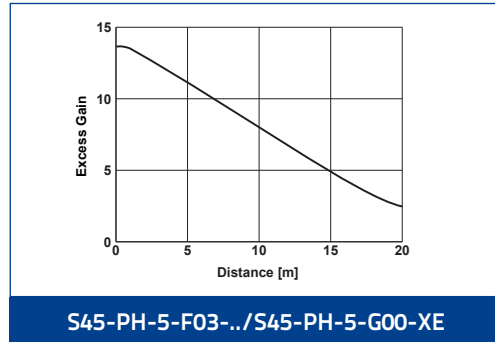
S45-PH-5-B03-..

## LASER THROUGH BEAM

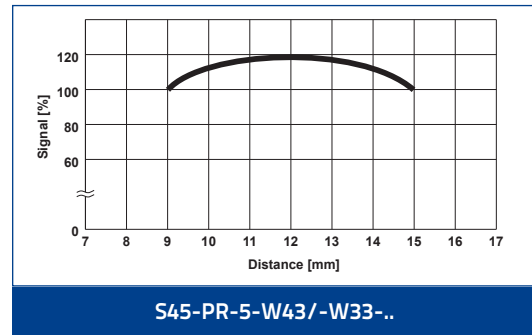
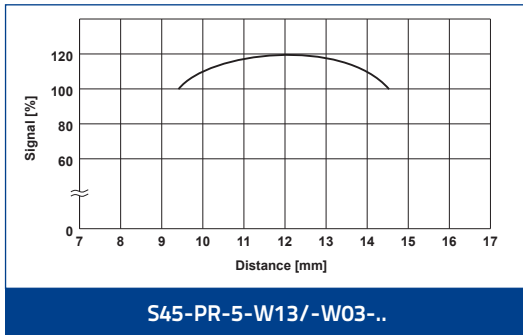
### DETECTION SPOT SIZE



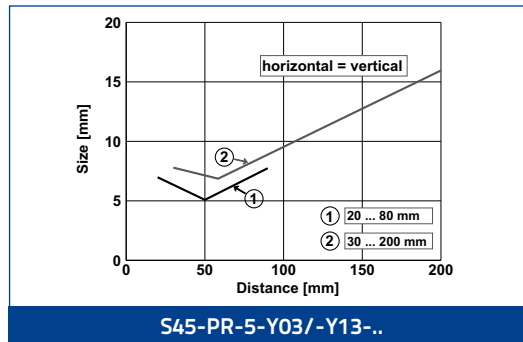
### EXCESS GAIN



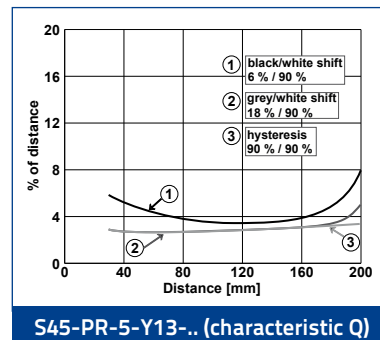
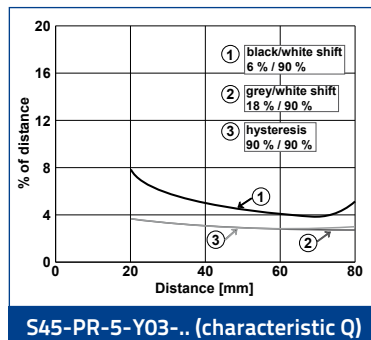
## CONTRAST SENSOR READING DIAGRAM



## DISTANCE SENSOR DETECTION SPOT SIZE



## SCANNING PROPERTIES

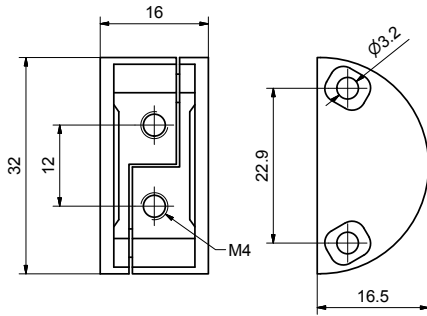


# MINIATURE SENSORS

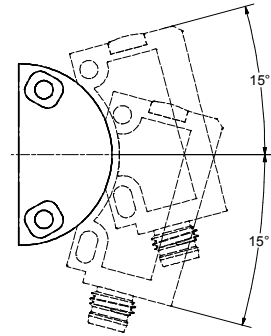
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
Diffused proximity	LED	2m Cable	PNP	S45-PR-2-C03-PH	950411220
			NPN	S45-PR-2-C03-NH	950411210
		M8	PNP	S45-PR-5-C03-PH	950411240
			NPN	S45-PR-5-C03-NH	950411230
	LASER	M8	PNP	S45-PH-5-C03-PH	950411260
			NPN	S45-PH-5-C03-NH	950411250
Polarized Retroreflective	LED	2m Cable	PNP	S45-PR-2-B03-PH	950411100
			NPN	S45-PR-2-B03-NH	950411090
		M8	PNP	S45-PR-5-B03-PH	950411120
			NPN	S45-PR-5-B03-NH	950411110
	LASER	M8	PNP	S45-PH-5-B03-PH	950411140
			NPN	S45-PH-5-B03-NH	950411130
Polarized retroreflective autocollimated for transparent	LED	2m Cable	PNP	S45-PR-2-T53-PH	950411160
			NPN	S45-PR-2-T53-NH	950411150
		M8	PNP	S45-PR-5-T53-PH	950411180
			NPN	S45-PR-5-T53-NH	950411170
Polarized retroreflective autocollimated	LED	M8	PNP	S45-PR-5-B53-PH	950411200
			NPN	S45-PR-5-B53-NH	950411190
Through beam	LED	2m Cable	-	S45-PR-2-G00-XE	950411000
			PNP	S45-PR-2-F03-PH	950411020
			NPN	S45-PR-2-F03-NH	950411010
		M8	-	S45-PR-5-G00-XE	950411030
			PNP	S45-PR-5-F03-PH	950411050
			NPN	S45-PR-5-F03-NH	950411040
	LASER	M8	-	S45-PH-5-G00-XE	950411060
			PNP	S45-PH-5-F03-PH	950411080
			NPN	S45-PH-5-F03-NH	950411070
			PNP	S45-PR-2-M03-PH	950411280
Background suppressor 200mm	LED	2m Cable	NPN	S45-PR-2-M03-NH	950411270
			PNP	S45-PR-5-M03-PH	950411300
		M8	NPN	S45-PR-5-M03-NH	950411290
			PNP	S45-PR-2-M13-PH	950411320
Background suppressor 400mm	LED	2m Cable	NPN	S45-PR-2-M13-NH	950411310
			PNP	S45-PR-5-M13-PH	950411340
		M8	NPN	S45-PR-5-M13-NH	950411330
			PNP	S45-PH-5-M03-PH	950411360
Background suppressor laser	LASER	M8	NPN	S45-PH-5-M03-NH	950411350
			PNP	S45-PR-5-Y03-PV	950411380
Distance sensor	LED	M8	NPN	S45-PR-5-Y03-NV	950411370
			PNP	S45-PR-5-Y13-PV	950411400
Distance sensor	LED	M8	NPN	S45-PR-5-Y13-NV	950411390
			WHITE	M8	PUSH-PULL
Contrast Sensor 10kHz	RGB	M8	PUSH-PULL		S45-PR-5-W33-OH
	WHITE		M8	PUSH-PULL	S45-PR-5-W13-OH
Contrast Sensor 25kHz	RGB	M8		PUSH-PULL	S45-PR-5-W43-OH

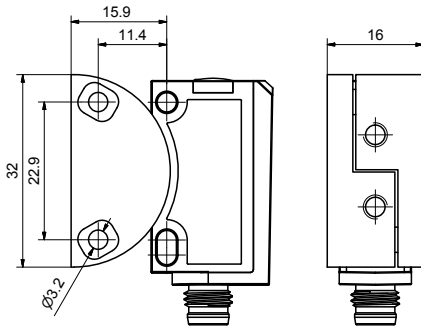
## ACCESSORIES



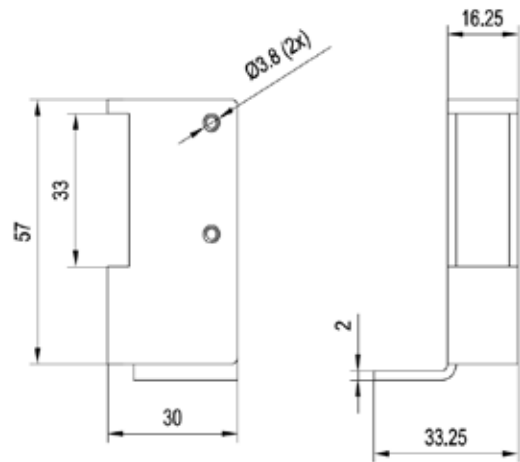
ST-S45-DVT



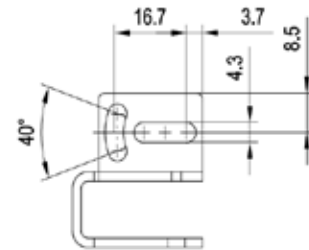
ST-S45-DVT



ST-S45-DVT



ST-MINI-PRO



MODEL	DESCRIPTION	ORDER NO.
ST-S45-DVT	S45 DOVE TAIL BRACKET	95ACC7970
ST-MINI-PRO	MINI PROTECTIVE BRACKET	95ACC7980

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
		2 m	CS-B1-02-R-02	95A251620
Radial M8 Connector	4-pole, grey, P.V.C.	5 m	CS-B1-02-R-05	95A251640
		3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
	4-pole, P.U.R.	10 m	CS-B2-02-G-10	95A251530
		2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650

# MINIATURE SENSORS

## S100

*The universal miniature photoelectric sensor*

- Two threaded front mounting holes
- Two slotted rear mounting holes
- Anti-tampering sensor (no adjustment)
- Standard optic functions
- M8 connector and cable models
- PNP or NPN models with LIGHT/DARK selection by wire
- Plastic housing, IP67 mechanical protection



### APPLICATIONS

- Processing and packaging machines
- Conveyors
- Automatic warehousing
- Intralogistic lines

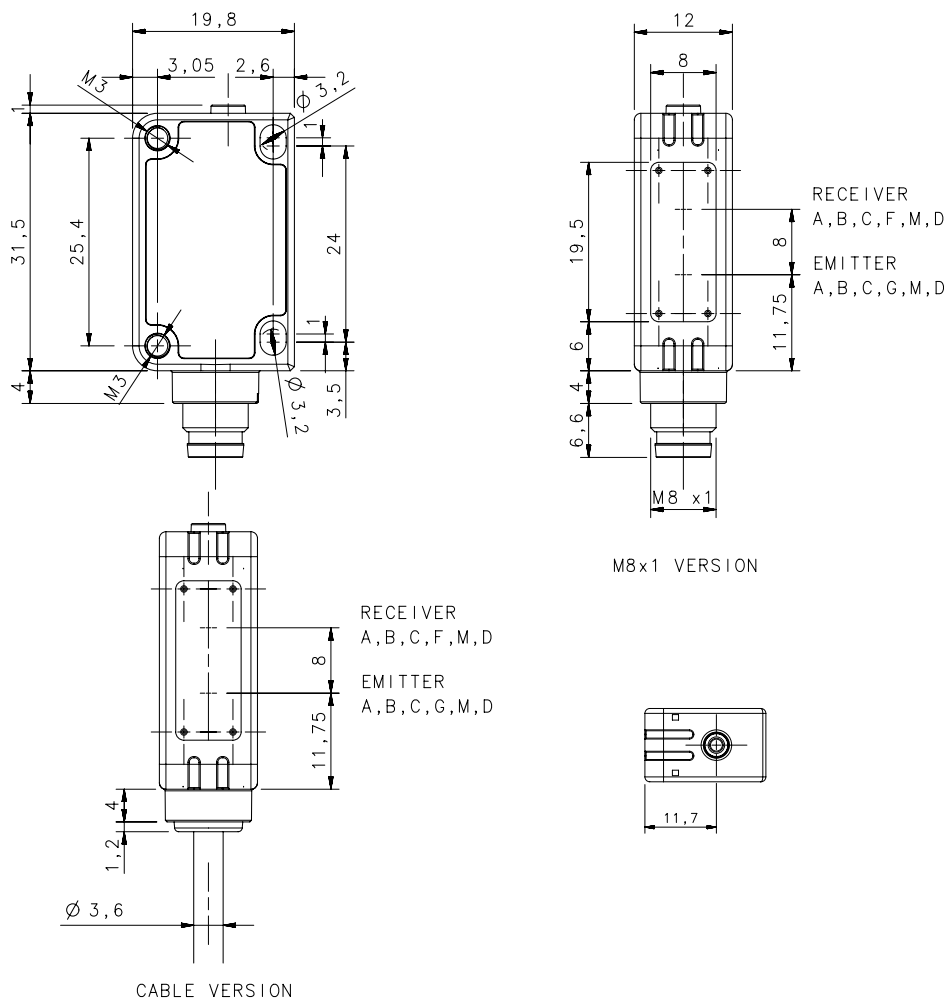


S100		
Through beam		12 m
Retroreflective		7 m
Polarized Retroreflective (long range)		5,5 m
Polarized Retroreflective (short range)		3 m
Diffused proximity (short range)		300 mm
Diffused proximity (long range)		500 mm
Fixed focus		70 mm
Background suppression		30...100 mm
Power supply	Vdc	10...30 Vdc
Output	PNP	▪
	NPN	▪
Connection	cable	2 m cable, 4 wires
	connector	M8 conn., 4-pole
Approximate dimensions (mm)		32x20x12
Housing material		Plastic
Mechanical protection		IP67

TECHNICAL DATA

Power supply	10 ... 30 Vdc
Ripple	10% max.
Consumption (output current excluded)	20 mA max.
Light emission	red LED 632 nm (mod. S100...B/C/D/M) IR LED 860 nm (mod. S100...A/G)
Setting	remote teach-in (mod. S100...M)
Operating mode	LIGHT/DARK selectable by wire (mod. S100...A/B/C/D/F)
Indicators	yellow OUTPUT LED (excl. mod. G) green POWER LED (mod. S100...G)
Output	PNP or NPN
Output current	100 mA
Saturation voltage	2 V max.
Response time	2 ms (mod. S100...FG) 1 ms (mod. S100...A/B/C/D/M) 250 Hz (mod. S100...FG)
Switching frequency	500 Hz (mod. S100...A/B/C/D/M)
Connection	2 m cable 3,5 mm, M8 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS body, PMMA indicators cover
Lens material	PC lens, PMMA window
Operating temperature	-25... 55 °C
Storage temperature	-40 ... 70 °C
Weight	50 g max. cable vers., 10 g max. connector vers.

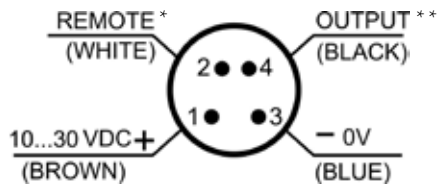
DIMENSIONS



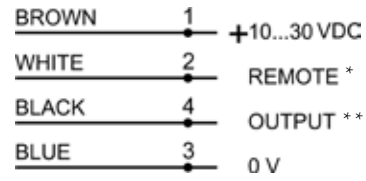
# MINIATURE SENSORS

## CONNECTIONS

### M8 CONNECTOR

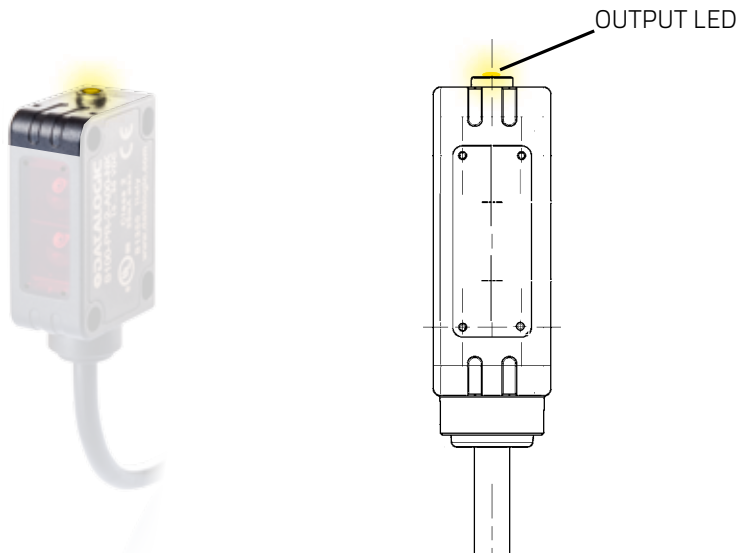


### CABLE



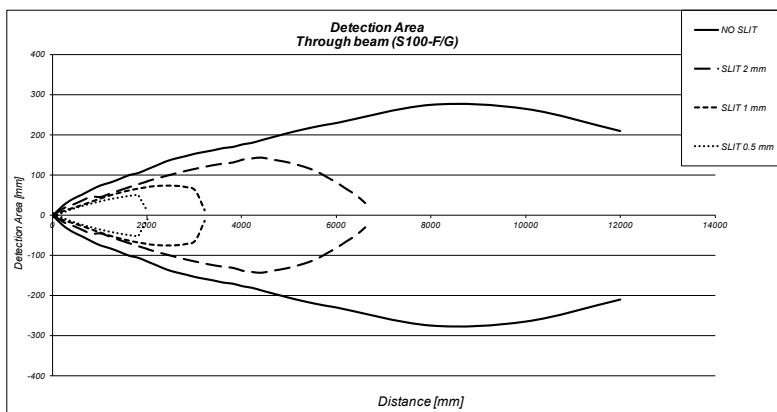
\*REMOTE: Light/Dark selection (S100-...-A-B-C-D-F), External Teach-in (S100-...-M)  
 \*\*OUTPUT: PNP or NPN depends on the model

## INDICATORS AND SETTINGS



## DETECTION DIAGRAMS

### THROUGH BEAM

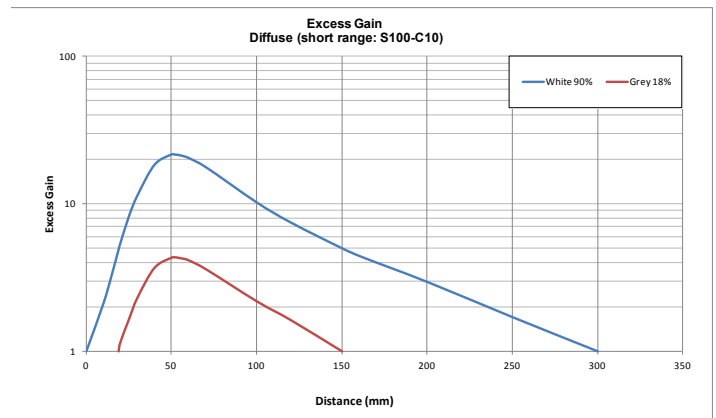
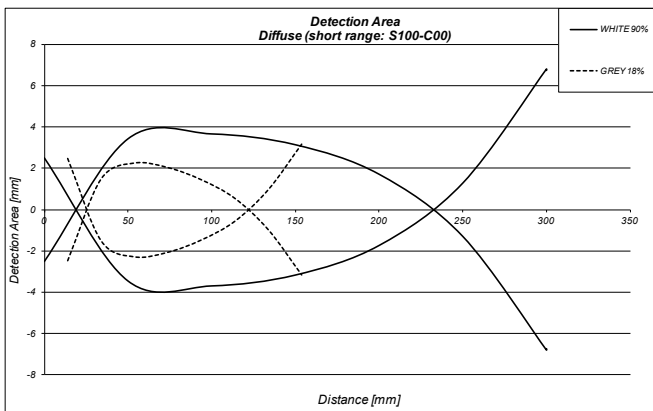


	max. operating distance
NO SLIT	12 m
2 mm SLIT	6,7 m
1 mm SLIT	3,2 m
0,5 mm SLIT	2 m

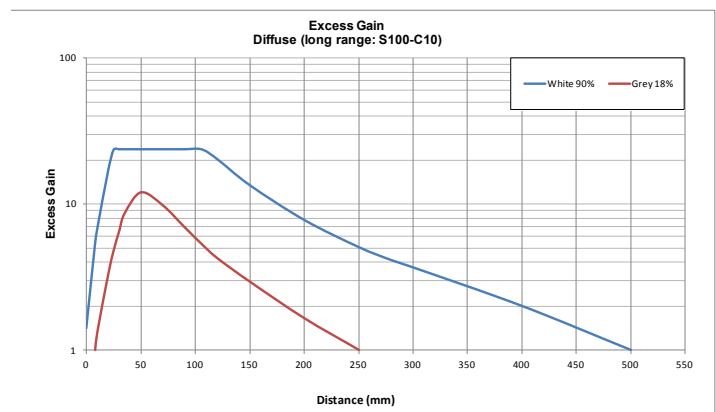
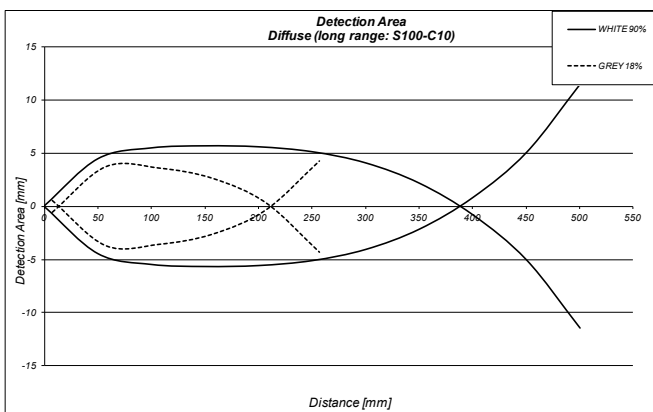
## DIFFUSE PROXIMITY

	SHORT RANGE (S100-...-C0)	LONG RANGE (S100-...-C1)
Recommended operating distance (on White 90% target)	10...240 mm	2...400 mm
Maximum operating distance (White 90% target)	1...300 mm	0...500 mm
Maximum operating distance (Grey 18% target)	20...150 mm	10...280 mm
Maximum operating distance (Black 6% target)	30...80 mm	20...160 mm
Difference White-Grey	50%	50%
Difference White-Black	75%	75%
Hysteresis	20%	20%

### DIFFUSE (SHORT RANGE: S100-C00)



### DIFFUSE (LONG RANGE: S100-C10)





# MINIATURE SENSORS

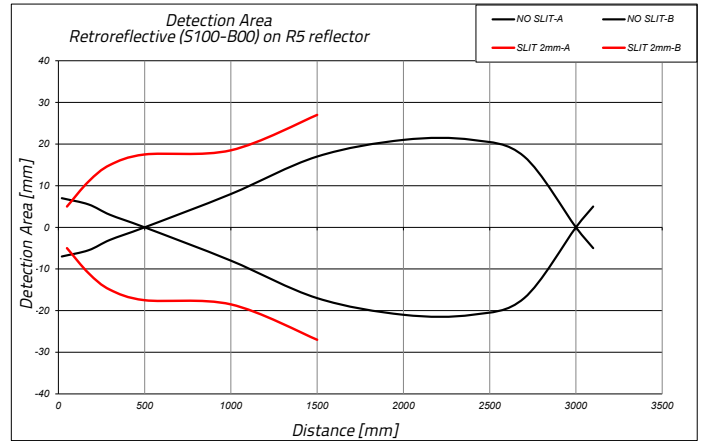
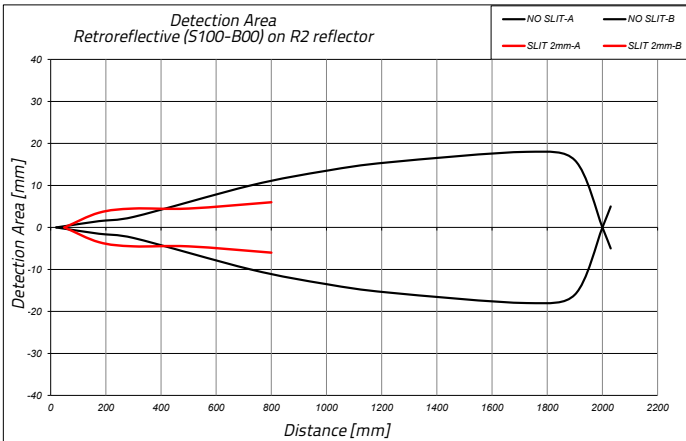
## POLARIZED RETROREFLECTIVE

REFLECTOR	TYPE	SHORT RANGE (S100-...-B00)	LONG RANGE (S100-...-B10)
R1	circular (23 mm)	0,2..0,8 m	0,02..2 m
R2	circular (48 mm)	0,03..2 m	0,01..4,5 m
R3	rectangular (18x54 mm)	0,03..1,5 m	0,01..3 m
R4	rectangular (47x47 mm)	0,03..2,5 m	0,01..4,5 m
R5	circular (75 mm)	0,01..3 m	0,01..5,5 m
R6	rectangular (36x55 mm)	0,03..1,8 m	0,01..4 m
RT3970	self-adhesive tape (60x40 mm)	0,2..0,8 m	0,05..1,8 m

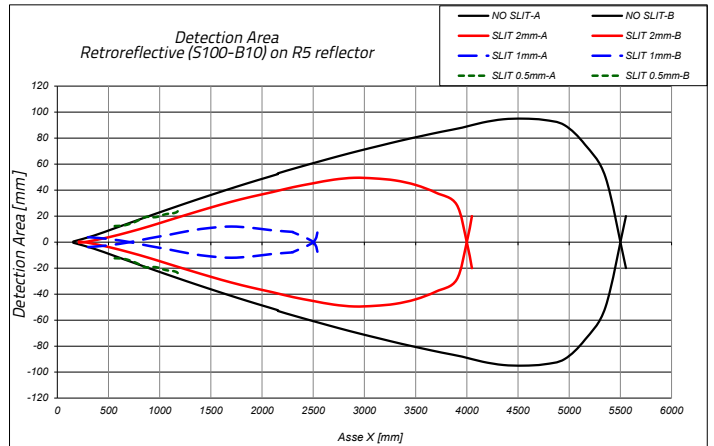
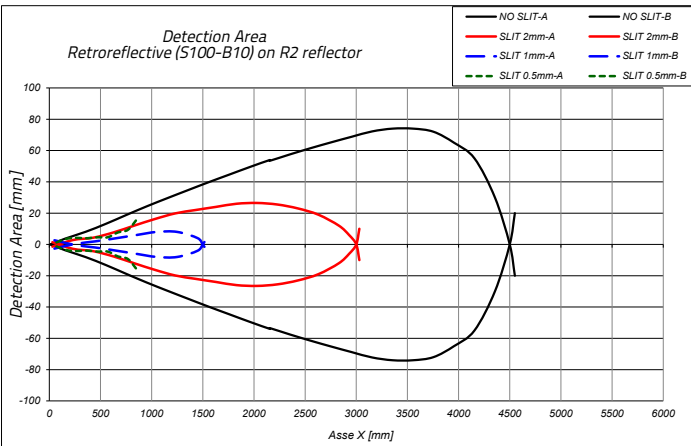


	max. operating distance			
	SHORT RANGE (S100-...-B00)		LONG RANGE (S100-...-B10)	
	with R5 reflector	with R2 reflector	with R5 reflector	with R2 reflector
NO SLIT	0,02 ... 3 m	0,02 ... 2 m	0,1...5,5 m	0,01...4,5 m
2 mm SLIT	0,05 ... 1,5 m	0,05 ... 0,8 m	0,2...4 m	0,03...3 m
1 mm SLIT	-	-	0,3...2,5 m	0,05...1,5 m
0,5 mm SLIT	-	-	0,5...1,2 m	0,07...0,7 m

### POLARIZED RETROREFLECTIVE (SHORT RANGE: S100-B00)



### POLARIZED RETROREFLECTIVE (LONG RANGE: S100-B10)

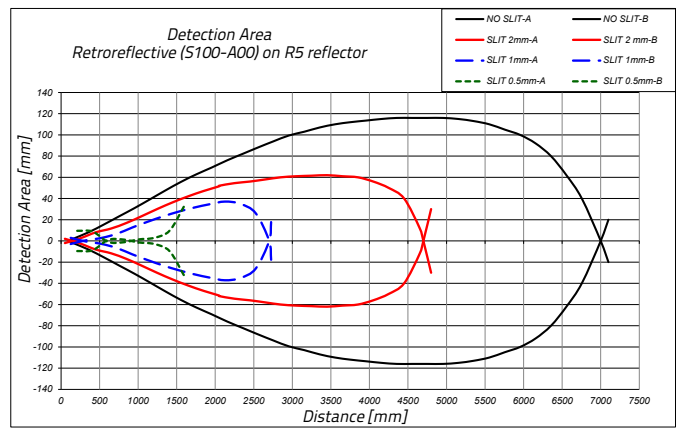
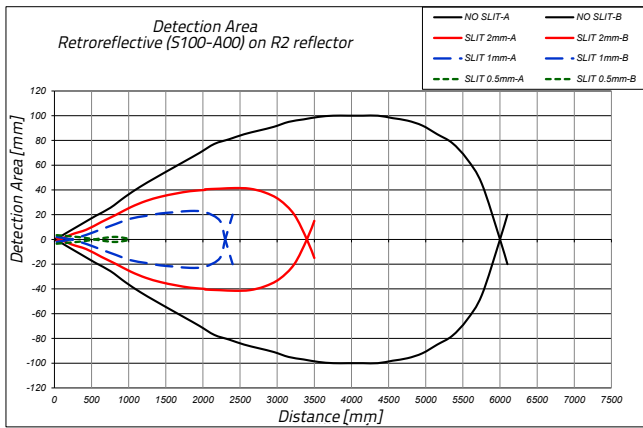


## RETROREFLECTIVE (infrared)

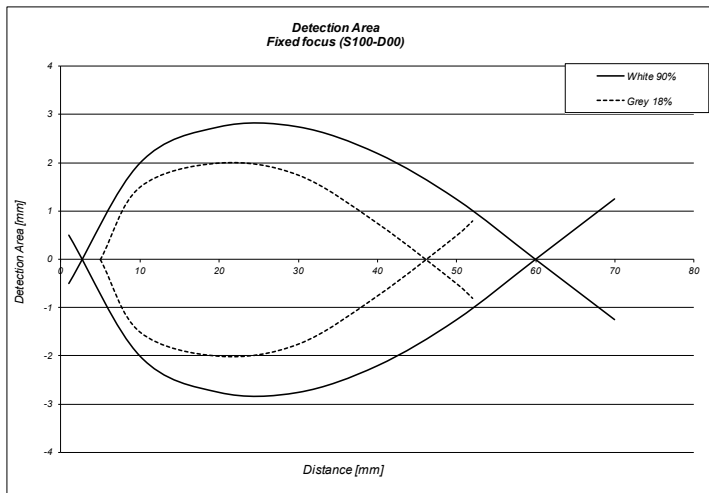
REFLECTOR	TYPE	(S100-...-A00)
R1	circular (23 mm)	0.03..3 m
R2	circular (48 mm)	0.01..6 m
R3	rectangular (18x54 mm)	0.01..3.5 m
R4	rectangular (47x47 mm)	0.01..5 m
R5	circular (75 mm)	0.01..7 m
R6	rectangular (36x55 mm)	0.01..6 m
RT3970	self-adhesive tape (60x40 mm)	0,05..2 m



	max. operating distance	
	with R5 reflector	with R2 reflector
NO SLIT	7 m	6 m
2 mm SLIT	4,7 m	3,4 m
1 mm SLIT	2,7 m	2,3 m
0,5 mm SLIT	1,5 m	1 m



## FIXED FOCUS

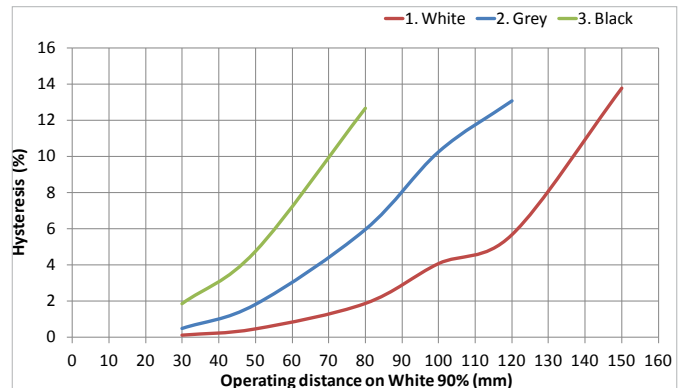
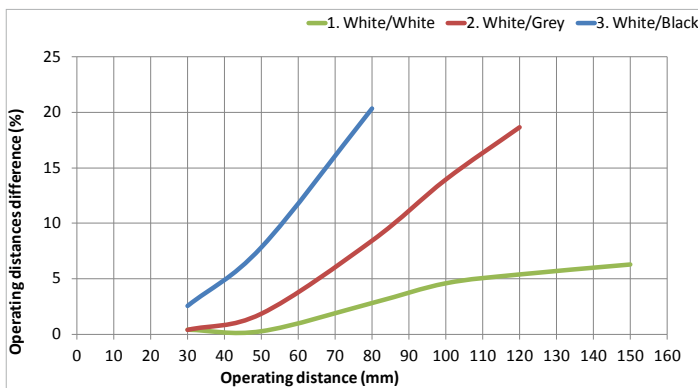


Focus point	70 mm
Maximum operating distance (White 90%)	70 mm
Maximum operating distance (Grey 18%)	55 mm
Difference White/Black	25%

# MINIATURE SENSORS

## BACKGROUND SUPPRESSION

Operating distances (background suppression)	30...100 mm
Maximum operating distance (White 90%)	0...150 mm
Maximum operating distance (Grey 18%)	4...110 mm
Maximum operating distance (Black 6%)	5...80 mm
Difference White 90%/White 90%	< 5%
Difference White 90%/Grey 18%	< 15%
Difference White 90%/Black 6%	<25 %



## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	OPERATING DISTANCE	CONNECTION	OUTPUT	MODEL	ORDER No.
Through beam	IR	12 m	2 m cable	NPN	S100-PR-2-FG00-NK	950811100
				PNP	S100-PR-2-FG00-PK	950811110
			M8 connector	NPN	S100-PR-5-FG00-NK	950811240
				PNP	S100-PR-5-FG00-PK	950811250
Retroreflective	IR	7 m	2 m cable	NPN	S100-PR-2-A00-NK	950811000
				PNP	S100-PR-2-A00-PK	950811010
			M8 connector	NPN	S100-PR-5-A00-NK	950811140
				PNP	S100-PR-5-A00-PK	950811150
Polarized Retroreflective (short)	RED	2 m	2 m cable	NPN	S100-PR-2-B00-NK	950811020
				PNP	S100-PR-2-B00-PK	950811030
			M8 connector	NPN	S100-PR-5-B00-NK	950811160
				PNP	S100-PR-5-B00-PK	950811170
Polarized Retroreflective (long)	RED	5 m	2 m cable	NPN	S100-PR-2-B10-NK	950811280
				PNP	S100-PR-2-B10-PK	950811290
			M8 connector	NPN	S100-PR-5-B10-NK	950811300
				PNP	S100-PR-5-B10-PK	950811310
Diffuse proximity (short)	RED	300 mm	2 m cable	NPN	S100-PR-2-C00-NK	950811040
				PNP	S100-PR-2-C00-PK	950811050
			M8 connector	NPN	S100-PR-5-C00-NK	950811180
				PNP	S100-PR-5-C00-PK	950811190
Diffuse proximity (long)	RED	500 mm	2 m cable	NPN	S100-PR-2-C10-NK	950811060
				PNP	S100-PR-2-C10-PK	950811070
			M8 connector	NPN	S100-PR-5-C10-NK	950811200
				PNP	S100-PR-5-C10-PK	950811210
Fixed focus	RED	70 mm	2 m cable	NPN	S100-PR-2-D00-NK	950811080
				PNP	S100-PR-2-D00-PK	950811090
			M8 connector	NPN	S100-PR-5-D00-NK	950811220
				PNP	S100-PR-5-D00-PK	950811230
Background suppression	RED	30...100 mm	2 m cable	NPN	S100-PR-2-M00-NH	950811120
				PNP	S100-PR-2-M00-PH	950811130
			M8 connector	NPN	S100-PR-5-M00-NH	950811260
				PNP	S100-PR-5-M00-PH	950811270



# COMPACT SENSORS

## S8

*Compact size and high performance for the most challenging detection applications*

- Compact dimensions (14x42x25 mm)
- Background suppression for transparent and shiny objects
- Contrast sensors up to 10 kHz switching frequency
- Extremely focused spot, under 1 mm (LASER model)
- Very high resolution LASER models
- INOX AISI 316L model



### APPLICATIONS

- Processing and Packaging machinery
- Beverage/Food/ Cosmetics/ Pharmaceutical industries
- Electronics assembling



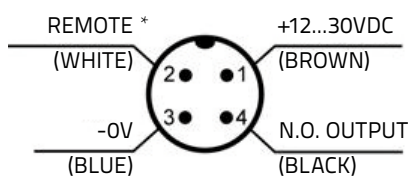
(\*) Stainless steel models.  
ATEX II 3DG

S8		
Through beam		0...25 m
Polarized retroreflective		0,1...5 m
Retroreflective for transparent (coaxial)		0...10 m (class 2 LASER)
Diffuse proximity		0...0,8 m (T51), 0...2 m (T53, T50)
Background suppression		0...500 mm
Background suppression for clear detection		50...300 mm
Contrast sensor		20...200 mm (class 2 LASER)
Luminescence sensor		100...300 mm (LED)
		50...150 mm (class 2 LASER)
Power supply	Vdc	10 mm
	Vac	10...30 mm
	Vac/dc	10...30 V
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	▪
Approximate dimensions (mm)		14x42x25
Housing material		ABS, Stainless Steel AISI 316L
Mechanical protection		IP69K (Stainless Steel vers.), IP67

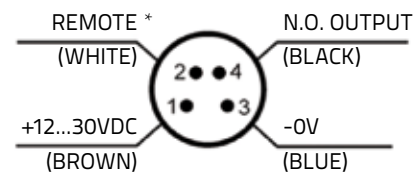
TECHNICAL DATA	
Power supply	12 ... 30 Vdc (short-circuit protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	30 mA; 35 mA (mod. S8...M01); 20 mA (mod. S8...F), 15 mA (mod. S8...G) max.
Light emission	red LED 660 nm (mod. S8...B/C/M/G/T) RGB LEDs: blue 465 nm, green 520 nm, red 630nm with automatic selection (mod. S8...W) UV LED 375 nm (mod. S8...U) red Laser 645..665 nm (mod. S8...B/M)
Setting	8-turn distance adjustment trimmer (mod. S8...M53/M) LIGHT / DARK mono-turn trimmer (mod. S8...B/C/F/T51) teach-in push button (mod. S8...M53/W03/W13/T53/U) remote input (mod. S8...W/U/T50/T53)
Operating mode	mono-turn trimmer (mod. S8...B/C/F/M/T/U/W13) automatic (mod. S8...W/T50) remote input (mod. S8...M53)
Indicators	yellow OUTPUT LED (excl. mod. S8...G), OUTPUT/ALARM LED (mod. S8...M53/M/C) green POWER LED
Output	PNP or NPN N.O.
Output current	100 mA (overload protection)
Saturation voltage	2 V max.
Response time	1 ms (mod. S8...M53/M) 500 µs (mod. S8...B/F/C) 250 µs (mod. S8...T) 100 µs (Laser vers. mod. S8...M) 50 µs (mod. S8...W00/W03 e Laser mod. S8...B) 20 µs (mod. S8...W13) 250 µs...1 ms (mod. S8...U)
Switching frequency	500 Hz (mod. S8...M53/M) 1 kHz (mod. S8...B/F/C) 2 kHz (mod. S8...T) 5 kHz (Laser vers. mod. S8...M) 10 kHz (mod. S8...W00/W03 e Laser mod. S8...B) 25 kHz (mod. S8...W13) 500 Hz...2 kHz (mod. S8...U)
Connection	M8 4-pole connector, 150 mm length Ø 4 mm cable with M12 4-pole connector (pig-tail vers.)
Dielectric strength	1500 VAC 1 min between electronic parts and housing
Insulating resistance	>20 MΩ 500 VDC between electronic parts and housing
Mechanical protection	IP67, IP69K (mod. S8-M)
Ambient light rejection	according to EN 60947-5-2
Vibrations	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shocks per every axis (EN60068-2-27)
Housing material	ABS, Stainless Steel AISI316L
Lens material	window in PMMA; lens in PC
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	12 g max. conn. vers., 50 g pig-tail vers., 70 g max. (mod. S8-M)

## CONNECTIONS

M12 PIGTAIL



M8 CONNECTOR

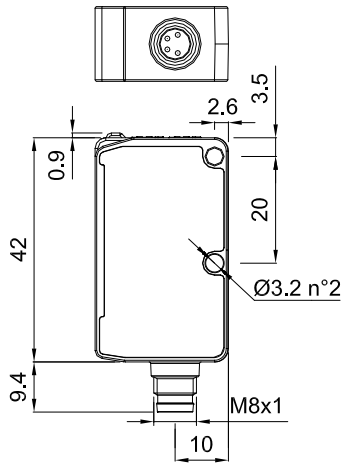


\* REMOTE INPUT (mod. S8...W, U, T50, T53), LIGHT / DARK INPUT (mod. S8...M53), DELAY (mod. S8...M Laser), TEST INPUT (mod. S8...G), ALARM OUTPUT (mod. S8...B, T51), NOT USED (mod. S8...C, M, F)

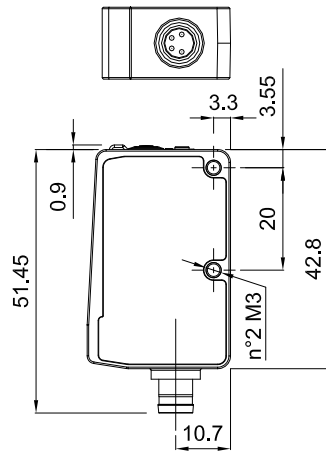
# COMPACT SENSORS

## DIMENSIONS

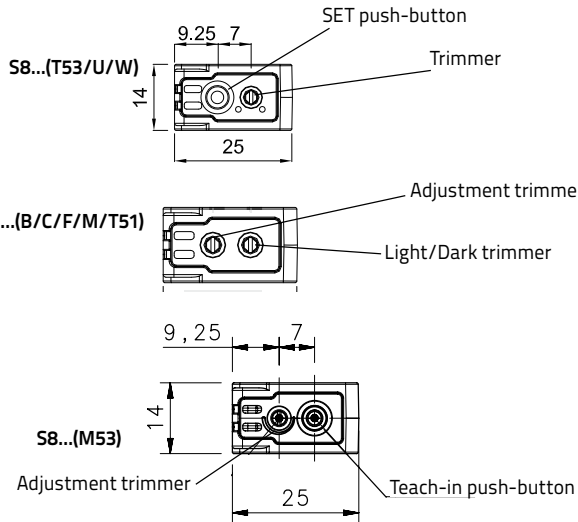
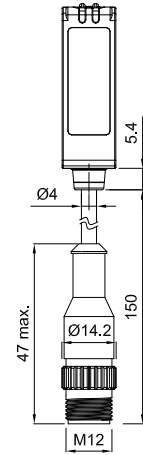
PLASTIC



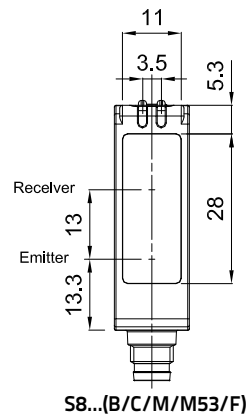
METAL



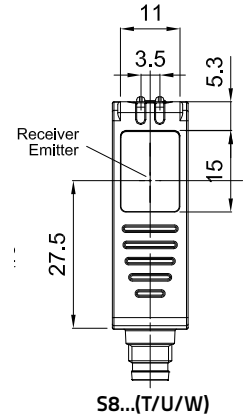
PIG-TAIL



BIAXIAL

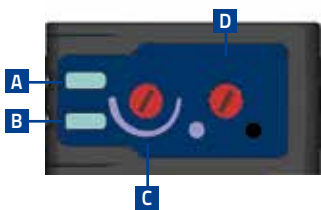


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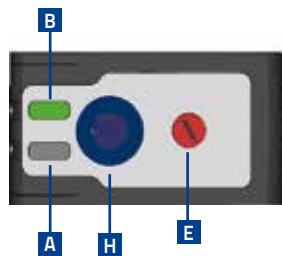


## INDICATOR AND SETTING

S8...M / B / C / T01



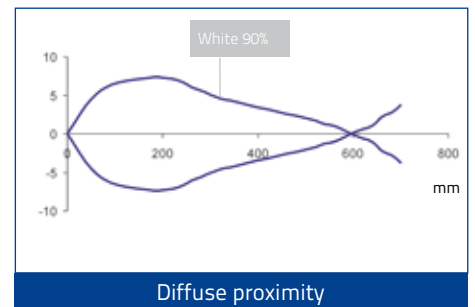
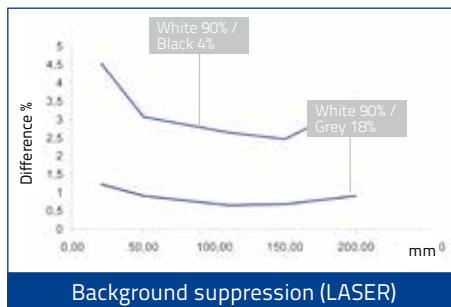
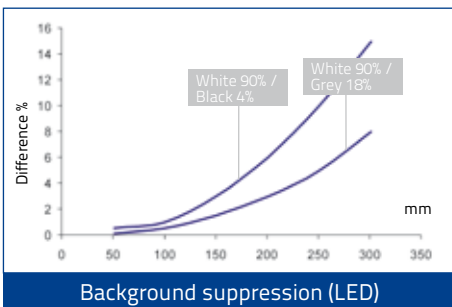
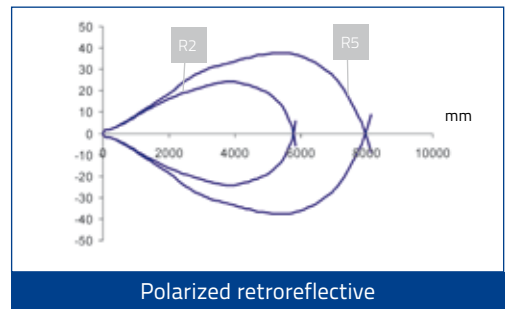
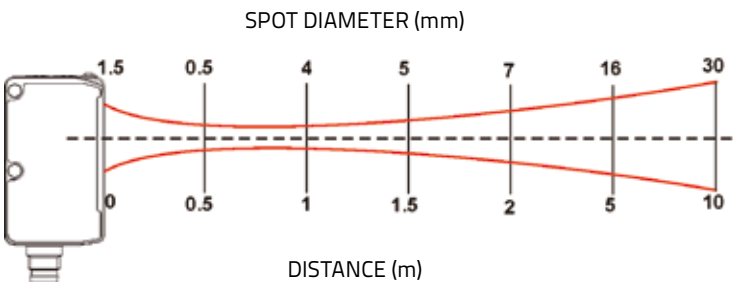
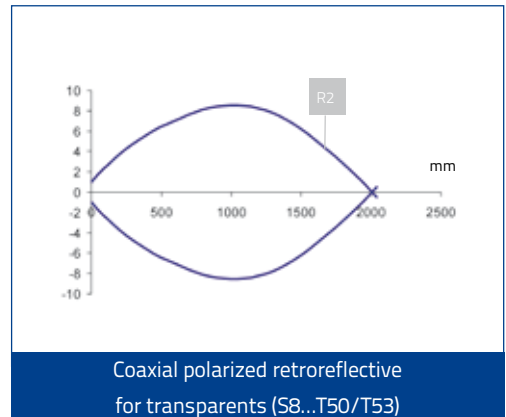
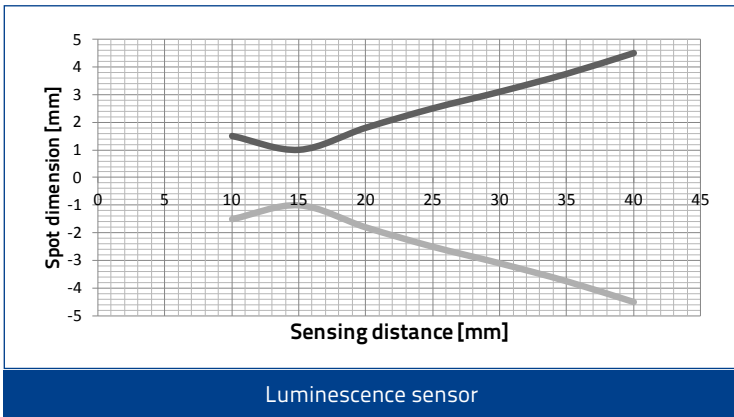
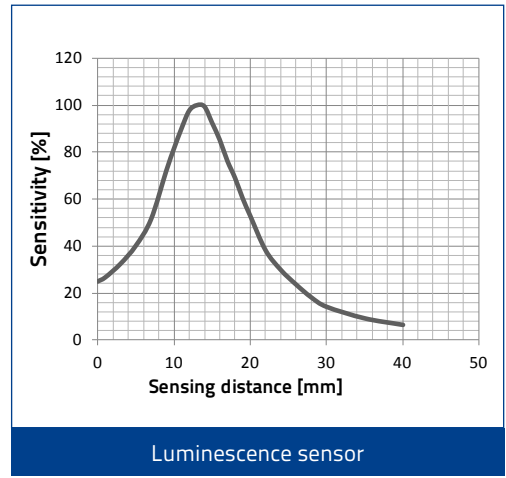
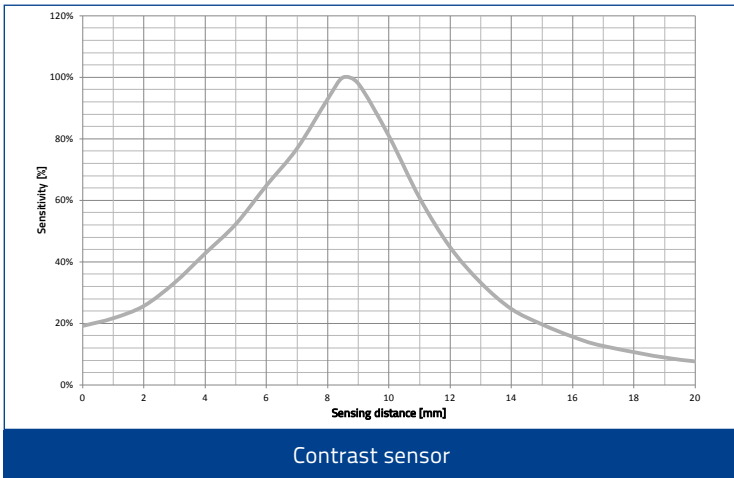
S8...W / T53



- 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

# READING DIAGRAMS





# COMPACT SENSORS

## MODEL SELECTION AND ORDER INFORMATION

CLEAR DETECTION					
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	PNP	S8-MH-5-M53-PP	950801450
	LED			S8-MR-5-M53-PP	950801600
PLASTIC ABS	LASER			S8-PH-5-M53-PP	950801380
	LED			S8-PR-5-M53-PP	950801590

RETROREFLECTIVE FOR TRASPARENT						
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.	
METAL Stainless Steel (INOX AISI346L)	LED	M8 connector	NPN	S8-MR-5-T50-NH	950801330	
			PNP	S8-MR-5-T50-PH	950801320	
		M8 connector with auto-adjustment function	NPN	S8-MR-5-T53-NN	950801310	
			PNP	S8-MR-5-T53-PP	950801300	
PLASTIC ABS		pig-tail	pig-tail	NPN	S8-PR-3-T51-NN	950801130
				PNP	S8-PR-3-T51-PP	950801120
		M8 connector	M8 connector	NPN	S8-PR-5-T51-NN	950801050
				PNP	S8-PR-5-T51-PP	950801040
	M8 connector with auto-adjustment function		NPN	S8-PR-5-T53-NN	950801290	
			PNP	S8-PR-5-T53-PP	950801280	

POLARIZED RETROREFLECTIVE					
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	NPN	S8-MH-5-B51-NN	950801490
			PNP	S8-MH-5-B51-PP	950801480
	LED		NPN	S8-MR-5-B01-NN	950801420
			PNP	S8-MR-5-B01-PP	950801410
PLASTIC ABS	LASER	pig-tail	NPN	S8-PH-3-B51-NN	950801090
			PNP	S8-PH-3-B51-PP	950801080
		M8 connector	NPN	S8-PH-5-B51-NN	950801010
			PNP	S8-PH-5-B51-PP	950801000
	LED	pig-tail	NPN	S8-PR-3-B01-NN	950801190
			PNP	S8-PR-3-B01-PP	950801180
		M8 connector	NPN	S8-PR-5-B01-NN	950801170
			PNP	S8-PR-5-B01-PP	950801160

BACKGROUND SUPPRESSION					
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel (INOX AISI346L)	LASER	M8 connector	NPN	S8-MH-5-M01-NN	950801470
			PNP	S8-MH-5-M01-PP	950801460
	LED		NPN	S8-MR-5-M01-NN	950801400
			PNP	S8-MR-5-M01-PP	950801390
PLASTIC ABS	LASER	pig-tail	NPN	S8-PH-3-M01-NN	950801110
			PNP	S8-PH-3-M01-PP	950801100
		M8 connector	NPN	S8-PH-5-M01-NN	950801030
			PNP	S8-PH-5-M01-PP	950801020
	LED	pig-tail	NPN	S8-PR-3-M01-NN	950801230
			PNP	S8-PR-3-M01-PP	950801220
		M8 connector	NPN	S8-PR-5-M01-NN	950801210
			PNP	S8-PR-5-M01-PP	950801200

THROUGH BEAM					
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel (INOX AISI316L)	LED	M8 connector	NPN	S8-MR-5-F01-NN	950801570
			PNP	S8-MR-5-F01-PP	950801560
			emitter	S8-MR-5-G00-XG	950801580
PLASTIC ABS		pig-tail	NPN	S8-PR-3-F01-NN	950801530
			PNP	S8-PR-3-F01-PP	950801520
			emitter	S8-PR-3-G00-XG	950801550
M8 connector		NPN	S8-PR-5-F01-NN	950801510	
		PNP	S8-PR-5-F01-PP	950801500	
		emitter	S8-PR-5-G00-XG	950801540	

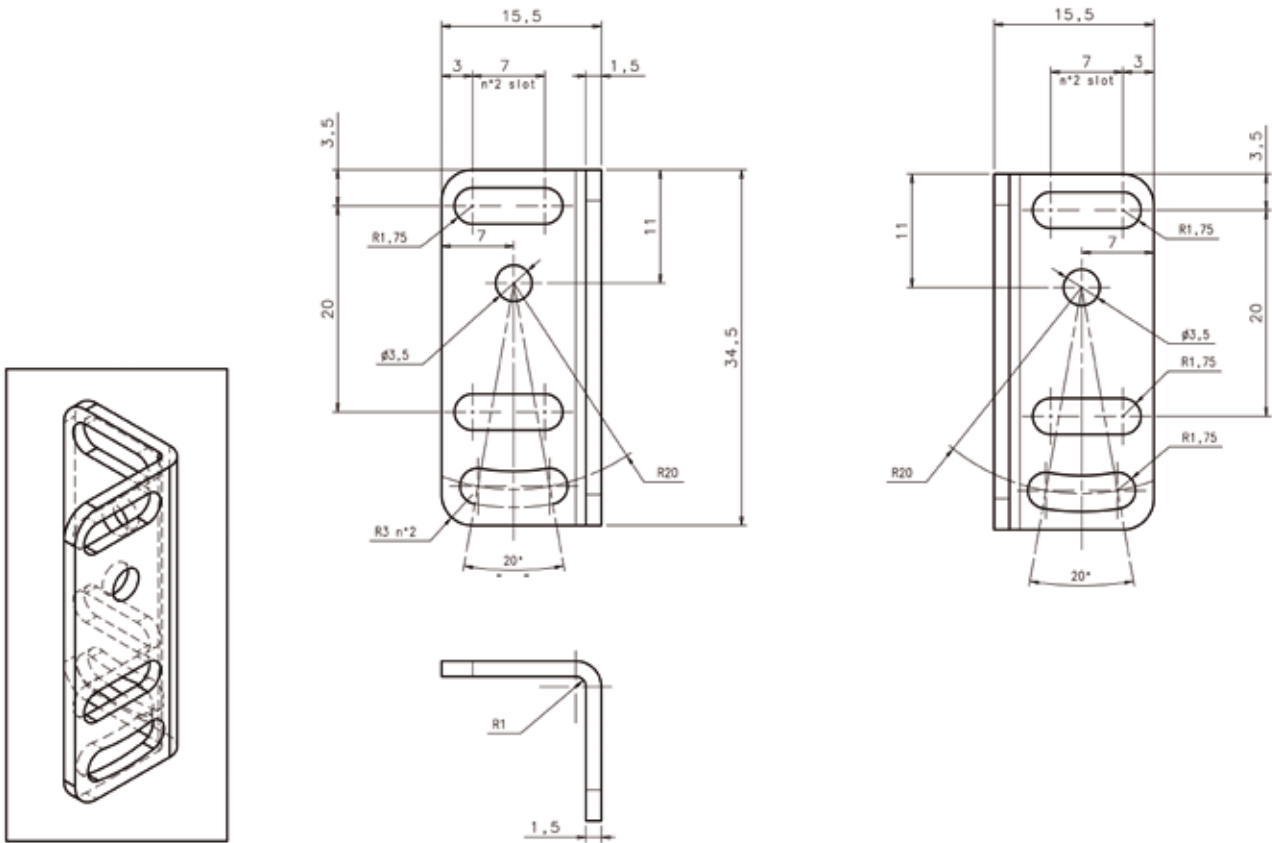
DIFFUSE					
HOUSING	LIGHT EMISSION	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel (INOX AISI316L)	LED	M8 connector	NPN	S8-MR-5-C01-NN	950801440
			PNP	S8-MR-5-C01-PP	950801430
PLASTIC ABS		pig-tail	NPN	S8-PR-3-C01-NN	950801270
			PNP	S8-PR-3-C01-PP	950801250
M8 connector		NPN	S8-PR-5-C01-NN	950801260	
		PNP	S8-PR-5-C01-PP	950801240	

CONTRAST					
SWITCHING FREQUENCY	HOUSING	CONNECTION	OUTPUT	MODEL	ORDER NO.
10 kHz	METAL Stainless Steel	M8 connector without trimmer	PNP	S8-MR-5-W00-PH	950801360
			NPN	S8-MR-5-W00-NH	950801370
		M8 connector	PNP	S8-MR-5-W03-PP	950801340
	PLASTIC ABS	M12 pig-tail (150 mm)	NPN	S8-MR-5-W03-NN	950801350
			PNP	S8-PR-3-W03-PP	950801140
		M8 connector	NPN	S8-PR-3-W03-NN	950801150
25 kHz	METAL Stainless Steel	M8 connector	PNP	S8-PR-5-W03-PP	950801060
			NPN	S8-PR-5-W03-NN	950801070
		PLASTIC ABS	M8 connector	PNP	S8-MR-5-W13-PP
	NPN	S8-MR-5-W13-NN		950801680	
	PNP	S8-PR-5-W13-PP		950801650	
	M12 pig-tail (150 mm)	NPN	S8-PR-5-W13-NN	950801660	
PNP		S8-PR-3-W13-PP	950801690		
NPN	S8-PR-3-W13-NN	950801700			

LUMINESCENCE					
HOUSING	SETTINGS	CONNECTION	OUTPUT	MODEL	ORDER NO.
METAL Stainless Steel	Teach-in push-button; L/D trimmer selector; Remote input	M8 connector	PNP	S8-MR-5-U03-PP	950801630
			NPN	S8-MR-5-U03-NN	950801640
PLASTIC ABS			PNP	S8-PR-5-U03-PP	950801610
pig-tail		NPN	S8-PR-5-U03-NN	950801620	
		PNP	S8-PR-3-U03-PP	950801710	
		NPN	S8-PR-3-U03-NN	950801720	



ST-5072



MODEL	FUNCTION	ORDER No.
ST-S8-FRM	mounting bracket for standard frame	95ACC7860
ST-5072	mounting bracket	95ACC1470
R4K	IP69K plastic reflector 51 x 61 mm	95A151220
ST-S8-TL-LD46	TL-LD46 adapting bracket	95ACC3430
ST-S8-S3Z	S8-miniature sensors adapting bracket	95ACC3440

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650

# COMPACT SENSORS

## S6

### Multivoltage 50x50 mm compact sensors series

- 50x50 mm compact dimensions
- Free voltage Vac/Vdc models with relay output
- 10-30 Vdc model with transistor output
- Standard cable or M12 4-pole connection



#### APPLICATIONS

- Automatic machines
- Packaging lines
- Transportation lines
- Automatic warehouses

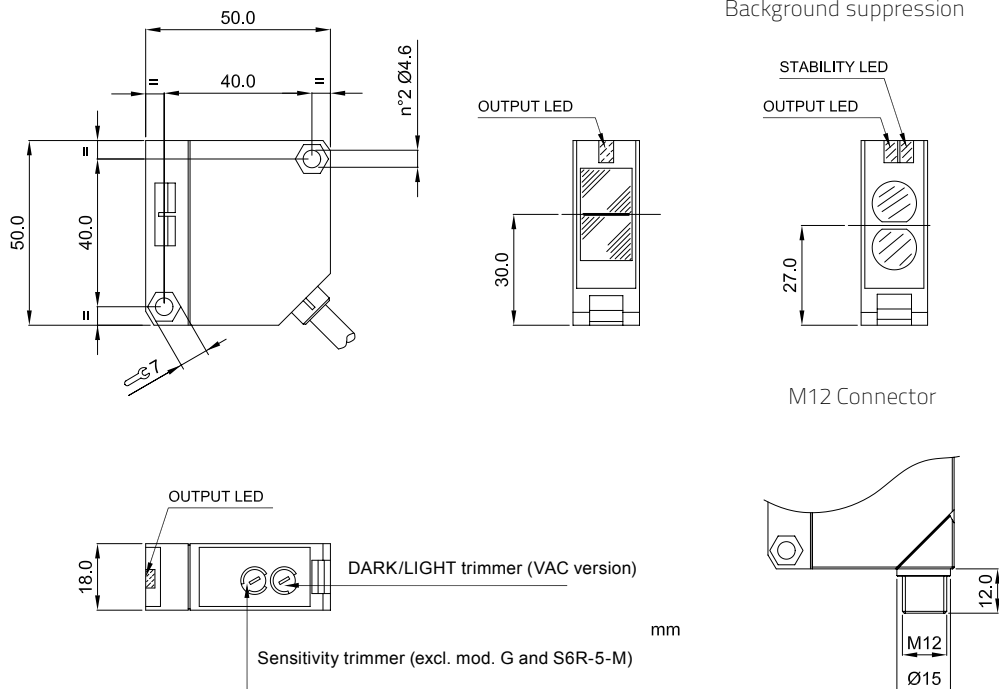


S6		
Through beam		0...20 m
Retroreflective (on R2 reflector)		0,1...6 m
Polarized retroreflective (on R2 reflector)		0,1...5 m
Diffuse proximity		10...900 mm
		10...2000 mm
Background suppression		30...100 mm
		30...250 mm
		100...500 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	15...264 Vac/Vdc
Output	PNP	▪
	NPN	▪
	NPN/PNP	▪
	relay	▪
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		18x50x50
Housing material		ABS
Mechanical protection		IP65

TECHNICAL DATA

Power supply	10 ... 30 Vdc limit values (mod. S6/S6T/S6R-5) 15 ... 264 Vac/Vdc (48 ... 60 Hz) limit values (mod. S6-1)
Ripple	2 Vpp max.
Consumption (output current excluded)	30 mA max. (mod. S6/S6T/S6R-5) 40 mA max. (mod. S6-1)
Light emission	IR LED 880 nm red LED 660 nm (mod. S6/S6R/S6T...B/M10)
Setting	sensitivity trimmer (excl. mod. S6...G, S6R-5-M) adjustment screw (mod. S6/S6T/S6R-5-M)
Operating mode	LIGHT/DARK selection by cable or connector (mod. S6/S6T/S6R-5) LIGHT/DARK selection by N.O./N.C. output (mod. S6R-5-M) LIGHT/DARK selection by trimmer (mod. S6-1)
Indicators	red OUTPUT LED (excl. mod. S6...G), POWER LED (mod. S6...G) green STABILITY LED (mod. S6-5-M25)
Output	NPN/PNP (mod. S6) PNP (mod. S6T) NPN or PNP; NC; NO (mod. S6R) Relay 1 NO and NC contact 250 Vac, 30 Vdc min. applicable load 5 Vdc, 10 mA (mod. S6-1)
Output current	100 mA max., 3 A max. (mod. S6-1)
Saturation voltage	1,5 V max. (NPN/PNP output)
Response time	1 ms max. 2 ms max. (mod. S6/S6R/S6T...F/G) 30 ms max. (mod. S6-1)
Switching frequency	500 Hz 250 Hz max. (mod. S6/S6R/S6T...F/G) 16 Hz (mod. S6-1)
Connection	2 m cable Ø 6 mm (mod. S6-1), 2 m cable Ø 5 mm (mod. S6-5), M12 4-pole connector (mod. S6T-S6R)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2, class 1 (mod. S6-1)
Mechanical protection	IP65
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS UL 94V-0
Lens material	PMMA plastic
Operating temperature	-25 ... 55 °C
Storage temperature	-25 ... 70 °C
Weight	160 g max. cable vers., 40 g max. conn. vers.

DIMENSIONS

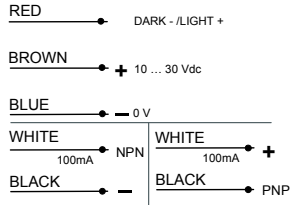


# COMPACT SENSORS

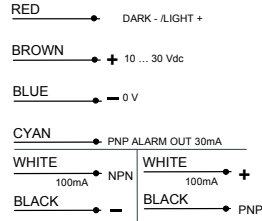
## CONNECTIONS

### VDC MODELS

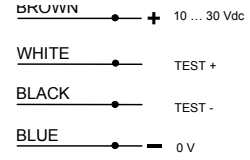
NPN/PNP version



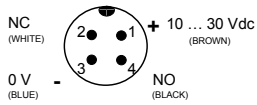
Through beam receiver - NPN/PNP version



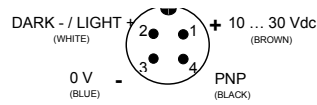
Through beam emitter - NPN/PNP version



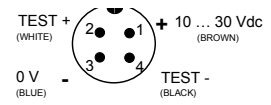
NPN or PNP and NC/NO version



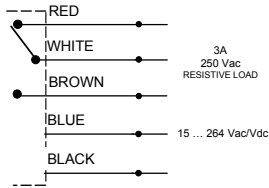
PNP version



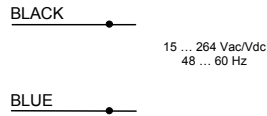
Through beam emitter - PNP version



### VAC MODELS



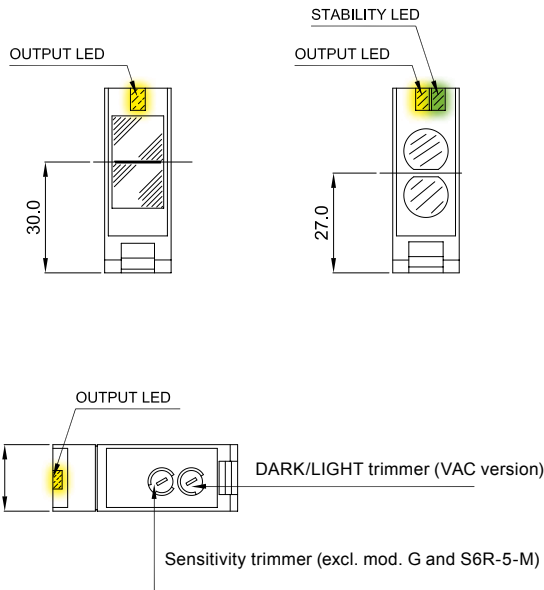
Through beam emitter



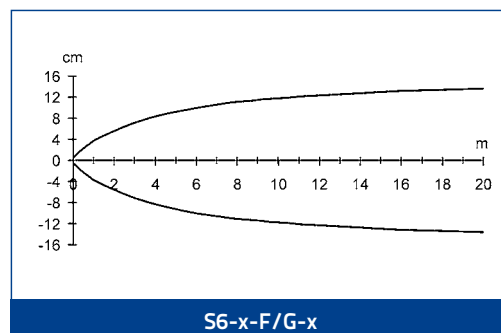
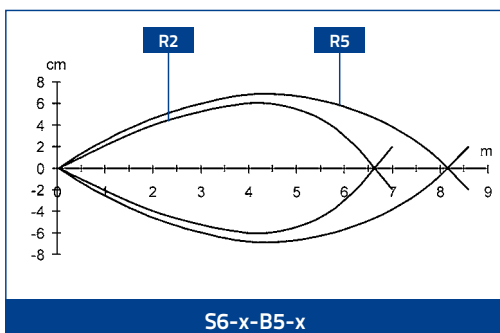
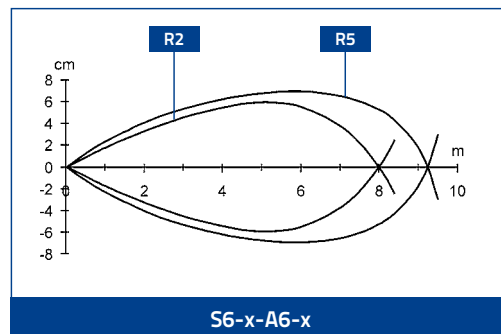
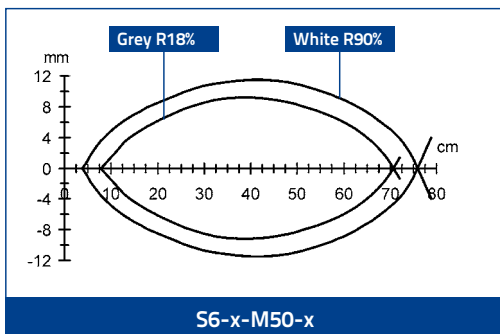
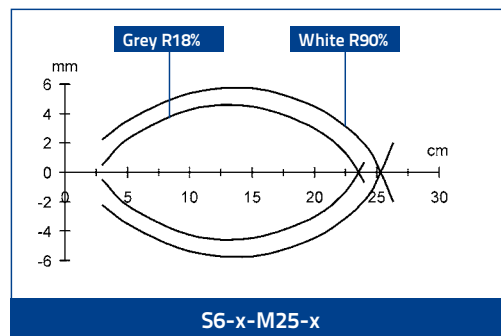
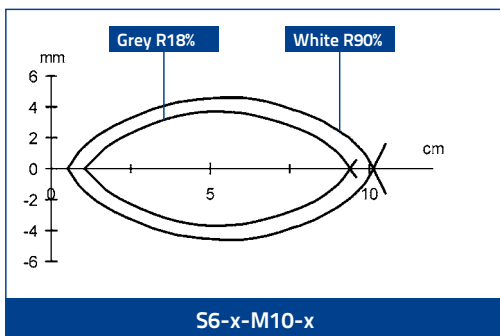
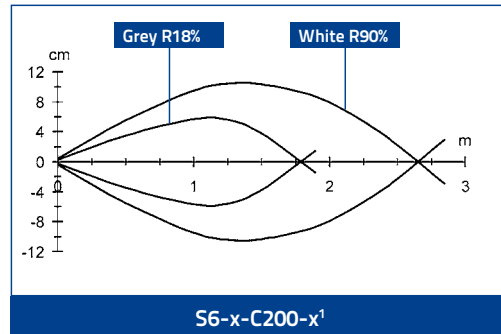
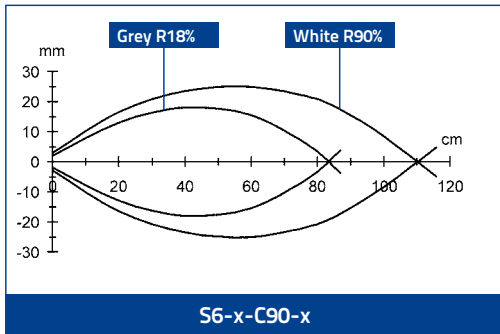
## INDICATORS AND SETTINGS



Background suppression



## DETECTION DIAGRAMS



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

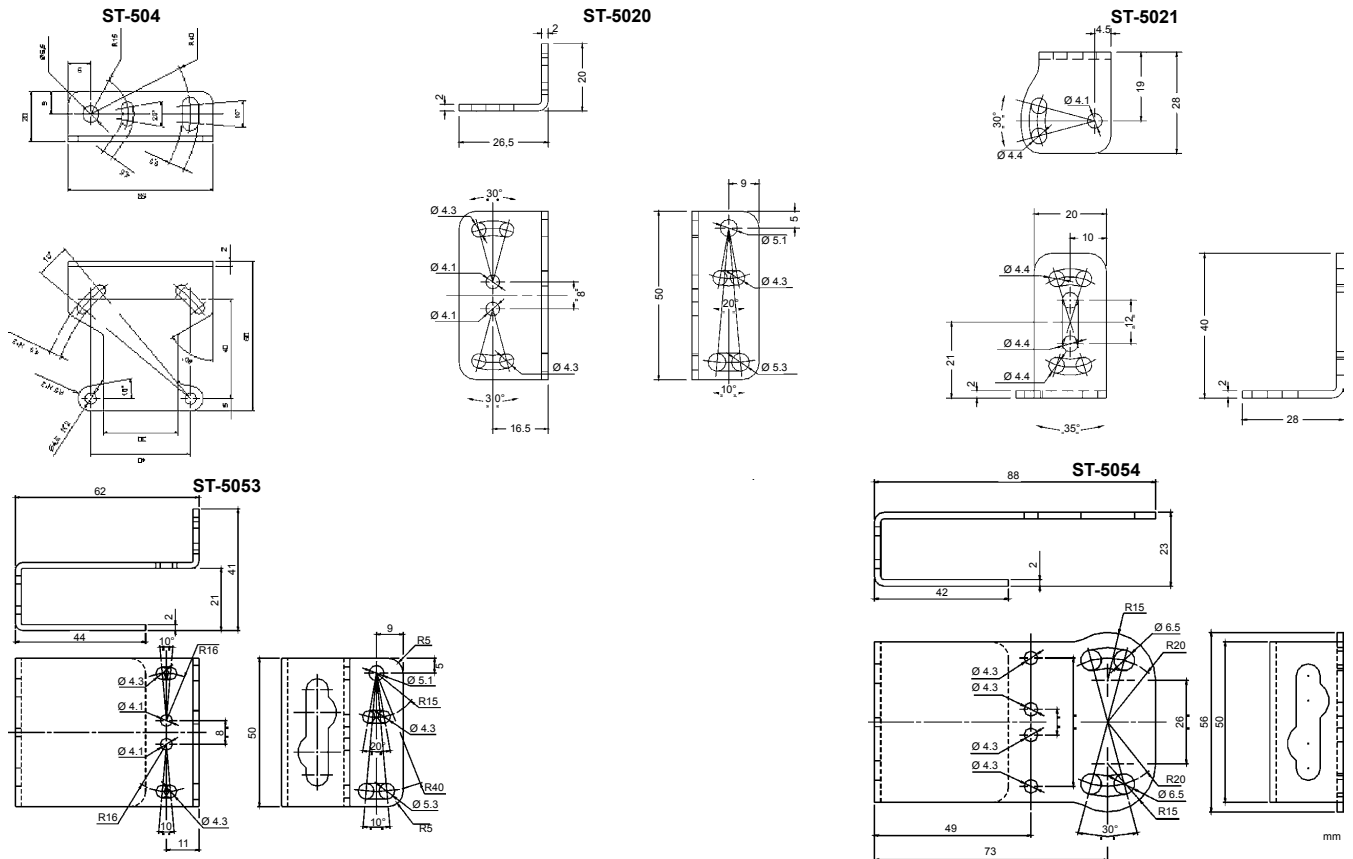


# COMPACT SENSORS

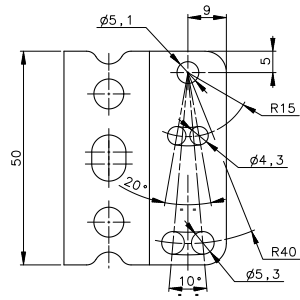
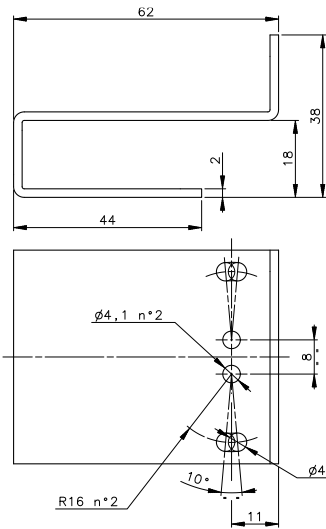
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING	POWER SUPPLY	OUTPUT	MODEL	ORDER No.
Short diffuse proximity	10...900 mm	15...264 V A.C.	relay SPDT 250V/3A	S6-1-C90	5937530090
		10...30 V D.C.	NPN/PNP	S6-5-C90	5937530000
			PNP N.O./N.C.	S6R-5-C90-P	950201190
			PNP	S6T-5-C90-P	961031020
Long diffuse proximity	10...2000 mm	15...264 V A.C.	relay SPDT 250V/3A	S6-1-C200	950151140
		10...30 V D.C.	NPN/PNP	S6-5-C200	950201150
			PNP N.O./N.C.	S6R-5-C200-P	950201200
			NPN N.O./N.C.	S6R-5-C200-N	956101050
Retroreflective	0,1...6 m (on R2 reflector)	15...264 V A.C.	relay SPDT 250V/3A	S6-1-A6	5937330090
		10...30 V D.C.	NPN/PNP	S6-5-A6	5937330000
			PNP	S6T-5-A6-P	961031000
			PNP N.O./N.C.	S6R-5-A6-P	950201170
Polarized retroreflective	0,1...5 m (on R2 reflector)	15...264 V A.C.	relay SPDT 250V/3A	S6-1-B5	5937420090
		10...30 V D.C.	NPN/PNP	S6-5-B5	5937420000
			PNP N.O./N.C.	S6R-5-B5-P	950201180
			PNP	S6T-5-B5-P	961031010
Background suppression	30...100 mm	10...30 V D.C.	PNP N.O./N.C.	S6R-5-M10-P	950201230
	30...250 mm		NPN/PNP	S6-5-M25	5937830000
			PNP N.O./N.C.	S6R-5-M25-P	950201220
			NPN N.O./N.C.	S6R-5-M25-N	956101080
			PNP	S6T-5-M25-P	961041000
	100...500 mm		PNP N.O./N.C.	S6R-5-M50-P	950201250
Through beam (Receiver)	0...20 m	15...264 V A.C.	relay SPDT 250V/3A	S6-1-F20	5937200090
		10...30 V D.C.	NPN/PNP	S6-5-F20	5937200010
			PNP N.O./N.C.	S6R-5-F20-P	950201160
			PNP	S6T-5-F20-P	961211010
Through beam (Emitter)	-	15...264 V A.C.	-	S6-1-G20	5937130090
		10...30 V D.C.	-	S6-5-G20	5937130000
			-	S6T-5-G20	961211000

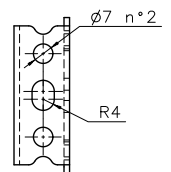
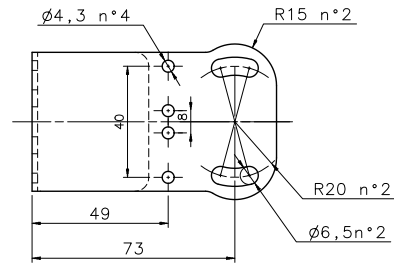
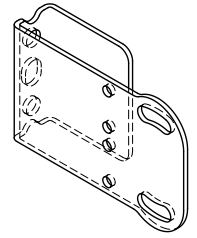
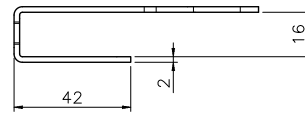
## ACCESSORIES



ST-5018



ST-5019



MODEL	DESCRIPTION	ORDER No.
ST-5018	protective bracket	95ACC5310
ST-5019	protective bracket	95ACC5320
ST-5020	mounting bracket	95ACC5330
ST-5021	mounting bracket	95ACC5340
ST-504	mounting bracket	95ACC2820
ST-5053	protective bracket	95ACC2410
ST-5054	protective bracket	95ACC2420
JOINT-S62	protective bracket with jointed support	95ACC2430

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
Radial M12 Connector	4-pole, grey, P.V.C.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
		3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
Radial M12 Connector	4-pole, grey, P.V.C.	7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
		2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Radial M12 Connector with LED (for PNP N.O. sensors)	4-pole, grey, P.V.C.	3 m	CS-A2-12-G-03	95A251400
		5 m	CS-A2-12-G-05	95A251350
		10 m	CS-A2-12-G-10	95A251370
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003

# COMPACT SENSORS

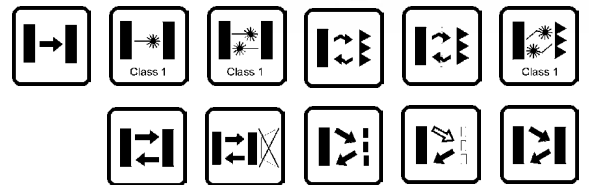
## S60

*Extended range of standard "One for All" photoelectric compact sensors*

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

### APPLICATIONS

- Automatic machines
- Packaging lines
- Transportation lines
- Automatic warehouses
- Pharma and bottling



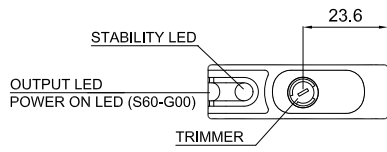
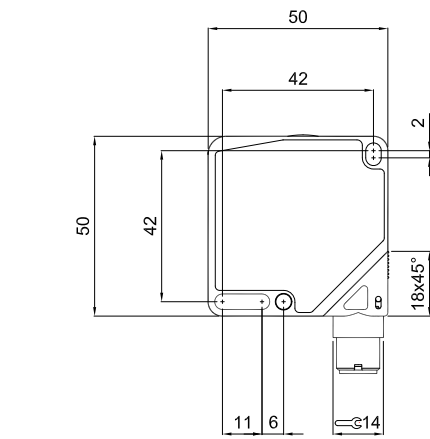
S60		
Through beam		0...20 m 0...60 m (class 1 LASER)
Polarized retroreflective (on R5 reflector)		0.1...8 m 0.1...20 m (class 1 LASER)
Polarized retroreflective coaxial (on R5 reflector)		0...4 m
Polarized retroreflective coaxial transparent (on R5 reflector)		0...2 m
Diffuse proximity		0...100 cm 0...200 cm (long range) 0...60 cm (class 1 LASER)
Background suppression		7...20 cm 5...10 cm (class 1 LASER)
Contrast Sensor		19 mm ±2 mm (white emission)
Luminescence Sensor		0...40 mm
Power supply	Vdc	10...30 V
	Vac	18...30 V
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		50x50x15 mm
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

Power supply	10 ... 30 Vdc
Ripple	≤ 2 Vpp max.
Consumption (output current excluded)	≤ 40 mA max.
Light emission	red LED 660 nm (mod. S60...B01/B51/T51/C01) IR LED 880 nm (mod. S60...C11/G00) white LED 400-700 nm (mod. S60...W08) UV LED 370 nm (mod. S60...U08) red Laser 650 nm (mod. S60...G00/B01/C01/M08)
Setting	sensitivity trimmer (mod. B01/B51/C01/C11/F01/T51)
Operating mode	LIGHT mode on N.O. output / DARK mode on N.C. output (mod.S60...C01/C11/M08/U08) DARK mode on N.O. output / LIGHT mode on N.C. output (mod.S60...B01/B51/F01/T51) LIGHT mode on N.O. output / remote input (mod.M08/W08/U08)
Indicators	yellow OUTPUT LED (S60 all models excluded G00) green STABILITY LED (mod. S60...F01/B01/B51/T51/C01/C11) POWER LED (mod. S60 LASER...F01/B01/C01) green/red READY/ERROR LED (mod. S60...M08/W08/U08)
Output	PNP or NPN; NO; NC (mod. S60)
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	0,5 ms (mod. S60...A00/B01/T01/C10/C21/C01/D00/E01/U08) 2 ms (mod. S60...F01/G00) 1 ms (mod. S50...M08, A00/B01/C01/C10/G00) 4 ms (mod. S60) 100 μs (mod. S60...W08) 333 μs (Laser mod. S60)
Switching frequency	1 kHz (mod. S60...A00/B01/T01/C10/C21/C01/D00/E01/U08) 250 Hz (mod. S50...F01/G00) 500 Hz (mod. S60...M08, A00/B01/C01/C10/G00) 5 kHz (mod. S60...W08) 1,5 kHz (Laser mod. S60)
Connection	2 m Ø 4 mm cable / M12 4-pole connector
Dielectric strength	500 VAC, 1 min between electronic parts and housing
Insulating resistance	>20 MΩ, 500 VDC between electronic parts and housing
Electrical protection	Class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS
Lens material	window in PMMA, lenses in glass and polycarbonate
Operating temperature	-10 ... 50 °C (Laser Models) -25 ... 55 °C (LED Models)
Storage temperature	-25 ... 70 °C
Weight	90 g. max. cable vers. / 40 g. max. connector vers.

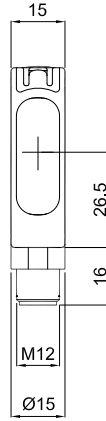
# COMPACT SENSORS

## DIMENSIONS

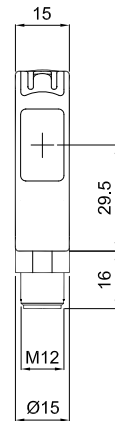


mm

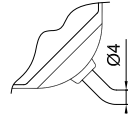
S60...B01/C01/C11/F01/G00  
S60-PL...B01/C01/F01/G00



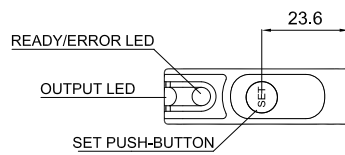
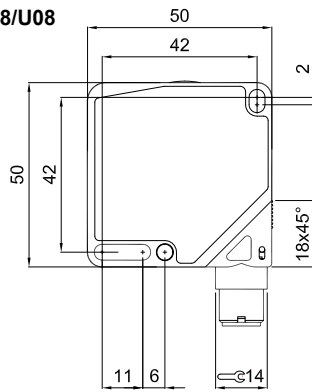
S60...B51/T51



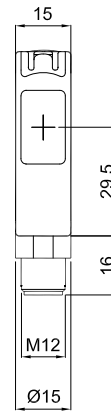
CABLE VERSION



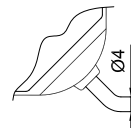
S60...W08/U08



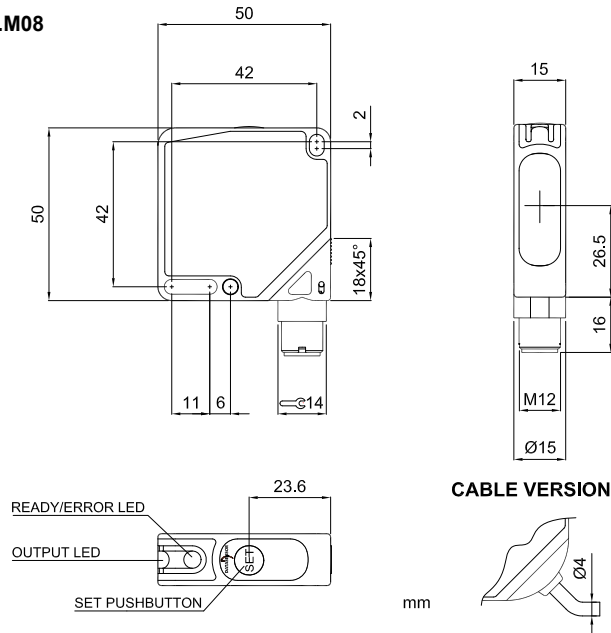
mm



CABLE VERSION



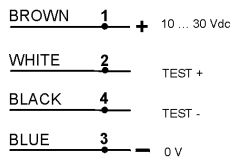
**S60...M08**  
**S60-PL...M08**



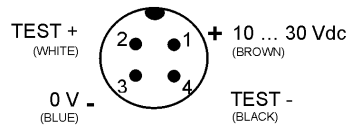
CONNECTIONS



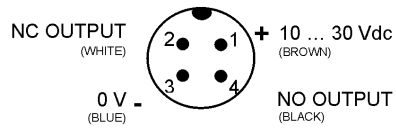
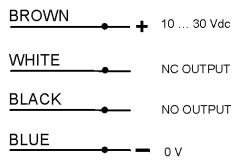
S60-PA-2



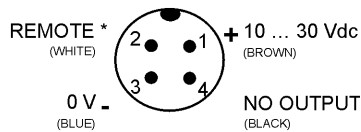
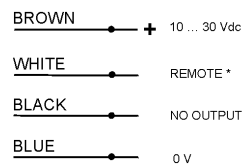
S60-PA-5



S60...G00  
S60-PL...G00



S60...B01,B51,C01,C11,T51,F01  
S60-PL...B01,C01,F01

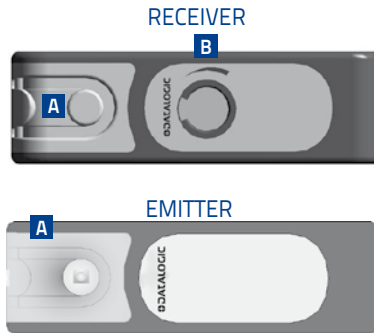


S60...W08,U08,M08  
S60-PL...M08

# COMPACT SENSORS

## INDICATORS AND SETTINGS

### INFRARED EMISSION G00 - LASER RED EMISSION G00/F01



- 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. Only for Receiver model

### B01/B51/T51/C01/C11



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

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

### RED LASER MODEL B01/C01



- A** Output status yellow LED and green Power LED
- B** Teach-in push-button
- C** M12 connector output
- D** Cable output

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

### W08/U08/M08/M08 LASER

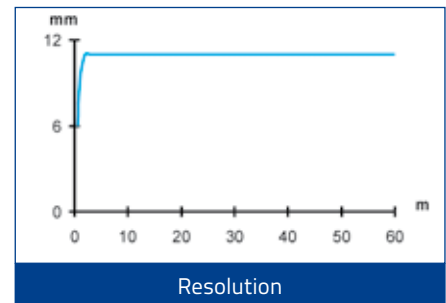
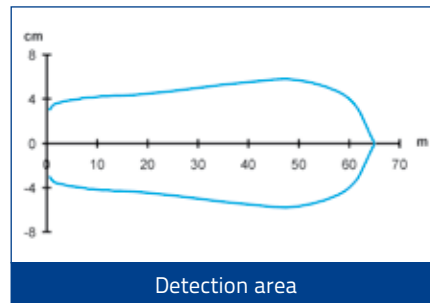
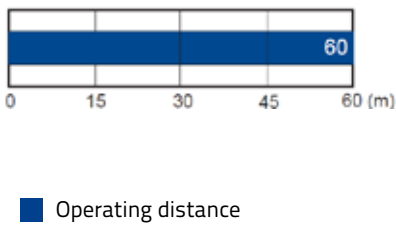
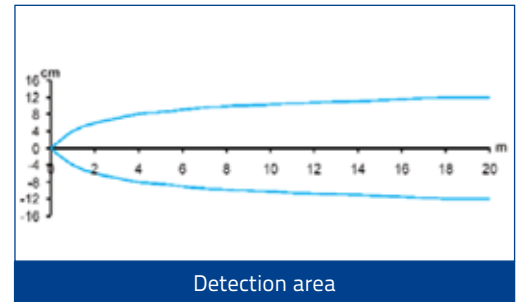
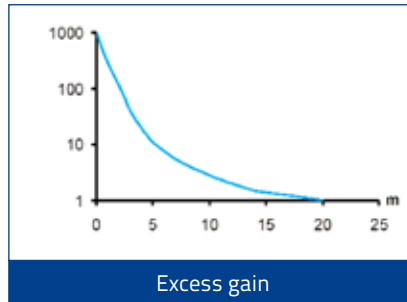
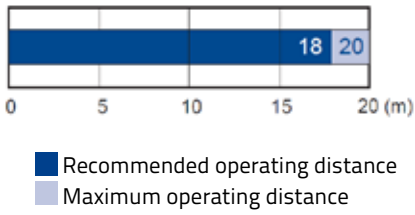


- A** Output status and READY/ERROR LEDs
- B** Teach-in push-button
- C** M12 connector output orientable in two positions
- D** Cable output

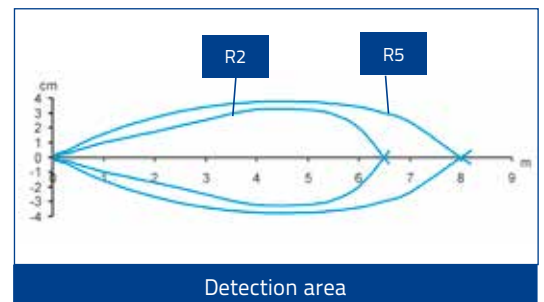
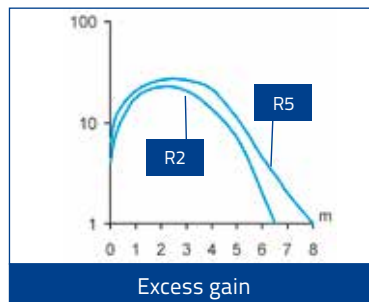
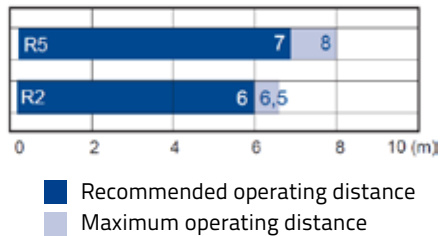
Teach-in button for setting.  
 EASYtouch™ provides two setting modes: standard or fine.  
 Please refer to instructions manual for operating details.

## DETECTION DIAGRAMS

S60...F01,G00

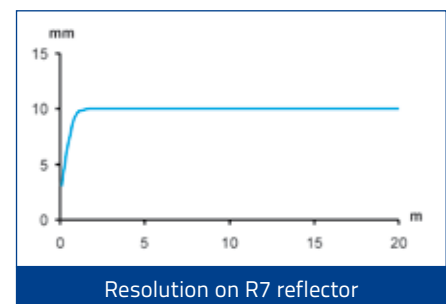
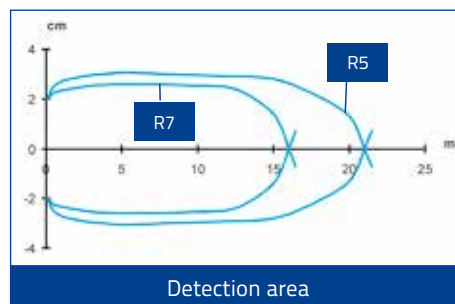
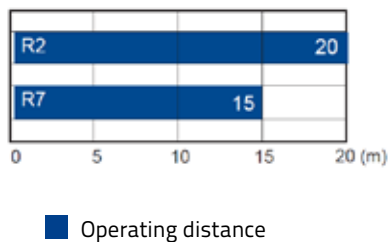


S60...B01



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

S60-PL...B01

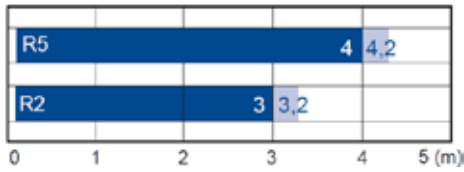


High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors (A.01)** of the **General Catalogue**.



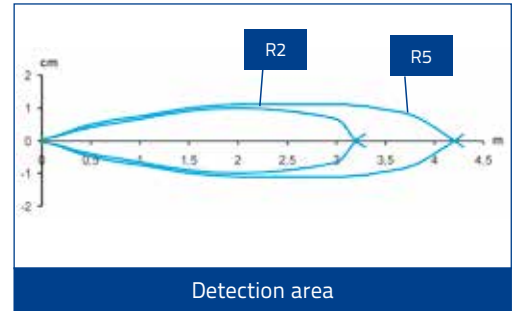
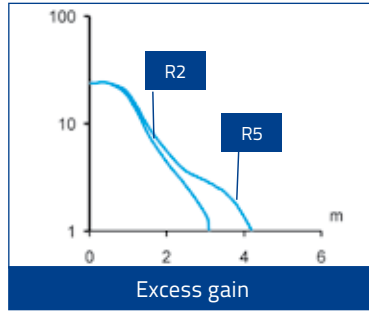
# COMPACT SENSORS

S60...B51

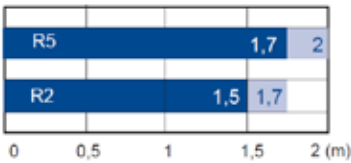


■ Recommended operating distance  
 ■ Maximum operating distance

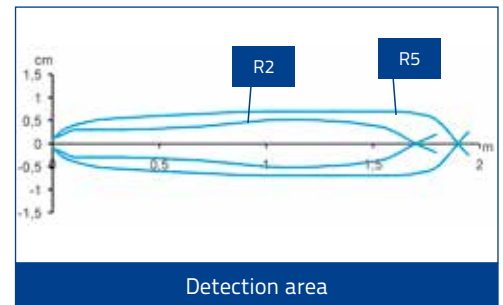
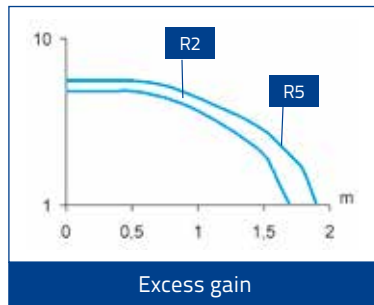
High efficiency reflectors can be used to obtain larger operating distances. Refer to **Reflectors**.



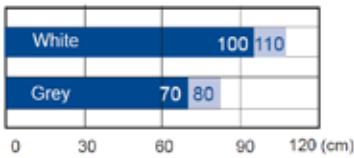
S60...T51



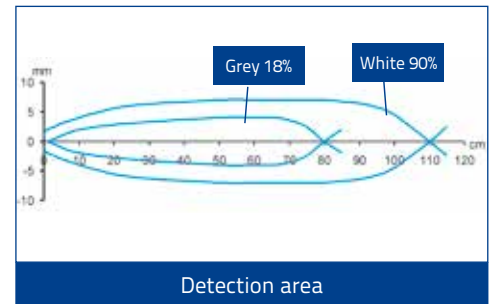
■ Recommended operating distance  
 ■ Maximum operating distance



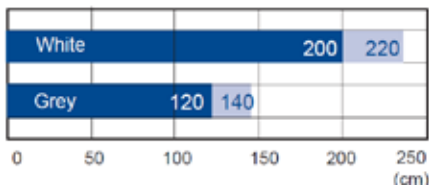
S60...C01



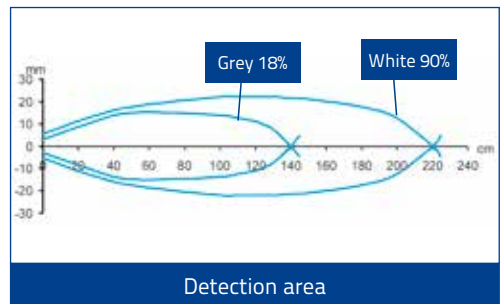
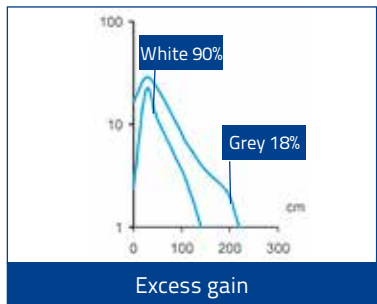
■ Recommended operating distance  
 ■ Maximum operating distance



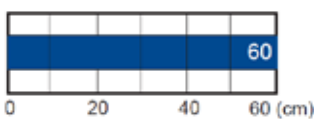
S60...C11



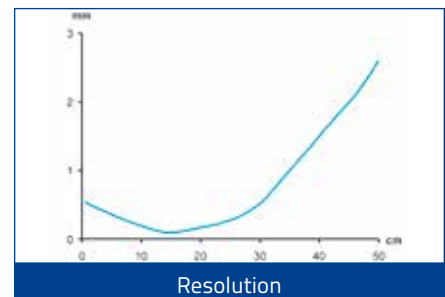
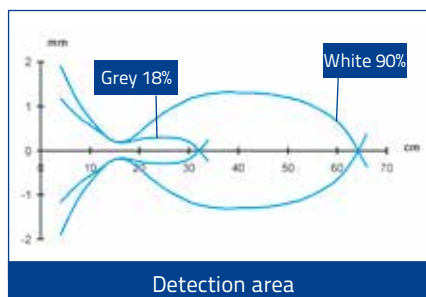
■ Recommended operating distance  
 ■ Maximum operating distance



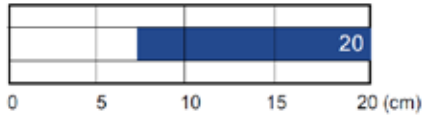
S60-PL...C01



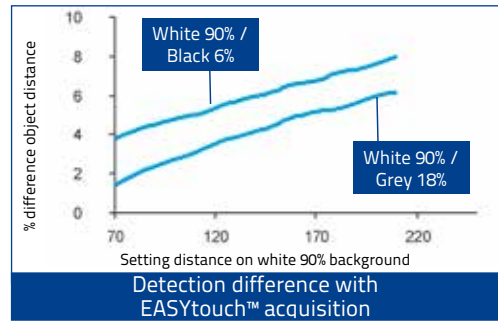
■ Operating distance



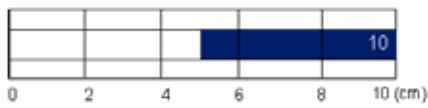
S60...M08



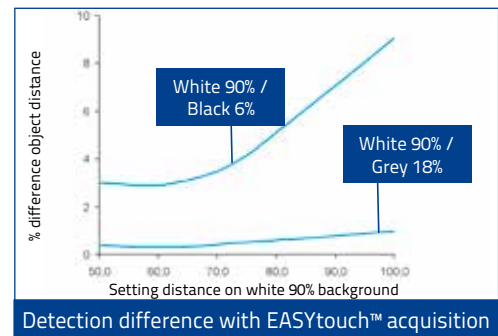
■ Operating distance



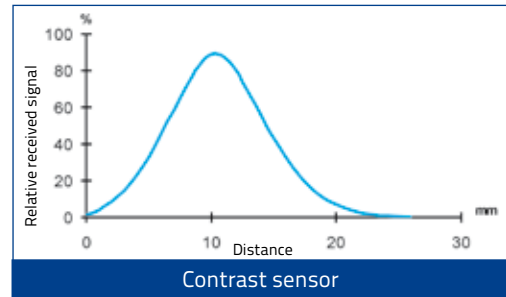
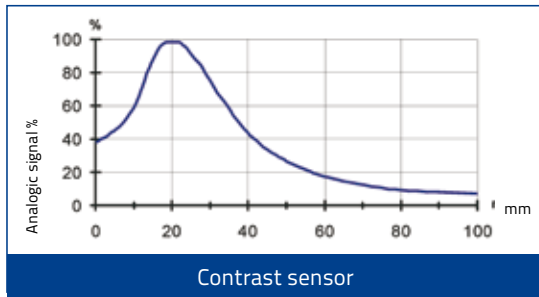
S60-PL...M08



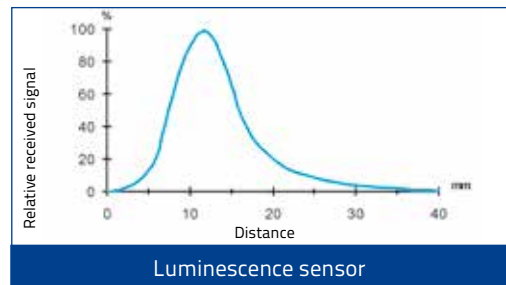
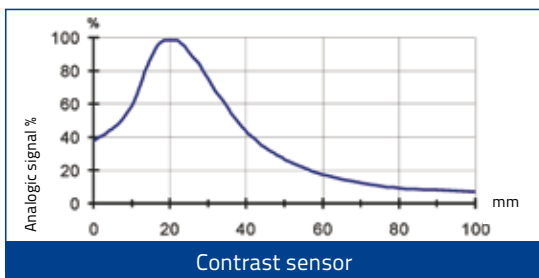
■ Operating distance



S60...W08



S60...U08



# COMPACT SENSORS

## MODEL SELECTION AND ORDER INFORMATION

MODEL	FUNCTION	N° ORDER	PAGE
S60-PA-2-B01-NN	polarized retroreflective	956201460	6
S60-PA-2-B01-PP	polarized retroreflective	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	receiver	956201490	2
S60-PA-2-F01-PP	receiver	956201330	2
S60-PA-2-G00-XG	emitter	956201340	2
S60-PA-2-T51-NN	retroreflective for transparents	956201530	12
S60-PA-2-T51-PP	retroreflective 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	polarized retroreflective	956201180	6
S60-PA-5-B01-PP	polarized retroreflective	956201040	6
S60-PA-5-B51-NN	coaxial polarized retroreflective	956201630	8
S60-PA-5-B51-PP	coaxial polarized retroreflective	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	receiver	956201210	2
S60-PA-5-F01-PP	receiver	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-T51-NN	retroreflective for transparents	956201250	12
S60-PA-5-T51-PP	retroreflective 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-PL-2-B01-NN	laser polarized retroreflective	956201560	10
S60-PL-2-B01-PP	laser polarized retroreflective	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 polarized retroreflective	956201260	10
S60-PL-5-B01-PP	laser polarized retroreflective	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
S60-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

## ACCESSORIES

The series is compatible with the following Datalogic Automation accessories

- 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



# COMPACT SENSORS

## S62

*The most complete universal sensor in a compact 50x50 mm housing*

- Sensors with red, infrared LED or LASER emission
- Background suppression from 3 cm to 2 m
- Polarized retroreflective up to 20 m
- Multivoltage 24-240Vac / 24-60Vdc with Relay output
- NPN/PNP output NO-NC configuration



### APPLICATIONS

- Processing and Packaging machinery
- Conveyor lines, material handling



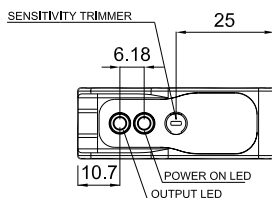
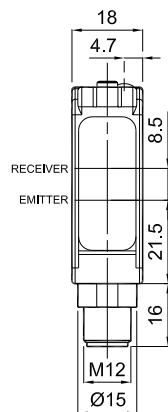
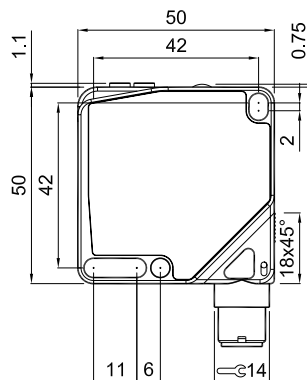
S62		
Through beam		0...25 m
Retroreflective (on R2 reflector)		0,1...13 m
Polarized retroreflective		0,1...8 m
		0,3...20 m (class 2 LASER)
Diffuse proximity		short 0...900 mm, long 0...2000 mm
		0...900 mm (class 2 LASER)
Background suppression		short 30...300 mm
		medium 60...600 mm
		long 60...1200 mm
		very long 200...2000 mm
		short LASER 30...150 mm (class 2 LASER)
		long LASER 50...350 mm (class 2 LASER)
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	24/240 Vac / 24...60 Vdc
	PNP	▪
Output	NPN	▪
	NPN/PNP	▪
	relay	▪
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		18x50x50
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

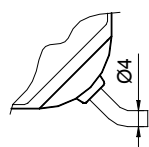
Power supply	10 ... 30 Vdc (mod. S62...2/5) 24...240 Vac/ 24...60 Vdc (mod. S62...1)
Ripple	2 Vpp max. (mod. S62...2/5), 10% max. (mod. S62...1)
Consumption (output current excluded)	30 mA max. (mod. S62...2/5) 3 VA max. (mod. S62...1)
Light emission	red LED 640 nm (mod. S62-PA...A/B/C/G/M01/M05/M11/M15) IR LED 880 nm (mod. S62-PA...M21/M25/M31/M35) red Laser 645...665 nm (mod. S62-PL)
Setting	sensitivity adjustment trimmer
Operating mode	mono-turn LIGHT/DARK trimmer (mod. S62...RX/PN) yellow OUTPUT LED
Indicators	green STABILITY LED, POWER LED (S62...G)
Output	PNP or NPN N.O./N.C. (mod. S62...PP/NN); NPN/PNP (mod. S62...PN); electromechanical SPDT 250 Vac/30 Vdc (mod. S62...RX)
Output current	100 mA max. (mod. S62...2/5), 2 A max. (mod. S62...1)
Saturation voltage	2 V max. (mod. S62...2/5)
Response time	25 ms (mod. S62...1) 1,5 ms (mod. S62...M3x) 1 ms (mod. S62...2/5-F/G/M2x) 500 µs (mod. S62-PA...2/5-A/B/C/M0x/M1x) 200 µs (mod. S62-PL...B/C/M11) 140 µs (mod. S62-PL...M01)
Switching frequency	20 Hz (mod. S62...1) 330 Hz (mod. S62...M3x) 500 Hz (mod. S62...2/5-F/G/M2x) 1 kHz (mod. S62-PA...2/5-A/B/C/M0x/M1x) 2,5 kHz (mod. S62-PL...B/C/M11) 3,5 kHz (mod. S62-PL...M01)
Connection	M12 4-pole connector, 2 m Ø 4 mm cable vers., 2 m Ø 5 mm cable vers.
Dielectric strength	500 Vac 1 min., between electronics and housing
Insulation resistance	>20 MΩ 500 Vdc, between electronics and housing
Mechanical protection	IP67
Ambient light rejection	According to EN 60947-5-2
Vibrations	0.5 mm amplitude, 10 ... 55 Hz frequency, for each axis (EN60068-2-6)
Shock resistance	11ms (30G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS
Lens material	PMMA window, polycarbonate lens
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	40 g max. conn. vers., 90 max. cable vers.

DIMENSIONS

Background suppression

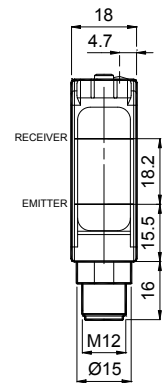
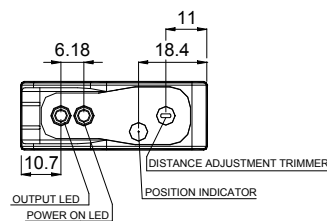


Cable version

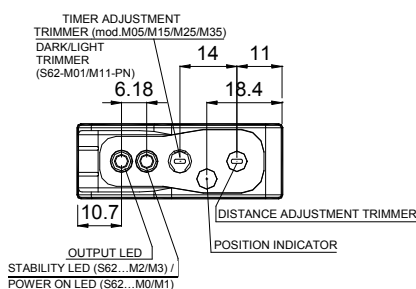


mm

Laser version



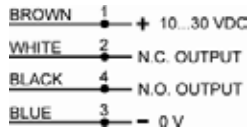
Led version



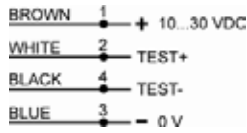
# COMPACT SENSORS

## CONNECTIONS

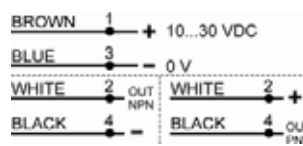
### VDC MODELS



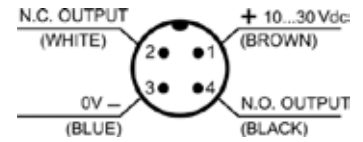
Through beam emitter



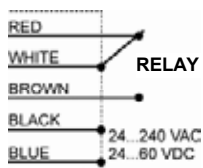
NPN/PNP version



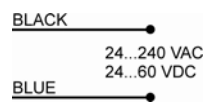
### M12 CONNECTOR



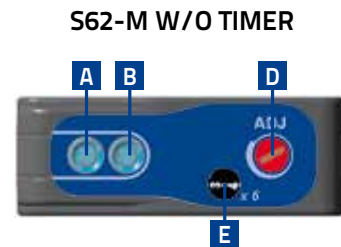
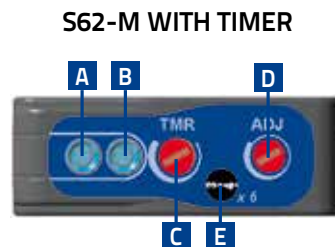
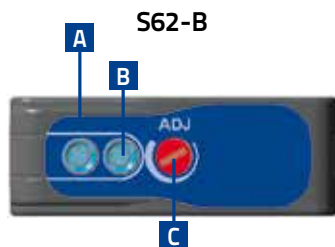
### VAC MODELS



Through beam emitter



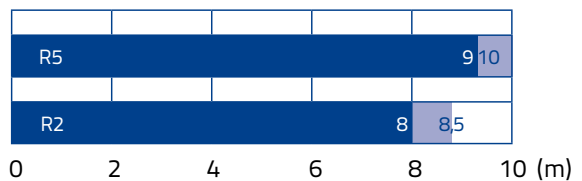
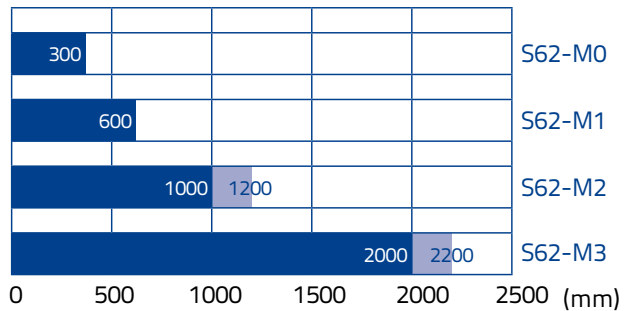
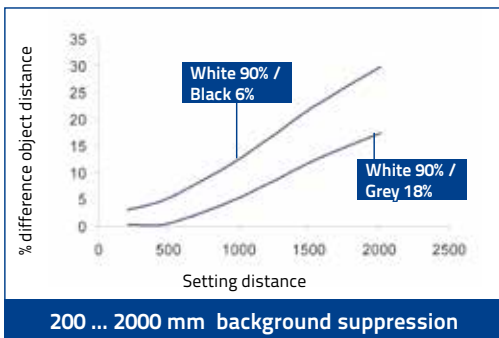
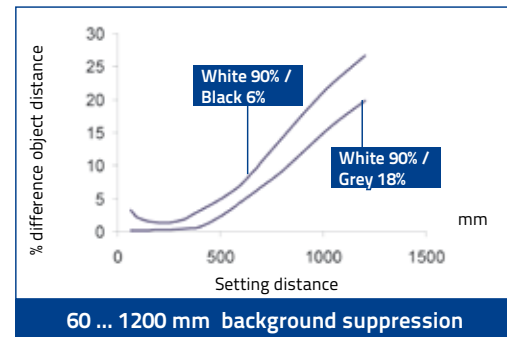
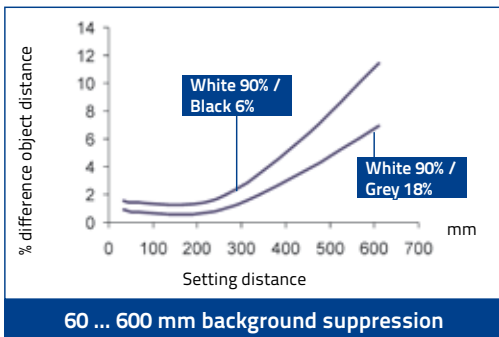
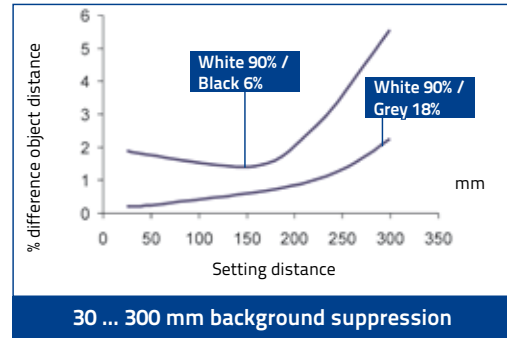
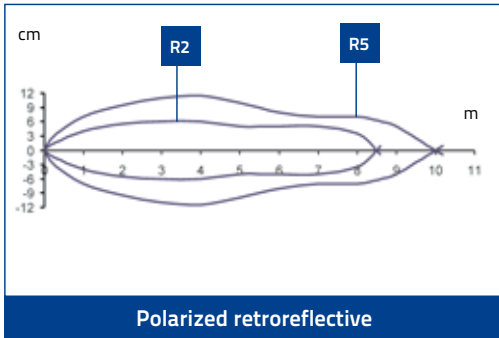
## INDICATORS AND SETTINGS



- 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

# DETECTION DIAGRAMS OF MODELS WITH LED EMISSION

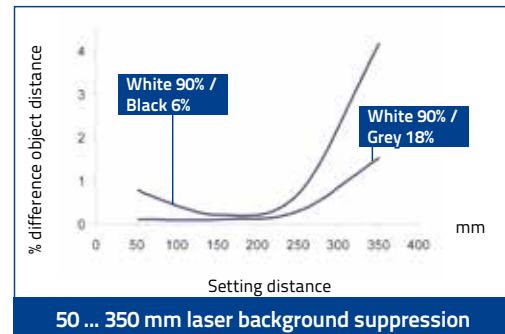
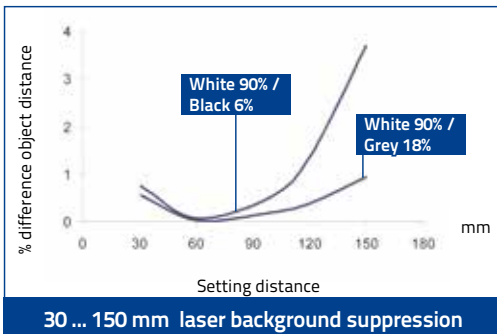
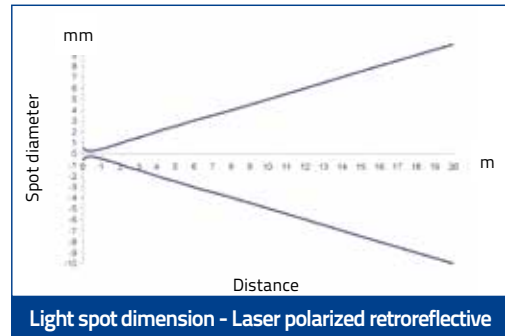
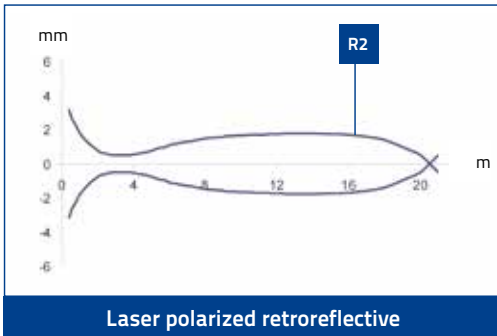


Recommended operating distance  
 Maximum operating distance



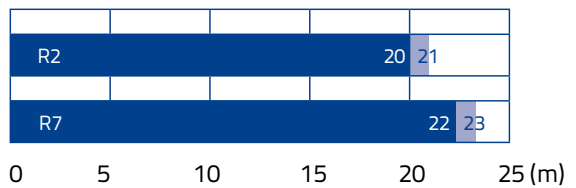
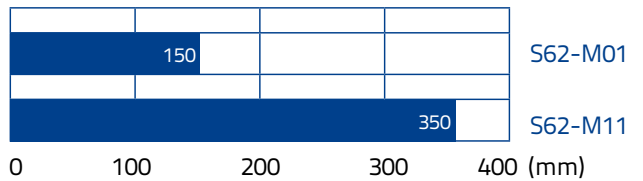
# COMPACT SENSORS

## 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

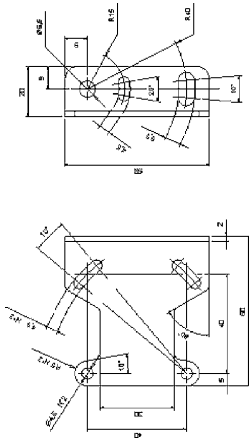
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.	
Retroreflective	LED (red 640nm)	2m Cable	PNP/NPN	S62-PA-2-A01-PN	956211240	
		M12 Connector	PNP/NPN	S62-PA-5-A01-PN	956211310	
		Vac relay	Relay	S62-PA-1-A01-RX	956211180	
Polarized retroreflective	LED (red 640nm)	2m Cable	PNP/NPN	S62-PA-2-B01-PN	956211250	
			PNP	S62-PA-2-B01-PP	956211010	
		M12 Connector	NPN	S62-PA-5-B01-NN	956211020	
			PNP/NPN	S62-PA-5-B01-PN	956211320	
	LASER	M12 Connector	PNP	S62-PA-5-B01-PP	956211000	
			Relay	S62-PA-1-B01-RX	956211190	
Short diffused proximity	LED (red 640nm)	2m Cable	NPN	S62-PA-2-C01-NN	956211420	
			PNP/NPN	S62-PA-2-C01-PN	956211260	
			PNP	S62-PA-2-C01-PP	956211380	
		M12 Connector	NPN	S62-PA-5-C01-NN	956211500	
			PNP/NPN	S62-PA-5-C01-PN	956211330	
			PNP	S62-PA-5-C01-PP	956211460	
	LASER	2m Cable	Relay	S62-PA-1-C01-RX	956211200	
			NPN	S62-PL-2-C01-NN	956211440	
			PNP	S62-PL-2-C01-PP	956211400	
		M12 Connector	NPN	S62-PL-5-C01-NN	956211520	
			PNP	S62-PL-5-C01-PP	956211480	
			Relay	S62-PA-1-C11-RX	956211210	
Long diffused proximity	LED (red 640nm)	2m Cable	NPN	S62-PA-2-C11-NN	956211430	
			PNP/NPN	S62-PA-2-C11-PN	956211270	
			PNP	S62-PA-2-C11-PP	956211390	
		M12 Connector	NPN	S62-PA-5-C11-NN	956211510	
			PNP/NPN	S62-PA-5-C11-PN	956211340	
			PNP	S62-PA-5-C11-PP	956211470	
	Through beam receiver	-	2m Cable	Relay	S62-PA-1-F01-RX	956211220
				NPN	S62-PA-2-F01-NN	956211450
				PNP/NPN	S62-PA-2-F01-PN	956211290
Through beam emitter	LED (red 640nm)	2m Cable	PNP	S62-PA-2-F01-PP	956211410	
			NPN	S62-PA-5-F01-NN	956211530	
			PNP/NPN	S62-PA-5-F01-PN	956211360	
		M12 Connector	PNP	S62-PA-5-F01-PP	956211490	
			Relay	S62-PA-1-G00-XX	956211230	
			-	S62-PA-2-G00-XG	956211300	
Background suppression (short distance)	LED (red 640nm)	2m Cable	PNP/NPN	S62-PA-2-M01-PN	956211280	
			PNP	S62-PA-2-M01-PP	956201841	
			NPN	S62-PA-5-M01-NN	956201811	
		M12 Connector	PNP/NPN	S62-PA-5-M01-PN	956211350	
			PNP	S62-PA-5-M01-PP	956201831	
			NPN	S62-PA-5-M05-NN	956201801	
	LASER	M12 Connector	PNP	S62-PA-5-M05-PP	956201821	
			NPN	S62-PL-5-M01-NN	956211120	
			PNP	S62-PL-5-M01-PP	956211130	
Background suppression (medium distance)	LED (red 640nm)	2m Cable	PNP	S62-PA-2-M11-PP	956201891	
			NPN	S62-PA-5-M11-NN	956201861	
		M12 Connector	PNP	S62-PA-5-M11-PP	956201881	
			NPN	S62-PA-5-M15-NN	956201851	
	LASER	M12 Connector	PNP	S62-PA-5-M15-PP	956201871	
			NPN	S62-PL-5-M11-NN	956211140	
Background suppression (long distance)	LED (infrared 880nm)	2m Cable	PNP	S62-PL-5-M11-PP	956211150	
			NPN	S62-PA-2-M21-PP	956201940	
			PNP	S62-PA-5-M21-PP	956201910	
		M12 Connector	PNP	S62-PA-5-M21-PP	956201900	
			NPN	S62-PA-5-M25-NN	956201930	
			PNP	S62-PA-5-M25-PP	956201920	
Background suppression (very long distance)	LED (infrared 880nm)	2m Cable	PNP	S62-PA-2-M31-PP	956211050	
			NPN	S62-PA-5-M31-NN	956211060	
		M12 Connector	PNP	S62-PA-5-M31-PP	956211070	
			NPN	S62-PA-5-M35-NN	956211080	
PNP	S62-PA-5-M35-PP	956211090				

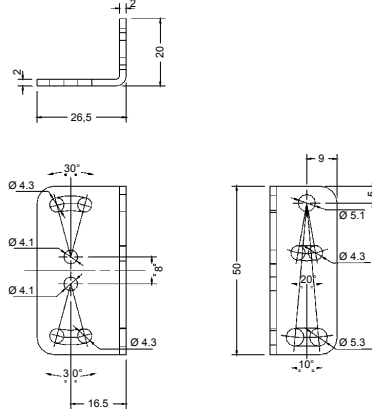
# COMPACT SENSORS

## ACCESSORIES

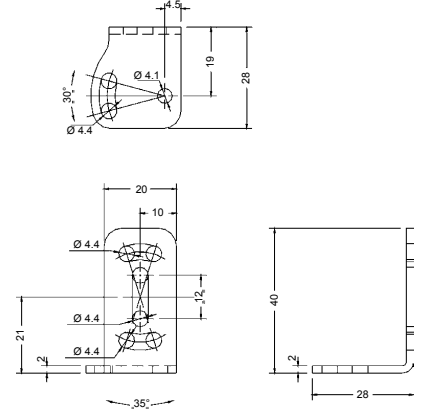
ST-504



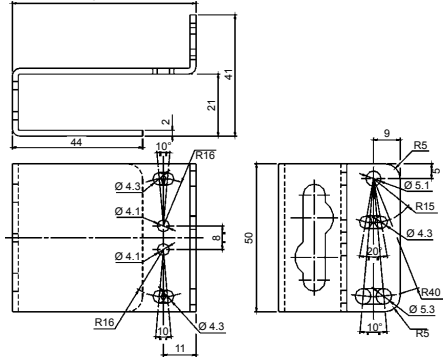
ST-5020



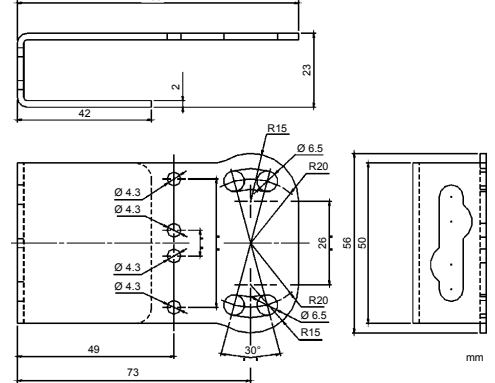
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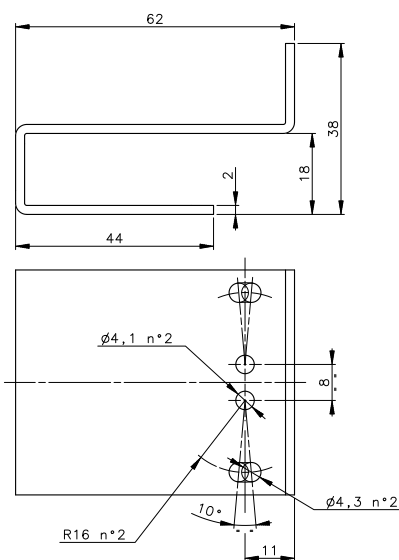
ST-5053



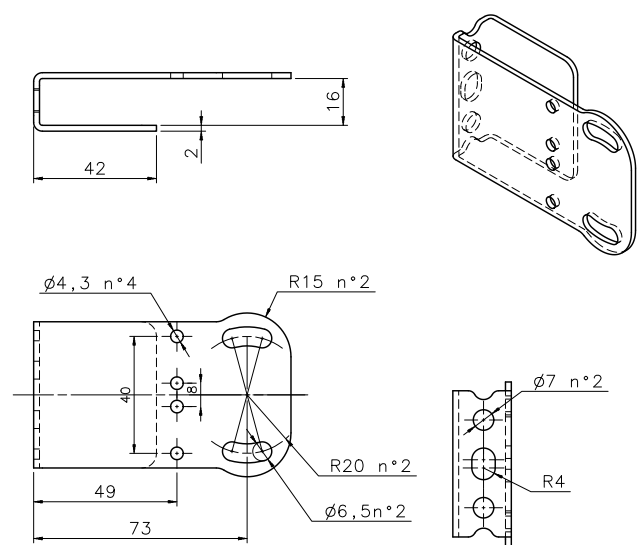
ST-5054



ST-5018



ST-5019



MODEL	DESCRIPTION	ORDER No.
ST-5018	protective bracket	95ACC5310
ST-5019	protective bracket	95ACC5320
ST-5020	mounting bracket	95ACC5330
ST-5021	mounting bracket	95ACC5340
ST-504	mounting bracket	95ACC2820
ST-5053	protective bracket	95ACC2410
ST-5054	protective bracket	95ACC2420
JOINT-S62	protective bracket with jointed support	95ACC2430

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Radial M12 Connector with LED (for PNP N.O. sensors)	4-pole, grey, P.V.C.	3 m	CS-A2-12-G-03	95A251400
		5 m	CS-A2-12-G-05	95A251350
		10 m	CS-A2-12-G-10	95A251370
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003

# COMPACT SENSORS

## S90

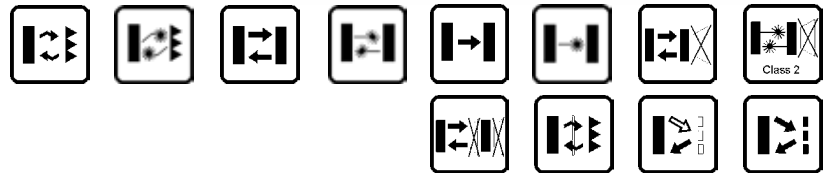
### Extended range of compact photoelectric sensors in a metal housing

- Background suppression and polarized retroreflective
- Class 1 LASER models for long distance detection
- Contrast and UV Luminescence sensors
- Industrial IP67 metal housing
- Standard 4-wire NO-NC NPN or PNP output



#### APPLICATIONS

- Processing and Packaging machinery
- Conveyor lines, material handling
- Automotive assembling lines
- Automated warehousing



S90		
Through beam		0...20 m 0...60 m (class 1 LASER)
Polarized retroreflective		0...3,2 m (coaxial) 0,1...6,5 m 0,1...20 m (class 1 LASER)
Retroreflective for transparent (on R2 reflector)		0...1,7 m (coaxial)
Diffuse proximity		short 0,01...1 m long 0,05...2 m 0...600 mm (class 1 LASER)
Background suppression		70...200 mm 50...100 mm (class 1 LASER)
Foreground suppression		70...200 mm
Luminescence		0...40 mm
Contrast		19 ± 2 mm
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		15x50x41
Housing material		Zama
Mechanical protection		IP67

TECHNICAL DATA

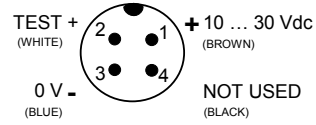
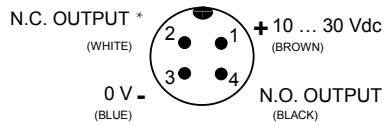
Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	35 mA max. 35 mA max. (mod. S90...B01/B51/C01/C11/F01/T51) 30 mA max. (mod. S90...W08/U08) 50 mA max. (mod. S90...M08/N03) 60 mA max. (Laser mod. S90...M08)
Light emission	red LED 660 nm (mod. S90...B01/B51/C01/T51) red LED 670 nm (mod. S90...M08) IR LED 880 nm (mod. S90...C11/G00) white LED 400-700 nm (mod. S90...W08) UV LED 370 nm (mod. S90...U08) red Laser 650 nm
Setting	sensitivity trimmer (mod. S90...B01/B51/C01/C11/F01/T51) SET push-button (mod. S90...M08/N03/W08/U08)
Operating mode	LIGHT mode on N.O. output/DARK mode on N.C. output (mod. S90...C01) DARK mode on N.O. output/LIGHT mode on N.C. output (mod. S90...B01/F01) LIGHT mode with EASY TOUCH™/automatic with fine detection (mod. S90...M08/N03/U08) DARK mode with EASY TOUCH/automatic with fine detection (mod. S90...W08)
Indicators	yellow OUTPUT LED (excl. mod. S90...G00) green STABILITY LED (mod. S90...B01/B51/C01/C11/F01), POWER LED (mod. S90...G00, Laser mod. S90...B01/C01/F01/G00) green/red READY/ERROR LED (mod. S90...M08/N03/W08/U08) yellow/orange OUTPUT LED, green/red LASER ON/ERROR LED (Laser mod. S90...M08)
Output	PNP or NPN; NO and NC (mod. S90...B01/C01/F01/T51)
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	0,5 ms (mod. S90...B01/B51/T51) 1 ms (mod. S90...C01/C11/F01) 100 µs (mod. S90...W08) 500 µs max. (mod. S90...M08/N03) 250 µs (mod. S90...U08, Laser mod. S90...B01/C01) 333 µs (Laser mod. S90...F01)
Switching frequency	1 kHz (mod. S90...B01/B51/T51) 500 Hz (mod. S90...C01/C11/F01) 5 kHz (mod. S90...W08) 1 kHz (mod. S90...M08/N03) 2 kHz (mod. S90...U08, Laser mod. S90...B01/C01) 1,5 kHz (Laser mod. S90...F01)
Connection	M12 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67 (type 1 enclosure)
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ZAMA
Lens material	PMMA window and polycarbonate lens (mod. S90...B01/C01/C11/F01/G00/M08/N03) glass window and lens (mod. S90...B51/T51) glass window skewed anti-reflection and glass lens (mod. S90...W08/U08) PMMA window, polycarbonate and glass lens (Laser mod. S90...M08)
Operating temperature	-25 ... 55 °C (mod. S90...B01/B51/C01/C11/F01/G00) -10 ... 55 °C (mod. S90...M08/N03/W08/U08) -10 ... 50 °C (Laser mod.)
Storage temperature	-25 ... 70 °C (mod. S90...B01/B51/C01/C11/F01/G00, Laser mod. S90...B01/C01/F01/G00) -20 ... 70 °C (mod. S90...M08/N03/W08/U08, Laser mod. S90...M08)
Weight	77 g

# COMPACT SENSORS

## CONNECTIONS

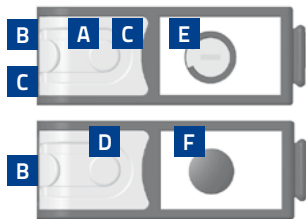
### M12 CONNECTOR

Through beam emitter



\* N.C. OUTPUT (mod. S90...B, C, F, T), REMOTE (mod. S90...M, N, U, W)

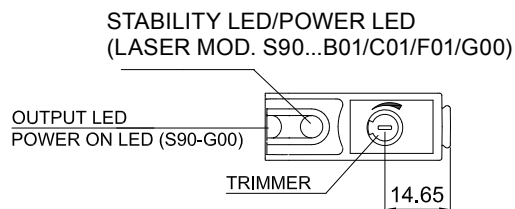
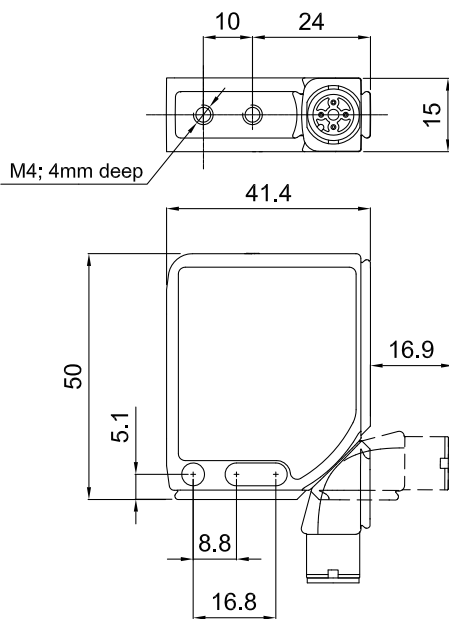
## INDICATORS AND SETTINGS



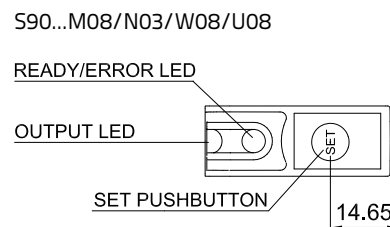
- A** STABILITY LED
- B** Output status LED
- C** POWER ON LED
- D** READY/ERROR LED
- E** Trimmer
- F** SET push-button \*
- G** M12 connector output, orientable in 4 positions

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

## DIMENSIONS

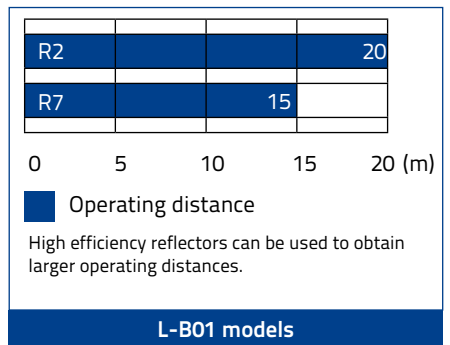
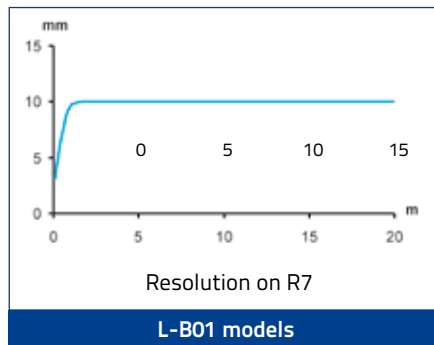
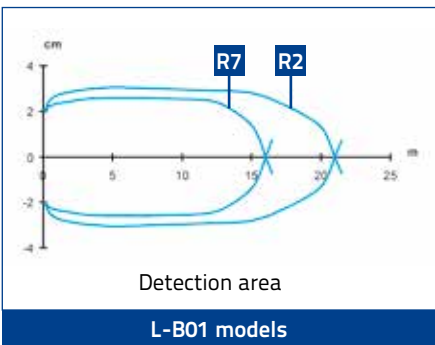
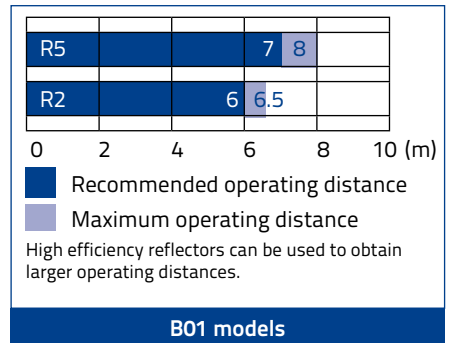
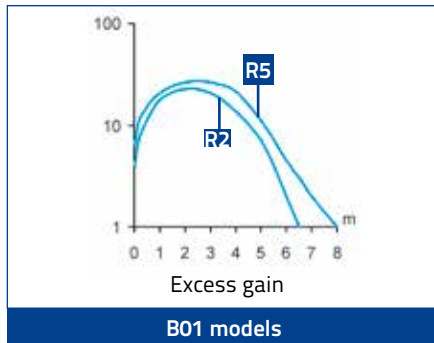
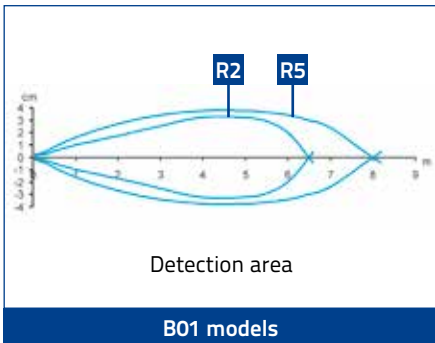
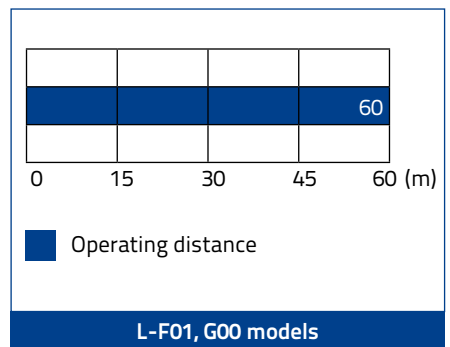
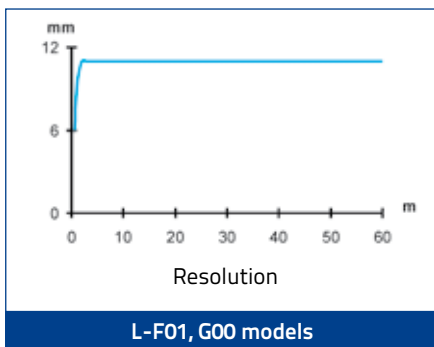
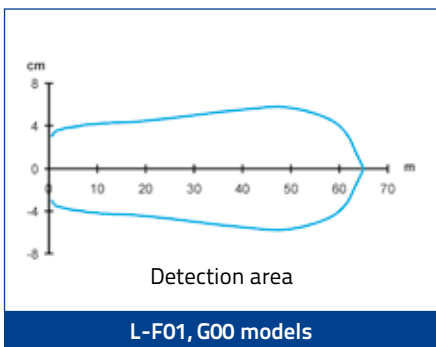
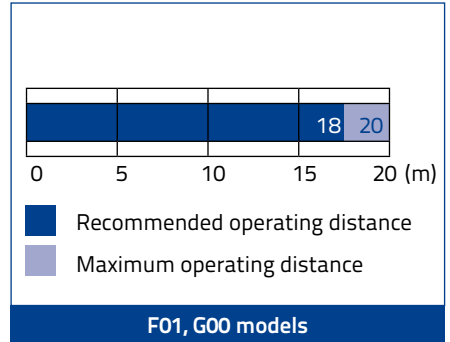
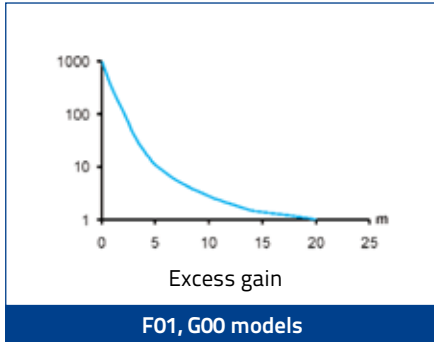
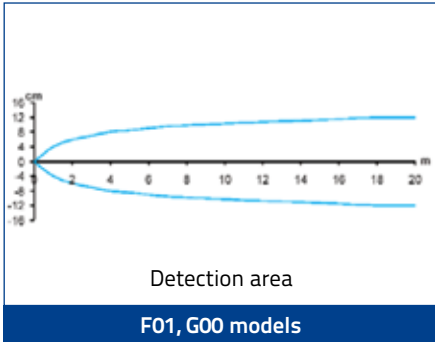


VERSION	h
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M08 N03	27.2
B51 T51 W08 U08	29.7



mm

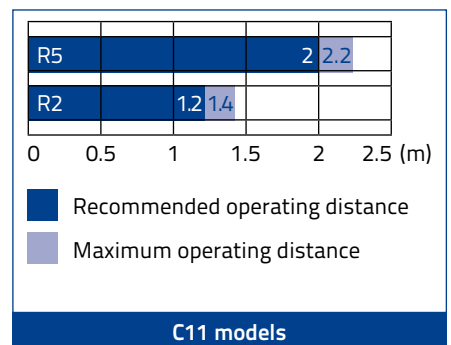
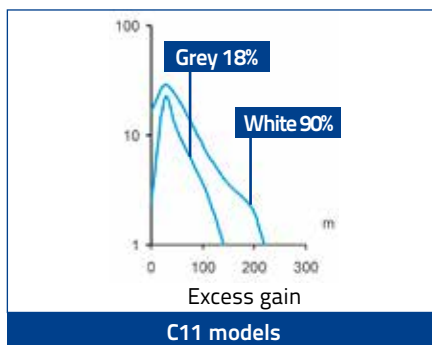
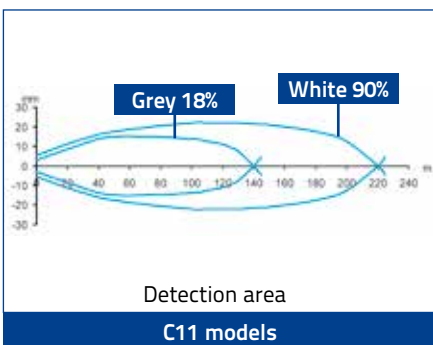
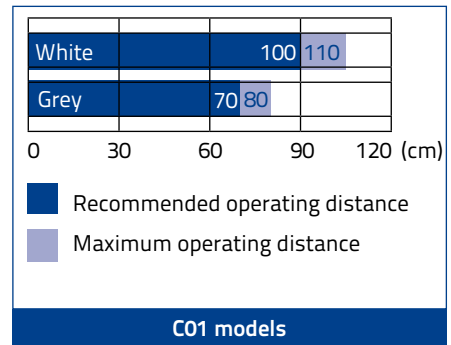
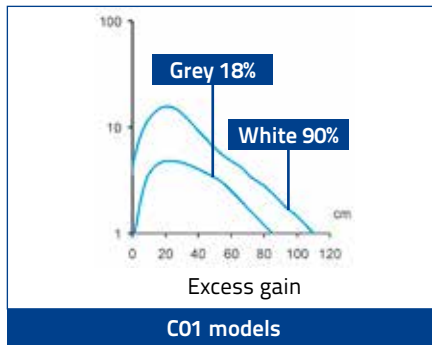
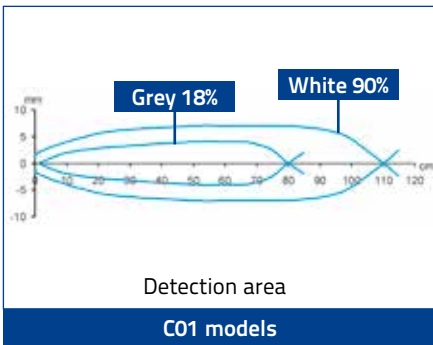
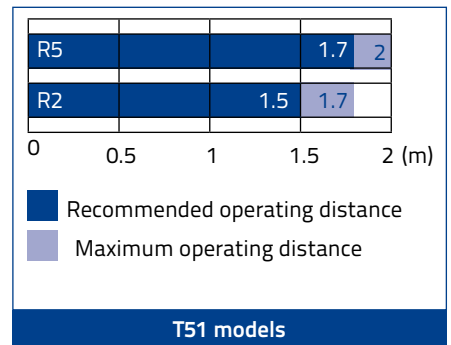
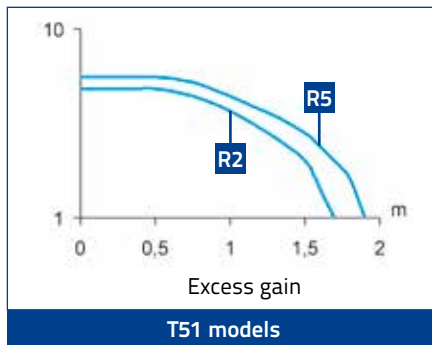
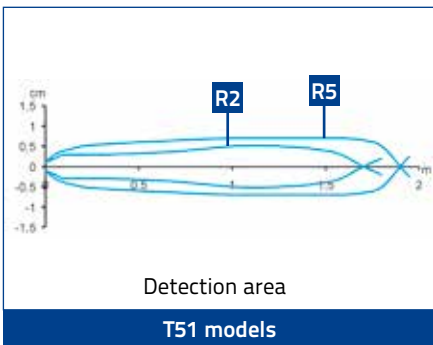
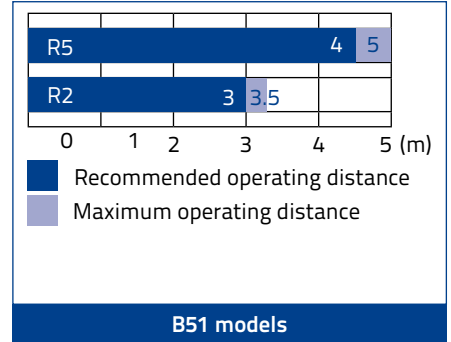
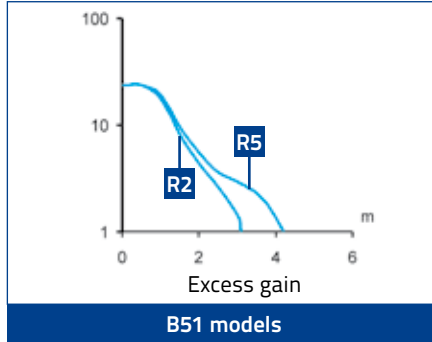
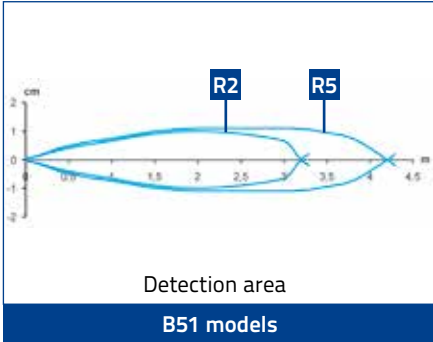
# DETECTION DIAGRAMS



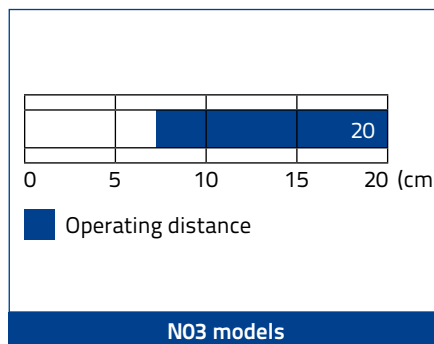
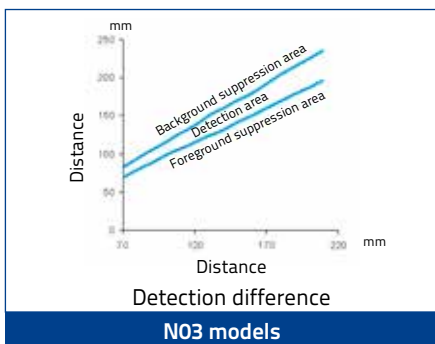
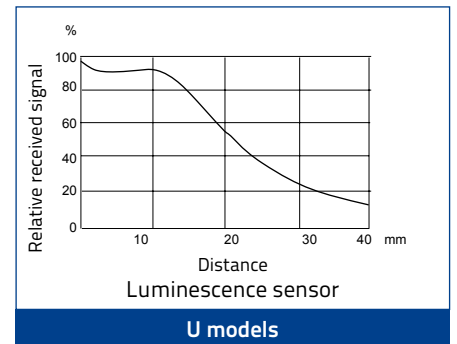
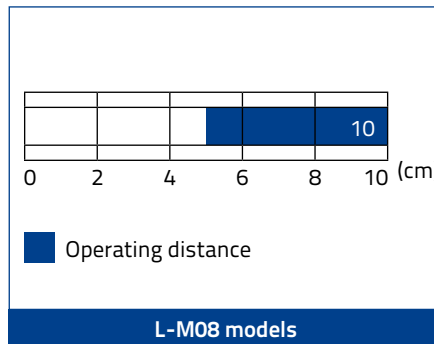
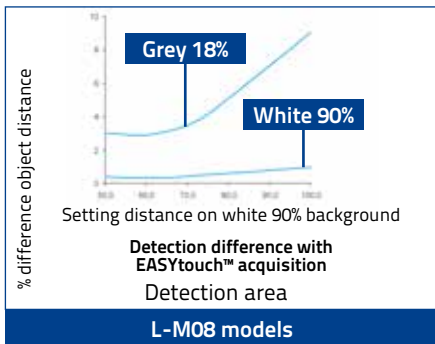
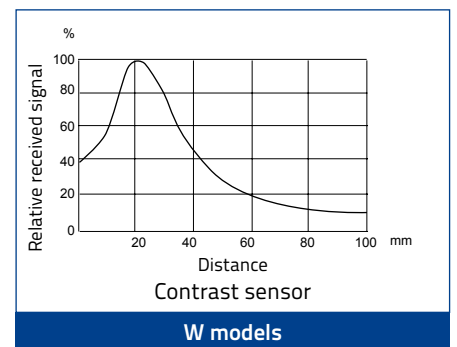
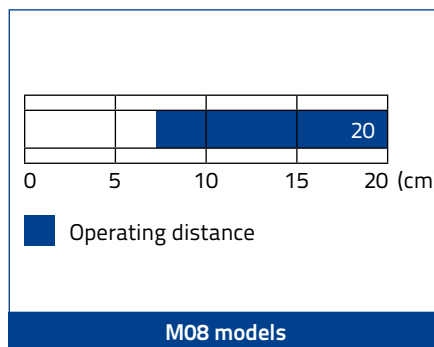
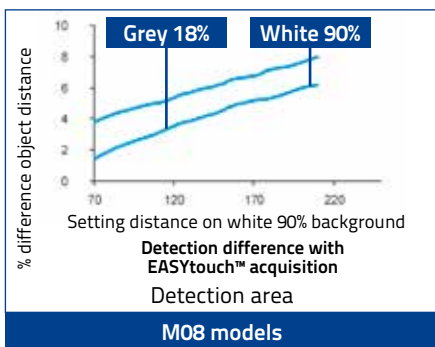
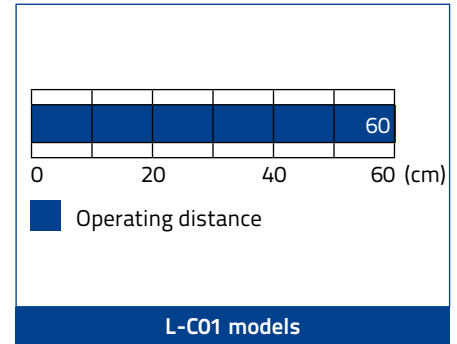
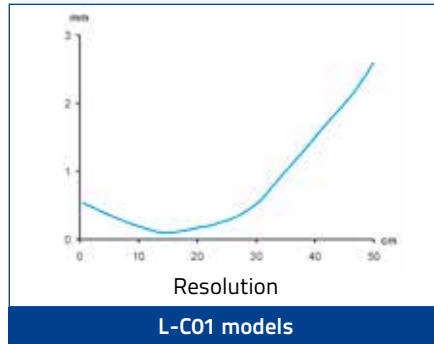
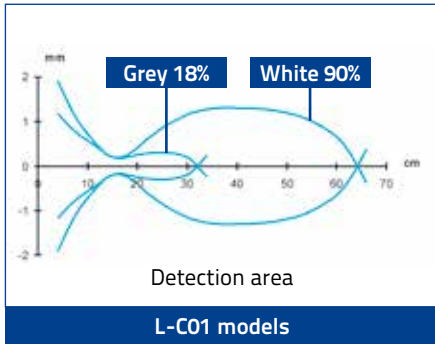


# COMPACT SENSORS

## DETECTION DIAGRAMS



# DETECTION DIAGRAMS







# COMPACT SENSORS

MODEL	DESCRIPTION	ORDER No.
ST-5018	protective bracket	95ACC5310
ST-5019	protective bracket	95ACC5320
ST-5020	mounting bracket	95ACC5330
ST-5021	mounting bracket	95ACC5340
ST-504	mounting bracket	95ACC2820
ST-5053	protective bracket	95ACC2410
ST-5054	protective bracket	95ACC2420
ST-5041	short dove-tail bracket	95ACC2300
ST-5042	long dove-tail bracket	95ACC2310
JOINT -60	protective bracket with jointed support	95ACC 5350

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Radial M12 Connector with LED (for PNP N.O. sensors)	4-pole, grey, P.V.C.	3 m	CS-A2-12-G-03	95A251400
		5 m	CS-A2-12-G-05	95A251350
		10 m	CS-A2-12-G-10	95A251370
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003



## S300 PA

### Advanced MAXI photoelectric multivoltage sensors

- Industrial plastic housing with IP67 mechanical protection
- Timing function from 0.6-16 s ON delay, OFF delay and ONE SHOT
- Terminal block for both Vdc and Vac/ Vdc free voltage
- Distance trimmer for mechanical background suppression models



#### APPLICATIONS

- Packaging end of line, palletizers
- Outdoor or indoor gates control
- Manufacturing plants



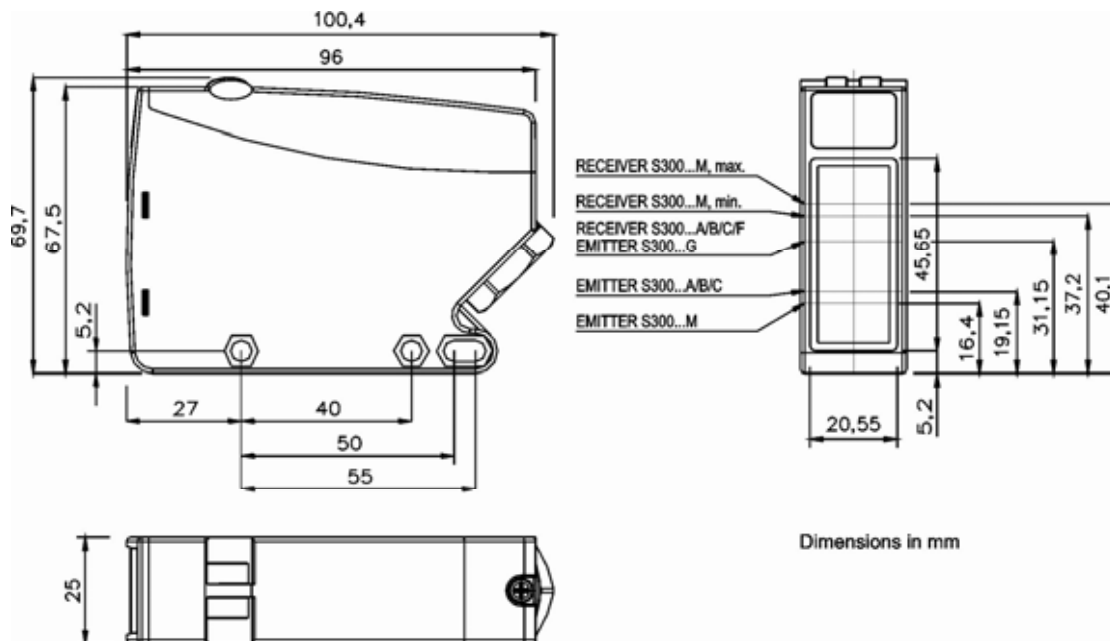
(\*)DC models:  
ATEX II 3DG

S300 PA		
Through beam		0...50 m
Retroreflective (on R2 reflector)		0,1...15 m
Polarized retroreflective		0,1...10 m
Diffuse proximity		0,05...2 m
Background suppression		0,2...2 m
Power supply	Vdc	12...30 V
	Vac	
	Vac/dc	24...240 Vac / 24...60 Vdc
	PNP	
Output	NPN	
	NPN/PNP	▪
	relay	▪
	other	
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		25x100x70
Housing material		PBT
Mechanical protection		IP67

TECHNICAL DATA

Power supply	12 ... 30 Vdc (mod. S300...2) 24...240 Vac/24...60 Vdc (mod. S300...1)
Ripple	10% max.
Consumption (output current excluded)	35 mA max. (mod. S300...2) 3 VA max. (mod. S300...1)
Light emission	red LED 660 nm (mod. S300...B) IR LED 940 nm (mod. S300...C) IR LED 880 nm (mod. S300...A/G/M)
Setting	sensitivity trimmer (mod. S300...A/B/C/F), DARK/LIGHT dip-switch (mod. S300...A/B/C/F/M) 7-turns distance adjustment trimmer (mod. S300...M) dip-switch mode ON delay/OFF delay/ON-OFF delay/single pulse (ONE-SHOT) (mod. S300...x06) timing trimmer (mod. S300...x06)
Indicators	yellow OUTPUT LED (excl. mod. S300...G) green STABILITY LED, POWER LED (mod. S300...G)
Output	PNP or NPN open collector (mod. S300...2); electromechanical SPDT 250 Vac/30 Vdc (mod. S300...1)
Output current	100 mA (mod. S300...2) 3 A max. (mod. S300...1)
Saturation voltage	2,4 V max.
Response time	1 ms (mod. S300...2-A/B/C/M) 2 ms (mod. S300...2-F/G) 25 ms (mod. S300...1)
Switching frequency	500 Hz (mod. S300...2-A/B/C/M) 250 Hz (mod. S300...2-F/G) 20 Hz max. (mod. S300...1)
Connection	terminal block
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 M $\Omega$ , 500 Vdc between electronics and housing
Electrical protection	class 2 (mod. S300...2)
Mechanical protection	IP67 (IEC/EN60529)
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	PBT 30% glass fiber-reinforced
Lens material	frontal window and lens in PC
Operating temperature	-25 ... 55 °C
Storage temperature	-25 ... 70 °C
Weight	120 g (mod. S300...2), 130 g (mod. S300...1)

DIMENSIONS





# MAXI SENSORS

## CONNECTIONS

### VAC MODELS

Through beam emitter

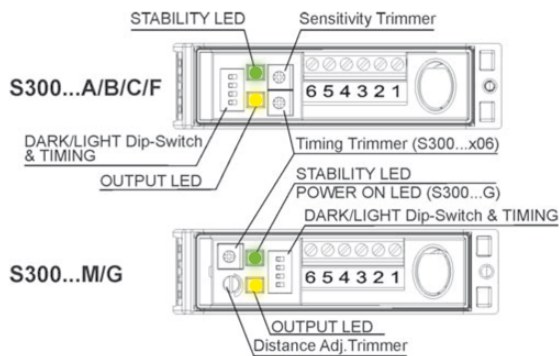


### VDC MODELS

Through beam emitter



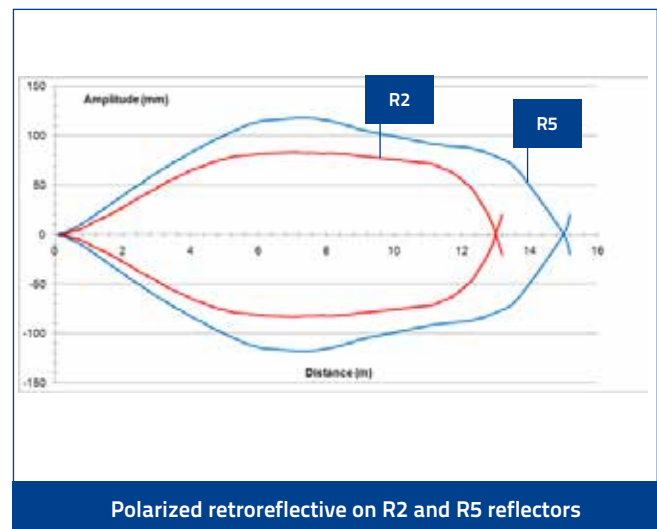
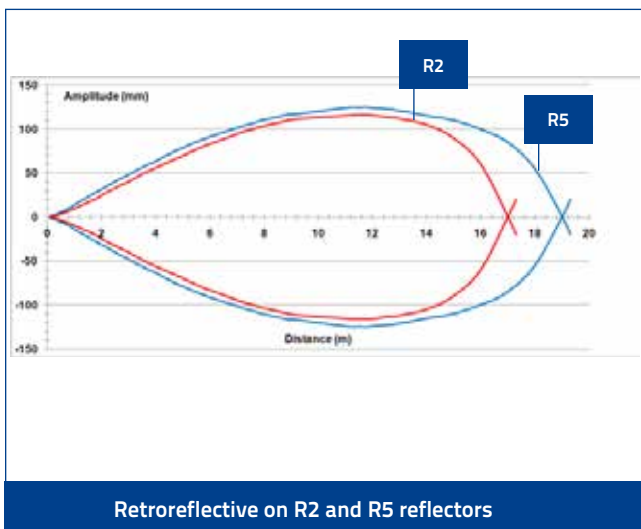
## INDICATORS AND SETTINGS

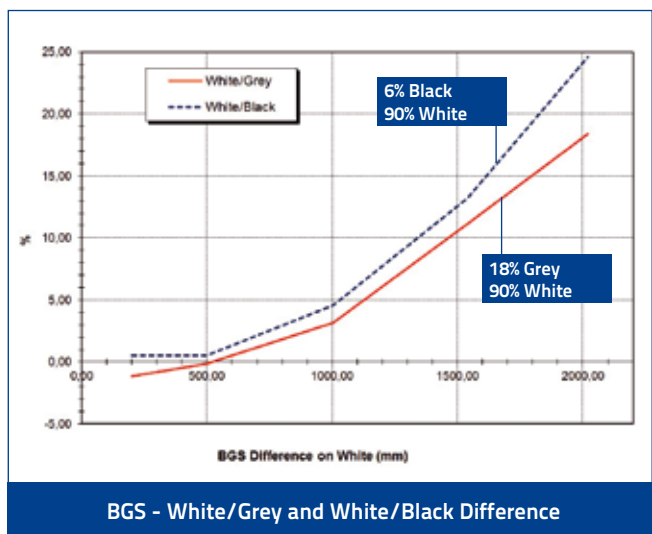
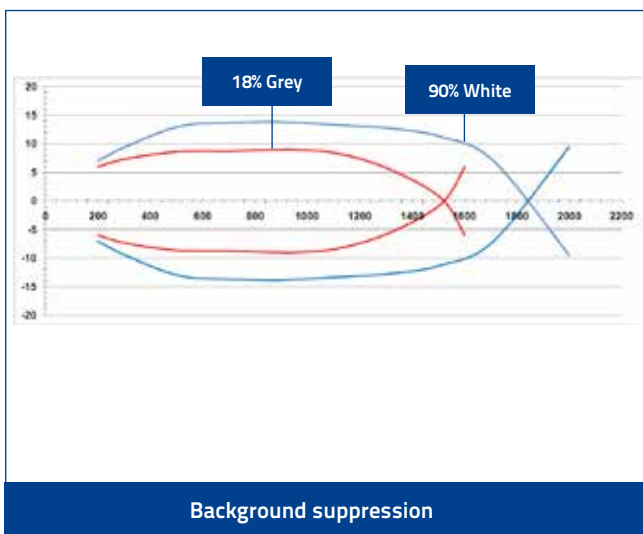
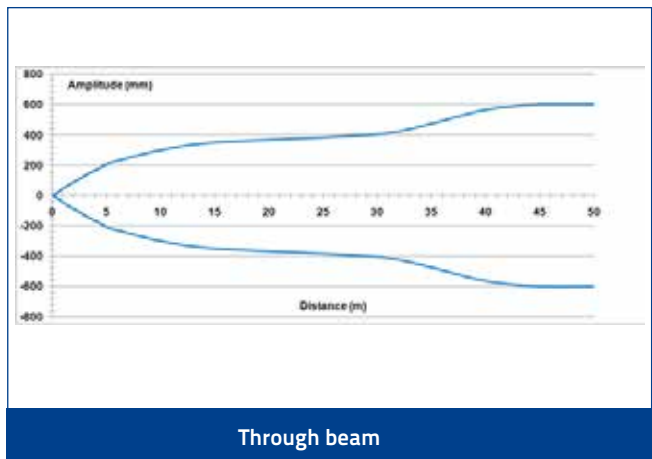
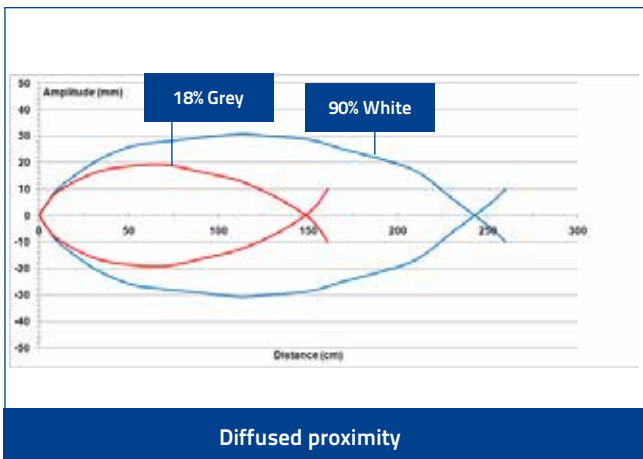


## SETTINGS

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 whilst functioning mode selection is performed through DIP SWITCHES.

## DETECTION DIAGRAMS





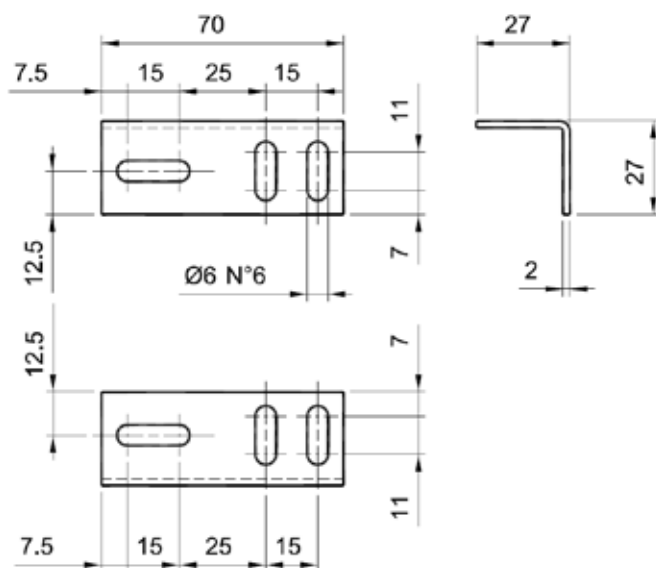
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	POWER SUPPLY	OUTPUT	SETTING	MODEL	ORDER No.
Retroreflective (IR LED 880 nm)	12...30 Vdc	NPN/PNP	Sensitivity trimmer and D/L dip-switch	S300-PA-2-A01-OC	951451500
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-2-A06-OC	951451510
	24...240 Vac / 24...60 Vdc	Relay	Sensitivity trimmer and D/L dip-switch	S300-PA-1-A01-RX	951451480
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-1-A06-RX	951451490
Polarized retroreflective (red LED 660 nm)	12...30 Vdc	NPN/PNP	Sensitivity trimmer and D/L dip-switch	S300-PA-2-B01-OC	951451540
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-2-B06-OC	951451550
	24...240 Vac / 24...60 Vdc	Relay	Sensitivity trimmer and D/L dip-switch	S300-PA-1-B01-RX	951451520
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-1-B06-RX	951451530
Diffused proximity (IR LED 940 nm)	12...30 Vdc	NPN/PNP	Sensitivity trimmer D/L dip-switch	S300-PA-2-C01-OC	951451420
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-2-C06-OC	951451430
	24...240 Vac / 24...60 Vdc	Relay	Sensitivity trimmer and D/L dip-switch	S300-PA-1-C01-RX	951451400
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-1-C06-RX	951451410
Through beam receiver	12...30 Vdc	NPN/PNP	Sensitivity trimmer and D/L dip-switch	S300-PA-2-F01-OC	951451600
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-2-F06-OC	951451610
	24...240 Vac / 24...60 Vdc	Relay	Sensitivity trimmer and D/L dip-switch	S300-PA-1-F01-RX	951451580
			Timing and sensitivity trimmers, D/L dip-switch	S300-PA-1-F06-RX	951451590
Through beam emitter (IR LED 880 nm)	12...30 Vdc	-	-	S300-PA-2-G00-EX	951451570
	24...240 Vac / 24...60 Vdc	-	-	S300-PA-1-G00-EX	951451560
Background suppression (IR LED 880 nm)	12...30 Vdc	NPN/PNP	7-turns distance adjustment trimmer and /L dip-switch	S300-PA-2-M01-OC	951451460
			Timing and 7-turns distance adj. trimmers, D/L dip-switch	S300-PA-2-M06-OC	951451470
	24...240 Vac / 24...60 Vdc	Relay	7-turns distance adjustment trimmer and D/L dip-switch	S300-PA-1-M01-RX	951451440
			Timing and 7-turns distance adj. trimmers, D/L dip-switch	S300-PA-1-M06-RX	951451450

# MAXI SENSORS

## ACCESSORIES

ST-511



MODEL	DESCRIPTION	ORDER No.
ST-511	mounting bracket	95ACC2810



## S300 PR

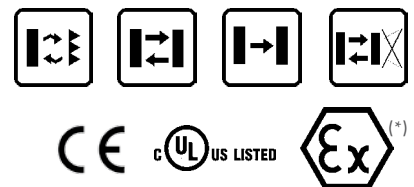
*Heavy duty sensor for outdoor applications and harsh environments*

- Industrial plastic housing with IP67 mechanical protection
- Defogging system function
- Double independent timing functions with double time scale from 0-2s or 0-10s, One-Delay, Off Delay, ONE SHOT



### APPLICATIONS

- Packaging end of line, palletizers
- Outdoor or indoor gates control
- Automotive plants
- Automated warehousing



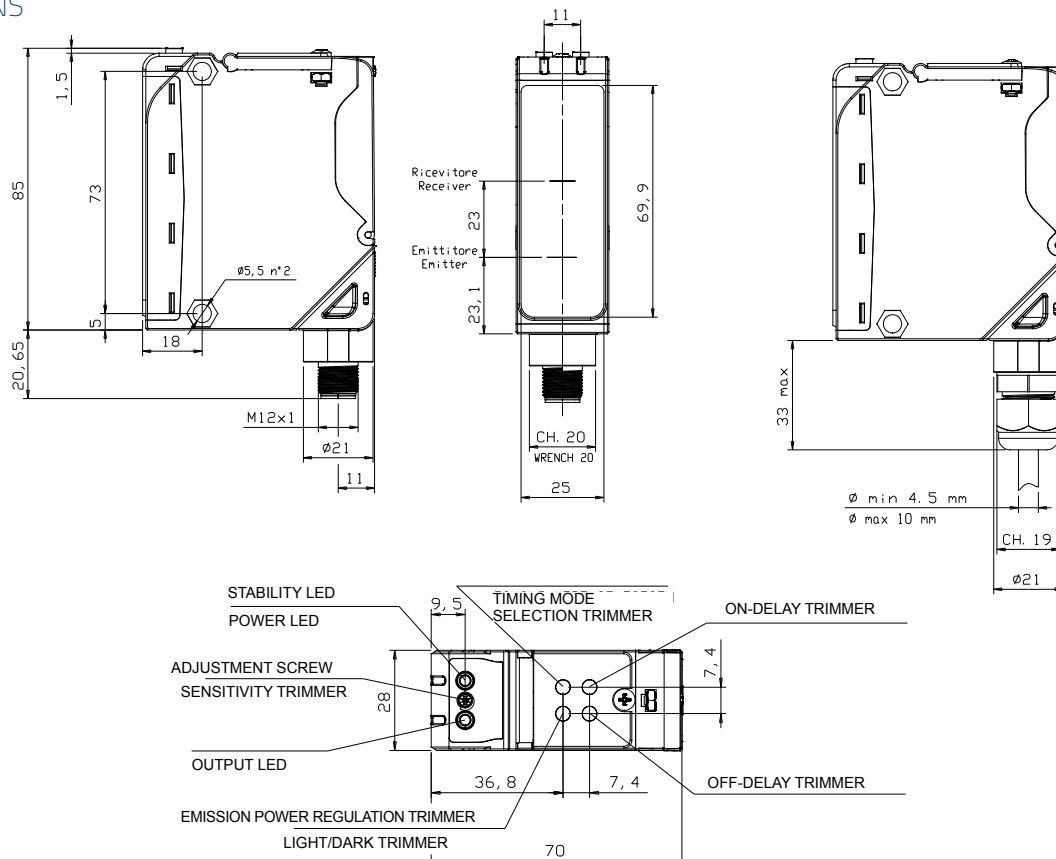
(\*)DC models:  
ATEX II 3DG

S300 PA		
Through beam		0...60 m
Polarized retroreflective		0,1...22 m
Diffuse proximity		0,05...5 m
Background suppression		0,4...2,5 m
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	24...240 Vac / 24...60 Vdc
Output	PNP	
	NPN	
	NPN/PNP	▪
	relay	▪
	other	
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		25x100x70
Housing material		PBT
Mechanical protection		IP67

### TECHNICAL DATA

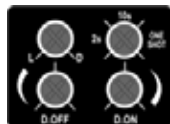
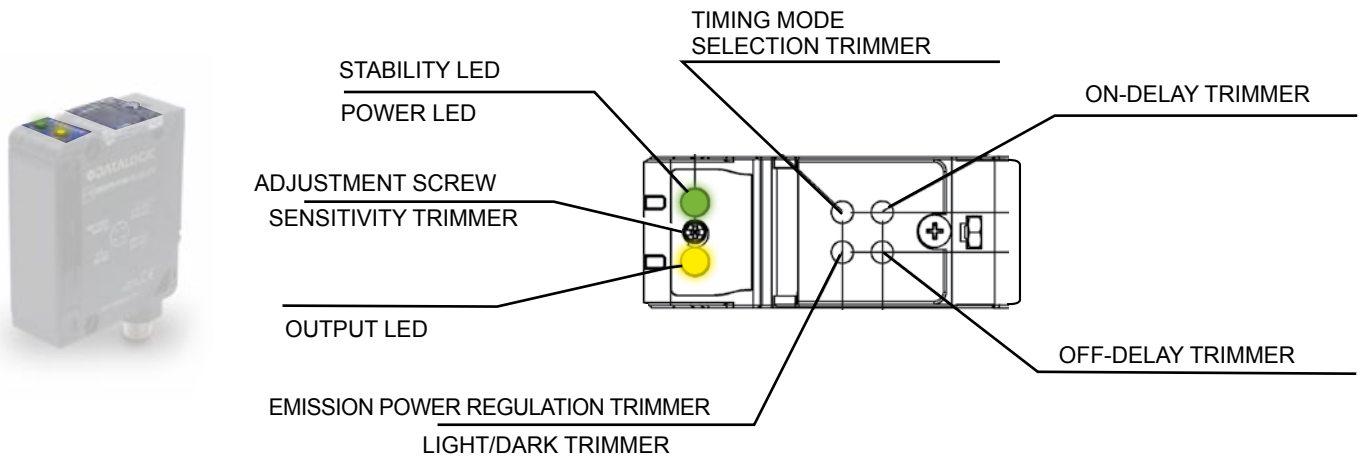
Power supply	10 ... 30 Vdc (mod. S300...2/5)
Ripple	24...240 Vac/24...60 Vdc (mod. S300...1) 10% max.
Consumption (output current excluded)	30 mA max. (mod. S300...2/5-B/C) 35 mA max. (mod. S300...2/5-M) 25 mA max. (mod. S300...2/5-F) 20 mA max. (mod. S300...2/5-G) 3 VA max. (mod. S300...1)
Light emission	red LED 660 nm (mod. S300...B) IR LED 880 nm (mod. S300...C/G/M) sensitivity trimmer, DARK/LIGHT trimmer (mod. S300...F/C/B)
Setting	15 turns adjustment screw/DARK/LIGHT trimmer (mod. S300...M) emission power regulation trimmer (mod. S300...G) versions with timing functions: time base selection and one shot trimmer/ON DELAY trimmer/OFF DELAY trimmer (mod. S300...x06) yellow OUTPUT LED (excl. mod. S300...G)
Indicators	green STABILITY LED, POWER LED (mod. S300...G)
Output	PNP or NPN open collector (mod. S300...2/5); Electromechanical SPDT 250 Vac/30 Vdc (mod. S300...1)
Output current	100 mA (mod. S300...2/5)
Saturation voltage	3 A max. (mod. S300...1) 2,4 V max.
Response time	1 ms (mod. S300...2/5-B/C/F/G) 2 ms (mod. S300...2/5-M) 20 ms (mod. S300...1)
Switching frequency	500 Hz (mod. S300...2/5-B/C/F/G) 250 Hz (mod. S300...2/5-M) 25 Hz (mod. S300...1)
Connection	terminal block, M12 4-pole connector (only DC mod.)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 M $\Omega$ , 500 Vdc between electronics and housing
Electrical protection	class 2 (mod. S300...2/5)
Mechanical protection	IP67 (IEC/EN60529)/cable gland EN50262
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	PBT 30% glass fiber-reinforced
Lens material	frontal window and lens in PC
Operating temperature	-40 ... 55 °C
Storage temperature	-40 ... 70 °C
Weight	140 g (mod. S300...2/5), 150 g (mod. S300...1)

### DIMENSIONS



# MAXI SENSORS

## INDICATORS AND SETTINGS



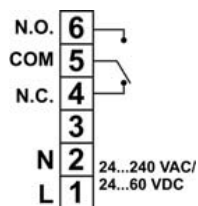
Vers. with timing functions



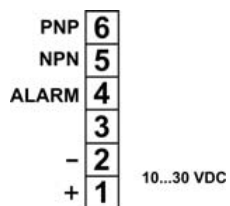
Vers. without timing functions

## CONNECTIONS

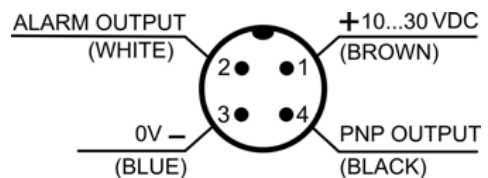
### AC MODELS



### DC MODELS

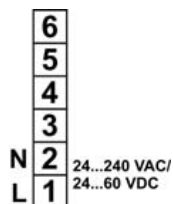


### M12 CONNECTOR (only DC models)

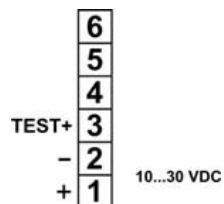


Through beam emitter

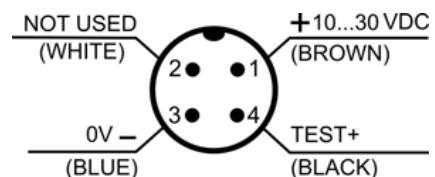
### AC MODELS



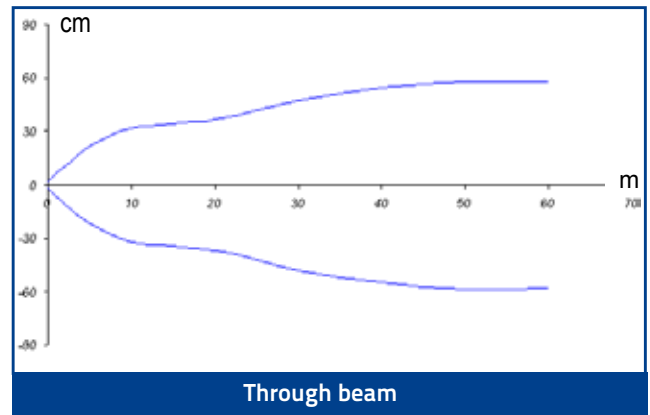
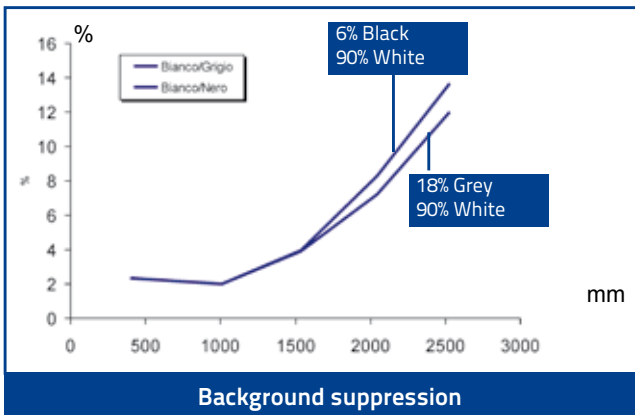
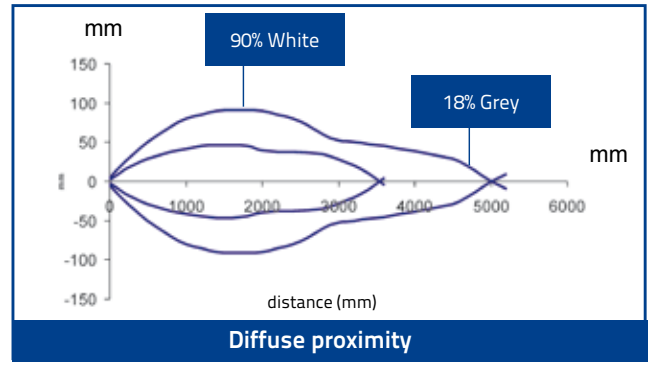
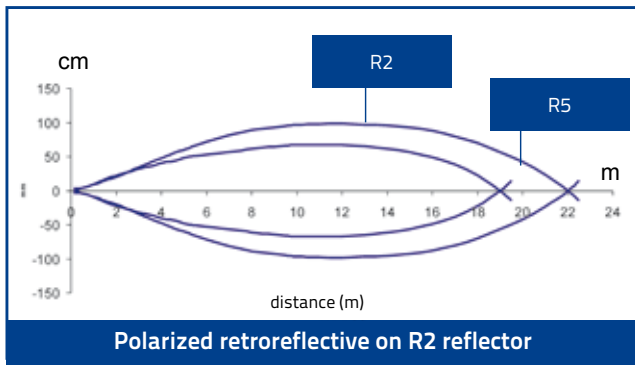
### DC MODELS



### M12 CONNECTOR (only DC models)



## DETECTION DIAGRAMS



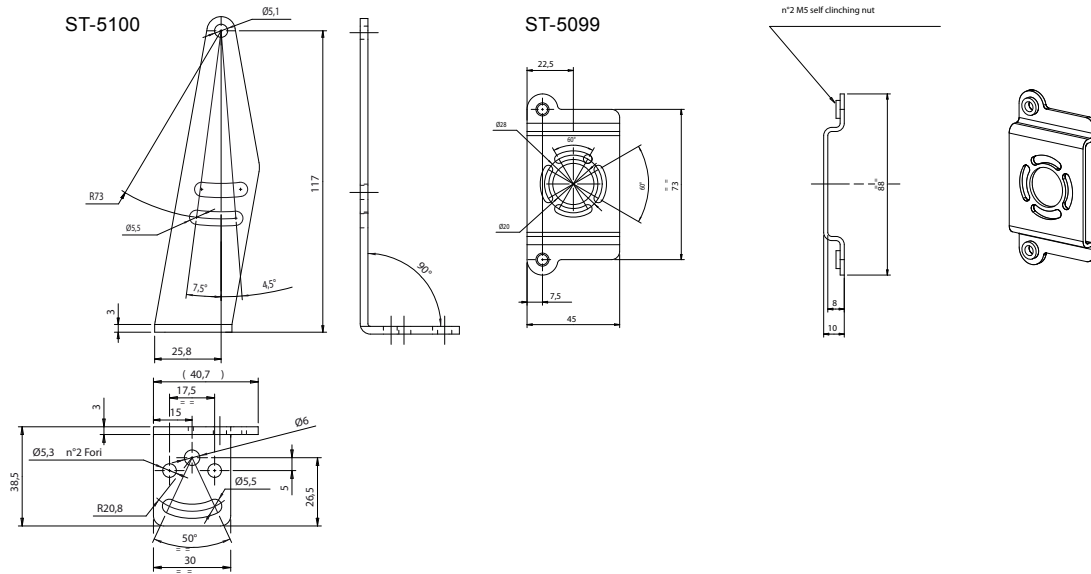
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OUTPUT	CONNECTION	SETTING	MODEL	ORDER No.	
Polarized retroreflective	NPN/PNP	Vdc - Terminal block	Sensitivity and D/L trimmers	S300-PR-2-B01-OC	951451000	
			Timing, sensitivity and D/L trimmers	S300-PR-2-B06-OC	951451010	
		Vdc - M12 Connector	Sensitivity and D/L trimmers	S300-PR-5-B01-OC	951451020	
			Timing, sensitivity and D/L trimmers	S300-PR-5-B06-OC	951451030	
	Relay	Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-B01-RX	951451040	
			Timing, sensitivity and D/L trimmers	S300-PR-1-B06-RX	951451050	
Diffused proximity	NPN/PNP	Vdc - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-B06-RX-M	951451060	
			Timing, sensitivity and D/L trimmers; defogging function	S300-PR-1-B06-RX-M	951451060	
		Vdc - M12 Connector	Sensitivity and D/L trimmers	S300-PR-2-C01-OC	951451070	
			Timing, sensitivity and D/L trimmers	S300-PR-2-C06-OC	951451080	
		Relay	Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-5-C01-OC	951451090
				Timing, sensitivity and D/L trimmers	S300-PR-5-C06-OC	951451100
	Relay	Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-C01-RX	951451110	
			Timing, sensitivity and D/L trimmers	S300-PR-1-C06-RX	951451120	
		Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-C06-RX-M	951451130	
			Timing, sensitivity and D/L trimmers; defogging function	S300-PR-1-C06-RX-M	951451130	
Through beam receiver	NPN/PNP	Vdc - Terminal block	Sensitivity and D/L trimmers	S300-PR-2-F01-OC	951451210	
			Timing, sensitivity and D/L trimmers	S300-PR-2-F06-OC	951451220	
		Vdc - M12 Connector	Sensitivity and D/L trimmers	S300-PR-5-F01-OC	951451230	
			Timing, sensitivity and D/L trimmers	S300-PR-5-F06-OC	951451240	
	Relay	Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-F01-RX	951451250	
			Timing, sensitivity and D/L trimmers	S300-PR-1-F06-RX	951451260	
		Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-F06-RX-M	951451270	
			Timing, sensitivity and D/L trimmers; defogging function	S300-PR-1-F06-RX-M	951451270	
Through beam emitter		Vdc - Terminal block	Emission power regulation trimmer	S300-PR-2-G00-EX	951451280	
		Vdc - M12 Connector		S300-PR-5-G00-EX	951451290	
		Vac - Terminal block		S300-PR-1-G00-EX	951451300	
		Vac - Terminal block		S300-PR-1-G00-EX-M	951451310	
Background suppression	NPN/PNP	Vdc - Terminal block	Sensitivity and D/L trimmers	S300-PR-2-M01-OC	951451140	
			Timing, sensitivity and D/L trimmers	S300-PR-2-M06-OC	951451150	
		Vdc - M12 Connector	Sensitivity and D/L trimmers	S300-PR-5-M01-OC	951451160	
			Timing, sensitivity and D/L trimmers	S300-PR-5-M06-OC	951451170	
	Relay	Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-M01-RX	951451180	
			Timing, sensitivity and D/L trimmers	S300-PR-1-M06-RX	951451190	
		Vac - Terminal block	Sensitivity and D/L trimmers	S300-PR-1-M06-RX-M	951451200	
			Timing, sensitivity and D/L trimmers; defogging function	S300-PR-1-M06-RX-M	951451200	



# MAXI SENSORS

## ACCESSORIES



MODEL	DESCRIPTION	ORDER No.
ST-5099	mounting BRACKET	95ACC2830
ST-5100	mounting BRACKET	95ACC2840

## CABLES

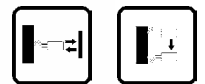
TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
Radial M12 Connector	4-pole, shielded, black, P.V.C.	25 m	CV-A1-22-B-25	95ACC2090
		3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003



## S7

*Fiber optic amplifiers in a DIN rail compatible format for small object detection in limited spaces*

- High-resolution models with integrated display
- 12 bit resolution and 50  $\mu$ s response time
- Trimmer or teach-in models
- Wide range of accessory fiber optics
- 4 wire NO/NC output or Remote teach input



### APPLICATIONS

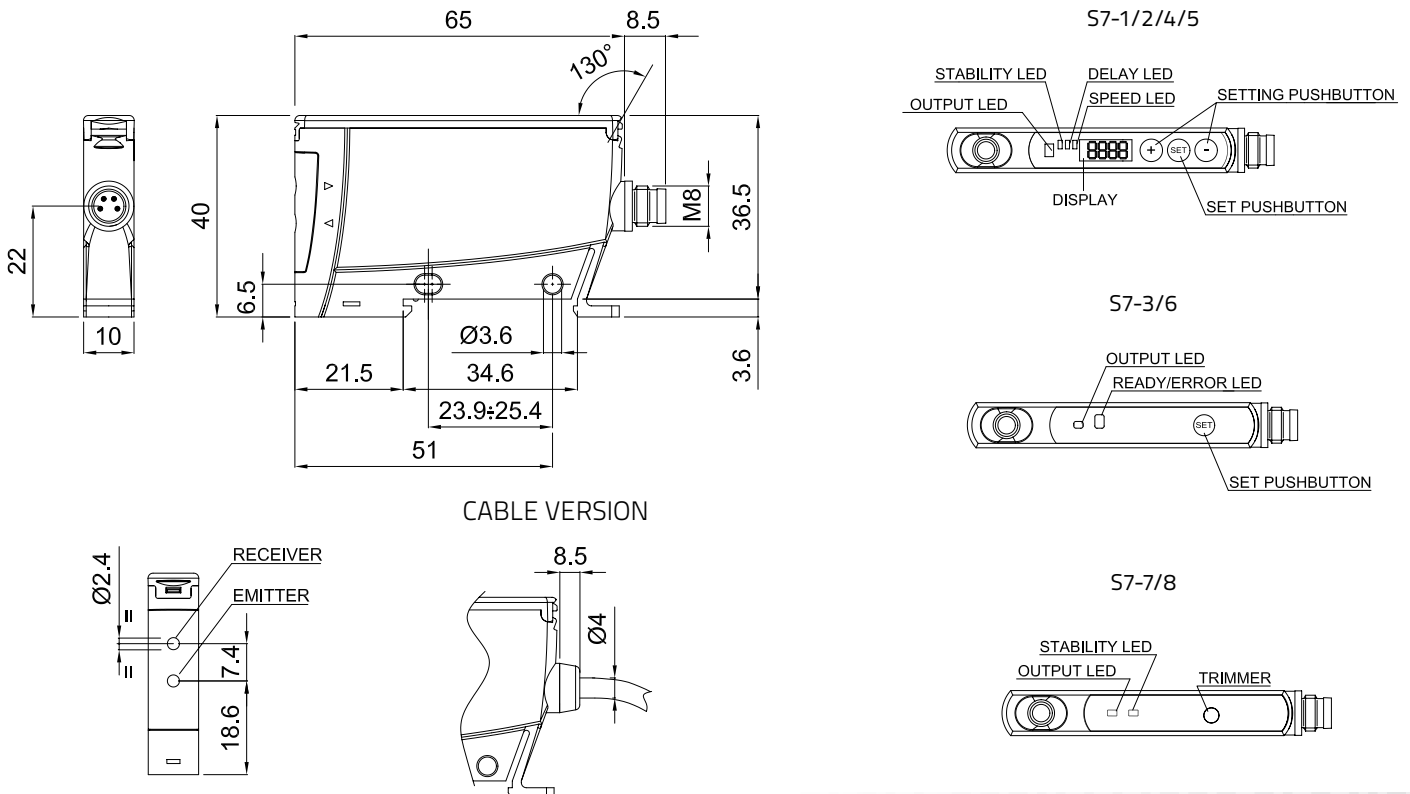
- Processing and Packaging machinery
- Electronics assembling
- Pharmaceutical industry

S7		
Through beam with fiber optic		0...300 mm
		0...150 mm
		0...75 mm
Diffuse proximity with fiber optic		0...100 mm
		0...50 mm
		0...25 mm
Power supply	Vdc	12...24 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		10x65x40
Housing material		ABS
Mechanical protection		IP65, IP60 (trimmer vers.)

TECHNICAL DATA

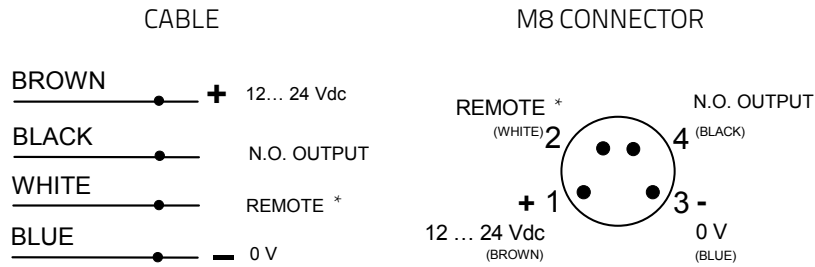
Power supply	12 ... 24 Vdc ± 10% (reverse polarity protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	50 mA max. (mod. S7-1/2/4/5) 40 mA (mod. S7-3/6) 30 mA max. (mod. S7-7/8)
Light emission	red 670 nm (mod. S7-2/3/5/6/7/8) white 400-700 nm (mod. S7-1/4)
Setting	SET pushbutton, + pushbutton, - pushbutton (mod. S7-1/2/4/5) 1 SET pushbutton (mod. S7-3/6) 12 multiturn trimmer (mod. S7-7/8)
Indicators	yellow OUTPUT LED green STABILITY LED, DELAY LED and SPEED LED (mod. S7-1/2/4/5) green/red READY/ERROR LED (mod. S7-3/6/7/8)
Output	PNP or NPN
Output current	100 mA max.
Saturation voltage	1,2 V max. (mod. S7-3/6/7/8) 2 V max. (mod. S7-1/2/4/5)
Response time	500 µs max. (at low speed for mod. S7-1/2/7/8) 100 µs max. (at fast speed for mod. S7-2/5) 50 µs max. (at fast speed for mod. S7-1/4)
Switching frequency	1 kHz (at low speed for mod. S7-1/2/7/8) 5 kHz (at fast speed for mod. S7-2/5) 10 kHz (at fast speed for mod. S7-1/4)
Connection	2 m Ø 4 mm cable (S7-1/2/3/7), M8 4-pole connector (S7-4/5/6/8)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP65 IP60 (mod. S7-7/8)
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS
Operating temperature	-10 ... 55 °C
Storage temperature	-25 ... 70 °C
Weight	115 g max. cable vers., 30 g max. conn. vers.

DIMENSIONS



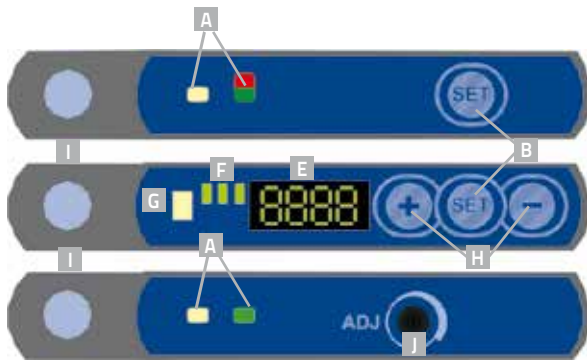
# FIBER OPTIC SENSORS

## CONNECTIONS



\* N.C. OUTPUT on S7-7/8 models

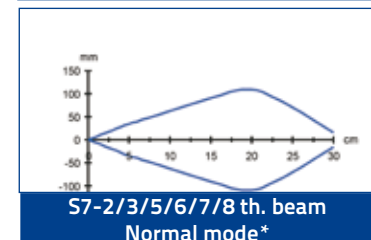
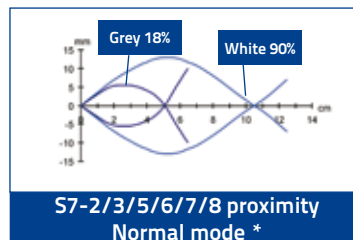
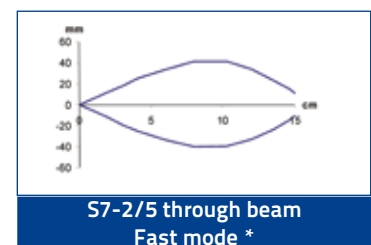
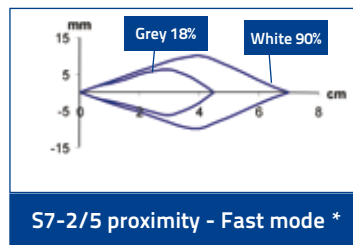
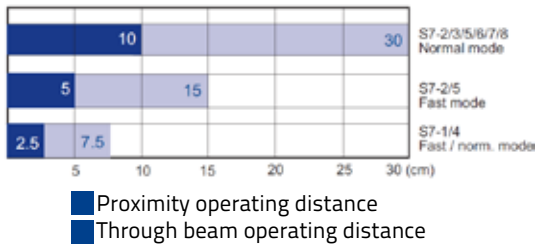
## INDICATOR AND SETTINGS



- 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 Fiber 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 DIAGRAMS



High efficiency Fiber-optics or accessory lenses can be used to obtain larger operating distances.

**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

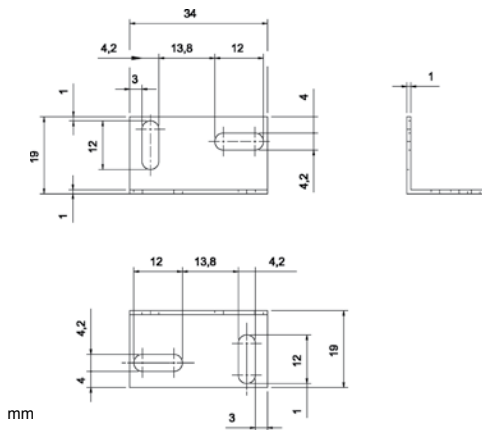
## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	SETTING	CONNECTION	OUTPUT	MODEL	ORDER No.
OPTIC FIBER (white LED)	display, push-button	2m Cable	PNP	S7-1-E-P	950551090
			NPN	S7-1-E-N	950551080
		M8 Connector	PNP	S7-4-E-P	950551110
			NPN	S7-4-E-N	950551100
OPTIC FIBER (red LED)	display, push-button	2m Cable	PNP	S7-2-E-P	950551010
			NPN	S7-2-E-N	950551000
	PNP		S7-3-E-P	950551050	
	NPN		S7-3-E-N	950551040	
	push-buttons	M8 Connector	PNP	S7-5-E-P	950551030
			NPN	S7-5-E-N	950551020
	display, push-buttons	M8 Connector	PNP	S7-6-E-P	950551070
			NPN	S7-6-E-N	950551060
	push-buttons	M8 Connector	PNP	S7-7-E-P	950551120
			NPN	S7-7-E-N	950551130
		2m Cable	PNP	S7-8-E-P	950551140
			NPN	S7-8-E-N	950551150

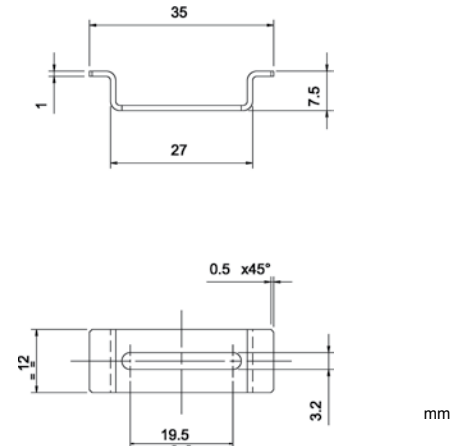
Datalogic Automation offers a wide range of fiber optic cables available in two different lines: OF series for standard applications and OFA series for specialistic applications, such as 90° optics as well as fixed focus optics. These accessories allow to carry out the diffuse proximity and through beam detection of small object in difficult point of the machine. Refer to the next page for the complete list.

## ACCESSORIES

ST-505



CRD-5000



MODEL	DESCRIPTION	ORDER No.
ST -505	L-shaped mounting bracket	95ACC 2800
CRD -5000	DIN rail mounting bracket	95ACC 2790

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
Radial M8 Connector	4-pole, grey, P.V.C.	5 m	CS-B1-02-R-05	95A251640
		3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
	10 m	CS-B2-02-G-10	95A251530	
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650

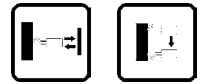
## S70

*Advanced fiber optic amplifiers for high speed and low contrast applications*

- DIN rail mountable models with dual digital displays
- High speed models: 200  $\mu$ s...5 ms
- Super high speed models: 10  $\mu$ s...1ms
- Teach-in setting via +/SET/- push-button/switch, remote input or IO-Link
- Standard 2 m cable or M8 4-pole connection

### APPLICATIONS

- Processing and Packaging machinery
- Electronics assembling
- Pharmaceutical industry



### S70

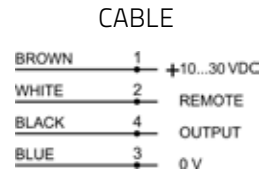
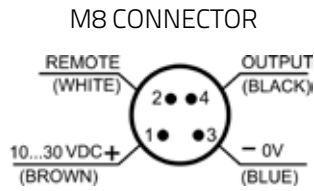
Response time		Super high speed: 10 $\mu$ s (S70...E2) High speed: 200 $\mu$ s (S70...E1), 15 $\mu$ s (S70...E2) Fast: 50 $\mu$ s (S70...E2) Standard: 500 $\mu$ s (S70...E1), 250 $\mu$ s (S70...E2) Medium range: 500 $\mu$ s (S70...E2) Long range: 2 ms (S70...E1), 1 ms (S70...E2) Extra long range: 5 ms (S70...E1)
Repeatability		Super high speed: 5 $\mu$ s (S70...E2) High speed: 66 $\mu$ s (S70...E1), 5 $\mu$ s (S70...E2) Fast: 12 $\mu$ s (S70...E2) Standard: 100 $\mu$ s (S70...E1), 50 $\mu$ s (S70...E2) Medium range: 80 $\mu$ s (S70...E2) Long range: 100 $\mu$ s (S70...E1), 165 $\mu$ s (S70...E2) Extra long range: 100 $\mu$ s (S70...E1)
Power supply	Vdc	10...30 V, 18...30 V (IO-Link mod.)
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	IO-Link
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		10x79x31.5
Housing material		ABS and polycarbonate
Mechanical protection		IP50, NEMA 1





# FIBER OPTIC SENSORS

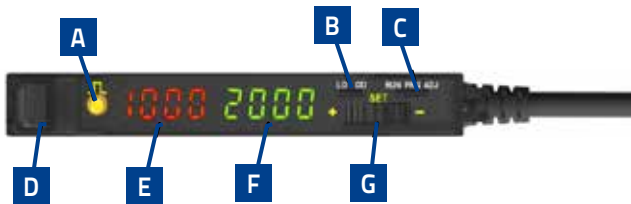
## CONNECTIONS



## INDICATOR AND SETTINGS

The **RUN/PRG/ADJ Mode Switch** puts the sensor in RUN, PRG (Program), or ADJ (Adjust) mode. RUN mode allows the sensor to operate normally and prevents unintentional programming changes via the **+ /SET/ -** button. PRG mode allows the sensor to be programmed through the display driven programming menu. ADJ mode allows the user to perform TEACH and SET methods and Manual Adjust. The **LO/DO Switch** is used to select Light Operate or Dark Operate mode.

### Top Panel Interface



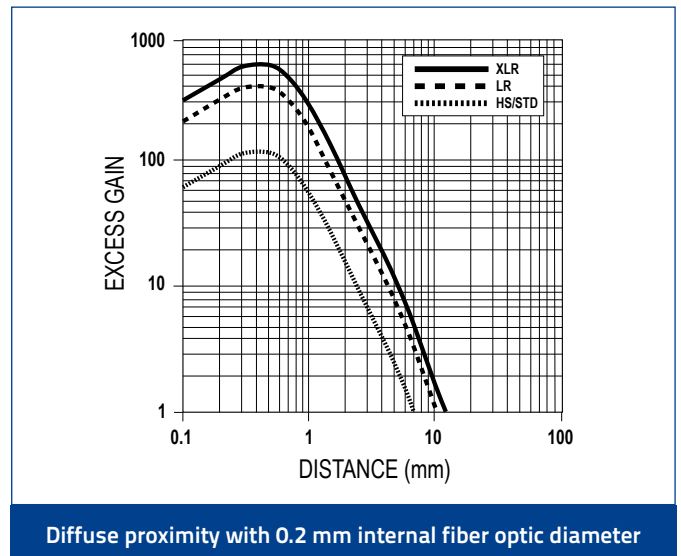
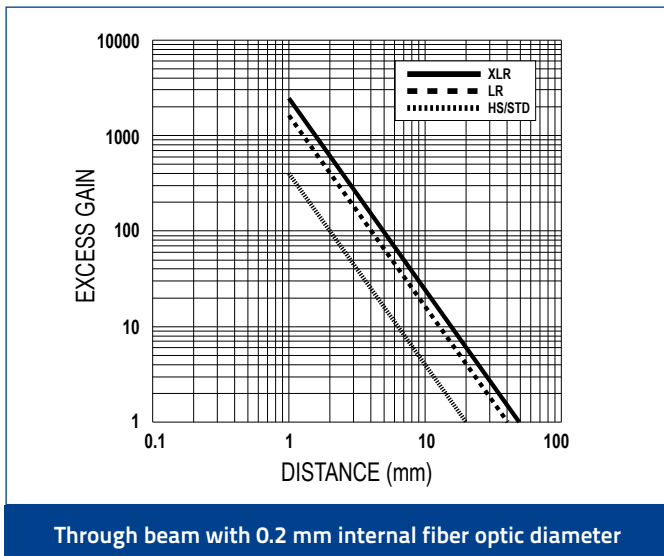
- A Output LED
- B LO/DO Switch
- C RUN/PRG/ADJ
- D Lever Action Fiber Clamp
- E Red Signal Level
- F Green Threshold
- G +/SET/- Rocker Button

As an alternative the sensor can be programmed remotely and the remote input may be used to perform TEACH and SET methods (not available on IO-Link models).

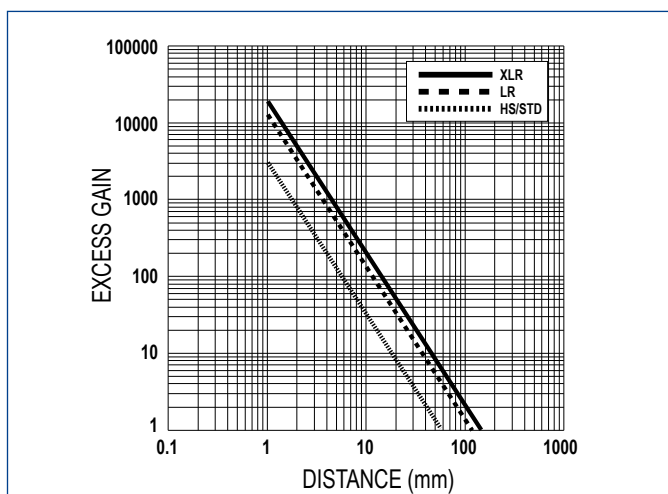
## DETECTION DIAGRAMS

	S70-E1			
	HIGH SPEED	STANDARD	LONG RANGE	EXTRA LONG RANGE
Response Time	200 $\mu$ s	500 $\mu$ s	2 ms	5 ms
Repeatability	66 $\mu$ s	100 $\mu$ s	100 $\mu$ s	100 $\mu$ s

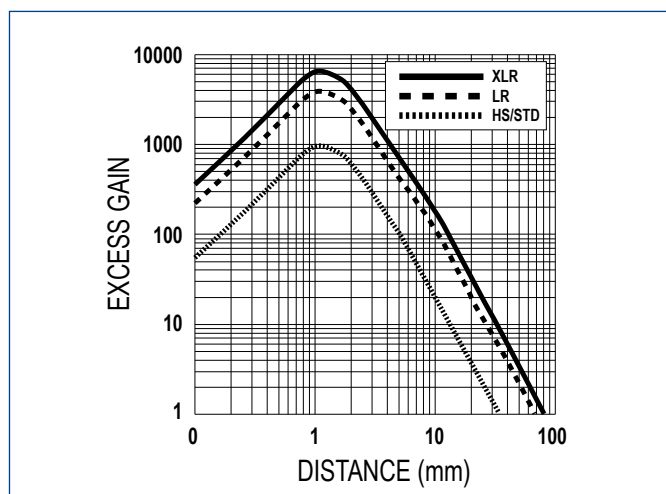
### Excess gain



### Excess gain

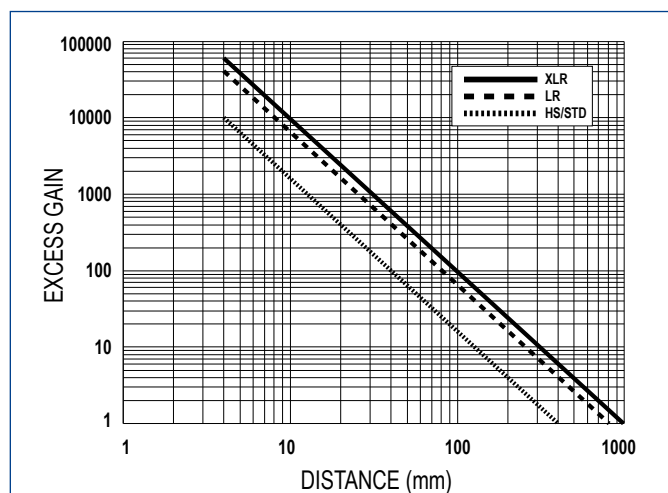


Through beam with 0.5 mm internal fiber optic diameter

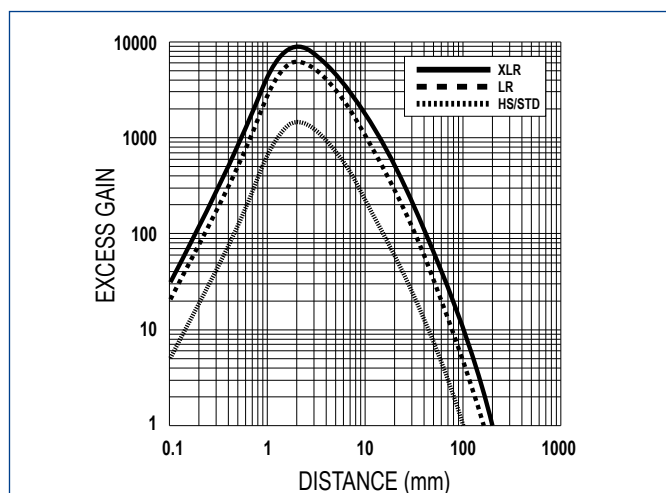


Diffuse proximity with 0.5 mm internal fiber optic diameter

### Excess gain

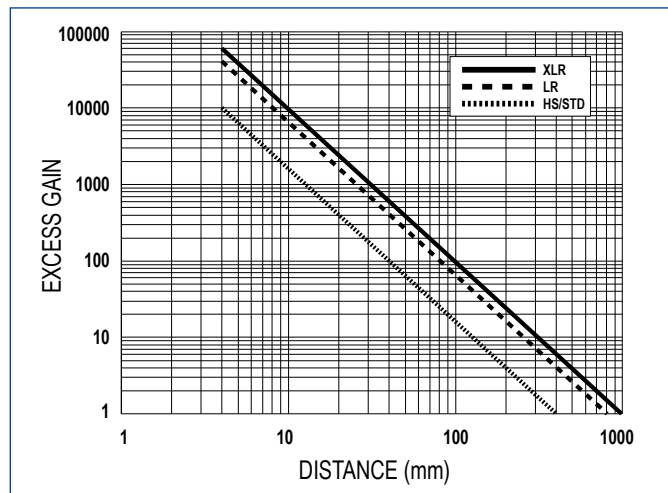


Through beam with 1 mm internal fiber optic diameter

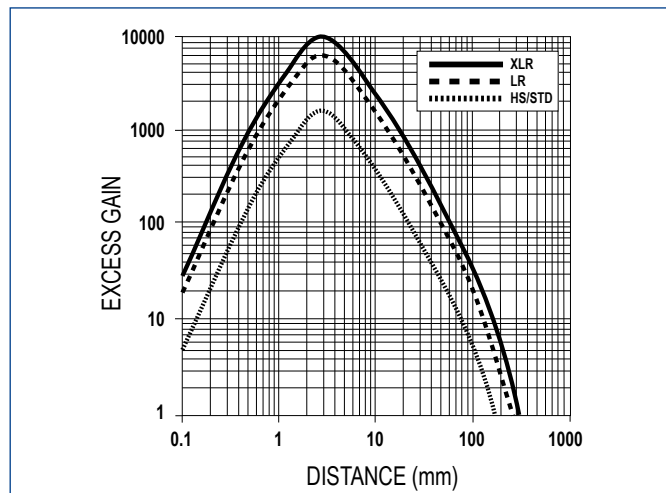


Diffuse proximity with 1 mm internal fiber optic diameter

### Excess gain



Through beam with 1.5 mm internal fiber optic diameter

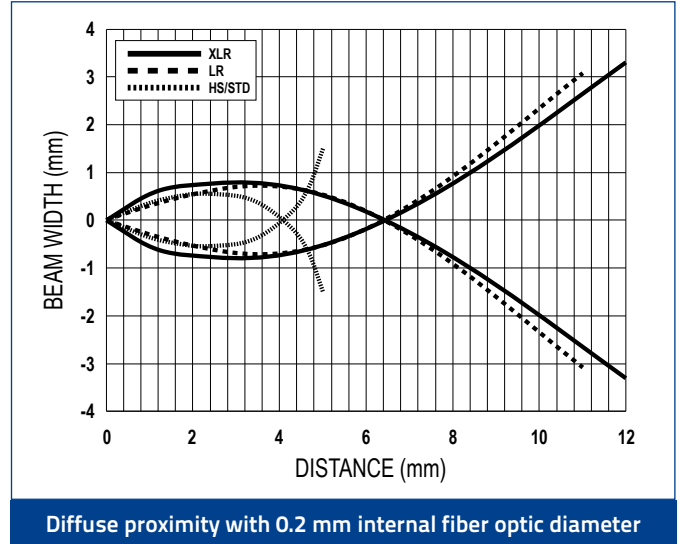
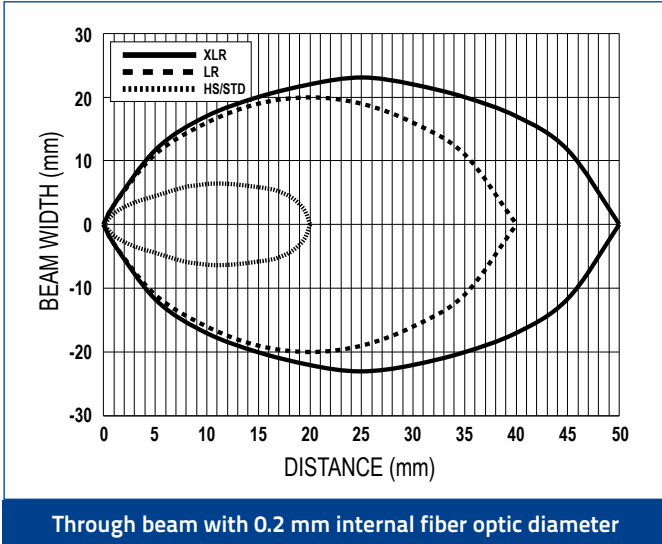


Diffuse proximity with 1.5 mm internal fiber optic diameter

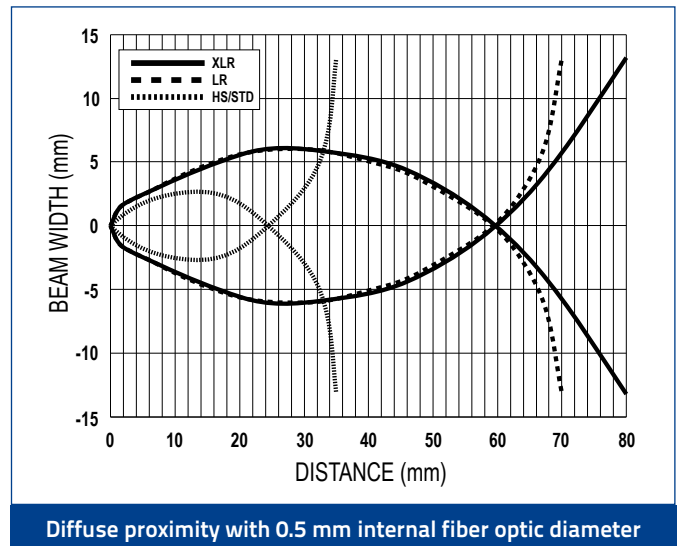
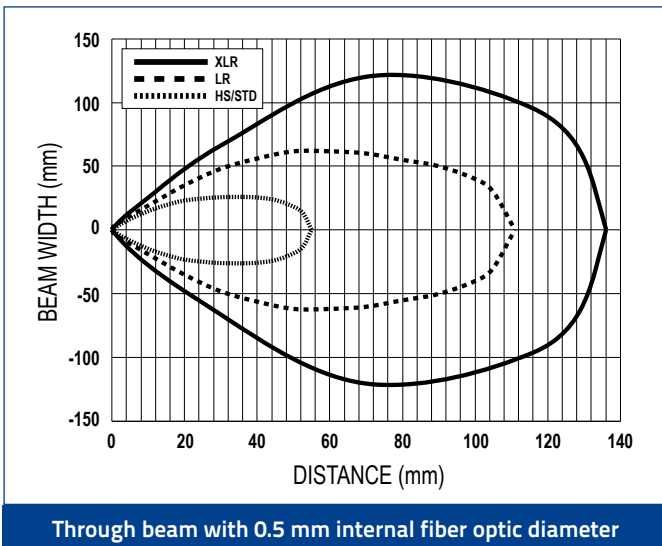
# FIBER OPTIC SENSORS

S70-E1				
	HIGH SPEED	STANDARD	LONG RANGE	EXTRA LONG RANGE
Response Time	200 $\mu$ s	500 $\mu$ s	2 ms	5 ms
Repeatability	66 $\mu$ s	100 $\mu$ s	100 $\mu$ s	100 $\mu$ s

## Detection area



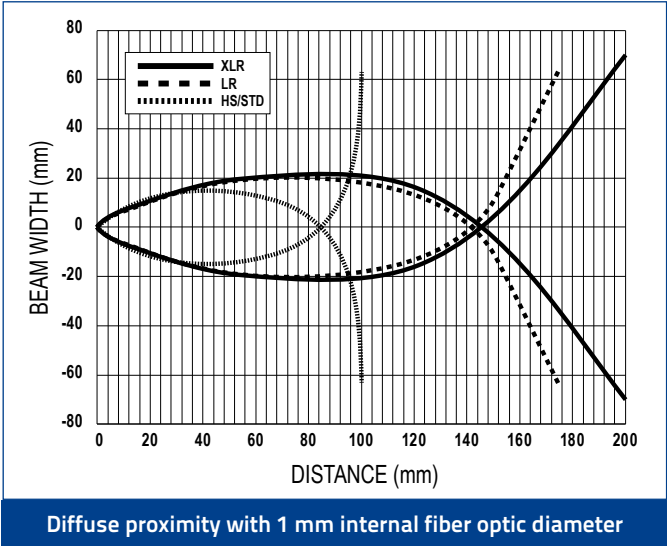
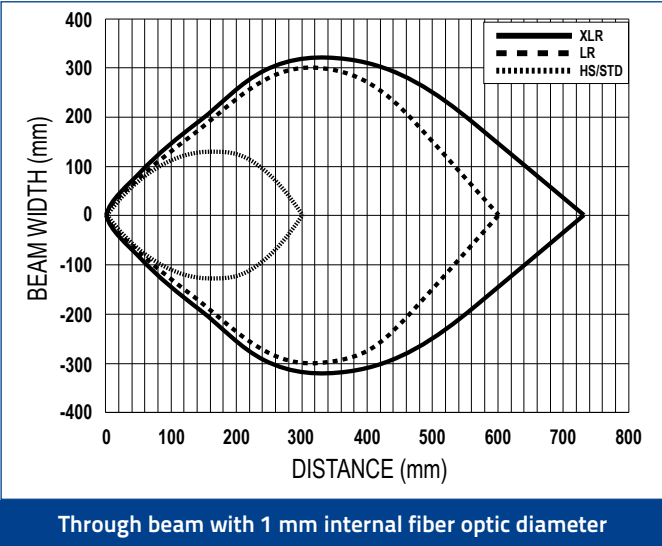
## Detection area



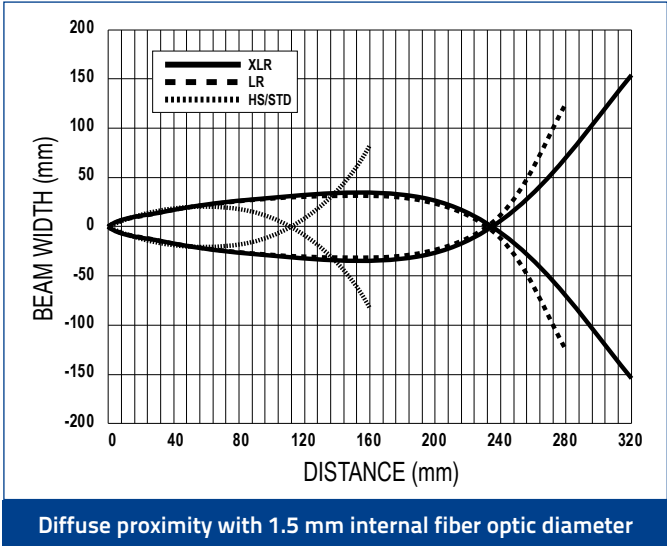
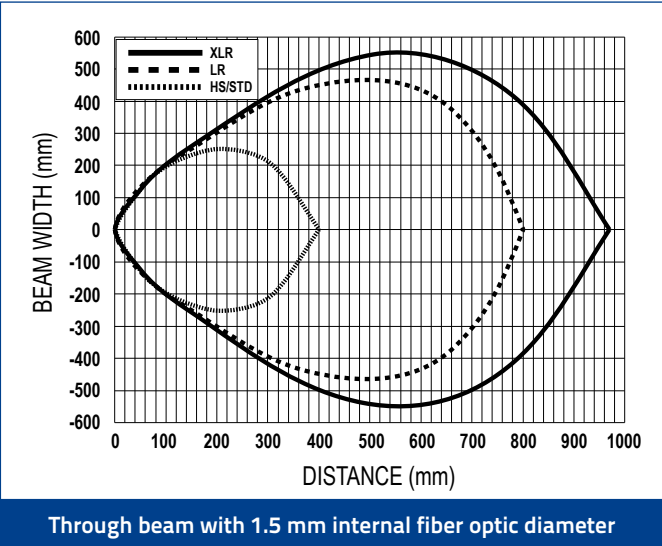
S70-E1

	HIGH SPEED	STANDARD	LONG RANGE	EXTRA LONG RANGE
Response Time	200 $\mu$ s	500 $\mu$ s	2 ms	5 ms
Repeatability	66 $\mu$ s	100 $\mu$ s	100 $\mu$ s	100 $\mu$ s

Detection area



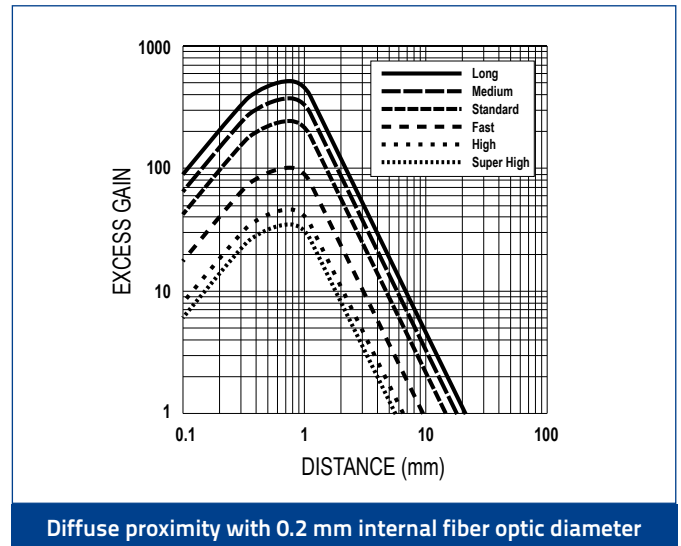
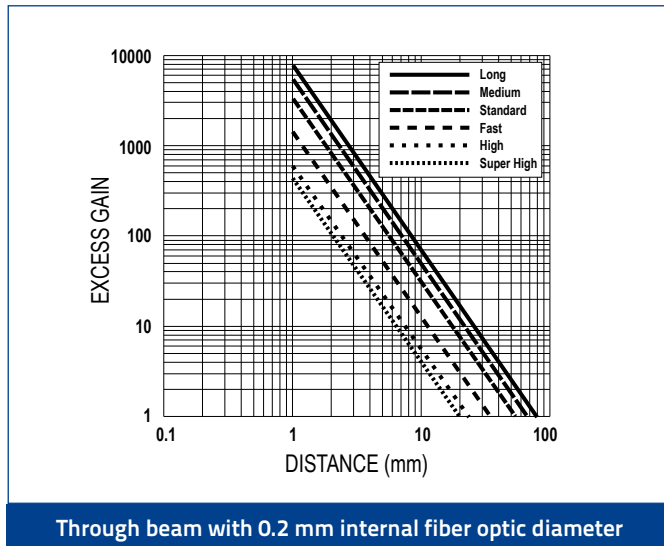
Detection area



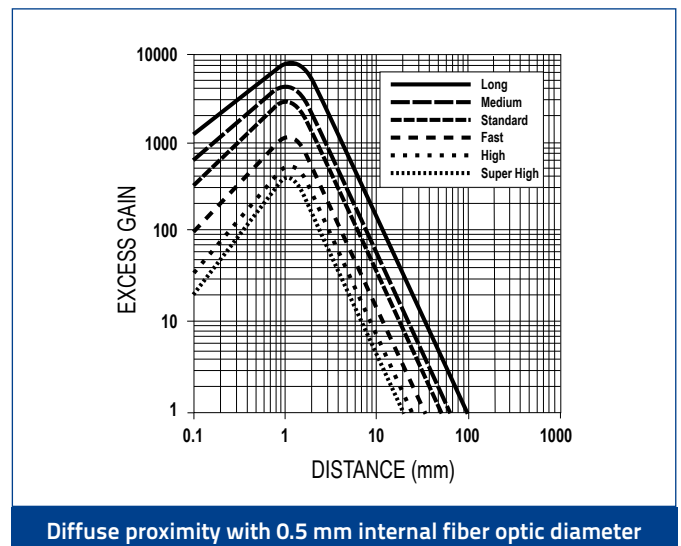
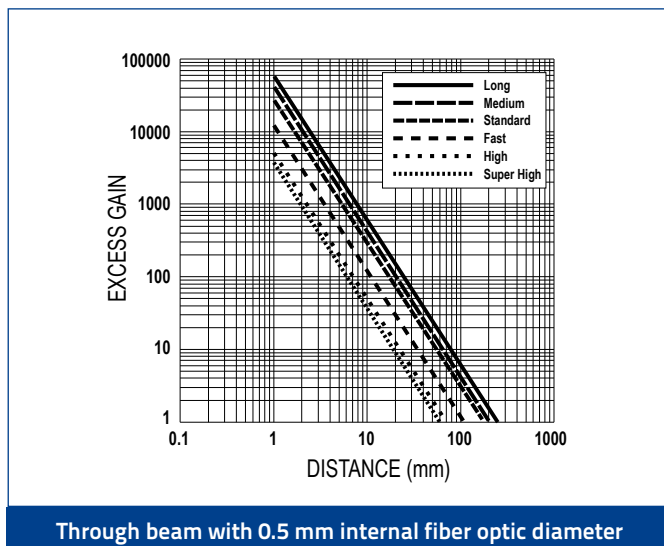
# FIBER OPTIC SENSORS

S70-E2						
	SUPER HIGH SPEED	HIGH SPEED	FAST	STANDARD	MEDIUM RANGE	LONG RANGE
Response Time	10 $\mu$ s	15 $\mu$ s	50 $\mu$ s	250 $\mu$ s	500 $\mu$ s	1 ms
Repeatability	5 $\mu$ s	5 $\mu$ s	12 $\mu$ s	50 $\mu$ s	80 $\mu$ s	165 $\mu$ s

## Excess gain



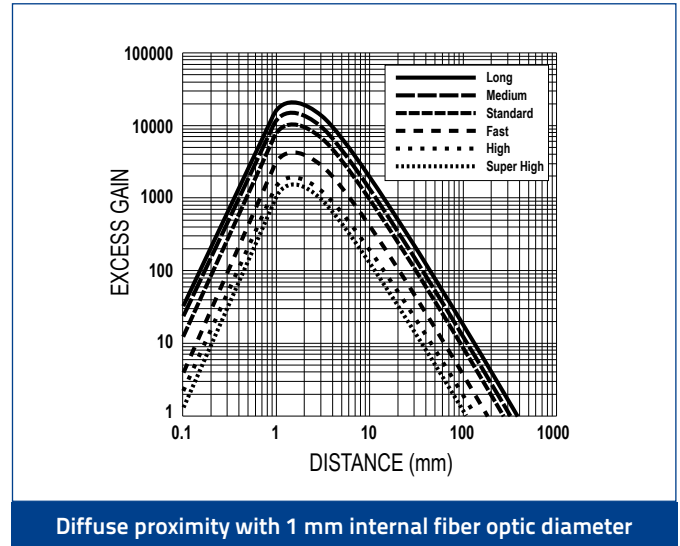
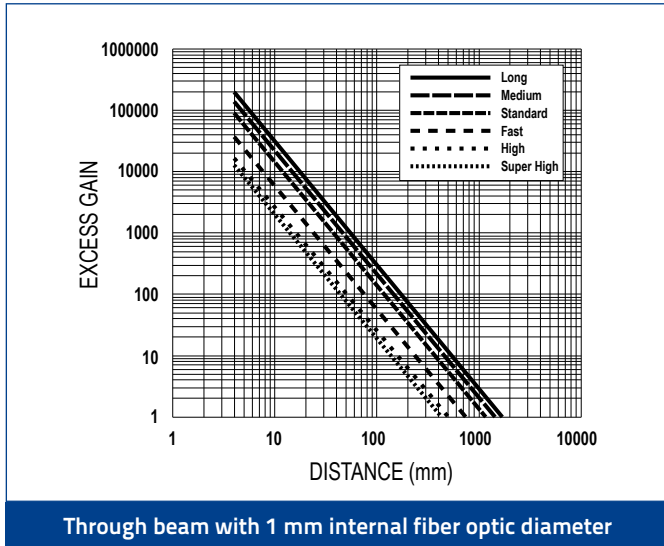
## Excess gain



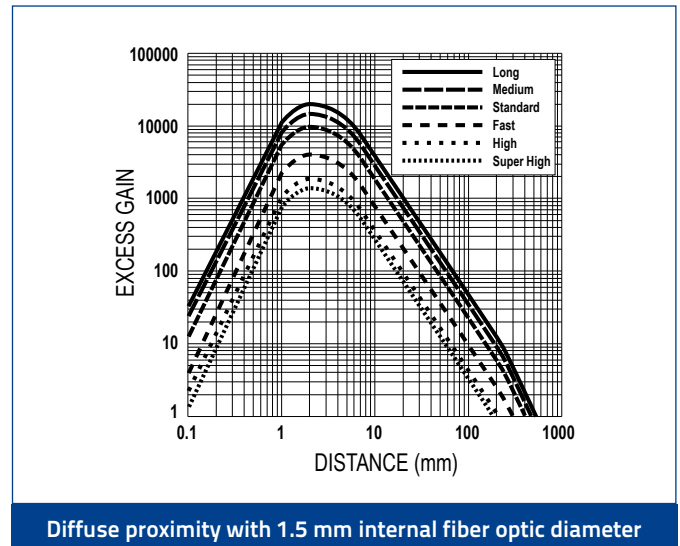
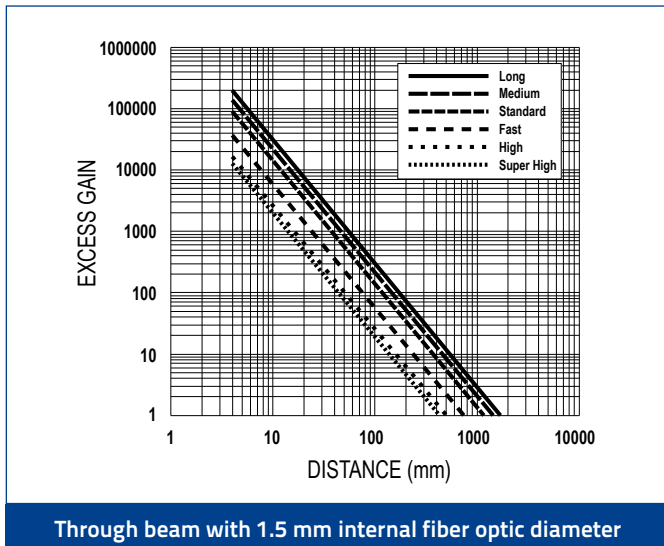
S70-E2

	SUPER HIGH SPEED	HIGH SPEED	FAST	STANDARD	MEDIUM RANGE	LONG RANGE
Response Time	10 $\mu$ s	15 $\mu$ s	50 $\mu$ s	250 $\mu$ s	500 $\mu$ s	1 ms
Repeatability	5 $\mu$ s	5 $\mu$ s	12 $\mu$ s	50 $\mu$ s	80 $\mu$ s	165 $\mu$ s

Excess gain



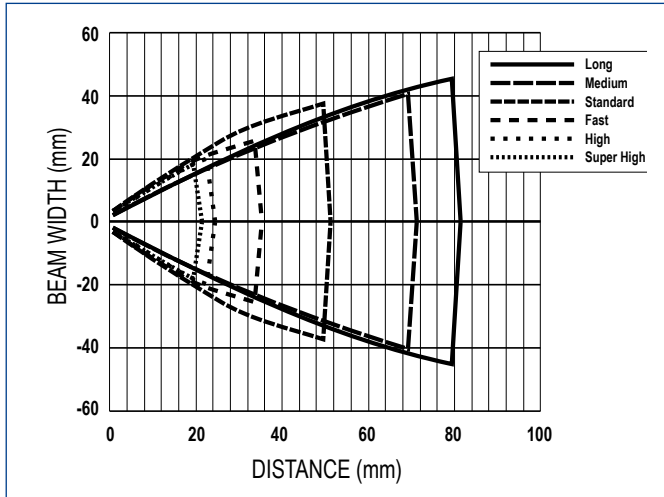
Excess gain



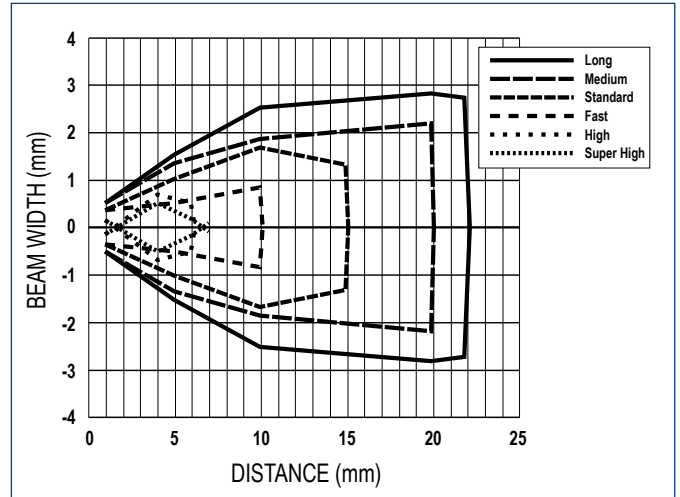
# FIBER OPTIC SENSORS

S70-E2						
	SUPER HIGH SPEED	HIGH SPEED	FAST	STANDARD	MEDIUM RANGE	LONG RANGE
Response Time	10 $\mu$ s	15 $\mu$ s	50 $\mu$ s	250 $\mu$ s	500 $\mu$ s	1 ms
Repeatability	5 $\mu$ s	5 $\mu$ s	12 $\mu$ s	50 $\mu$ s	80 $\mu$ s	165 $\mu$ s

## Detection area

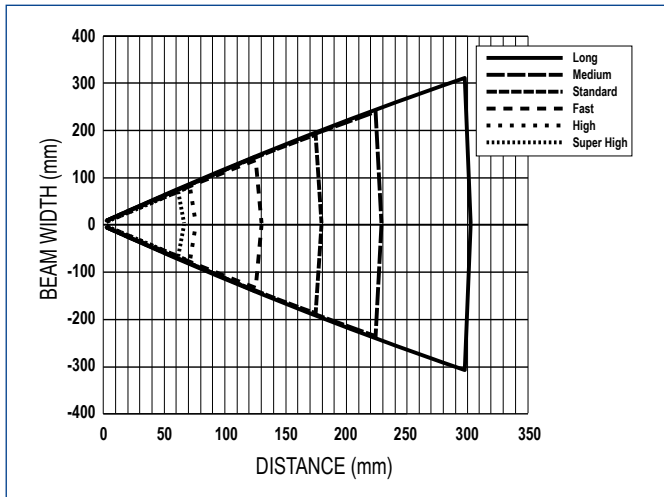


Through beam with 0.2 mm internal fiber optic diameter

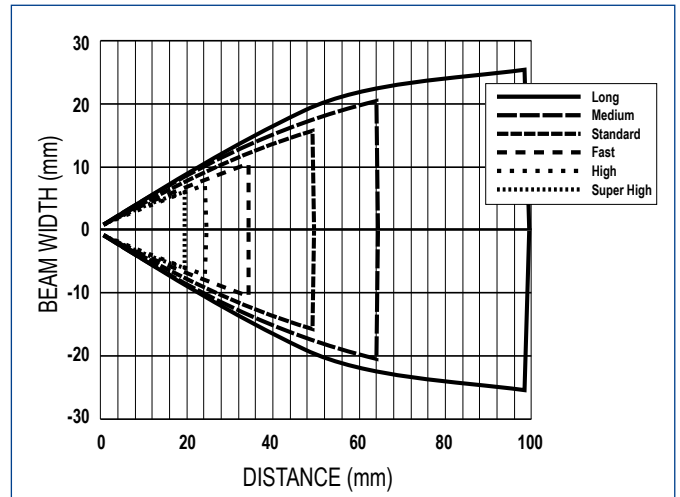


Diffuse proximity with 0.2 mm internal fiber optic diameter

## Detection area



Through beam with 0.5 mm internal fiber optic diameter

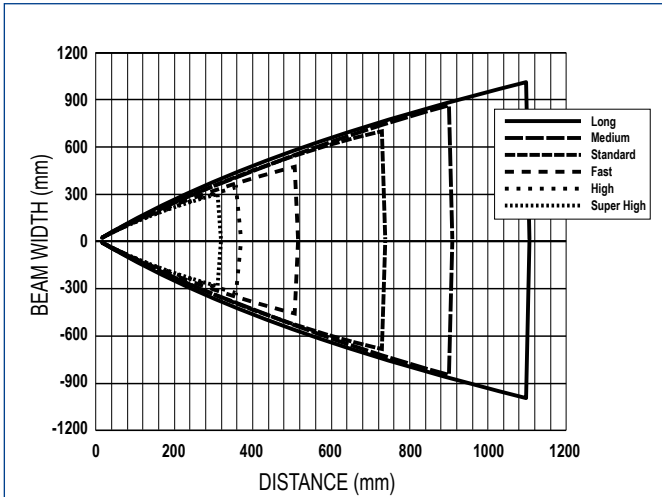


Diffuse proximity with 0.5 mm internal fiber optic diameter

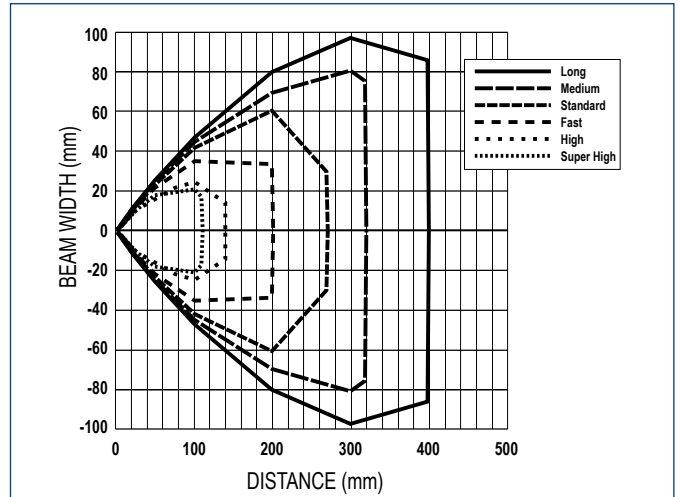
### S70-E2

	SUPER HIGH SPEED	HIGH SPEED	FAST	STANDARD	MEDIUM RANGE	LONG RANGE
Response Time	10 $\mu$ s	15 $\mu$ s	50 $\mu$ s	250 $\mu$ s	500 $\mu$ s	1 ms
Repeatability	5 $\mu$ s	5 $\mu$ s	12 $\mu$ s	50 $\mu$ s	80 $\mu$ s	165 $\mu$ s

#### Detection area

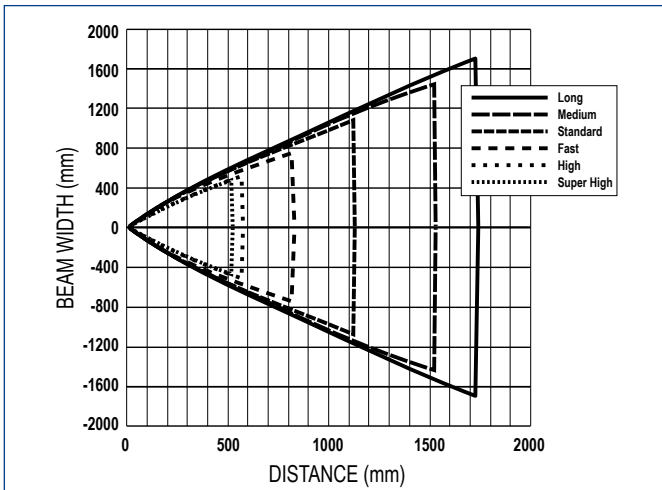


Through beam with 1 mm internal fiber optic diameter

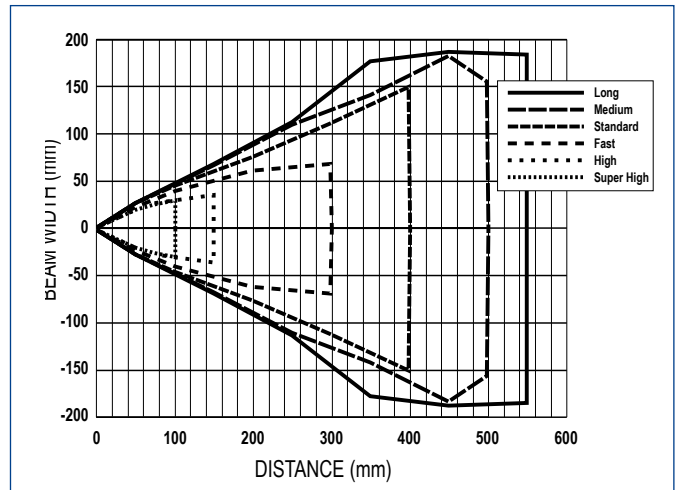


Diffuse proximity with 1 mm internal fiber optic diameter

#### Detection area



Through beam with 1.5 mm internal fiber optic diameter



Diffuse proximity with 1.5 mm internal fiber optic diameter



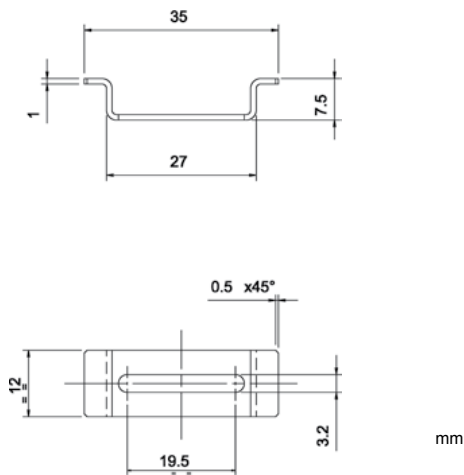
# FIBER OPTIC SENSORS

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	RESPONSE TIME	CONNECTION	OUTPUT	MODEL	ORDER No.
Optic fiber	200 $\mu$ s ... 5 ms	2 m Cable	NPN	S70-2-E1-N	950561000
			PNP	S70-2-E1-P	950561010
		M8 Connector	NPN	S70-5-E1-N	950561060
			PNP	S70-5-E1-P	950561020
	10 $\mu$ s ... 1 ms	M8 Connector	PNP, push-pull IO-Link	S70-5-E1-PZ	950561030
			NPN	S70-5-E2-N	950561040
		M8 Connector	PNP	S70-5-E2-P	950561050

## ACCESSORIES

CRD-5000



MODEL	DESCRIPTION	ORDER No.
CRD-5000	DIN rail mounting bracket	95ACC2790

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650



## OF/OFA series

*Complete range of optic fibers: universal or advanced models*

- Flexible models
- High temperature models (up to 125 °C)
- Fiber 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
- Focusing, collimating and deviating lenses



OF/OFA	
Through beam	Mechanical characteristics, length, diameter of the optic fiber, as well as the switching frequencies, light emitted and resolution of the optic fiber amplifier, affect the operating distances. Refer to the manuals to find the proper operating distance.
Diffuse proximity	
Fixed focus	
OF diameter	M3, M4, M6
OFA number of emitted beams	1, 16, 32
Cable lengths	1, 2 m
Operating temperature	-40...+60 °C (OF) -40...125 °C (OF-...-HT) -30...+70 °C (OFA)
Core material	PMMA plastic
Sheath material	PE plastic
Terminal material	Nickel-plated brass (OF), Stainless steel, Aluminium, ABS (OFA)
Mechanical protection	IP67

OF series					
OPTIC FUNCTION	FIBER TYPE	LENGTH	TERMINAL	MODEL	ORDER No.
Through beam	standard	1 m	M4x0.7 mm	OF-19-ST-10	576021901
	standard	2 m	M4x0.7 mm *	OF-23-ST-20	576022300
	thin (Ø 1 mm)	1 m	M2x0.4 mm	OF-25-TN-10	576022500
	standard	2 m	M4x0.7 mm	OF-43-ST-20	95A201350
	high-temperature	2 m	M4x0.7 mm	OF-43-HT-20	95A201280
	ultra-flexible	2 m	M4x0.7 mm	OF-43-UF-20	95A201290
	high-efficiency	2 m	M4x0.7 mm	OF-43-HP-20	95A201300
Proximity	standard	1 m	M6x1 mm	OF-18-ST-10	576021801
	standard	2 m	M6x1 mm *	OF-22-ST-20	576022200
	standard	2 m	M4x0.7 mm	OF-24-ST-20	576022400
	thin (Ø 1 mm)	1 m	M3x0.5 mm	OF-26-TN-10	576022600
	thin (Ø 1 mm)	1 m	M3x0.5 mm *	OF-28-TN-10	576022800
	standard	2 m	Ø 3x15 mm	OF-38-ST-20	95A201070
	standard	2 m	M6x0.75 mm	OF-42-ST-20	95A201340
	high-temperature	2 m	M6x0.75 mm	OF-42-HT-20	95A201250
	ultra-flexible	2 m	M6x0.75 mm	OF-42-UF-20	95A201260
	high-efficiency	2 m	M6x0.75 mm	OF-42-HP-20	95A201270
Coaxial proximity	standard	2 m	M6x1 mm	OF-36-ST-20	95A201000
	extra-flexible	2 m	M6x1 mm	OF-36-XF-20	95A201330
	standard	2 m	M4x0.7 mm	OF-44-ST-20	95A201310
	extra-flexible	2 m	M4x0.7 mm	OF-44-XF-20	95A201320

\* a bendable stainless steel extension 90mm long protrudes from the threaded optic head



OFA series					
OPTIC FUNCTION	FIBER TYPE	LENGTH	TERMINAL	MODEL	ORDER No.
Through beam	axial, 16 beam array	2 m	15x15 mm	OFA-1-AE-20	95A201170
	radial, 16 beam array	2 m	15x15 mm	OFA-1-AS-20	95A201180
Proximity	axial, 32 beam array	2 m	20x20 mm	OFA-2-AE-20	95A201150
	radial, 32 beam array	2 m	20x20 mm	OFA-2-AS-20	95A201160
	radial	2 m	5x65 mm	OFA-6-RA-20	95A201140
Fixed focus proximity	axial	2 m	15x20 mm	OFA-4-FE-20	95A201200
	lateral	2 m	15x20 mm	OFA-4-FF-20	95A201210
	radial	2 m	15x20 mm	OFA-4-FS-20	95A201190



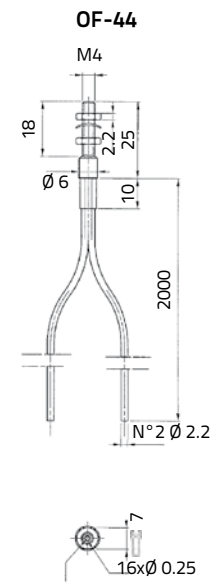
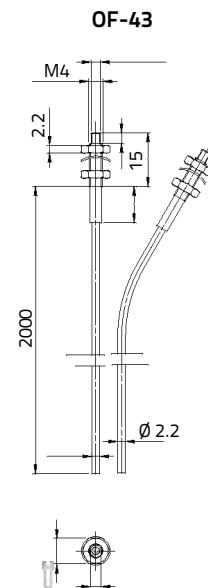
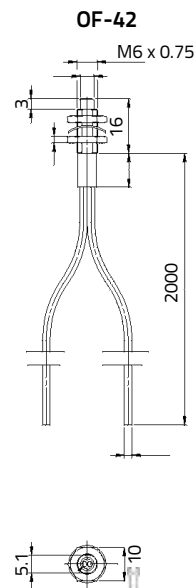
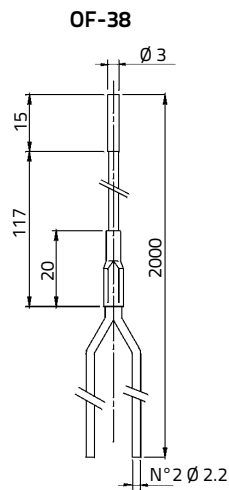
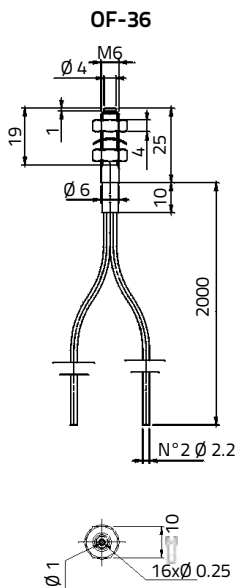
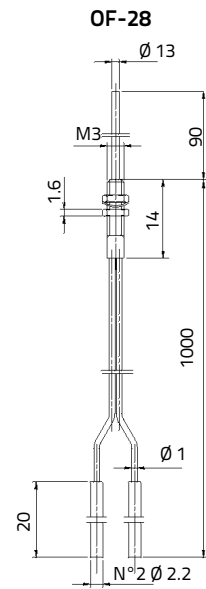
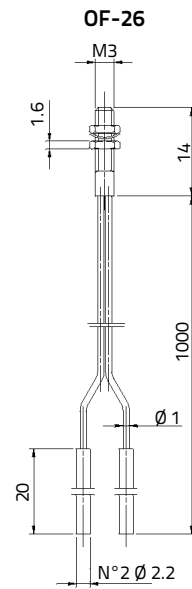
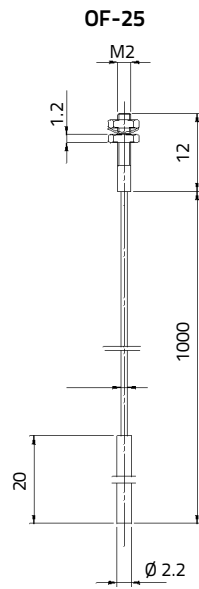
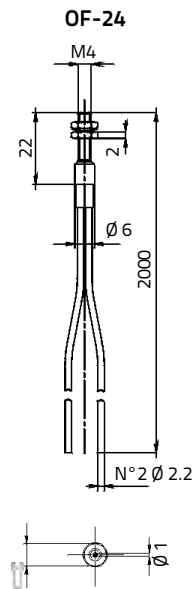
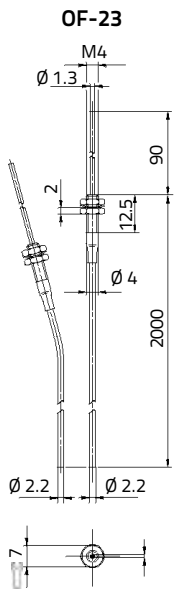
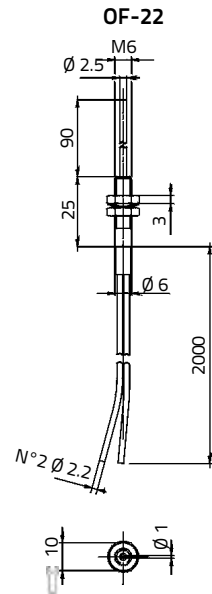
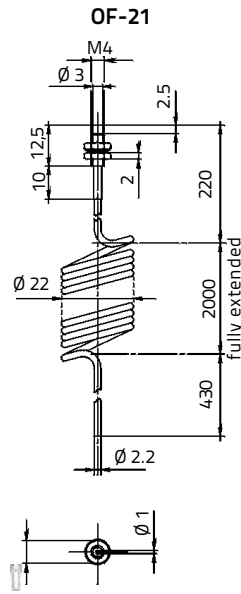
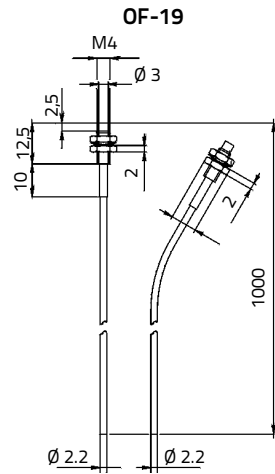
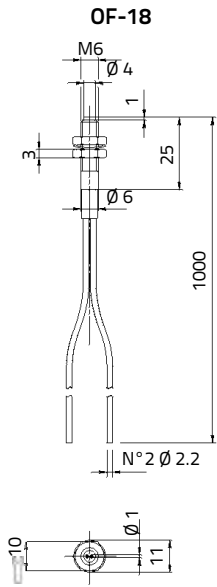
OF Accessories			
DESCRIPTION	SUITABLE FiberS	MODEL	CODE N°
2 pcs 90° deviating lenses	OF-43-XX	AF-1	95ACC2690
2 pcs long distance collimating lenses (x 4)	OF-43-XX	AF-2	95ACC2700
1 pc focusing lens with 4 mm resolution	OF-44-XX	AF-3	95ACC2710
1 pc focusing lens with 0.4 mm resolution	OF-44-XX	AF-4	95ACC2720
2 pcs adapters Ø 2.2 mm for thin Fibers	OF-XX-TN	AF-5	95ACC2730
1 pc metal sheath for m6 x 0.75 Fibers	OF-42-XX	AF-7	95ACC2750
1 pc metal sheath for m4 x 07 Fibers	OF-43-XX (*)	AF-9	95ACC2770
Fiber-cutting tool with Ø 2.2 mm and Ø 1.1 mm holes	ALL	AF-11	95ACC2780

\* 2 sheaths have to be ordered for both the emitter-receiver sections

# FIBER OPTIC SENSORS

## DIMENSIONS

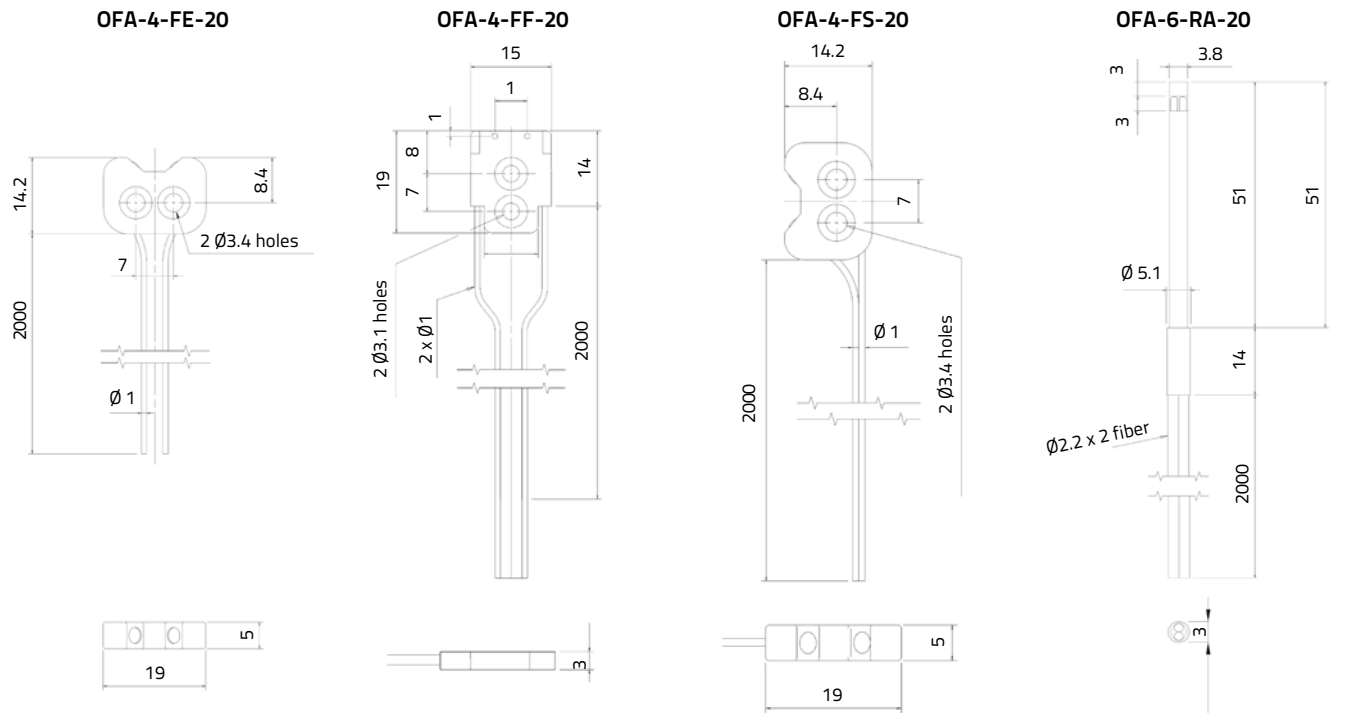
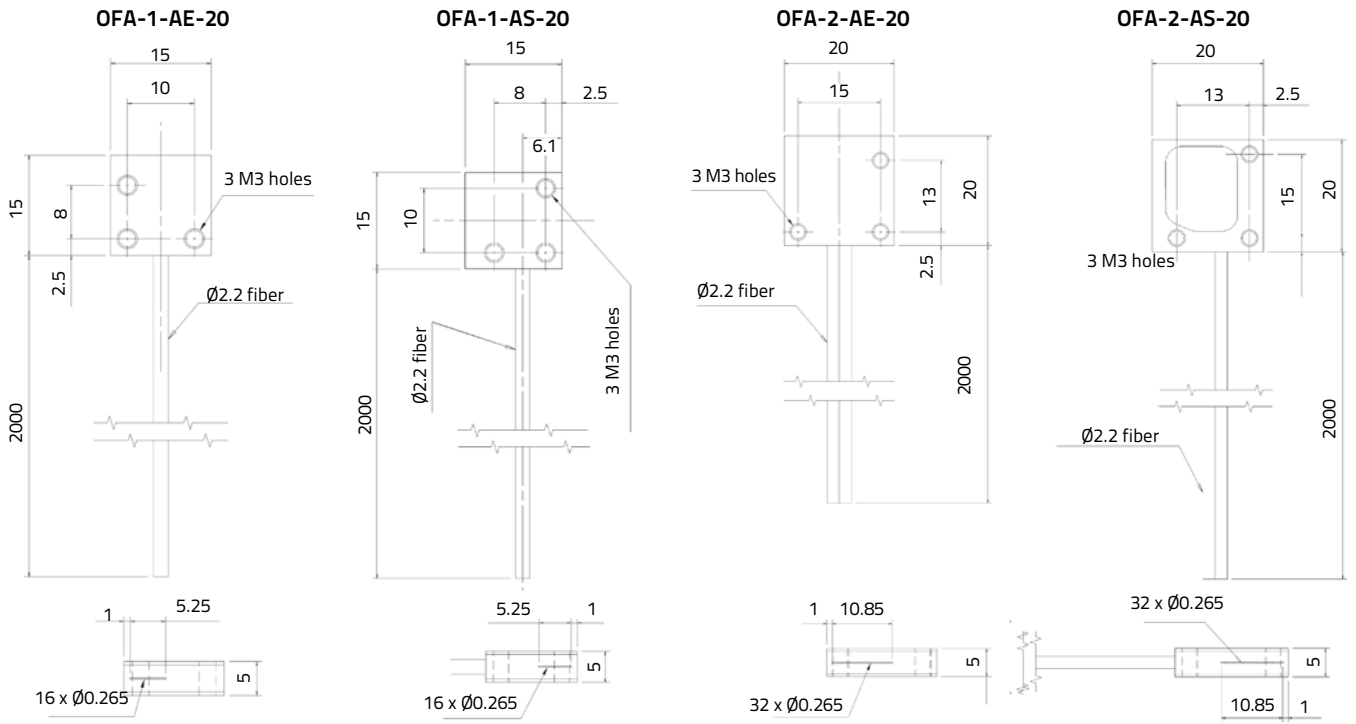
## OF SERIES



mm

DIMENSIONS

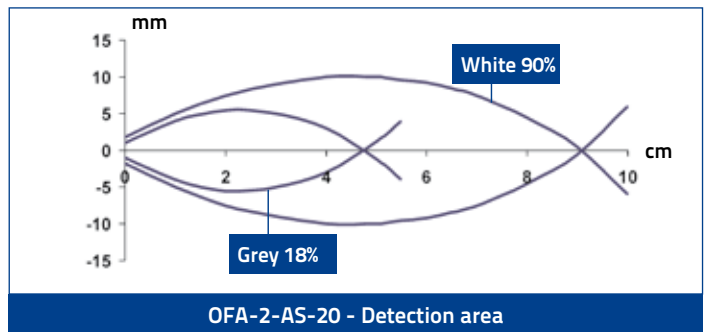
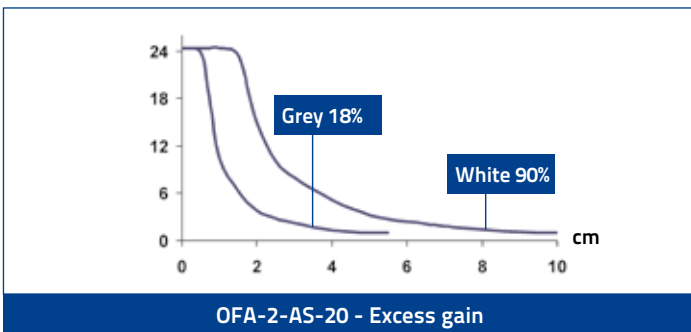
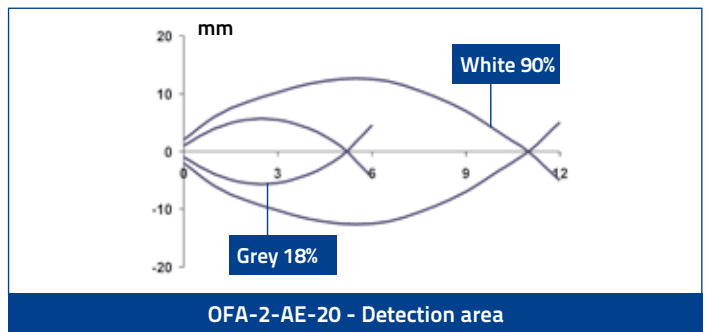
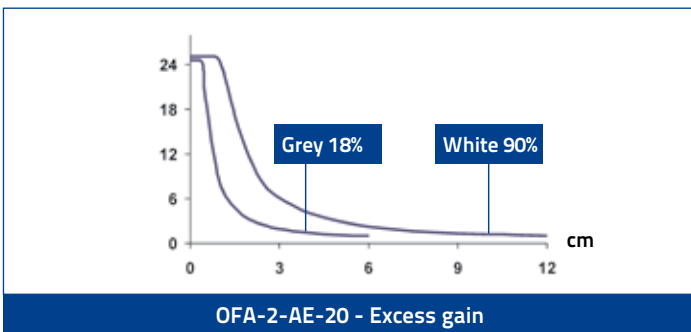
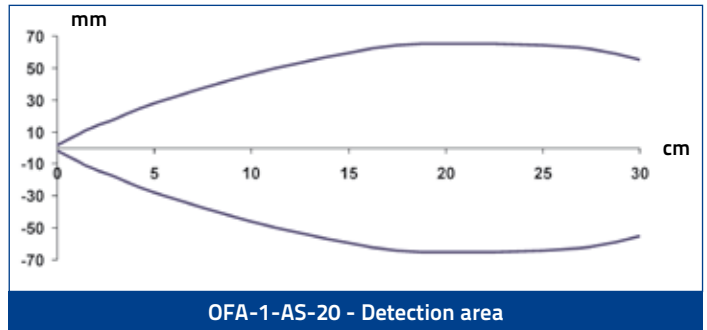
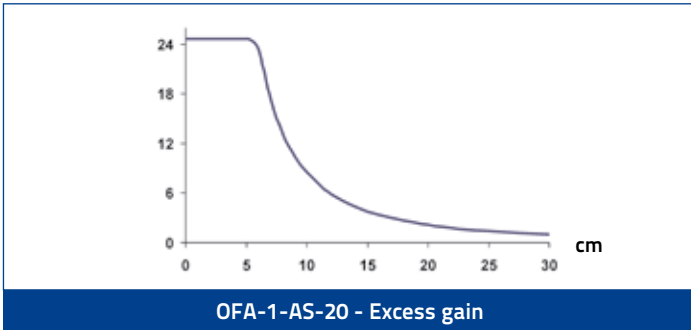
OFA SERIES

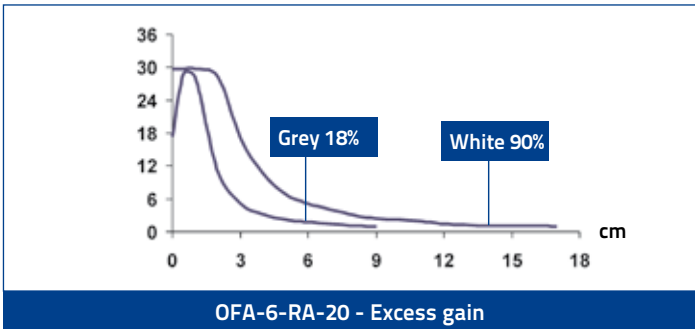
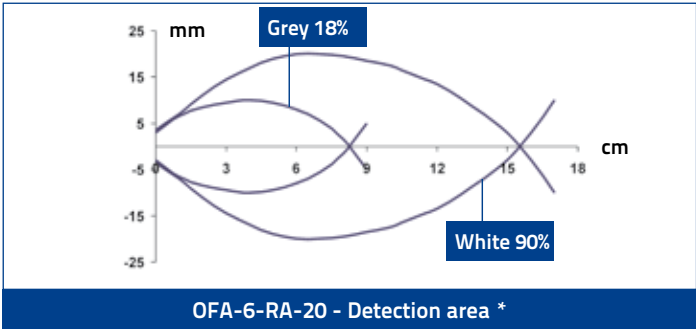
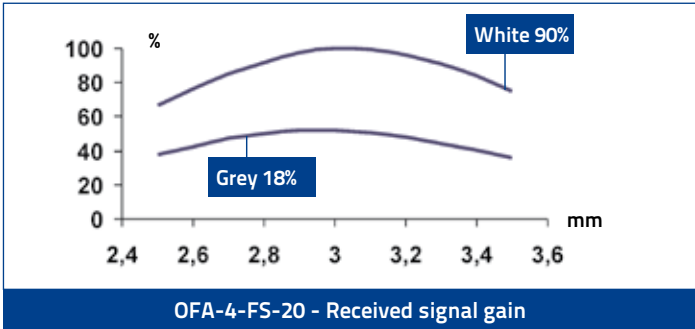
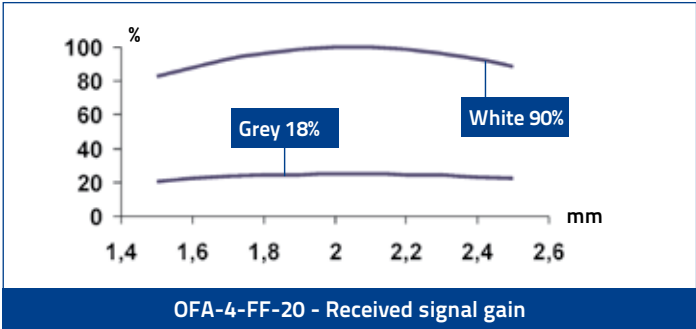
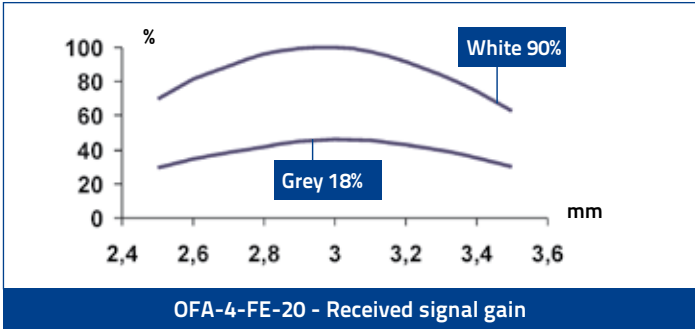


mm

# FIBER OPTIC SENSORS

## DETECTION DIAGRAMS







## SR21

### 2mm high-resolution fork sensors for labeling and packaging

- 25 kHz high switching frequency
- IR or red/green light models
- Detection of labels (SR21-IR) or print register mark on transparent films (SR21-RG)
- 4 wire NPN and PNP output



#### APPLICATIONS

- Packaging and labeling machinery
- Print and apply systems

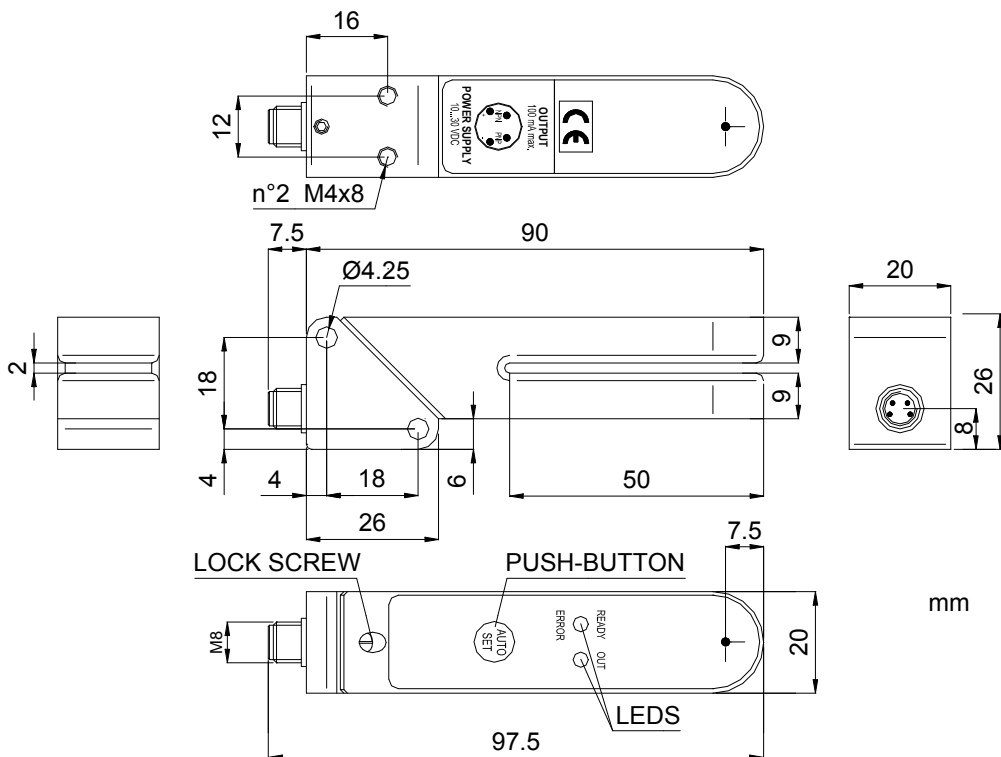


SR21		
Slot width		2 mm
Slot depth		50 mm
Switching frequency		25 kHz
Light emission		IR LED red/green LED
Setting		push button
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		20x90x26
Housing material		Zama
Mechanical protection		IP65

TECHNICAL DATA

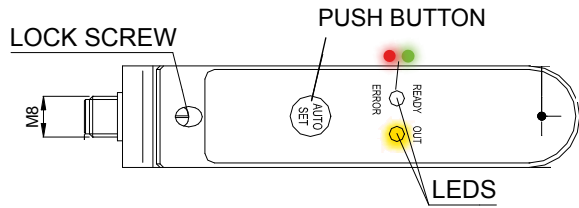
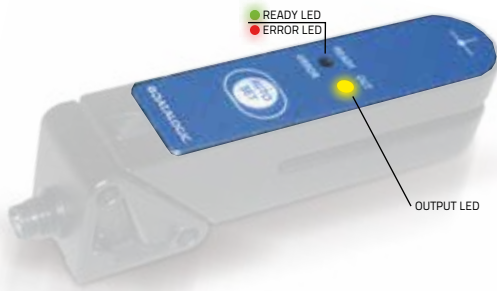
Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	55 mA max.
Light emission	red LED 633 nm/green LED 570 nm IR LED 880 nm
Setting	AUTO-SET push-button
Operating mode	LIGHT/DARK configurable
Indicators	yellow OUTPUT LED green/red READY/ERROR LED
Output	PNP and NPN
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	20 µs max.
Switching frequency	25 kHz max.
Connection	M8 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 1
Mechanical protection	IP65
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Slot width	2 mm
Resolution	0,5 mm
Housing material	ZAMA
Lens material	glass
Operating temperature	-20 ... 60 °C
Storage temperature	-20 ... 70 °C
Weight	115 g

DIMENSIONS



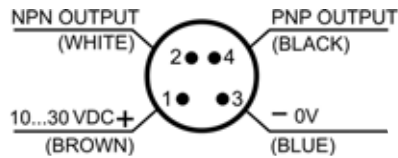
# FORK SENSORS

## INDICATORS AND SETTINGS



## CONNECTIONS

### M8 CONNECTOR



## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Fork sensor	Infrared LED	M8 Connector	PNP/NPN	SR21-IR	953151070
	Red/Green LED			SR21-RG	953151080

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650



# FORK SENSORS

## SR23

*High efficiency fork sensor for booklet and multilayer labels detection*

- Multilayer labels detection
- Up to 0,5 mm of minimum size labels/gap
- 5 mm slot width
- 50 mm slot depth
- Dynamic or static setting through single push-button
- 12 kHz switching frequency
- Compact and robust housing, IP65
- M8 connector or 2 m cable models
- PNP or NPN models



### APPLICATIONS

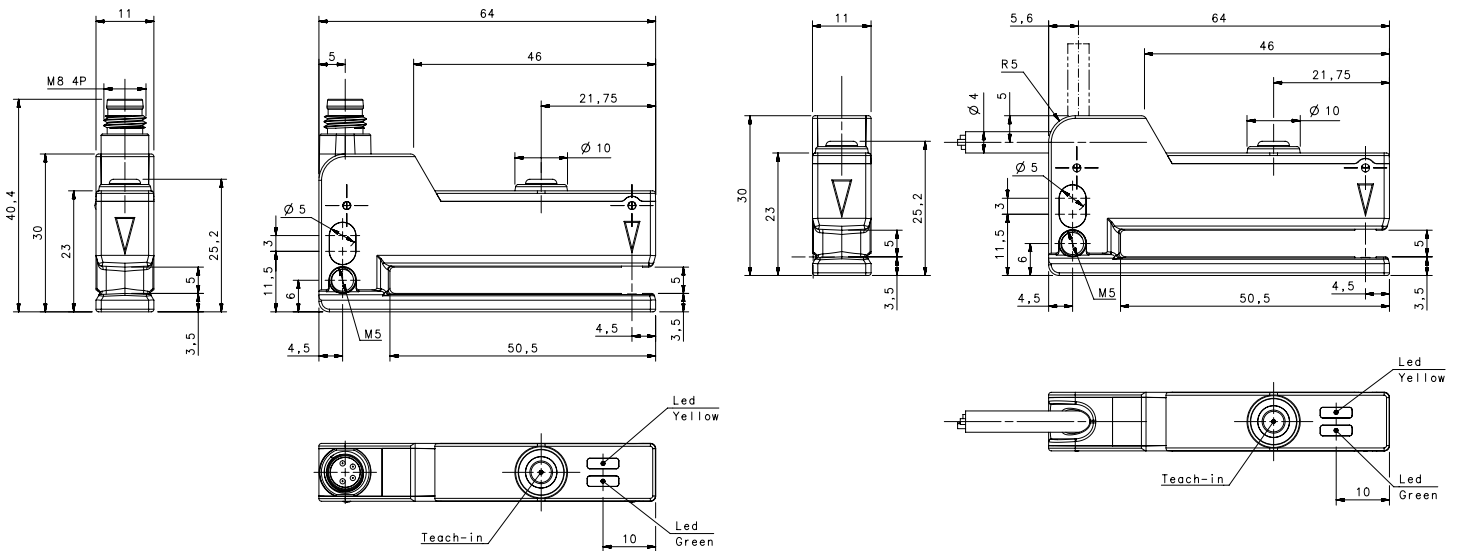
- Processing and Packaging machinery
- Automatic labelers

SR23		
Slot width		5 mm
Slot depth		50 mm
Switching frequency		12 kHz
Light emission		IR LED
Setting		push button
Power supply	Vdc	10...30 Vdc
	Vac	
	Vac/dc	
	PNP	▪
Output	NPN	▪
	NPN/PNP	
	relay	
	other	
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		30x63x10
Housing material		Alluminum (Zama), Plastic (PBT)
Mechanical protection		IP65

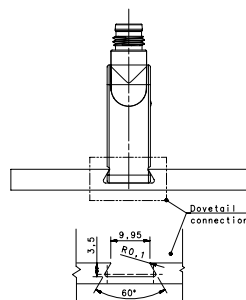
TECHNICAL DATA

Power supply	10 ... 30 Vdc (reverse polarity protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	30 mA max.
Light emission	IR LED 850 nm
Setting	SET push-button
Indicators	yellow OUTPUT LED green READY LED
Output	PNP or NPN
Output current	100 mA max.
Saturation voltage	2 V max.
Slot width	5 mm
Slot depth	50 mm
Minimum label width	0,5...2 mm
Minimum space between labels	0,5...2 mm
Speed of the conveyor during setting procedure	20 m/min (30 cm/s) max.
Response time	40 µs max.
Switching frequency	12 kHz max.
Connection	M8 4-pole connector, 2 m cable
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	> 20 MΩ, 500 Vdc between electronics and housing
Mechanical protection	IP65
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	Aluminum (Zama)
Cover material	PBT
Lens material	PC
Operating temperature	-20 ... 55°C
Storage temperature	-20 ... 70°C
Weight	85 g cable vers., 46 g M8 conn. vers.

DIMENSIONS

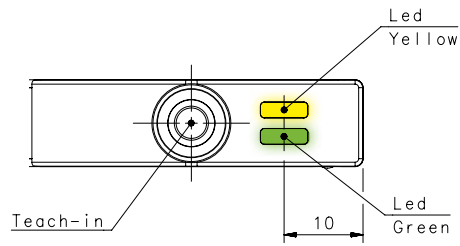


DOVETAIL GUIDE MOUNTING



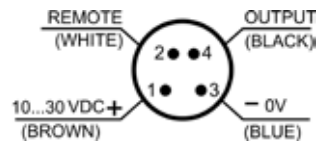
# FORK SENSORS

## INDICATORS AND SETTINGS

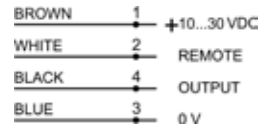


## CONNECTIONS

### M8 CONNECTOR



### CABLE

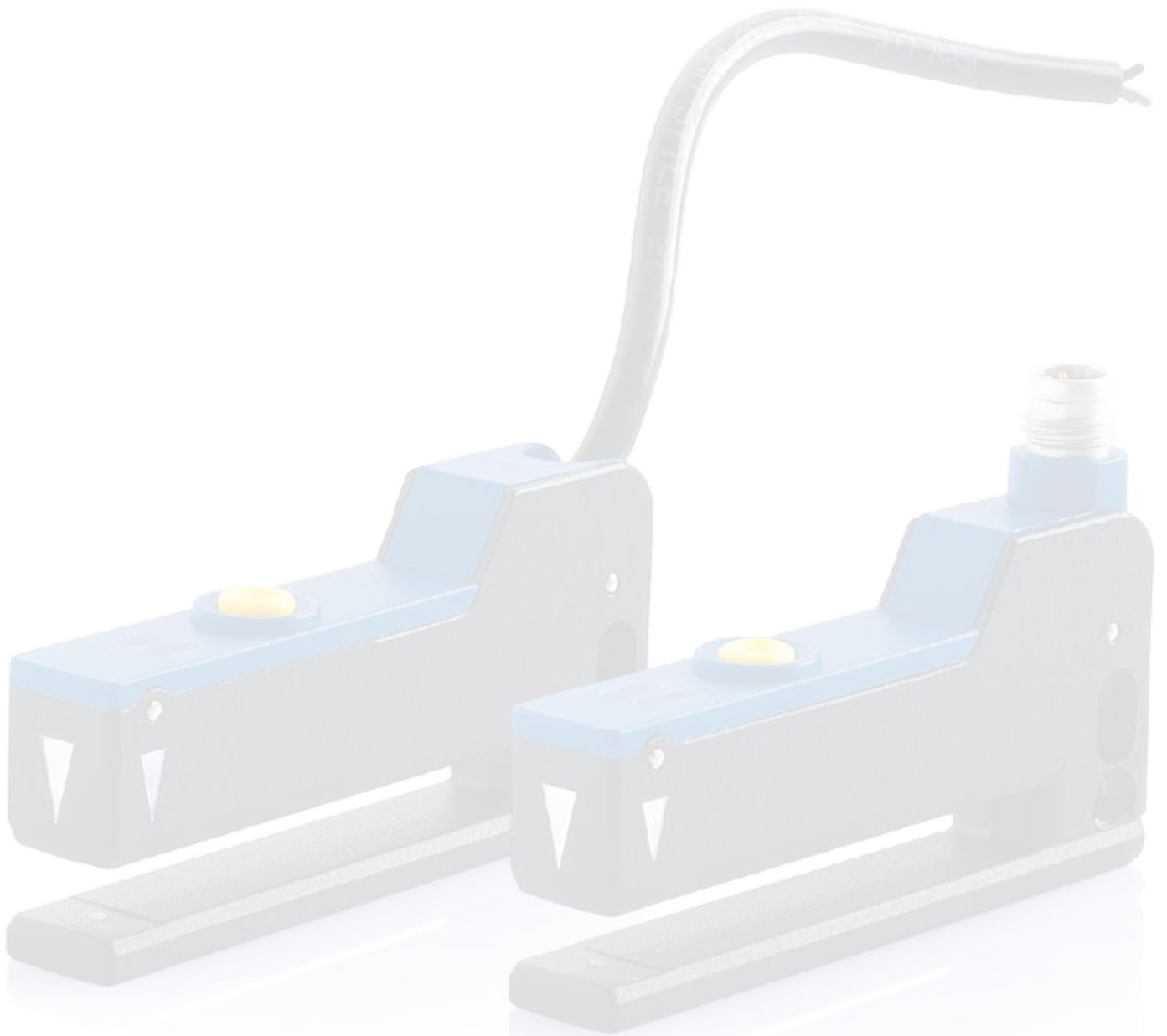


## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	CONNECTION	OUTPUT	MODEL	ORDER No.
Fork Sensor	2m Cable	PNP	SR23-2-IR-PH	953161000
		NPN	SR23-2-IR-NH	953161020
	M8 Connector	PNP	SR23-5-IR-PH	953161010
		NPN	SR23-5-IR-NH	953161030

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420
		5 m	CS-B1-02-G-05	95A251430
		7 m	CS-B1-02-G-07	95A251440
		10 m	CS-B1-02-G-10	95A251480
	4-pole, P.U.R.	2 m	CS-B1-02-R-02	95A251620
		5 m	CS-B1-02-R-05	95A251640
Radial M8 Connector	4-pole, grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
		5 m	CS-B2-02-G-05	95A251460
		7 m	CS-B2-02-G-07	95A251470
		10 m	CS-B2-02-G-10	95A251530
	4-pole, P.U.R.	2 m	CS-B2-02-R-02	95A251630
		5 m	CS-B2-02-R-05	95A251650





## SRF

*Ultimate precision using LED or LASER emissions for high resolution*

- Visible red emission models
- High resolution LASER models
- Sensitivity adjustment trimmer and DARK/LIGHT selectors
- Industrial metal housing with glass lenses



### APPLICATIONS

- Packaging and labeling machinery
- Automotive
- Packaging lines

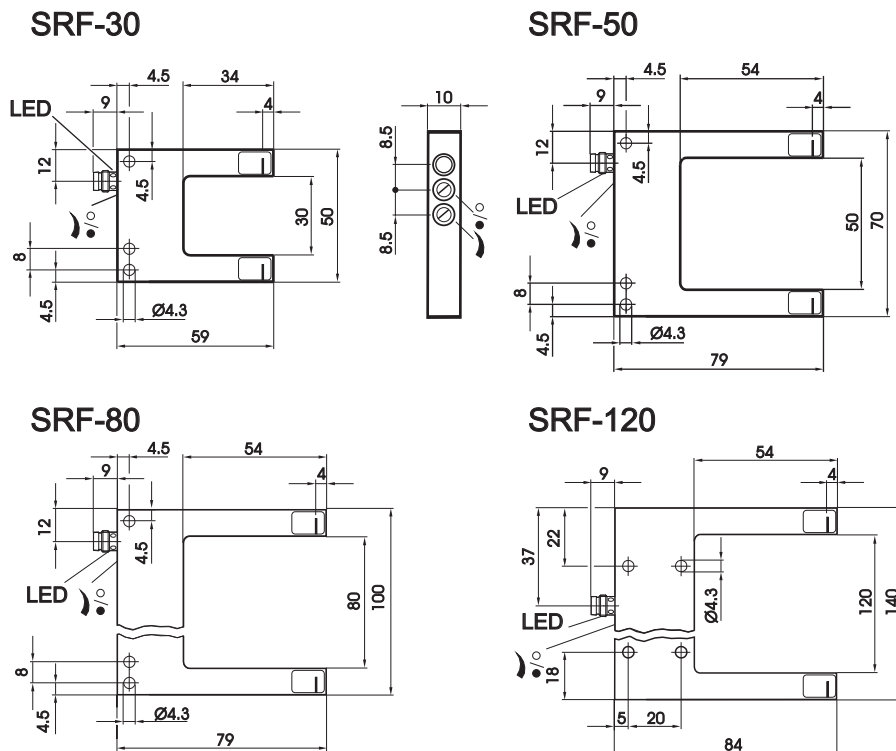


SRF-30/50/80/120		
Slot width	30 mm (SRF-30) 50 mm (SRF-50) 80 mm (SRF-80) 120 mm (SRF-120)	
Slot depth	34 mm (SRF-30) 54 mm (SRF-50/80/120)	
Switching frequency	1,5 kHz 5 kHz (class 2 LASER)	
Light emission	red LED red LASER (class 2)	
Setting	trimmer	
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
Connection	other	
	cable	
	connector	▪
Approximate dimensions (mm)	pig-tail	
		10x50x59 (SRF-30) 10x70x79 (SRF-50) 10x100x79 (SRF-80) 10x140x84 (SRF-120)
		Aluminium
Housing material		
Mechanical protection	IP67	

TECHNICAL DATA

Power supply	10 ... 30 Vdc (reverse polarity protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	35 mA max. 20 mA max. (Laser mod.)
Light emission	red LED 640 nm red Laser 650 nm
Setting	sensitivity trimmer and N.O./N.C. trimmer
Operating mode	LIGHT/DARK configurable
Indicators	yellow LED
Output	PNP or NPN; NO; NC
Output current	200 mA max.
Saturation voltage	3 V max. PNP, 2,5 V max. NPN
Response time	333 $\mu$ s 100 $\mu$ s (Laser mod.)
Switching frequency	1,5 kHz 5 kHz (Laser mod.)
Connection	M8 3-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 M $\Omega$ , 500 Vdc between electronics and housing
Electrical protection	class 1
Mechanical protection	IP67
Ambient light rejection	5 kLux
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Slot width	30, 50, 80, 120 mm
Resolution	0,3 mm (mod. SRF...30), 0,5 mm (mod. SRF...50/80), 0,8 mm (mod. SRF...120) 0,05 mm (Laser mod. SRF...30), 0,08 mm (Laser mod. SRF...50), 0,1 mm (Laser mod. SRF...80), 0,15 mm (Laser mod. SRF...120)
Housing material	GDZn
Lens material	glass
Operating temperature	-10 ... 60 °C
Storage temperature	-20 ... 70 °C
Weight	36 g (mod. SRF...30), 54 g (mod. SRF...50), 77 g (mod. SRF...80), 118 g (mod. SRF...120) 66 g (Laser mod. SRF...30), 110 g (Laser mod. SRF...50), 135 g (Laser mod. SRF...80), 210 g (Laser mod. SRF...120)

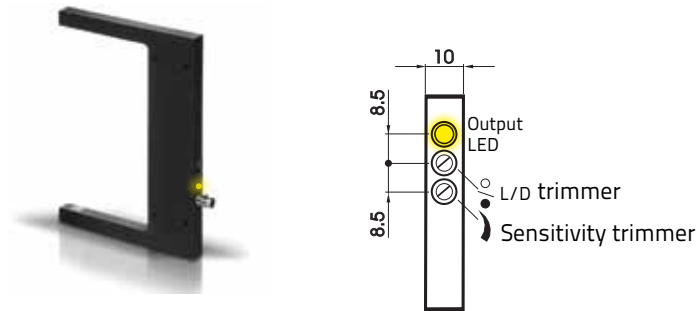
DIMENSIONS



# FORK SENSORS

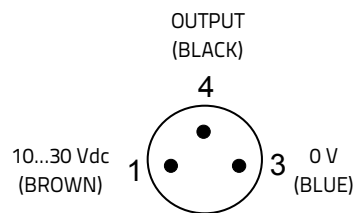
## INDICATORS AND SETTINGS

### ALL MODELS



## CONNECTIONS

### M8 CONNECTOR

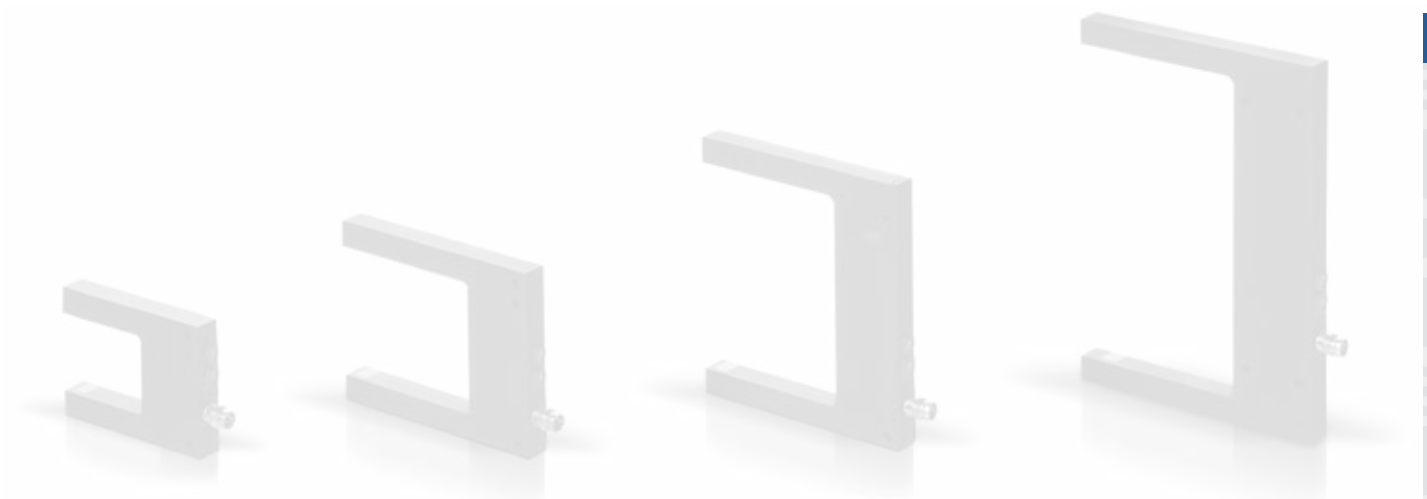


## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Fork sensor (30 mm)	Red LED	M8 Connector	PNP	SRF-30-5-P	95B020050
	LASER		NPN	SRF-30-5-N	95B020090
			PNP	SRF-L-30-5-P	95B020130
Fork sensor (50 mm)	Red LED	M8 Connector	PNP	SRF-50-5-P	95B020060
	LASER		NPN	SRF-50-5-N	95B020100
			PNP	SRF-L-50-5-P	95B020140
Fork sensor (80 mm)	Red LED	M8 Connector	PNP	SRF-80-5-P	95B020070
	LASER		NPN	SRF-80-5-N	95B020110
			PNP	SRF-L-80-5-P	95B020150
Fork sensor (120 mm)	Red LED	M8 Connector	PNP	SRF-120-5-P	95B020080
	LASER		NPN	SRF-120-5-N	95B020120
			PNP	SRF-L-120-5-P	95B020160

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M8 connector	3-pole, Grey, P.V.C.	3 m	CS -B1-01-G-03	95A251490
		5 m	CS -B1-01-G-05	95A251510
Radial M8 connector		3 m	CS -B2-01-G-03	95A251500
		5 m	CS -B2-01-G-05	95A251520



## SRX3

*High performance ultrasonic fork sensors for transparent label detection*

- Dynamic or static teach models
- Slot size 3mm
- High resolution up to 2 mm label gap
- M8 connector with PNP or NPN output
- M12 connector with PNP/NPN output and external teach-in
- Rugged and sturdy aluminium housing



### APPLICATIONS

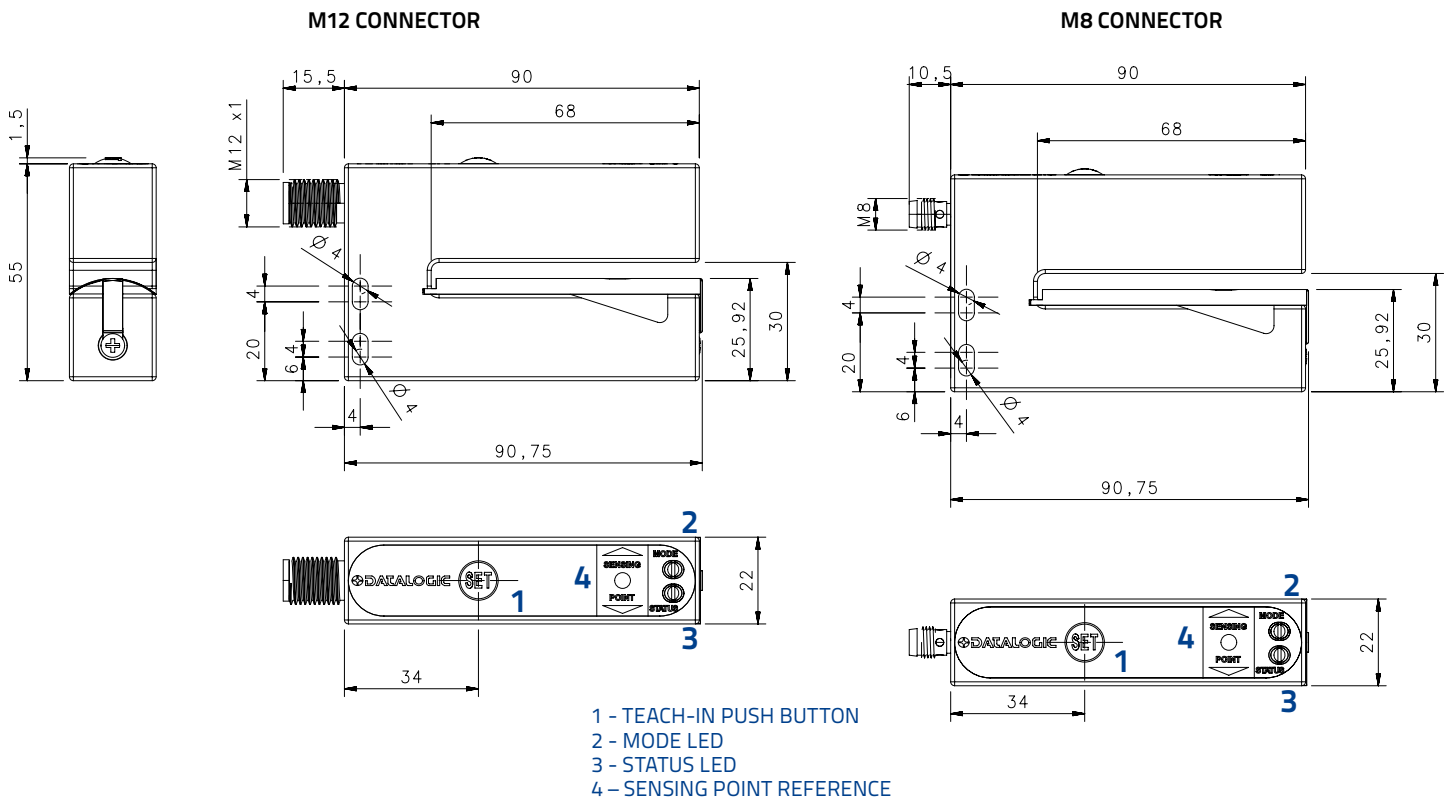
- Detection of transparent, opaque, or metallic ink labels
- Double sheet detection
- Adhesive surface detection



SRX3		
Slot width		3 mm
Slot depth		68 mm
Switching frequency		500 hz
Emission type		Ultrasonic 300 Khz
Setting		300 mm
Power supply	Vdc	12...30 Vdc
Output	PNP	•
	NPN	•
Connection	Connector	M12 5-pin
	Connector	M8 4-pin
Approximate dimensions (mm)		90 x 55 x 22
Housing material		Aluminium
Mechanical protection		IP54

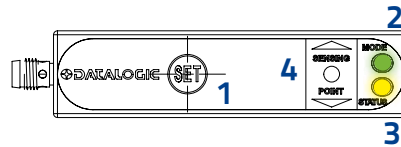
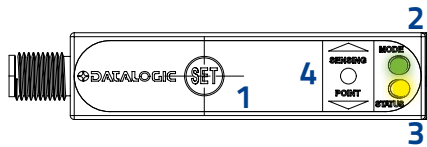
TECHNICAL DATA	
SPECIFICATION	
Minimum pulse time	1ms
Detectable size	> 2mm
Max. tape speed	60m/min
Tape size	> 16mm
Ultrasonic frequency	300 KHz
ELECTRICAL DATA	
Power supply	12...30 Vdc
Current consumption	< 55mA
Ripple	10%
Output current	250 mA max.
Output saturation voltage	< 1,5V @ 100mA
Rising time	0,8 us max
Falling time	1,6 us max
Power On delay	325 ms
Response time	1ms
Switching frequency	500 hz
Output	PNP / NPN
MECHANICAL DATA	
Connection	M12 5 pin
Operating temperature	0 °C ... +50 °C
Storage temperature	-25 °C ... +75 °C
Humidity	35...85% rH non condensing
Vibration	0.5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	Aluminium
Protection class	IP54
Weight	300g

## DIMENSIONS



# FORK SENSORS

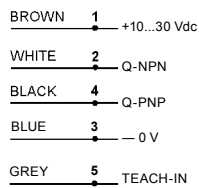
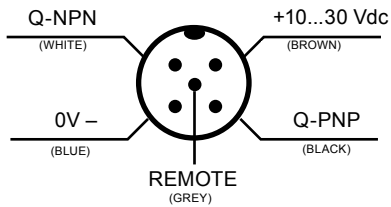
## INDICATORS AND SETTINGS



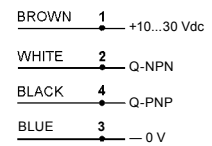
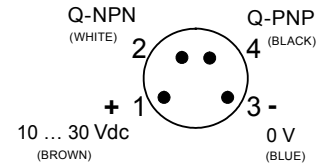
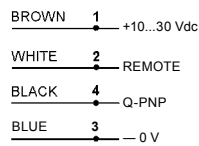
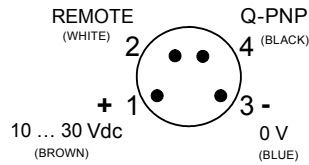
- 1 - TEACH-IN PUSH BUTTON
- 2 - MODE LED
- 3 - STATUS LED (OUTPUT LED)
- 4 - SENSING POINT REFERENCE

## CONNECTIONS

### M12 CONNECTOR – 5 PIN



### M8 CONNECTOR – 8 PIN



## MODEL SELECTION AND ORDER INFORMATION

ADJUSTMENT	OUTPUT	CONNECTION	MODEL	ORDER No.
Dynamic Teach-in	PNP/NPN+EXT	M12 5 pin	SRX3-5-US-M12-PNH	953171000
Static Teach-in	PNP/NPN+EXT	M12 5 pin	SRX3-5-US-3-M12-PNH	953171010
Dynamic Teach-in	PNP+EXT	M8 4 pin	SRX3-6-US-M8-PH	953171020
Static Teach-in	PNP+EXT	M8 4 pin	SRX3-6-US-3-M8-PH	953171030
Dynamic Teach-in	PNP/NPN	M8 4 pin	SRX3-6-US-M8-PN	953171040
Static Teach-in	PNP/NPN	M8 4 pin	SRX3-6-US-3-M8-PN	953171050

## CABLES

TYPE	No. Of POLES	SHEAT	LENGTH	DESCRIPTION	ORDER No.
Female M12 Connector (Axial)	5-poles	Grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
			5 m	CS-A1-03-G-05	95ACC2120
			10 m	CS-A1-03-G-10	95ACC2140
		Black, P.V.C. UL	3	CS-A1-03-U-03	95ASE1170
			5	CS-A1-03-U-05	95ASE1180
			10	CS-A1-03-U-10	95ASE1190
M8 Connector (Axial)	4-poles	Grey, P.V.C.	3 m	CS-B-1-02-G-03	95A251420
			5 m	CS-B-1-02-G-05	95A251430
			7 m	CS-B-1-02-G-07	95A251440
			10 m	CS-B-1-02-G-10	95A251480
		P.U.R.	2 m	CS-B-1-02-R-02	95A251500
			5 m	CS-B-1-02-R-05	95A251520
M8 Connector (radial 90°)	4-poles	Grey, P.V.C.	3 m	CS-B2-02-G-03	95A251450
			5 m	CS-B2-02-G-05	95A251480
			7 m	CS-B2-02-G-07	95A251470
		P.U.R.	5 m	CS-B2-02-R-05	95ACC2110

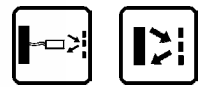


# CONTRAST SENSORS

## TL $\mu$

### All registration mark detection applications

- Teach-in, Remote settings
- Red/green or white LED emission
- Various interchangeable lenses and fiber-optic models
- Metal housing with orientable optics and connector



#### APPLICATIONS

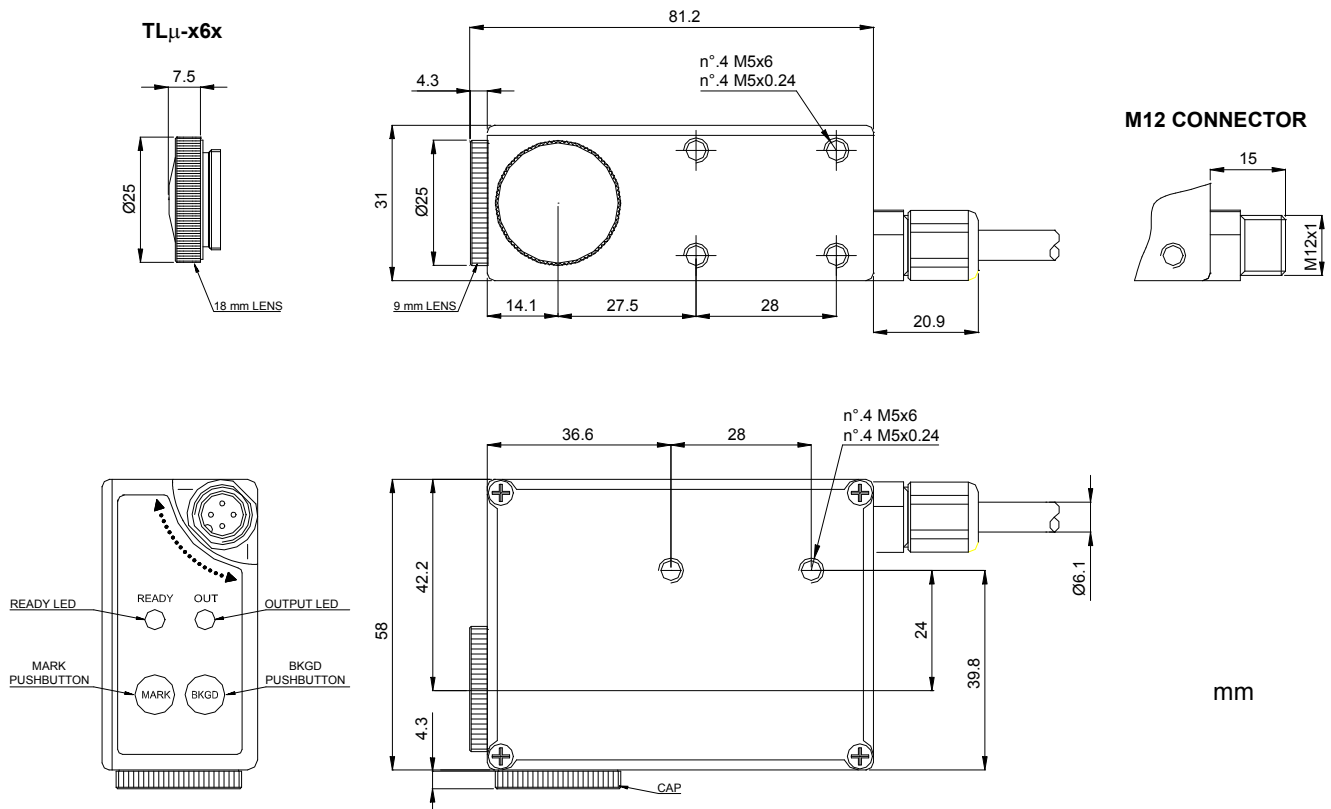
- Packaging and labeling machinery
- Beverage/Food/Cosmetic/  
Pharmaceutical industries
- Printing machinery

TL $\mu$		
Contrast sensor		6...12 mm (9 mm lens)
		14...22 mm (18 mm lens)
		22...34 mm (28 mm lens)
		40...60 mm (50 mm lens)
Contrast sensor with fiber optic		0...3 mm (proximity)
		0...10 mm (through beam)
Switching frequency		10 kHz
		20 kHz
Light emission		red/green LED
		white LED
Setting		push buttons
		remote
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	0...5 V Analog Output
Connection	cable	▪
	connector	▪
	pig-tail	
Approximate dimensions (mm)		31x81x58
Housing material		Zama
Mechanical protection		IP67

### TECHNICAL DATA

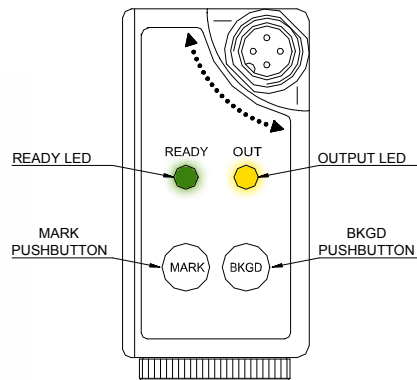
Power supply	10 ... 30 Vdc (limit values; reverse polarity protection)
Ripple	2 Vpp max.
Consumption (output current excluded)	80 mA max.
Light emission	green LED 526 nm/red LED 630 nm (mod. TL $\mu$ -0/1xx) white LED 400-700 nm (mod. TL $\mu$ -4/5xx)
Setting	teach-in push-buttons/remote by 2 wires, 4 settings storage cable version
Operating mode	Light/Dark automatic setting with teach-in procedure
Indicators	red OUTPUT LED green READY LED
Output	PNP or NPN; analog output
Output current	200 mA max.
Saturation voltage	1 V max. NPN vers., 2 V max. PNP vers.
Response time	50 $\mu$ s max. (mod. TL $\mu$ -4xx) 25 $\mu$ s max. (mod. TL $\mu$ -5xx)
Switching frequency	10 kHz max. (mod. TL $\mu$ -4xx) 20 kHz max. (mod. TL $\mu$ -5xx)
Connection	3 m shielded cable $\varnothing$ 6.1 mm, M12 4-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 M $\Omega$ , 500 Vdc between electronics and housing
Electrical protection	class 1
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Minimum spot dimension	1,5 x 5 mm (TL $\mu$ -x1x), 2 x 7 mm (TL $\mu$ -x6x), $\varnothing$ 3 mm (TL $\mu$ -4xx/5xx)
Depth of field	$\pm$ 3 mm (TL $\mu$ -x1x/4xx/5xx) / $\pm$ 4 mm (TL $\mu$ -x6x)
Housing material	ZAMA
Lens material	glass
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	450 g max. cable vers., 310 g max. connector vers.

### DIMENSIONS



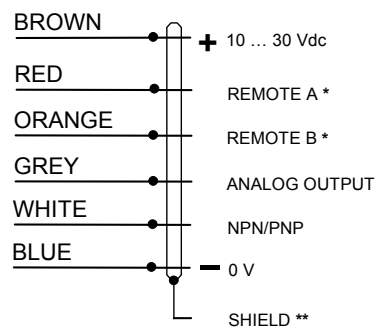
# CONTRAST SENSORS

## INDICATORS AND SETTINGS



## CONNECTIONS

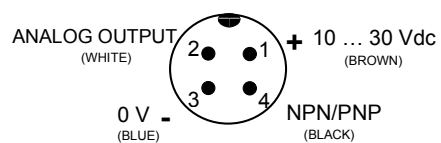
### CABLE



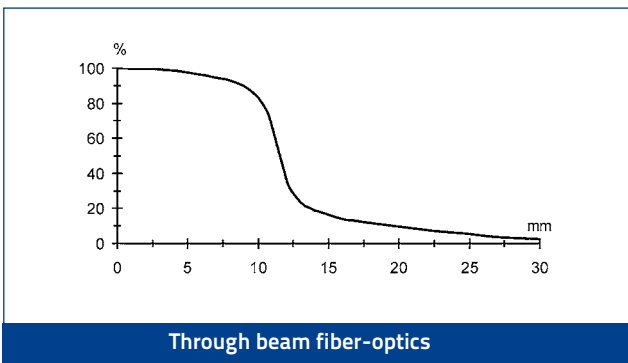
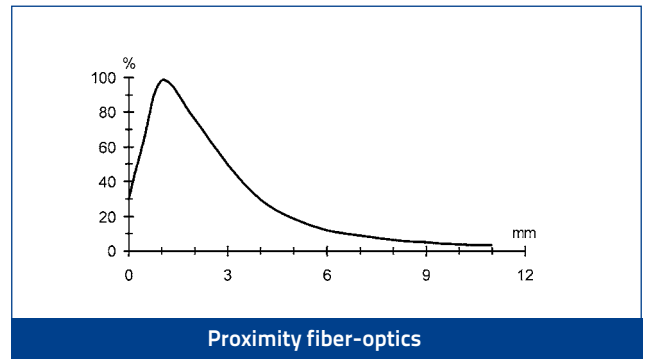
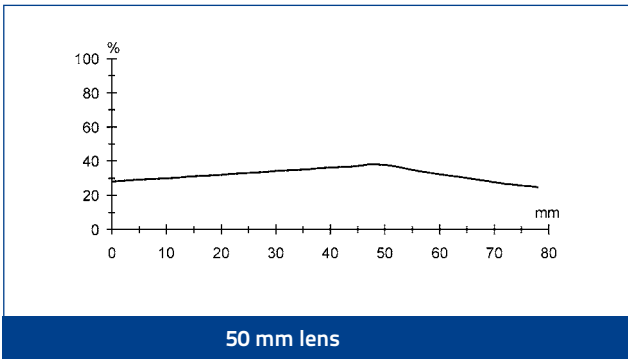
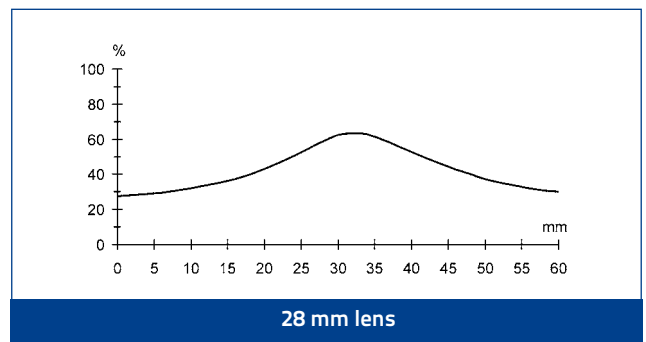
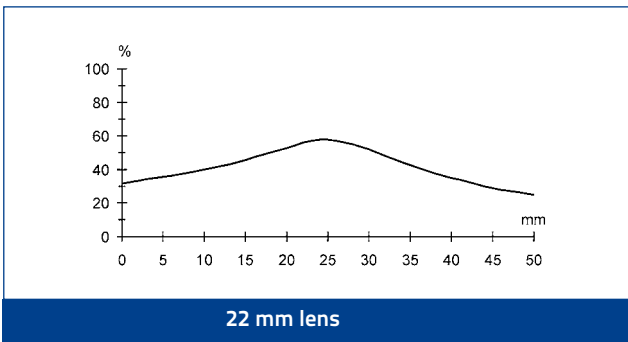
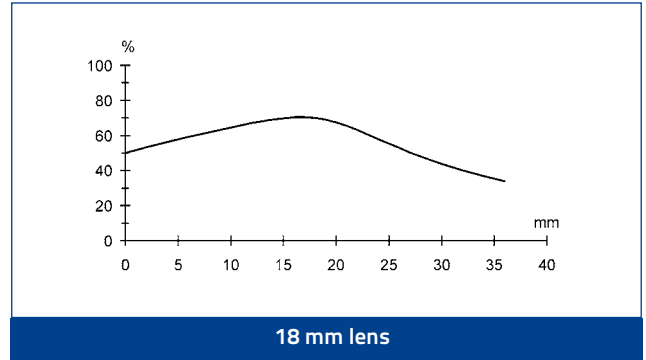
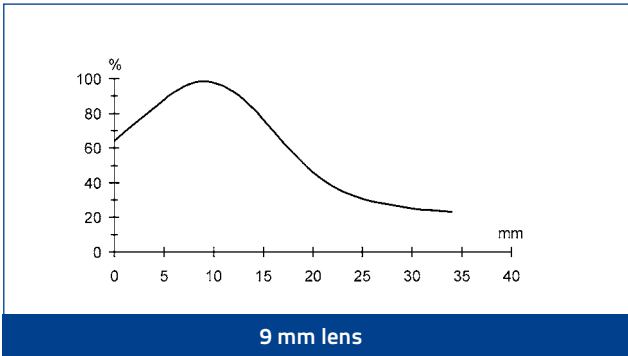
\* = Connect the unused REMOTE wires to 0 V.

\*\* = The cable shield is insulated from the sensor housing; it is recommended to connect the shield to 0 V.

### M12 CONNECTOR



## DETECTION DIAGRAMS



The detection diagrams indicate the typical operating distance.

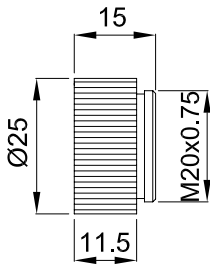
# CONTRAST SENSORS

## MODEL SELECTION AND ORDER INFORMATION

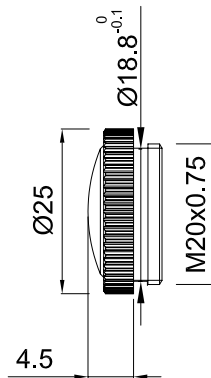
OPTIC FUNCTION	EMISSION	OPTICS	CONNECTION	OUTPUT	MODEL	ORDER No.		
Contrast sensor	Red/Green (Vertical spot)	9 mm	3m Cable	NPN	TLμ-011	964401000		
				PNP	TLμ-111	964401080		
			M12 Connector	NPN	TLμ-015	964401020		
				PNP	TLμ-115	964401100		
	Red/Green (Horizontal spot)		3m Cable	NPN	TLμ-011L	964401010		
				PNP	TLμ-111L	964401090		
			M12 Connector	NPN	TLμ-015L	964401030		
				PNP	TLμ-115L	964401110		
	Red/Green (Vertical spot)	18 mm	M12 Connector	NPN	TLμ-065	964401060		
				PNP	TLμ-165	964401140		
	White (Circular spot)	9 mm	M12 Connector	NPN	TLμ-415C	954151330		
				PNP	TLμ-515C	954151360		
3m Cable			NPN	TLμ-411C	954151410			
			PNP	TLμ-511C	954151420			
Fiber optic contrast sensor			White	Fiber optics	M12 Connector	PNP	TLμ-545	954151380
						NPN	TLμ-445	954151350

## ACCESSORIES

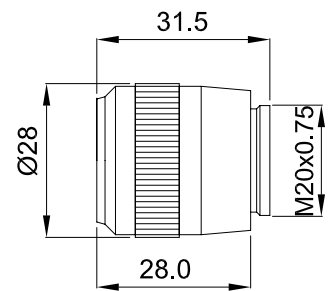
HI-RES LENS



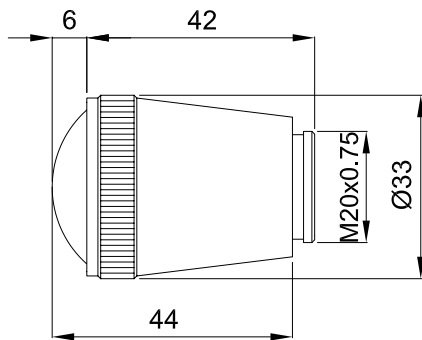
18 mm LENS



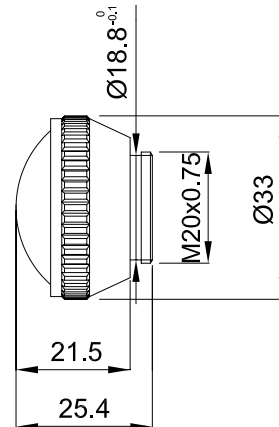
22 mm LENS



28 mm LENS



40 mm LENS



MODEL	DESCRIPTION	ORDER No.
Lens Hi-Res	additional focussing glass lens with 9 mm focus (*)	95ACC1050
Lens No.18	glass lens with 18 mm focus	95ACC2680
Lens No.22	glass lens with 22 mm focus	95ACC1100
Lens No.28	glass lens with 28 mm focus	890000194
Lens No.40	glass lens with 40 mm focus	95ACC2740
Lens No.50	glass lens with 50 mm focus	573030511
OF -30-5	plastic fiber-optic L 50 cm - point-shaped spot proximity	96B001070
OF -31-10	glass fiber-optic L 100 cm - point-shaped spot proximity	96B201000
OF -32-10	glass fiber-optic L 100 cm - rectangular spot proximity	96B211000
OF -33-10	glass fiber-optic L 100 cm - through beam	96B221000
OF -34-10	glass fiber-optic L 100 cm - horizontal spot 90° proximity	96B231000
OF -35-10	glass fiber-optic L 100 cm - vertical spot 90° proximity	96B24100

\* focussing lens to screw between the sensor and the normal 9 mm lens

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		7 m	CS-A1-02-G-07	95A251280
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
Radial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360
		5 m	CS-A2-02-G-05	95A251240
		7 m	CS-A2-02-G-07	95A251245
		10 m	CS-A2-02-G-10	95A251260
	4-pole, P.U.R.	2 m	CS-A2-02-R-02	95A251550
		5 m	CS-A2-02-R-05	95A251570
Axial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
		15 m	CV-A1-22-B-15	95ACC2070
		25 m	CV-A1-22-B-25	95ACC2090
Radial M12 Connector	4-pole, shielded, black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540
		5 m	CV-A2-22-B-05	95ACC1550
		10 m	CV-A2-22-B-10	95ACC1560
Axial M12 Connector	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
			25 m	CS-A1-02-U-25
Radial M12 Connector	4-pole, black	Connector- not cabled	CS-A1-02-B-NC	G5085002
		Connector- not cabled	CS-A2-02-B-NC	G5085003

# CONTRAST SENSORS

## TL46

*High performance contrast sensor for colored registration mark detection*

- Fastest and accurate low jitter model (TL46-WJ)
- Wide-spectrum RGB or white LED emission
- 4 different models: basic, standard, enhanced, low jitter
- Automatic, manual and dynamic settings
- 15, 20, 30 or 50 kHz switching frequencies
- Very low jitter down to 7µs (TL46-WJ...)
- NPN/PNP and analog outputs
- Standard mounting, M12 connector rotatable to 5 positions



### APPLICATIONS

- Packaging and labeling machinery
- Beverage/Food/Cosmetic/Pharmaceutical industries
- Printing machinery
- Flexographic printing machinery



(\*) ATEX II 3DG

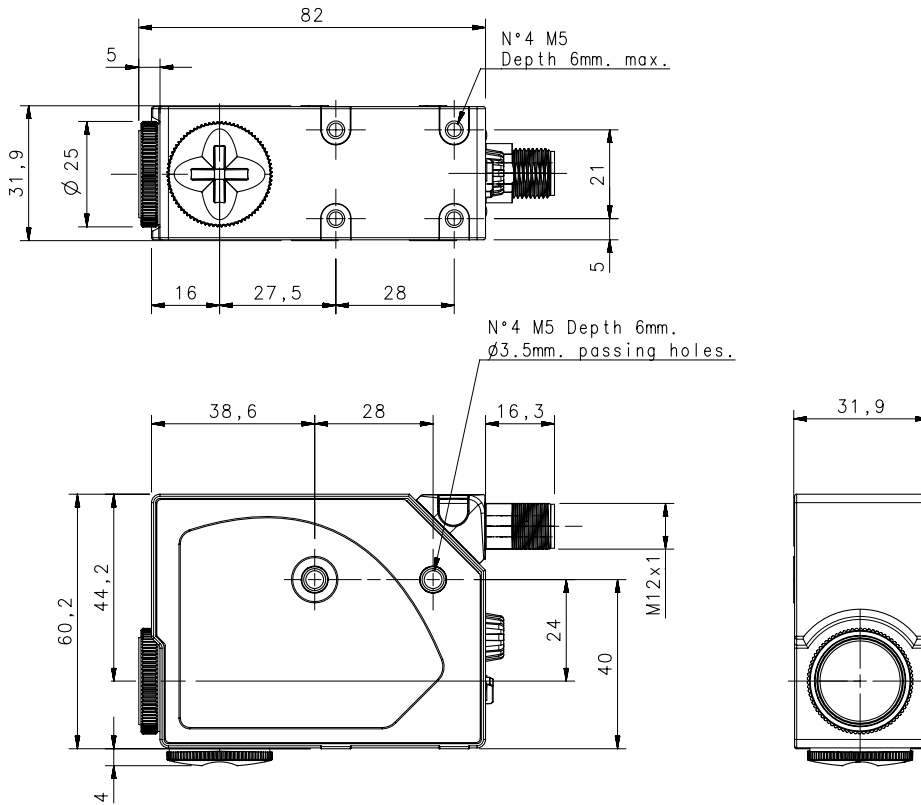
TL46		
Contrast sensor		9 ±3 mm
		18 mm (Lens No.18 glass)
		22 mm (Lens No.22 glass)
		28 mm (Lens No.28 glass)
		40 mm (Lens No.40 glass)
Switching frequency		15 kHz
		20 kHz
		30 kHz
		50 kHz
Jitter		< 7µs (TL46-WJ)
		16µs (TL46-WLF)
		>25µs (TL46-W/WL)
Light emission		RGB LED
		white LED
		Red LED
Setting		push buttons trimmer
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	▪
	relay	▪ (see Technical Data Table)
	other	0...5 V Analog Output
		▪ (see Technical Data Table)
Connection	cable	▪ (see Technical Data Table)
	connector	▪
	pig-tail	
Approximate dimensions (mm)		31x81x58
Housing material		Aluminium
Mechanical protection		IP67

TECHNICAL DATA	
Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	40 mA max. at 24 Vdc (mod. TL46-A) 50 mA max. at 24 Vdc (mod. TL46-W/WJ) 85 mA max. at 24 Vdc 24 Vdc with bargraph ON in threshold adjustment mode, 55 mA max at 24 Vdc with bargraph OFF in normal functioning mode (mod. TL46-WL) 35 mA max. at 24 Vdc (mod. TL46-WLF)
Light emission	white LED 400-700 nm (mod. TL46-A-4xx) red LED 630 nm (mod. TL46-A-6xx) blu LED 465nm/green LED 520 nm/red LED 630 nm (mod. TL46-W/WL/WLF/WJ)
Detection Distance	9 ±3 mm 18 mm (Lens No.18 glass) 22 mm (Lens No.22 glass) 28 mm (Lens No.28 glass) 40 mm (Lens No.40 glass)
Minimum spot dimension	1,5 x 5 mm 0,8x4mm (TL46-WJ)
Depth of field	± 3 mm
Response time	33 µs (mod. TL46-W) 25 µs (mod. TL46-A/WL) 16 µs (mod. TL46-WLF) 10 µs (mod. TL46-WJ)
Switching frequency	15 kHz (mod. TL46-W) 20 kHz (mod. TL46-A/WL) 30 kHz (mod. TL46-WLF) 50 kHz (mod. TL46-WJ)
Jitter	7 µs (mod. TL46-WJ)
Setting	SET push-buttons (mod. TL46-W/WL/WLF) sensitivity trimmer (mod. TL46-A)
Operating mode	DARK/LIGHT selection by switch (mod. TL46-A) automatic DARK/LIGHT selection (mod. TL46-W/WL/WJ) automatic DARK/LIGHT selection in the target/background detection, selectable via wire in the dynamic detection (mod. TL46-WLF)
Indicators	yellow OUTPUT LED green READY LED, orange DELAY LED and KEYLOCK (Mod TL46-W/WJ) green READY LED, 4-digit display/DELAY LED/KEYLOCK LED (mod. TL46-WLF) orange ARROWS (mod. TL46-A), DELAY LED and KEYLOCK LED 5-segment bargraph (mod. TL46-WL)
Dark/light selection	Switch Automatic Automatic/manual; remote/dynamic
Delay	0...20ms selectable via delay input 0...100ms programmed
Auxiliary function	Keylock Fine Hysteresis regulation
Indicators	
Output	PNP (mod. TL46-WJ); PNP or NPN; PNP/NPN (mod. TL46-W/WL/WLF); analog output (mod. TL46-A/W/WL)
Output current	100mA
Saturaton Voltage	=<2V
Analogue Out	0,5...5,5V ±10%; 2V on white target 90% 1...3V ±10%(white 90%) ; 5,5V max
Analogue out impedance	2,2 kΩ (short circuit protection)
Connection	M12 5-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2, double insulation
Protection device	Reverse polarity protection, overload and short circuit protection
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	aluminium
Lens material	mirror (mod. TL46-A), glass (mod. TL46-W/WL/WLF/WJ)
Operating temperature	-10 ... 55 °C
Storage temperature	'-20 ... 70 °C
Weight	170 g max.

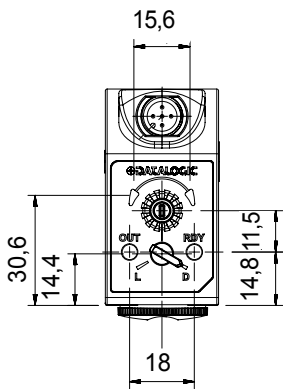


# CONTRAST SENSORS

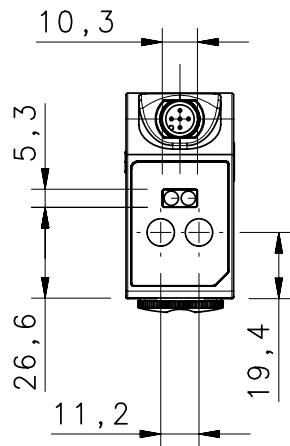
## DIMENSIONS



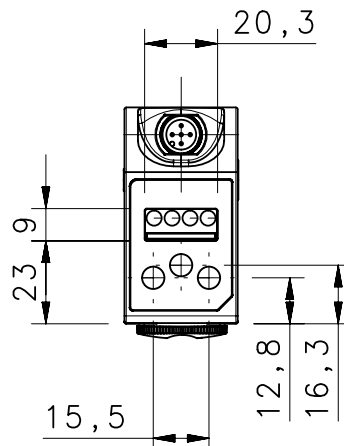
TL46-A



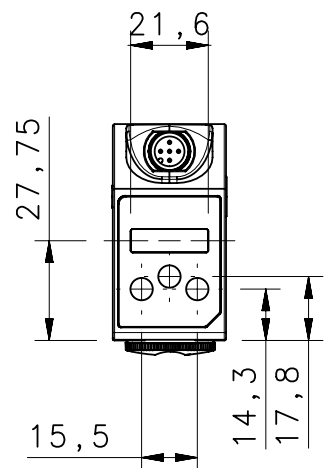
TL46-W/TL46-WJ



TL46-WL



TL46-WLF



## INDICATORS AND SETTINGS

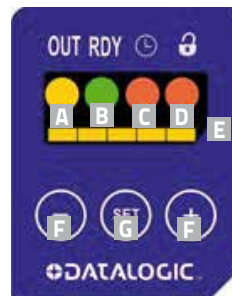


**TL46-A  
TRIMMER**



**TL46-W  
BASE**

**TL46-WJ  
LOW JITTER**



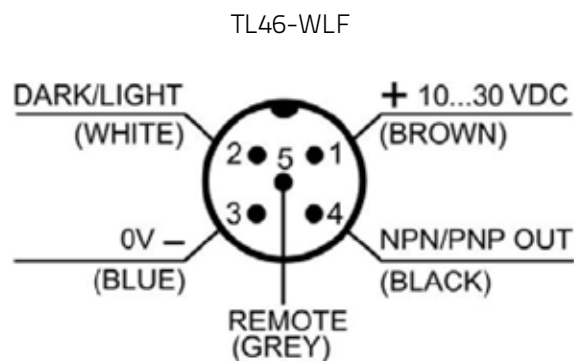
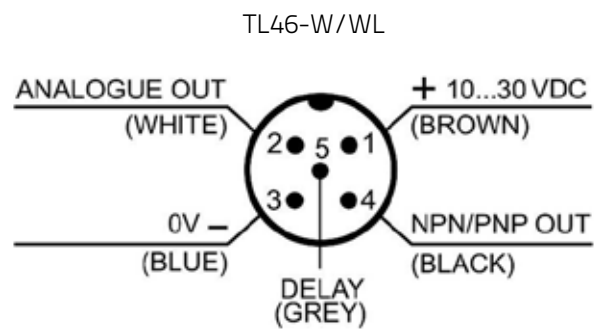
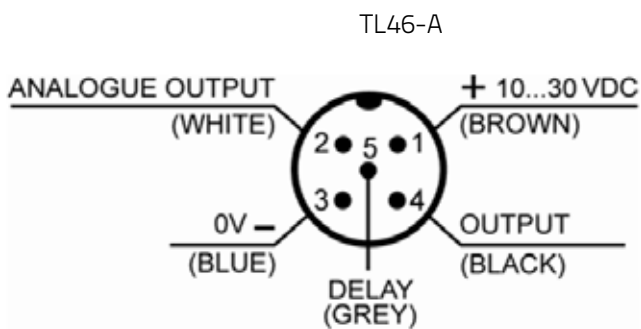
**TL46-WL  
STANDARD**



**TL46-WLF  
ENHANCED**

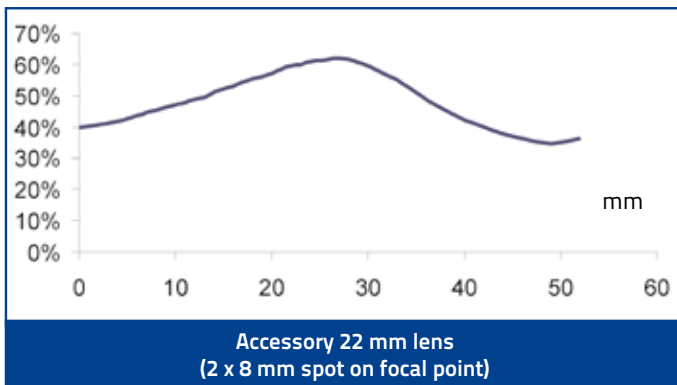
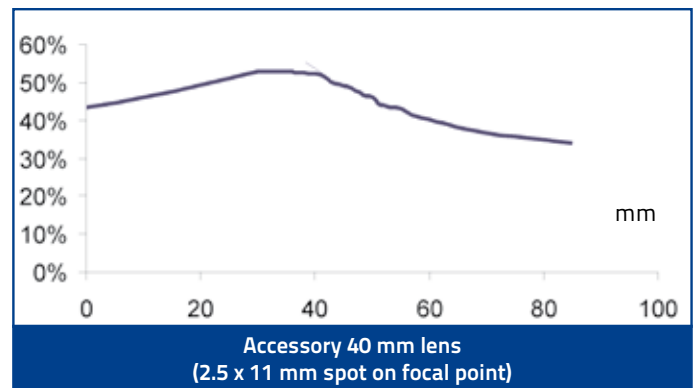
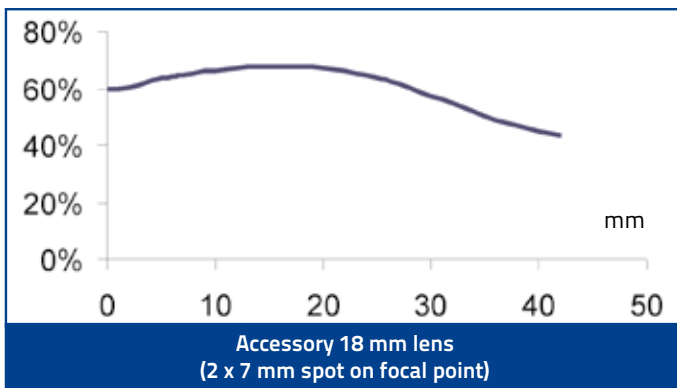
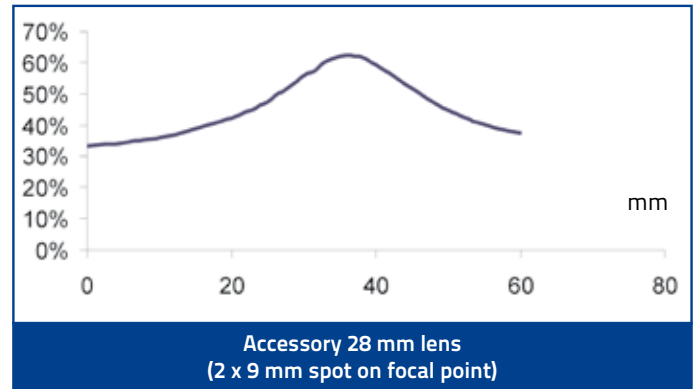
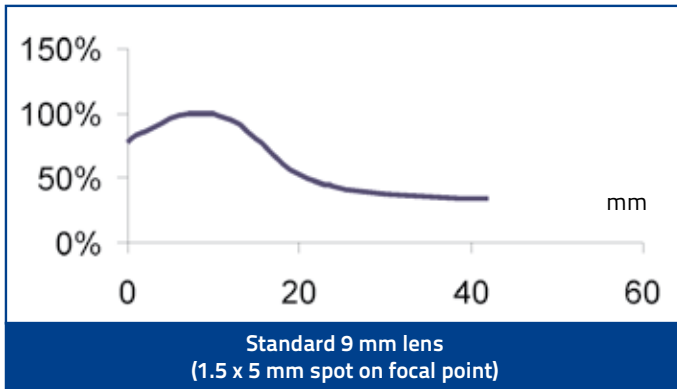
- |                             |                           |                                      |
|-----------------------------|---------------------------|--------------------------------------|
| <b>A</b> yellow OUTPUT LED  | <b>F</b> +/- push-buttons | <b>L</b> BKGD push-button            |
| <b>B</b> green READY LED    | <b>G</b> SET push-button  | <b>M</b> Light/Dark Switch           |
| <b>C</b> orange DELAY LED   | <b>H</b> Display          | <b>N</b> Orange Indicators Arrows    |
| <b>E</b> orange KEYLOCK LED | <b>I</b> MARK push-button | <b>O</b> Sensitivity Adjustment Knob |
| <b>D</b> Bargraph           |                           |                                      |

## CONNECTIONS



# CONTRAST SENSORS

## READING DIAGRAMS



VERTICAL SPOT



HORIZONTAL SPOT

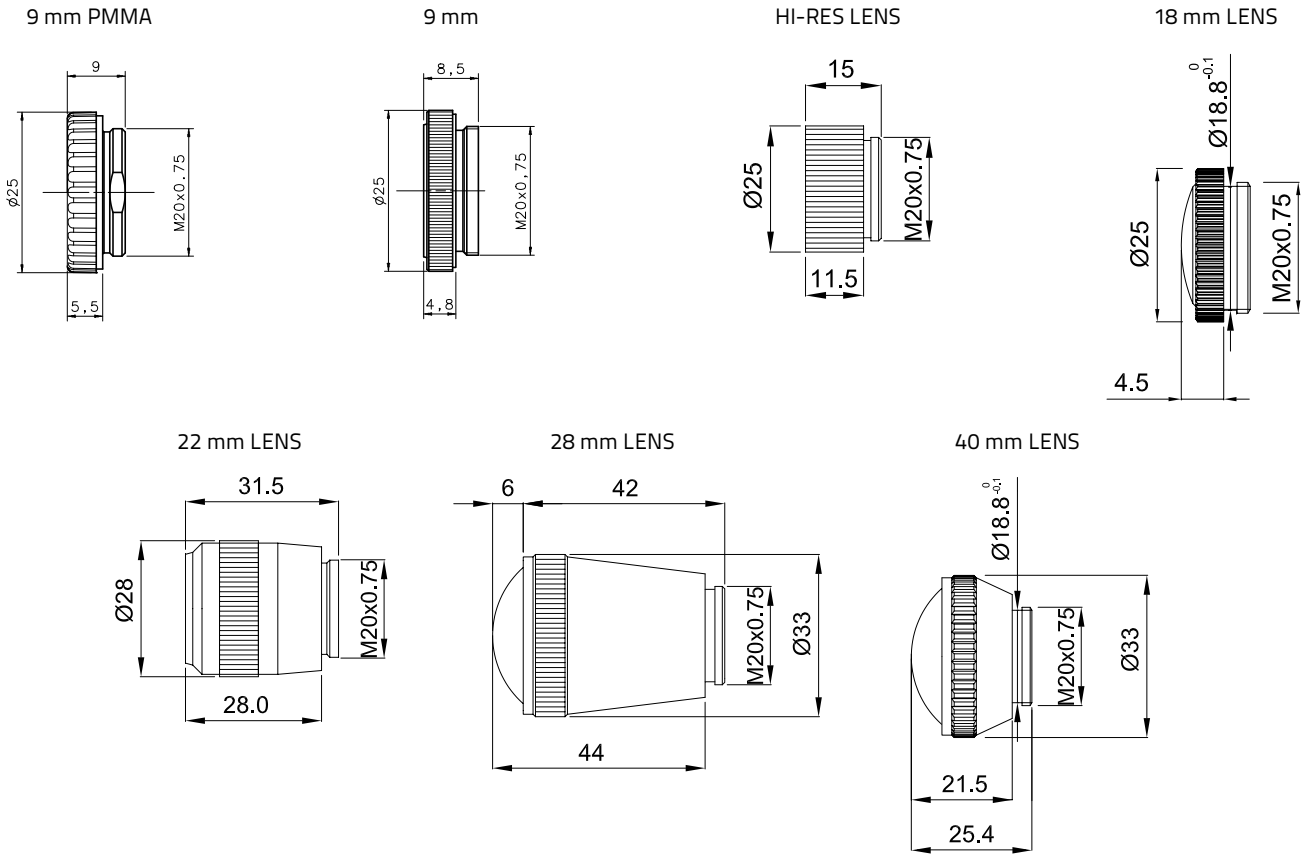


Horizontal spot is present in the TL46 models with final '-L' suffix

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	SETTING & INDICATORS	EMISSION	OUTPUT	MODEL	ORDER No.
Contrast sensor	Trimmer 2 LEDs	WHITE vertical spot	PNP	TL46-A-415	954601070
			NPN	TL46-A-425	954601080
	Push-buttons 2 LEDs	RED vertical spot	PNP	TL46-A-615	954601090
			NPN	TL46-A-625	954601100
	Push buttons 4 LEDs bargraph	R.G.B. vertical spot	PNP/NPN	TL46-W-815	954601000
		R.G.B. horizontal spot		TL46-W-815L	954601010
		R.G.B. vertical spot		TL46-WL-815	954601020
		R.G.B. horizontal spot		TL46-WL-815L	954601030
		R.G.B. vertical spot		TL46-WLF-815	954601040
		R.G.B. horizontal spot		TL46-WLF-815L	954601050
	Push buttons 4 LEDs display	R.G.B. vertical spot	PNP	TL46-WJ-815	954601110
		R.G.B. horizontal spot		TL46-WJ-815L	954601120

## ACCESSORIES



MODEL	DESCRIPTION	ORDER No.
Lens No.9	glass lens with 9 mm focus	95ACC2670
Lens No.9 PMMA	plastic lens with 9 mm focus	95ACC2540
Lens Hi-Res	additional focussing glass lens with 9 mm focus (*)	95ACC1050
Lens No.18	glass lens with 18 mm focus	95ACC2680
Lens No.22	glass lens with 22 mm focus	95ACC1100
Lens No.28	glass lens with 28 mm focus	890000194
Lens No.40	glass lens with 40 mm focus	95ACC2740

\* focussing lens to screw between the sensor and the normal 9 mm lens

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700

# LUMINESCENCE SENSORS

## LD46

### Luminescence sensor line in standard metal housing

- UV high power LED emission
- High sensitivity on fluorescent marks
- 10 - 50 mm detection distance
- 2 kHz switching frequency
- NPN/PNP and 0-5 V analog outputs



#### APPLICATIONS

- Packaging and labeling machinery
- Food, Cosmetic and Pharmaceutical
- Ceramic tiles selection and sorting



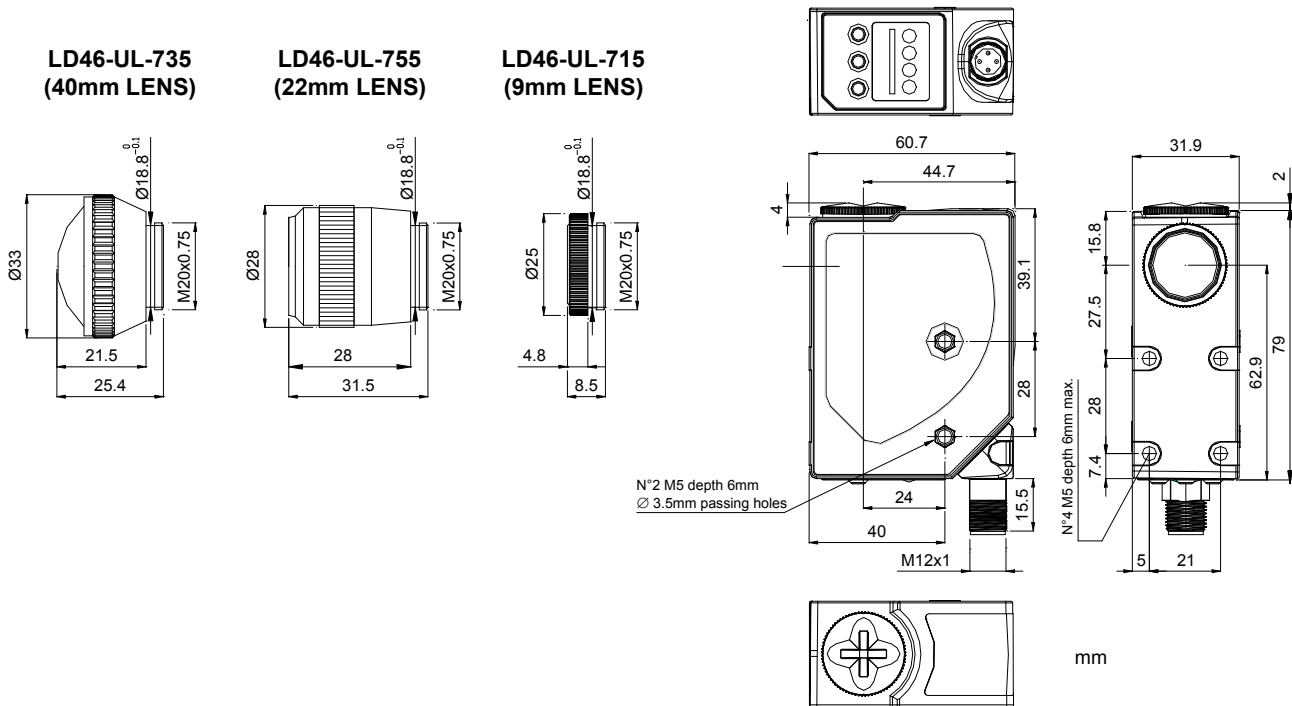
(\*) ATEX II 3DG

LD46		
Luminescence sensor		10...20 mm (LD46-UL-715) 20...40 mm (LD46-UL-755) 30...50 mm (LD46-UL-735)
Spot dimension		2x8 mm at 10 mm 3x11 mm at 24 mm 4x15 mm at 50 mm
Switching frequency		2 kHz
Response Time		250 µs
Light emission		UV-HP LED
Setting		push buttons
Power supply	Vdc	15...30 V
	Vac	
	Vac/dc	
Output	PNP	
	NPN	
	NPN/PNP	▪
	relay	
	other	0...5 V Analog output
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		31x81x58
Housing material		aluminium
Mechanical protection		IP67

TECHNICAL DATA

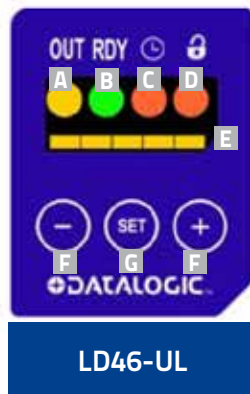
Power supply	15 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	50 mA max. at 24 Vdc
Light emission	UV LED 375 nm
Setting	SET push-buttons
Indicators	yellow OUTPUT LED green READY LED orange DELAY LED and KEYLOCK LED 5-segment bargraph
Output	PNP/NPN; analog output
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	250 µs
Switching frequency	2 kHz
Connection	M12 5-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2, double insulation
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Minimum spot dimension	2 x 8 mm at 10 mm (mod. LD46-UL-715) 3x11 mm at 24 mm (mod. LD46-UL-755) 4x15 mm at 50 mm (mod. LD46-UL-735)
Housing material	aluminium
Lens material	glass
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	180 g max.

DIMENSIONS



# LUMINESCENCE SENSORS

## INDICATORS AND SETTINGS

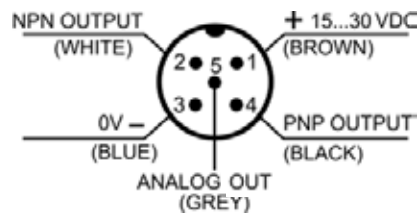


- A** yellow OUTPUT LED
- B** green READY LED
- C** orange DELAY LED
- D** orange KEYLOCK LED
- E** Bargraph
- F** +/- push-buttons
- G** SET push-button

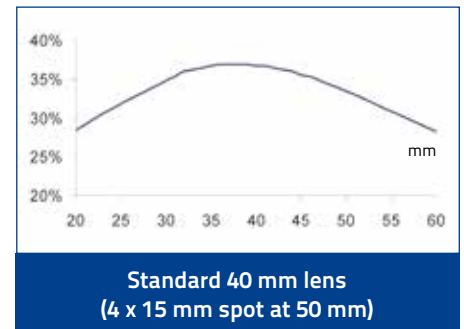
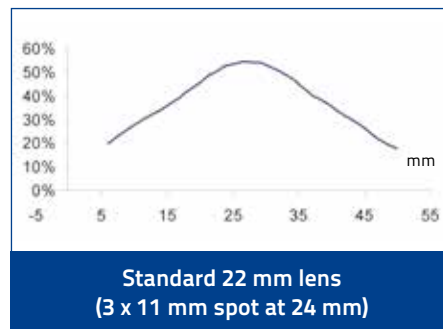
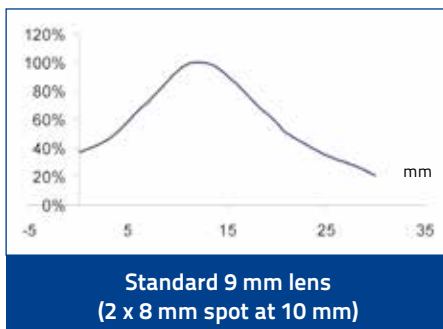
**LD46-UL**

## CONNECTIONS

### M12 CONNECTOR



## DETECTION DIAGRAMS

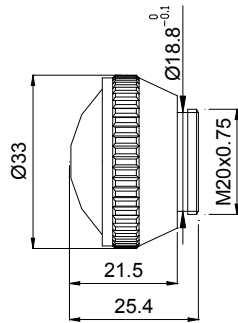


## MODEL SELECTION AND ORDER INFORMATION

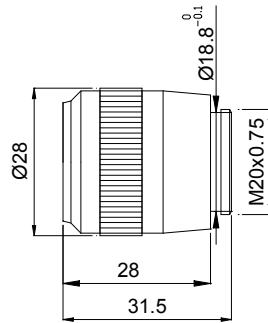
OPTIC FUNCTION	EMISSION	CONNECTION	OUTPUT	MODEL	ORDER No.
Luminescence sensor	10-20 mm Vertical spot	M12 Connector	NPN/PNP	LD46-UL-715	955201000
	20-40 mm Vertical spot			LD46-UL-755	955201010
	30-50 mm Vertical spot			LD46-UL-735	955201020

## ACCESSORIES

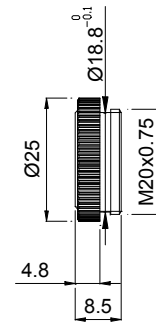
40 mm LENS  
(LD46-UL-735)



22 mm LENS  
(LD46-UL-755)



9 mm LENS  
(LD46-UL-715)



MODEL	DESCRIPTION	ORDER No.
Lens No.9	glass lens with 9 mm focus	95ACC2670
Lens No.22	glass lens with 22 mm focus	95ACC1100
Lens No.40	glass lens with 40 mm focus	95ACC2740

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700



# COLOR & CONTRAST SENSORS

## S65

### Advanced color and contrast sensors in compact case

#### Color S65-V:

- 3 independent NPN or PNP outputs and RS 485 serial interface
- 3 channel color sensor with 10 tolerance levels
- Wide spectrum white light LED emission and RGB photo-receiver
- 2 push button setting with 4 digit display indicator

#### Contrast S65-W:

- High 12 bit resolution and 30 kHz switching frequency
- PNP or NPN output and RS 485 serial interface



#### APPLICATIONS

- Packaging lines
- Contrast reading
- Automatic machine

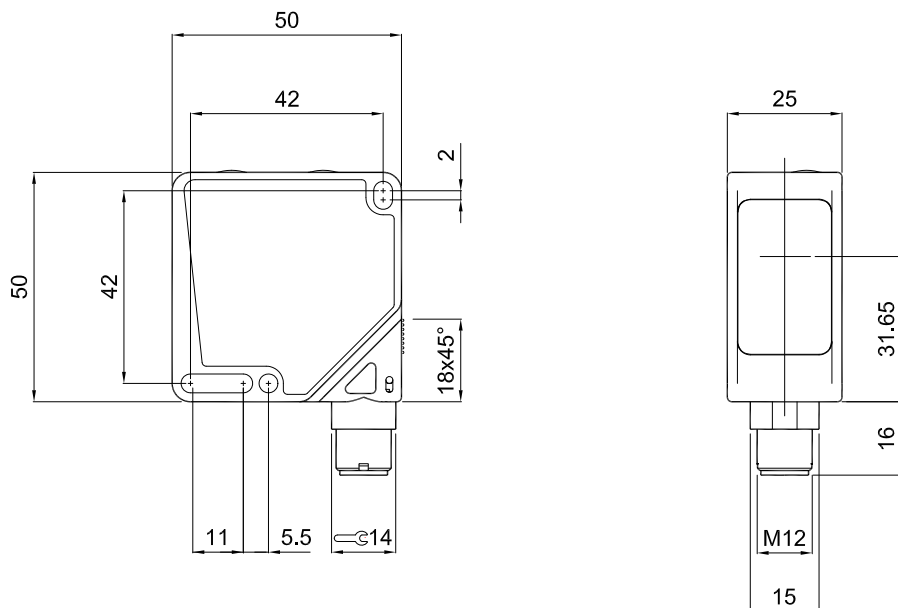


S65		
Contrast sensor		12...20 mm (S65-W)
Color sensor		5...45 mm (S65-V)
Switching frequency		30 kHz (S65-W) 500 Hz (S65-V19 vers.) 1,5 kHz (S65-V09 vers.)
Light emission		white LED
Serial interface		RS485
Setting		push-buttons
Power supply	Vdc	10...30 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	0...5 V Analog output (S65-W)
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		50x50x25
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

Power supply	10 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	50 mA max. at 24 Vdc (mod. S65-W) 60 mA max. at 24 Vdc (mod. S65-V)
Light emission	white LED 400-700 nm
Setting	SET push-buttons SEL push-buttons (mod. S65-V)
Indicators	yellow OUTPUT LED green 4-digit display, 3 OUTPUT STATUS LEDs (S65-V), STABILITY and 2 OUTPUT DELAY LEDs (mod. S65-W)
Output	1 PNP or NPN; analog output (mod. S65-W) 3 PNP or NPN; RS485 serial interface (mod. S65-V)
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	5 ms (norm) and 1 ms (fast) (mod. S65-V19) 335 µs (mod. S65-V09) 16 µs (mod. S65-W)
Switching frequency	100 Hz (norm) and 500 Hz (fast) (mod. S65-V19) 1,5 kHz (mod. S65-V09) 30 kHz (mod. S65-W)
Connection	M12 5-pole connector (mod. S65-W standard vers.), M12 8-pole connector (mod. S65-W vers. with RS485 serial interface) M12 8-pole connector (mod. S65-V)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Minimum spot dimension	3x1 mm at 19 mm (mod. S65-W) Ø 4 mm (mod. S65-V)
Depth of field	± 2 mm (mod. S65-W)
Housing material	ABS
Lens material	window and lenses in glass
Operating temperature	-10 ... 55 °C
Storage temperature	-20 ... 70 °C
Weight	100 g max.

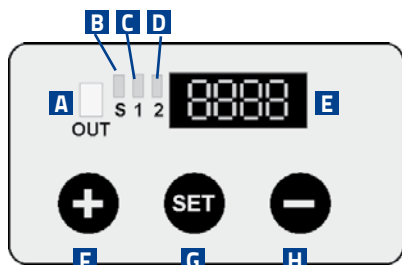
DIMENSIONS



# COLOR & CONTRAST SENSORS

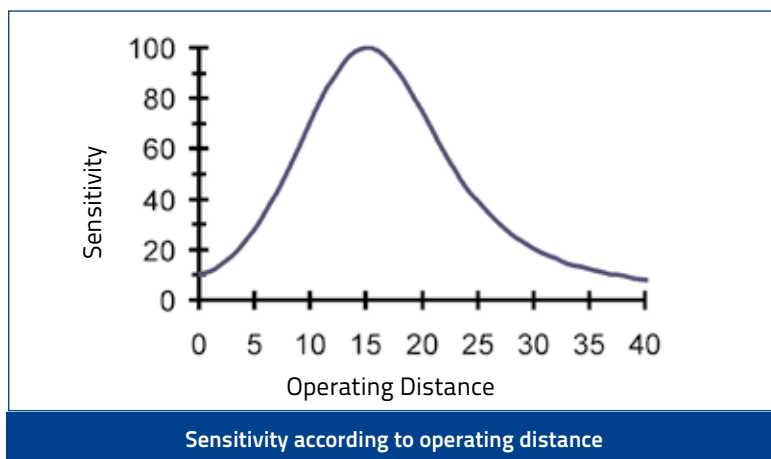
S65-W

## INDICATORS AND SETTINGS S65-W



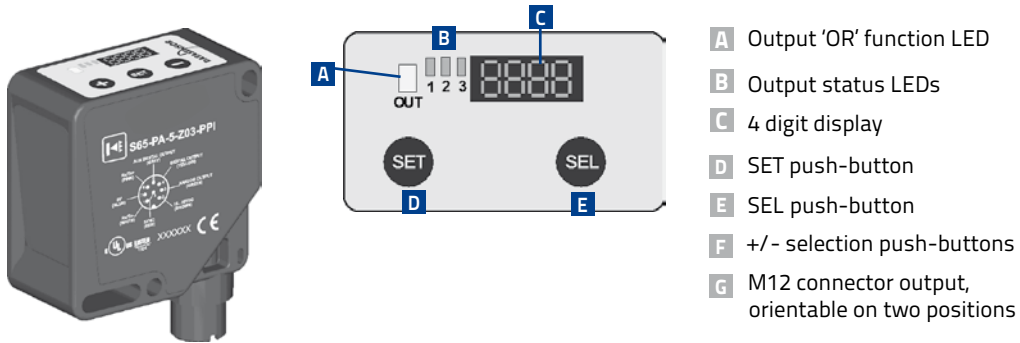
- A Output status LED
- B Stability LED
- C Delay ON LED
- D Delay OFF LED
- E 4-digit display
- F +/- push-buttons
- G SET push-button
- H M12 connector output, orientable on two positions

## DETECTION DIAGRAMS S65-W

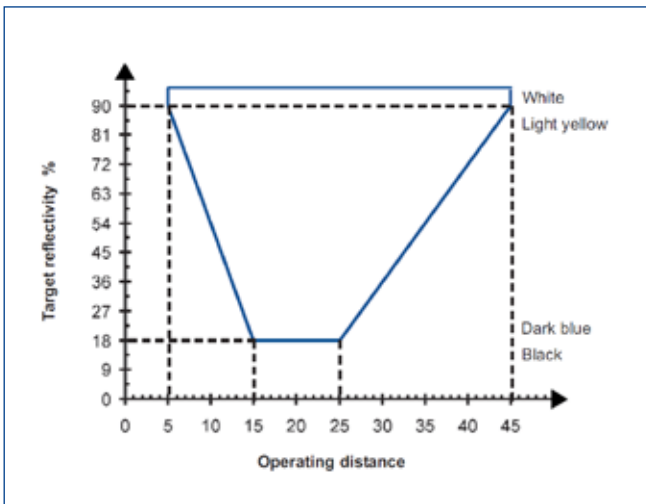


## S65-V

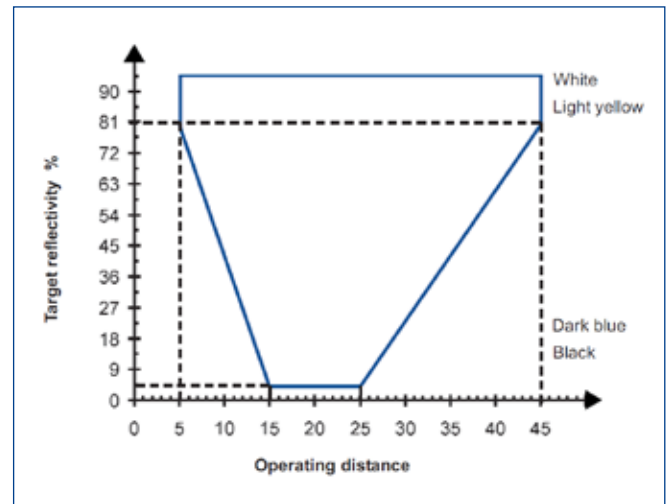
### INDICATORS AND SETTINGS S65-V



### DETECTION DIAGRAMS S65-V



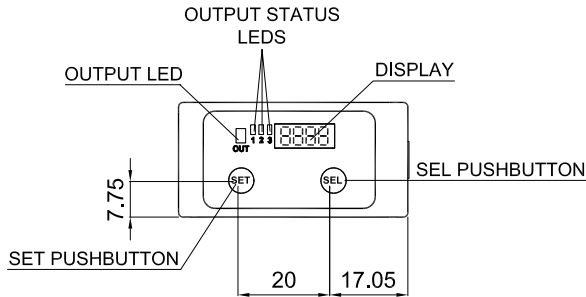
S65-V0: operating distance according to target reflectivity degree



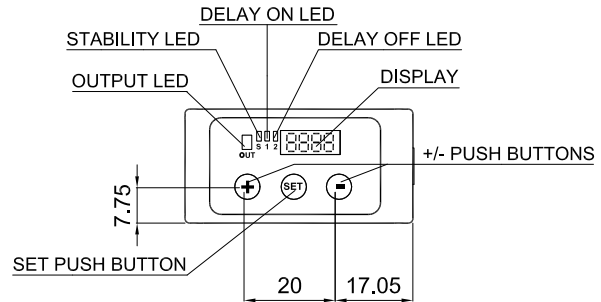
S65-V1: operating distance according to target reflectivity degree

# COLOR & CONTRAST SENSORS

Color sensor S65-V



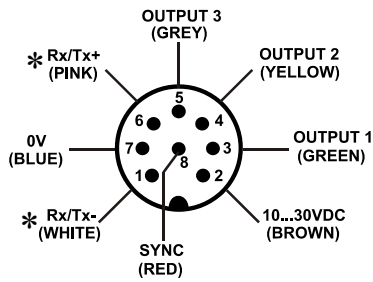
Contrast sensor S65-W



mm

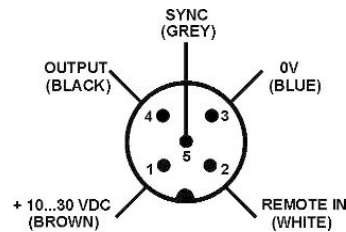
## CONNECTIONS

M12 CONNECTOR - COLOR SENSOR S65-V

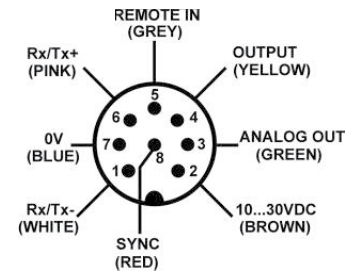


M12 CONNECTOR - CONTRAST SENSOR S65-W

standard versions



versions with RS485 serial interface



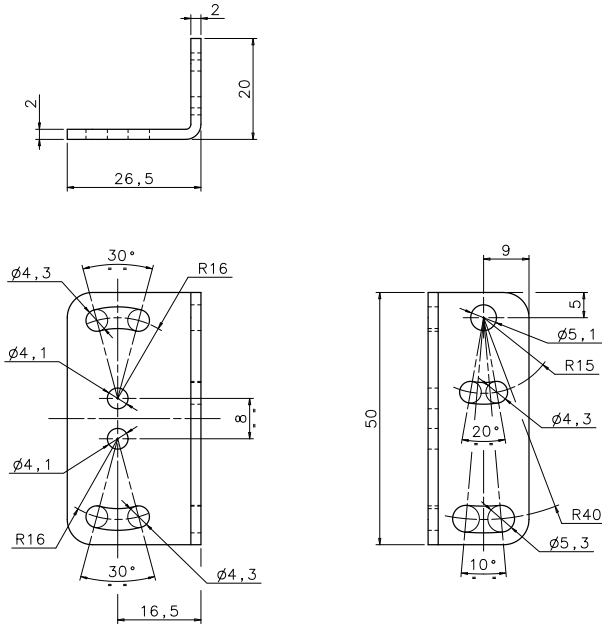
\* Available only for version with RS485 serial connection (S65-PA-5-V09-xxxZ).

## MODEL SELECTION AND ORDER INFORMATION

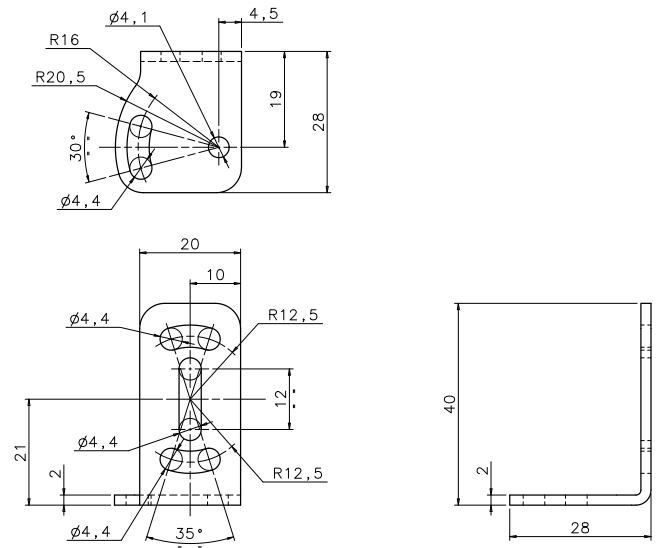
OPTIC FUNCTION	HOUSING	CONNECTION	OUTPUT	MODEL	ORDER No.
Color sensor	335 $\mu$ s	M12 8-pole Connector	PNP, RS485	S65-PA-5-V09-PPPZ	956251000
			NPN, RS485	S65-PA-5-V09-NNNZ	956251010
			PNP	S65-PA-5-V09-PPP	956251020
			NPN	S65-PA-5-V09-NNN	956251030
	5 ms (norm) or 1 ms (fast)		PNP, RS485	S65-PA-5-V19-PPPZ	956251080
			NPN, RS485	S65-PA-5-V19-NNNZ	956251090
			PNP	S65-PA-5-V19-PPP	956251100
			NPN	S65-PA-5-V19-NNN	956251110
Contrast sensor	16 $\mu$ s	M12 5-pole Connector	NPN	S65-PA-5-W09-NH	954201000
		M12 8-pole Connector	NPN, RS485	S65-PA-5-W09-NHZ	954201010
		M12 5-pole Connector	PNP	S65-PA-5-W09-PH	954201020
		M12 8-pole Connector	PNP, RS485	S65-PA-5-W09-PHZ	954201030

## ACCESSORIES

ST-5020



ST-5021



MODEL	DESCRIPTION	ORDER No.
ST-5020	mounting bracket 50 x 27 x 20 mm	95ACC5330
ST-5021	mounting bracket 20 x 40 x 28 mm	95ACC5340

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700
		8-pole, black, P.V.C.	3 m	CS-A1-06-B-03
5 m	CS-A1-06-B-05	95ACC2270		
10 m	CS-A1-06-B-10	95ACC2280		
Radial M12 Connector	8-pole, shielded, black, P.V.C.	3 m	CV-A2-26-B-03	95ACC1600
		5 m	CV-A2-26-B-05	95ACC1610
		10 m	CV-A2-26-B-10	95ACC1620
Axial M12 Connector	8-pole, shielded, black, P.V.C.	3 m	CV-A1-26-B-03	95ACC1510
		5 m	CV-A1-26-B-05	95ACC1520
		10 m	CV-A1-26-B-10	95ACC1530
		15 m	CV-A1-26-B-15	95ACC2080
		25 m	CV-A1-26-B-25	95ACC2100
		50 m	CS-A1-06-U-50	95A252710
	8-pole, U.L., black, P.V.C.	3 m	CS-A1-06-U-03	95ASE1220
		5 m	CS-A1-06-U-05	95ASE1230
		10 m	CS-A1-06-U-10	95ASE1240
		15 m	CS-A1-06-U-15	95ASE1250
		25 m	CS-A1-06-U-25	95ASE1260
		50 m	CS-A1-06-U-50	95A252710
		8-pole, black	Connector-not cabled	CS-A1-06-B-NC

# AREA SENSORS

## AS1

### AREAscan™ high-resolution detection photoelectric light grids

- Crossed beam area sensors
- 100mm controlled height
- Adjustment trimmer
- Optical synchronism
- Scan Mode input

#### APPLICATIONS

- Processing lines
- Food, Cosmetic and Pharmaceutical
- Electronics and mechanical assembling
- Conveyor lines and sorting systems

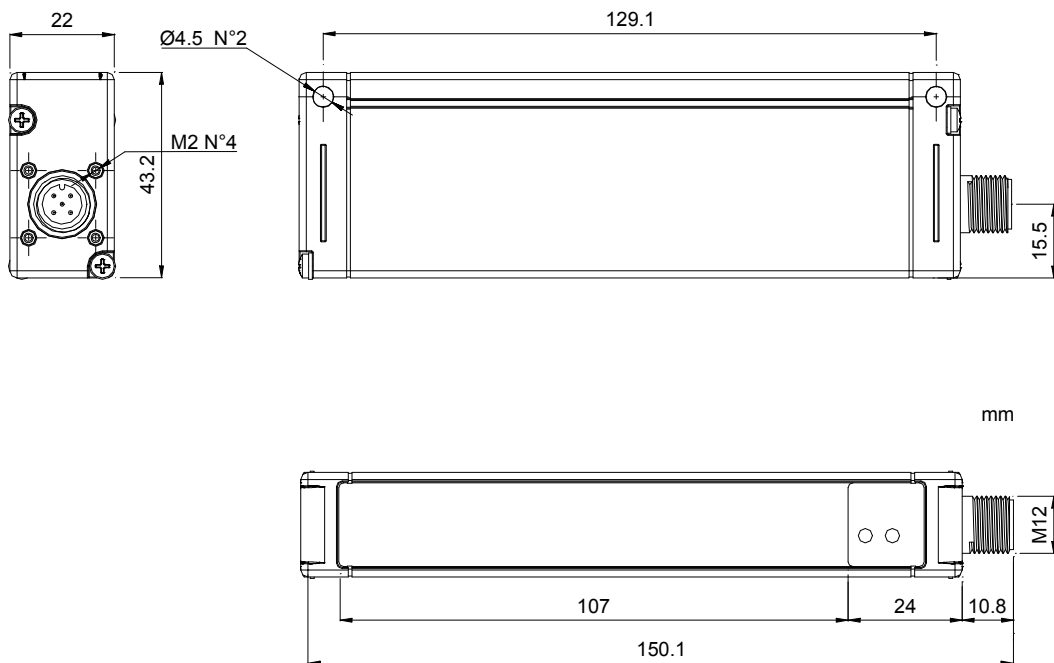


AS1		
Area sensing		100 mm
Operating Distance		0,3...2,1 m (AS1-LD) 0,8...3 m (AS1-HD)
Resolution		Flat: 0,2x75mm Cylindrical: Ø 6mm (AS1-HR) Flat: 0,2x200mm Cylindrical: Ø18mm (AS1-SR)
Response Time		1,75 ms (AS1-SR) 2,75...8 ms (AS1-HR)
Light emission		IR LED
Power supply	Vdc	24 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	
	NPN/PNP	
	relay	
	other	
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		22x43x150
Housing material		aluminium
Mechanical protection		IP65

TECHNICAL DATA

Power supply	24 Vdc ± 15%
Consumption on emitter unit (TX)	150 mA max.
Consumption on receiver unit (RX)	40 mA max. load excluded
Light emission	IR LED 880 nm
Setting	adjustment trimmer (mod. AS1...P)
Indicators	yellow OUTPUT LED green POWER ON LED
Output	PNP
Output current	100 mA max.
Saturation voltage	1,5 V max.
Response time	2,75 - 8 ms (mod. AS1-HR) 1,75 ms (mod. AS1-SR)
Connection	M12 4-pole connector (TX), M12 5-pole connector (RX)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Mechanical protection	IP65 (EN 60529)
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	black electro-painted aluminium
Lens material	PMMA
Operating temperature	0 ... 50 °C
Storage temperature	-25 ... 70 °C
Weight	300 g

DIMENSIONS

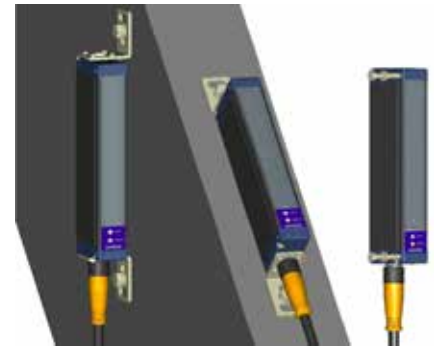




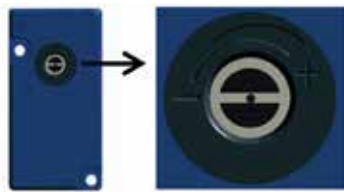
# AREA SENSORS

## INDICATORS AND SETTINGS

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.



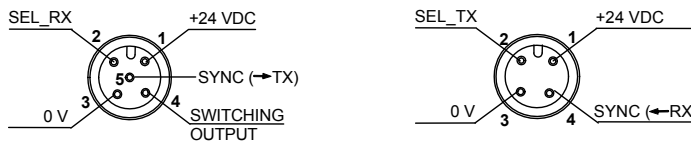
## INDICATORS AND SETTINGS (TRIMMER VERSIONS)



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

### M12 CONNECTOR

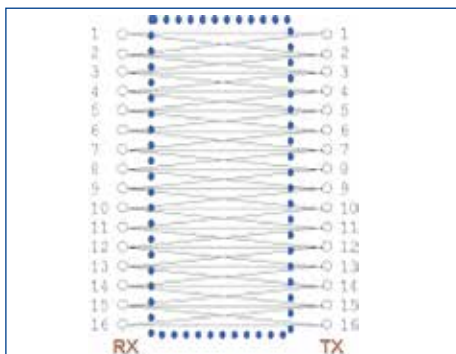


	AS1-HR	AS1-SR		AS1-HR	AS1-SR
<b>RECEIVER (RX):</b> M12 5-pole connector	1 – brown: +24 VDC	+24 VDC	<b>EMITTER (TX):</b> M12 4-pole connector	1 – brown: +24 VDC	+24 VDC
	2 – white: SEL_RX	Not used		2 – white: SEL_TX	Not used
	3 – blue: 0 V	0 V		3 – blue: 0 V	0 V
	4 – black: Switching output	Switching output		4 – black: SYNC **	SYNC *
	5 – grey: SYNC *	SYNC *			

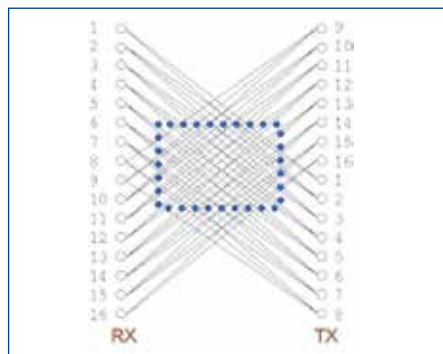
\* not used in trimmer version  
 \*\* SEL\_TX2 in trimmer version

## HIGH RESOLUTION SCANNING MODE

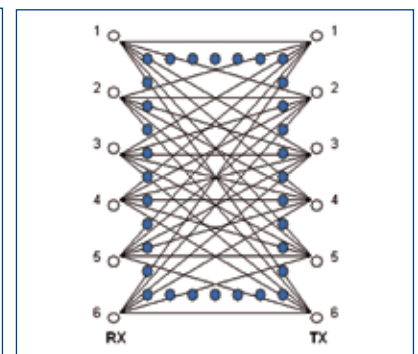
PROG. N°	SEL_RX	SEL_TX	RESOLUTION	RESPONSE TIME (msec)
1	0 Vdc or FLOAT	0 Vdc or FLOAT	LOW	2.75
2	0 Vdc or FLOAT	24 Vdc	M/L	3
3	24 Vdc	0Vdc or FLOAT	M/H	7.75
4	24 Vdc	24 Vdc	HIGH	8



**Scan mode 1:**  
 high speed / low resolution  
 Minimum object detection  
 Flat = 0.4 (thickness) x 100 (width) mm  
 Cylindrical objects = Ø 6 mm

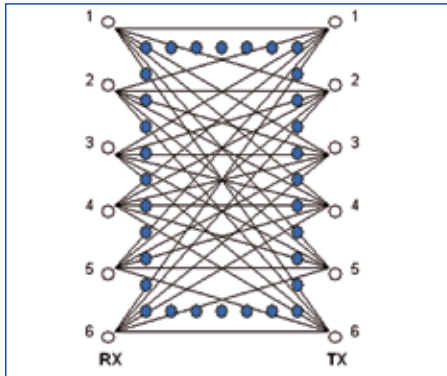


**Scan mode 2:**  
 high speed / mid resol. central area  
 Minimum object detection  
 Flat = 0.4 (thickness) x 90 (width) mm  
 Cylindrical objects = Ø 6 mm



**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



Minimum object detection  
 Flat = 0.2 (thickness) x 200 (width) mm  
 Cylindrical objects =  $\varnothing$  18 mm

Note: the scan mode is fixed in the standard resolution version.

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	RESOLUTION	SETTING	MODEL	ORDER No.
Area sensor	2 m	High	n/a	AS1-LD-HR-010-J	958101000
			Adjustment Trimmer	AS1-LD-HR-010-P	958101040
		Standard	n/a	AS1-LD-SR-010-J	958101010
			Adjustment Trimmer	AS1-LD-SR-010-P	958101050
	3 m	High	n/a	AS1-HD-HR-010-J	958101020
		Standard		AS1-HD-SR-010-J	958101030

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		10 m	CS-A1-02-G-10	95A251390
	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C.	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700

# DIMENSION LIGHT GRIDS

## DS1

### AREAscan™ detection and measurement light grids with analog output

- 4 mm resolution and 1 ms response time
- 100 to 300 mm controlled height
- Operating distance up to 4 m
- PNP digital and 0-10 V analog outputs
- Adjustment trimmer

#### APPLICATIONS

- Processing and Packaging machinery
- Food, Cosmetic, Pharmaceutical
- Electronics and mechanical assembling
- Conveyor lines and sorting systems

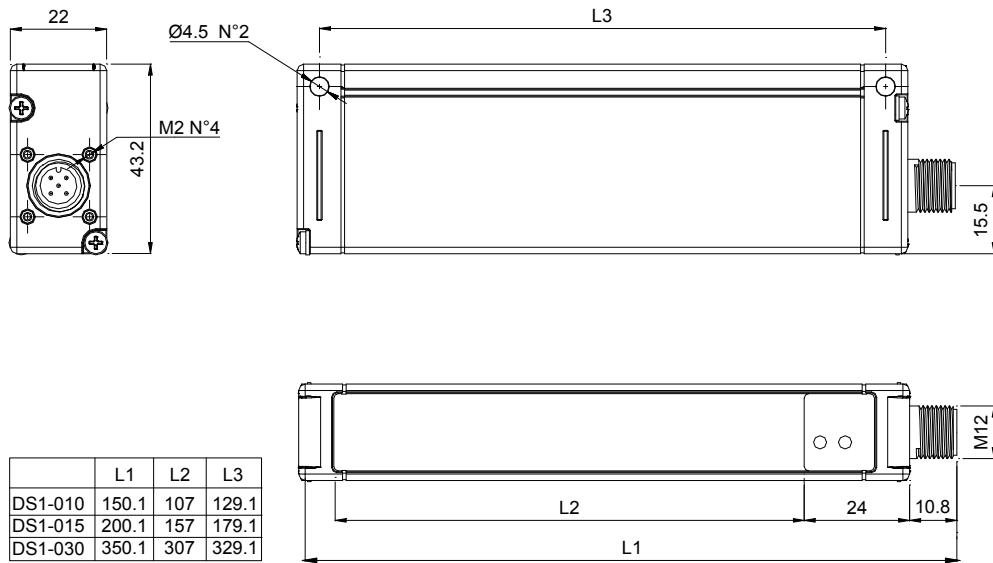


DS1		
Light array (controlled height)		100...300 mm
Resolution		4...7 mm
Number of beams		16...48
Light emission		IR LED
Response time		1...2,75 ms
Setting		Trimmer
Operating distance		0,15...0,8 m (SD)
		0,15...2,1 m (LD)
		0,2...4 m (HD)
Power supply	Vdc	24V +/- 15%
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	
	NPN/PNP	
	relay	
	other	0...10 V Analog output
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		22x43x(150/350)
Housing material		aluminium
Mechanical protection		IP65

TECHNICAL DATA

Power supply	24 Vdc ± 15%
Consumption on emitter unit (TX)	150 mA max.
Consumption on receiver unit (RX)	50 mA max. load excluded
Light emission	IR LED 880 nm
Setting	adjustment trimmer (mod. DS1...PV)
Indicators	yellow OUTPUT LED green POWER ON LED
Output	PNP; analog output
Output current	100 mA max.
Saturation voltage	1,5 V max.
Response time	1 - 2,75 ms
Connection	M12 4-pole connector (TX), M12 5-pole connector (RX)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Mechanical protection	IP65 (EN 60529)
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	black electro-painted aluminium
Lens material	PMMA
Operating temperature	0 ... 50 °C
Storage temperature	-25 ... 70 °C
Weight	300 g (mod. DS1...010)
	400 g (mod. DS1...015)
	600 g (mod. DS1...030)

DIMENSIONS



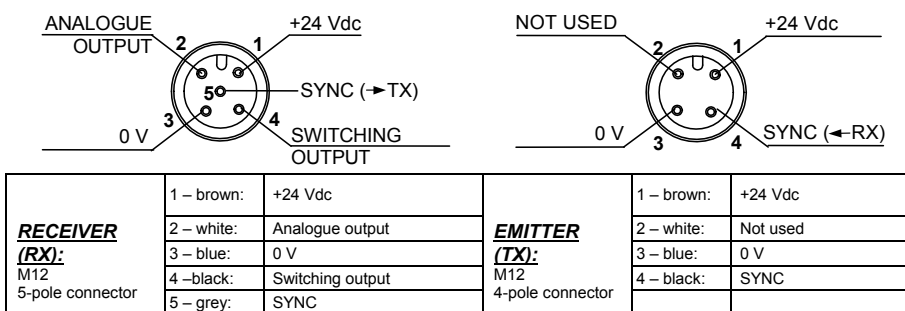
# DIMENSION LIGHT GRIDS

## INDICATORS AND SETTINGS (TRIMMER VERSIONS)

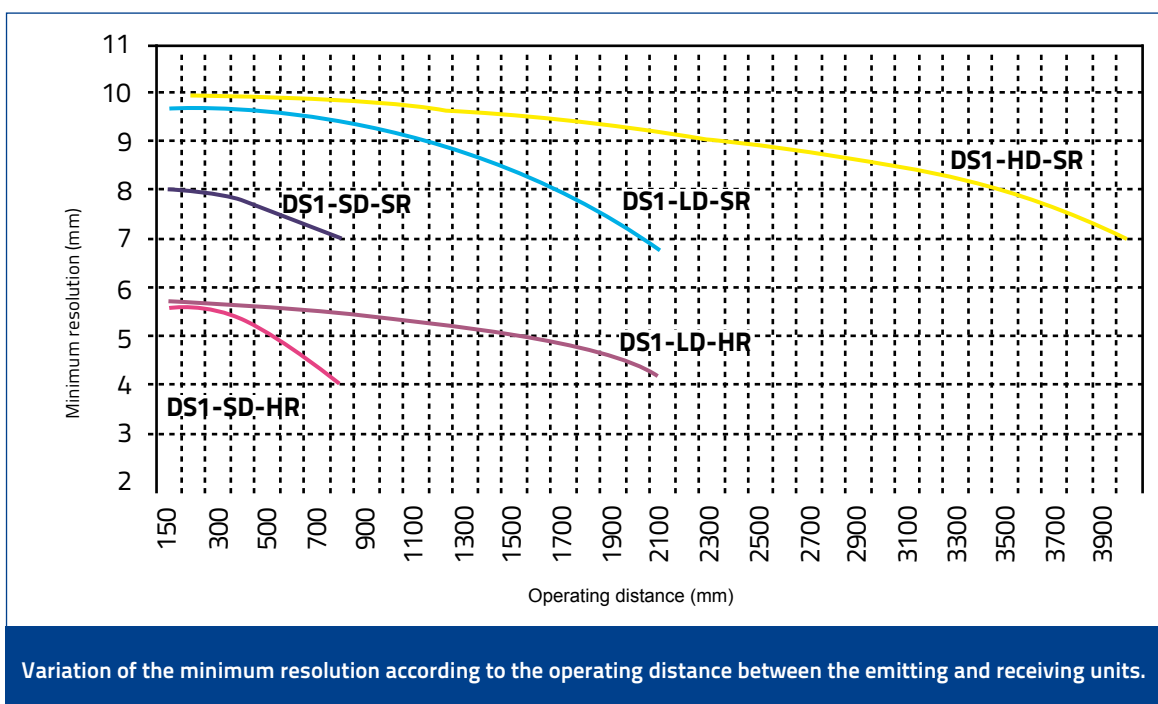


## CONNECTIONS

### M12 CONNECTOR



## DETECTION DIAGRAMS



## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	SETTING	CONTROLLED HEIGHT & RESOLUTION	MODEL	ORDER NO
Measurement light curtain	0,8 m	n/a	100 mm (res.: 7 mm)	DS1-SD-SR-010-JV	957701170
			100 mm (res.: 4 mm)	DS1-SD-HR-010-JV	957701200
			150 mm (res.: 7 mm)	DS1-SD-SR-015-JV	957701180
			150 mm (res.: 4 mm)	DS1-SD-HR-015-JV	957701210
			300 mm (res.: 7 mm)	DS1-SD-SR-030-JV	957701190
	2 m		100 mm (res.: 7 mm)	DS1-LD-SR-010-JV	957701130
			100 mm (res.: 4 mm)	DS1-LD-HR-010-JV	957701120
			150 mm (res.: 7 mm)	DS1-LD-SR-015-JV	957701150
			150 mm (res.: 4 mm)	DS1-LD-HR-015-JV	957701140
			300 mm (res.: 7 mm)	DS1-LD-SR-030-JV	957701160
	4 m	Adjustment trimmer	100 mm (res.: 7 mm)	DS1-LD-SR-010-PV	957701250
			150 mm (res.: 7 mm)	DS1-LD-SR-015-PV	957701260
			300 mm (res.: 7 mm)	DS1-LD-SR-030-PV	957701270
			100 mm (res.: 7 mm)	DS1-HD-SR-010-JV	957701220
			150 mm (res.: 7 mm)	DS1-HD-SR-015-JV	957701230
4 m	n/a	300 mm (res.: 7 mm)	DS1-HD-SR-030-JV	957701240	

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		10 m	CS-A1-02-G-10	95A251390
	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
		3 m	CS-A1-03-G-03	95ACC2110
	5-pole, grey, P.V.C.	5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
		3 m	CS-A1-03-U-03	95ASE1170
	5-pole, U.L., black, P.V.C.	5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700

# DIMENSION LIGHT GRIDS

## DS2

*AREAscan™ detection and measurement light grids with serial or Ethernet interface*

- 6 or 25 mm resolution
- Relative measurement precision  $\pm 6$  mm or  $\pm 22.5$  mm
- 150 - 1650 mm controlled heights
- Operating distance up to 10 m
- PNP and 0-10 V Analog output and RS485 or Ethernet interface



### APPLICATIONS

- Processing and Packaging machinery
- Food, Cosmetic, Pharmaceutical
- Electronics and mechanical assembling
- Conveyor lines and sorting systems

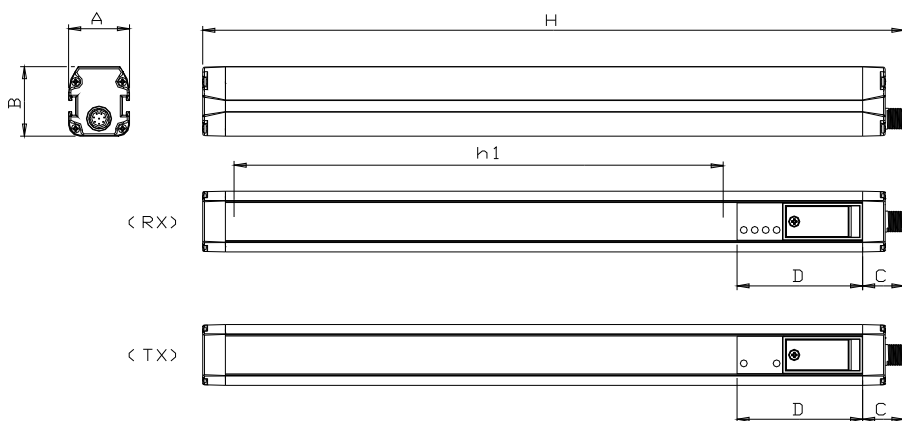


DS2		
Light array (controlled height)		150...1650 mm
Resolution		6...25 mm
Number of beams		21...231 (res= 6mm)
		6...66 (res= 25mm)
Light emission		IR LED
Response time		5...90 ms
Interface		serial RS485 or Ethernet
Setting		Dip-switches
		Graphic interface
Operating distance		0,3...5 m (res= 6mm)
		0,3...10 m (res=25mm)
Power supply	Vdc	24V +/- 20%
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	
	NPN/PNP	
	relay	
	other	0...10 V Analog output
	cable	
Connection	connector	▪
	pig-tail	
Approximate dimensions (mm)		35x40x(256...1726)
Housing material		aluminium
Mechanical protection		IP65

TECHNICAL DATA

Power supply	24 Vdc ± 20%
Consumption on emitter unit (TX)	250 mA max. load excluded
Light emission	IR LED 880 nm
Output	PNP, analog output
Output current	100 mA
Saturation voltage	1,5 V max.
Connection	M12 4-pole connector (TX), M12 8-pole and M12 4-pole type "D" connector (RX)
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class I
Mechanical protection	IP65 (EN 60529)
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	painted aluminium (Pulverit 5121/0085 Black)
Lens material	PMMA
Operating temperature	0 ... 50 °C
Storage temperature	-25 ... 55 °C
Weight	1,9 - 4,6 kg

DIMENSIONS

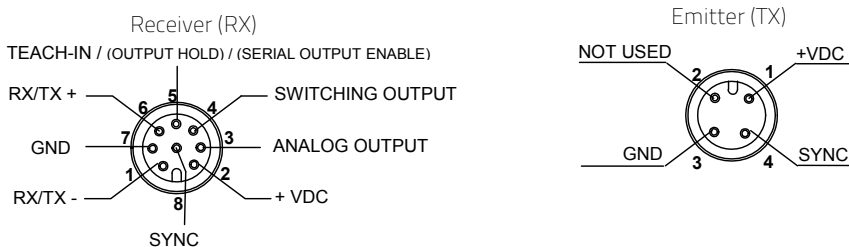


MODEL	A x B (mm)	H (mm)	C (mm)	D (mm)
DS2-05-07-015-XX	35 x 40	256	23.8	72.5
DS2-05-07-030-XX	35 x 40	403	23.8	72.5
DS2-05-07-045-XX	35 x 40	550	23.8	72.5
DS2-05-07-060-XX	35 x 40	697	23.8	72.5
DS2-05-07-075-XX	35 x 40	844	23.8	72.5
DS2-05-07-090-XX	35 x 40	991	23.8	72.5
DS2-05-07-105-XX	35 x 40	1138	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
DS2-05-07-045-XX	35 x 40	562	23.8	72.5
DS2-05-07-060-XX	35 x 40	713	23.8	72.5
DS2-05-07-075-XX	35 x 40	864	23.8	72.5
DS2-05-07-090-XX	35 x 40	1015	23.8	72.5

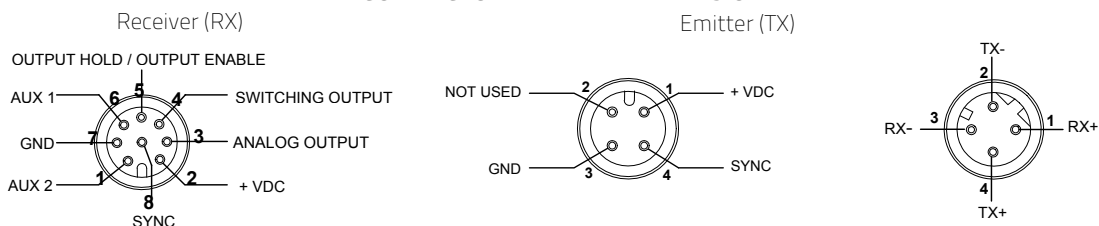
XX: JV for serial models or JE for ETHERNET models

CONNECTIONS

M12 CONNECTOR - SERIAL VERSION



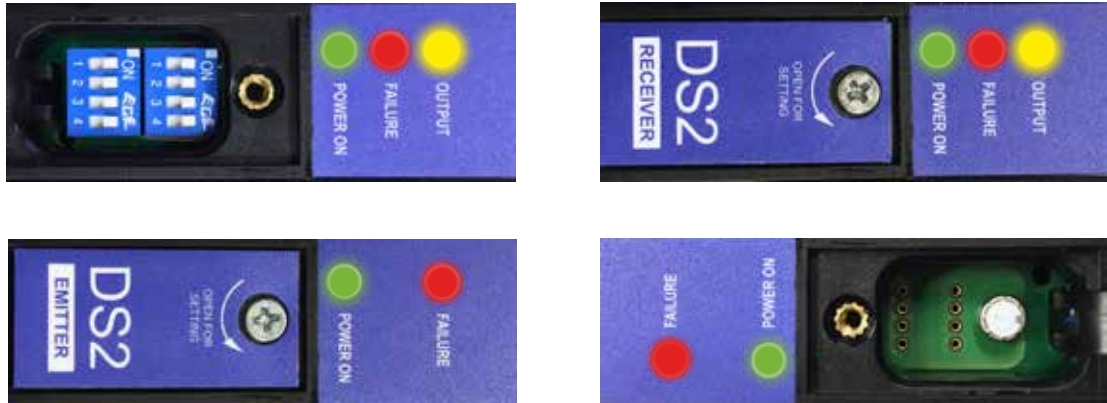
M12 CONNECTOR - ETHERNET VERSION



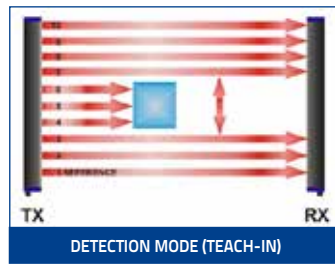
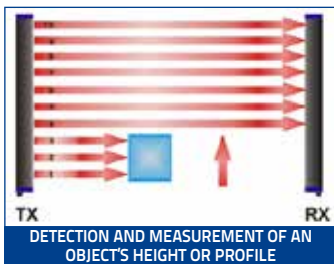


# DIMENSION LIGHT GRIDS

## INDICATORS AND SETTING



## DETECTION 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;
- Cartonners, stackers and palletizers.

## RESPONSE TIME - SERIAL AND ETHERNET VERSION

MODEL	Tmin (msec)							Tmax (msec)	
	CONFIGURATION								
MODEL	Top beam				Complete beams status				
	Binary	Binary	ASCII	ASCII	Binary	Binary	ASCII	ASCII	
	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud	57600 baud	9600 baud	
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	
DS2-05-07-045-JV	5	11	5	11	5	13	6	18	
DS2-05-07-060-JV	5.5	12	5.5	12.5	5.5	14.5	6.5	19.5	
DS2-05-07-075-JV	6	13	6	13.5	6	16	7	21	
DS2-05-07-090-JV	6.5	13.5	6.5	14.5	6.5	17.5	7.5	22.5	

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

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	CONTROLLED AREA (mm)	OPTICS INTERAXIS (mm)	OUTPUT	MODEL	ORDER No.		
Measurement light curtain	147	6.75	Voltage Analog and RS485	DS2-05-07-015-JV	957501040		
	294			DS2-05-07-030-JV	957501050		
	441			DS2-05-07-045-JV	957501060		
	588			DS2-05-07-060-JV	957501000		
	735			DS2-05-07-075-JV	957501070		
	882			DS2-05-07-090-JV	957501010		
	1029			DS2-05-07-105-JV	957501080		
	1176			DS2-05-07-120-JV	957501020		
	1323			DS2-05-07-135-JV	957501090		
	1470			DS2-05-07-150-JV	957501100		
	1617			DS2-05-07-165-JV	957501030		
	453			25	Voltage Analog and RS485	DS2-05-25-045-JV	957501110
	604					DS2-05-25-060-JV	957501140
	755					DS2-05-25-075-JV	957501120
	912	DS2-05-25-090-JV	957501130				
	588	6.75	Voltage Analog and Ethernet	DS2-05-07-060-JE	957501150		
	735			DS2-05-07-075-JE	957501160		
	882			DS2-05-07-090-JE	957501170		
	1176			DS2-05-07-120-JE	957501180		
	1470			DS2-05-07-150-JE	957501190		
	1617			DS2-05-07-165-JE	957501200		

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	4-pole, grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380
		5 m	CS-A1-02-G-05	95A251270
		10 m	CS-A1-02-G-10	95A251390
	4-pole, P.U.R.	2 m	CS-A1-02-R-02	95A251540
		5 m	CS-A1-02-R-05	95A251560
	8-pole, black, P.V.C.	3 m	CS-A1-06-B-03	95ACC2230
		5 m	CS-A1-06-B-05	95ACC2240
		10 m	CS-A1-06-B-10	95ACC2250
	4-pole, shielded, grey, P.V.C.	3 m	CV-A1-22-B-03	95ACC1480
		5 m	CV-A1-22-B-05	95ACC1490
		10 m	CV-A1-22-B-10	95ACC1500
	8-pole, shielded, black, P.V.C.	3 m	CV-A1-26-B-03	95ACC1510
		5 m	CV-A1-26-B-05	95ACC1520
		10 m	CV-A1-26-B-10	95ACC1530
		15 m	CV-A1-26-B-15	95ACC2080
		25 m	CV-A1-26-B-25	95ACC2100
	4-pole, U.L., black, P.V.C.	3 m	CS-A1-02-U-03	95ASE1120
		5 m	CS-A1-02-U-05	95ASE1130
		10 m	CS-A1-02-U-10	95ASE1140
		15 m	CS-A1-02-U-15	95ASE1150
		25 m	CS-A1-02-U-25	95ASE1160
	8-pole, U.L., black, P.V.C.	3 m	CS-A1-06-U-03	95ASE1220
		5 m	CS-A1-06-U-05	95ASE1230
		10 m	CS-A1-06-U-10	95ASE1240
		15 m	CS-A1-06-U-15	95ASE1250
		25 m	CS-A1-06-U-25	95ASE1260
50 m	CS-A1-06-U-50	95A252710		
4-pole, black	Connector-not cabled	CS-A1-02-B-NC	G5085002	
8-pole, black	Connector-not cabled	CS-A1-06-B-NC	95ACC2550	

# DISTANCE SENSORS

## S80

### Time Of Flight measurement LASER distance sensor

- Class 2 visible red LASER emission
- Direct proximity measurement from 4 m to 7 m
- 20 m to 100 m retroflex measurement
- High precision and measurement speed
- PNP or NPN, 4-20 mA analog output and RS 485 serial interface

#### APPLICATIONS

- Automated warehousing
- Trans-elevator and crane positioning
- Automotive assembling lines
- Non-LFT measurement in logistics



S80		
Direct measurement range <sup>1</sup> :	0,3...4 m (S80-Y0) 0,3...7 m (S80-YL0)	
Retroreflective measurement range <sup>2</sup> :	0,3...20,3 m (S80-Y1) 0,3...100,3 m (S80-Y2)	
Repeatability	< 5mm (S80-Y0) 7 mm @7m (S80-YL0) 10 mm @20m (S80-Y1) 10 mm @100m (S80-Y2)	
Switching frequency	100 Hz (Normal), 500 Hz(Fast)	
Light emission	red LASER (class 2)	
Response time	5 ms (Normal), 1 ms(Fast)	
Serial interface	RS485	
Setting	Teach-in	
Power supply	Vdc	15...30 V
	Vac	
	Vac/dc	
	PNP	▪
Output	NPN	▪
	NPN/PNP	
	relay	
	other	4...20 mA Analog output , RS485 serial interface
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)	34x90x73	
Housing material	aluminum	
Mechanical protection	IP67	

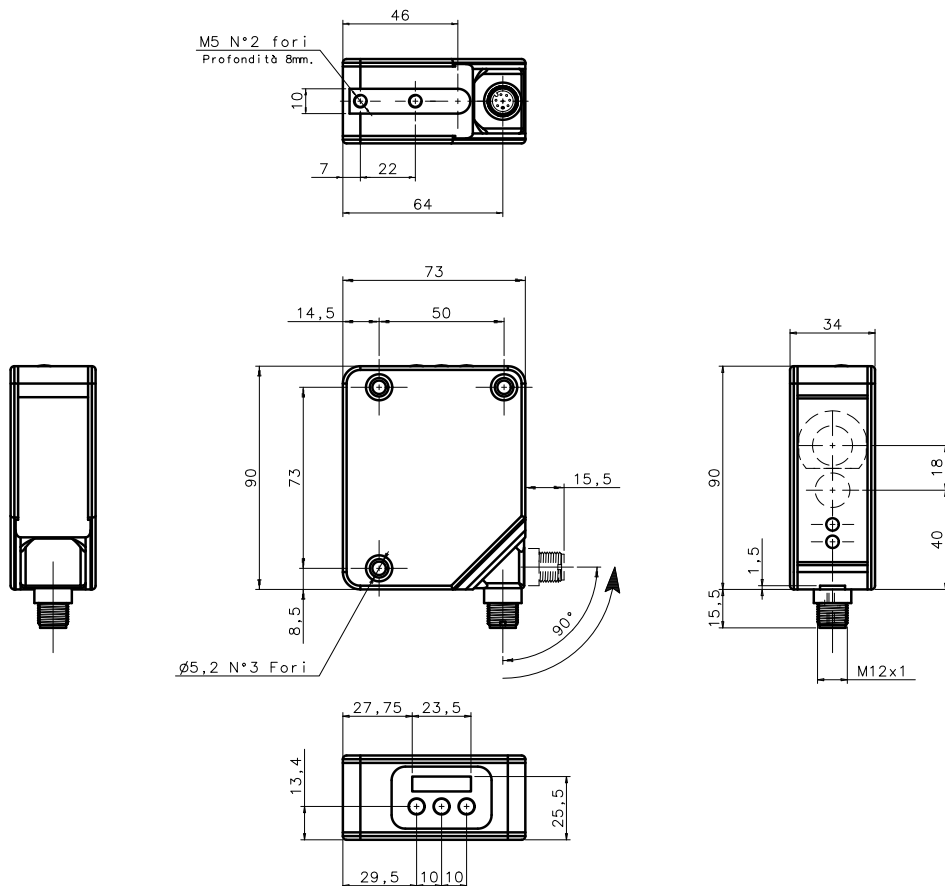
<sup>1</sup>On target 90% white to 18% grey

<sup>2</sup>On reflector R80

TECHNICAL DATA

Power supply	15 ... 30 Vdc (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	130 mA max. (110 mA at 24 V) (mod. S80...Y19/Y29) 170 mA max. (110 mA at 24 V) (mod. S80...Y09/YL09)
Light emission	red Laser 658 nm
Setting	SET push-buttons +/- push-buttons
Indicators	command panel: yellow OUTPUT LED green 4-digit display, 2 OUT1, OUT2 LEDs green FAST LED (mod. S80...Y09/Y19/Y29) indicators LED: yellow OUTPUT LED red ALARM LED
Output	2 PNP or NPN; analog output with 4-20 mA; RS485 serial interface
Output current	100 mA max.
Saturation voltage	2 V max.
Response time	5 ms (norm) and 1 ms (fast) (mod. S80...Y09/Y19/Y29) 6 ms (mod. S80...YL09)
Switching frequency	100 Hz (norm) and 500 Hz (fast) (mod. S80...Y09/Y19/Y29) 85 Hz (mod. S80...YL09)
Connection	M12 8-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	>20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	aluminium
Lens material	window and lenses in glass
Operating temperature	-10 ... 50 °C
Storage temperature	-20 ... 70 °C
Weight	330 g max.

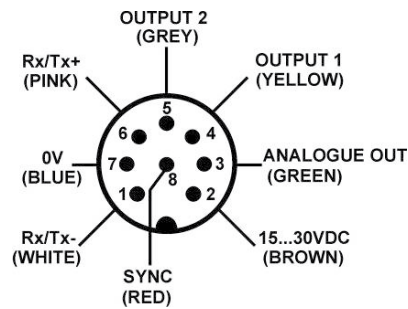
DIMENSIONS



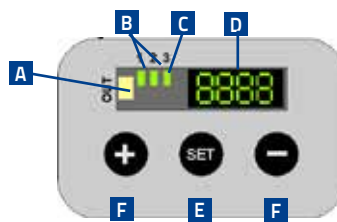
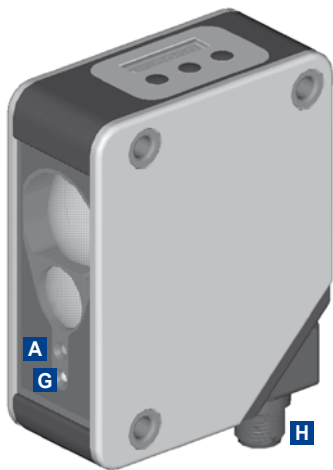
# DISTANCE SENSORS

## CONNECTIONS

### M12 CONNECTOR

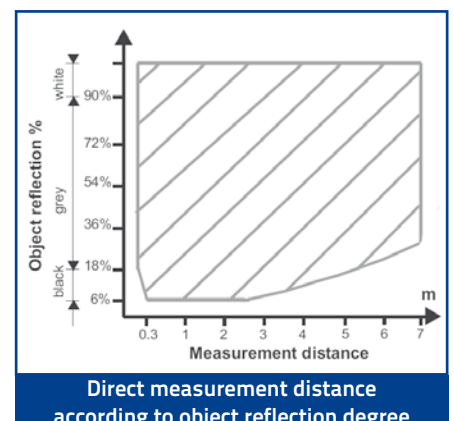
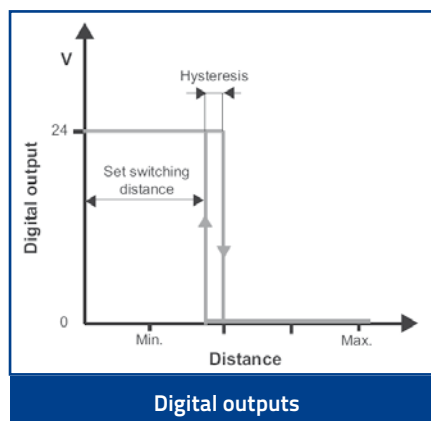
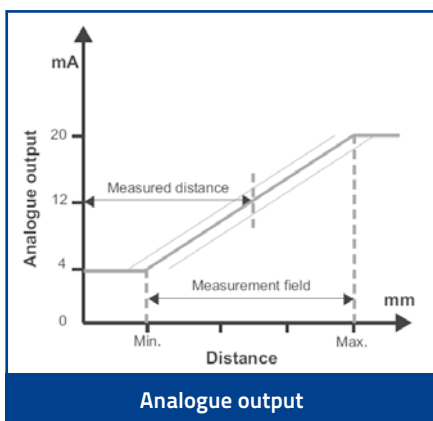


## INDICATORS AND SETTINGS



- 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

## DETECTION DIAGRAMS



## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	HOUSING	CONNECTION	OUTPUT	MODEL	ORDER No.
Distance sensor (4 m)	Aluminum	M12 Connector	PNP, Analog 4...20 mA, RS485	S80-MH-5-Y09-PPIZ	951501080
		M12 Connector	NPN, Analog 4...20 mA, RS485	S80-MH-5-Y09-NNIZ	951501010
Distance sensor (7 m)		M12 Connector	PNP, Analog 4...20 mA, RS485	S80-MH-5-YL09-PPIZ	951501060
		M12 Connector	NPN, Analog 4...20 mA, RS485	S80-MH-5-YL09-NNIZ	951501070
Distance sensor (20 m)		M12 Connector	PNP, Analog 4...20 mA, RS485	S80-MH-5-Y19-PPIZ	951501020
		M12 Connector	NPN, Analog 4...20 mA, RS485	S80-MH-5-Y19-NNIZ	951501030
Distance sensor (100 m)		M12 Connector	PNP, Analog 4...20 mA, RS485	S80-MH-5-Y29-PPIZ	951501040
		M12 Connector	NPN, Analog 4...20 mA, RS485	S80-MH-5-Y29-NNIZ	951501050

## ACCESSORIES

MODEL	DESCRIPTION	ORDER No.
ST-5037	L-SHAPED mounting bracket	95ACC2260
R80*	S80 distance sensor reflector	95A151210

\*Supplied with the sensor

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 Connector	8-pole, black, P.V.C.	3 m	CS-A1-06-B-03	95ACC2230
		5 m	CS-A1-06-B-05	95ACC2240
		10 m	CS-A1-06-B-10	95ACC2250
Radial M12 Connector	8-pole, shielded, black, P.V.C.	3 m	CV-A2-26-B-03	95ACC1600
		5 m	CV-A2-26-B-05	95ACC1610
		10 m	CV-A2-26-B-10	95ACC1620
Axial M12 Connector		3 m	CV-A1-26-B-03	95ACC1510
		5 m	CV-A1-26-B-05	95ACC1520
		10 m	CV-A1-26-B-10	95ACC1530
		15 m	CV-A1-26-B-15	95ACC2080
		25 m	CV-A1-26-B-25	95ACC2100
		Axial M12 Connector	8-pole, U.L., black, P.V.C.	3 m
5 m	CS-A1-06-U-05			95ASE1230
10 m	CS-A1-06-U-10			95ASE1240
15 m	CS-A1-06-U-15			95ASE1250
25 m	CS-A1-06-U-25			95ASE1260
50 m	CS-A1-06-U-50			95A252710
	8-pole, black	Connector-not cabled	CS-A1-06-B-NC	95ACC2550

# DISTANCE SENSORS

## S81

### Cost effective T.O.F. LASER distance sensor

- Class 2 visible red LASER emission
- Plastic housing and optics
- 2 PNP or NPN digital outputs
- 0-10 V analog output or alarm output



#### APPLICATIONS

- Packaging end of lines
- Carton stacking control
- Paper reel unwinding control
- Automotive assembling line

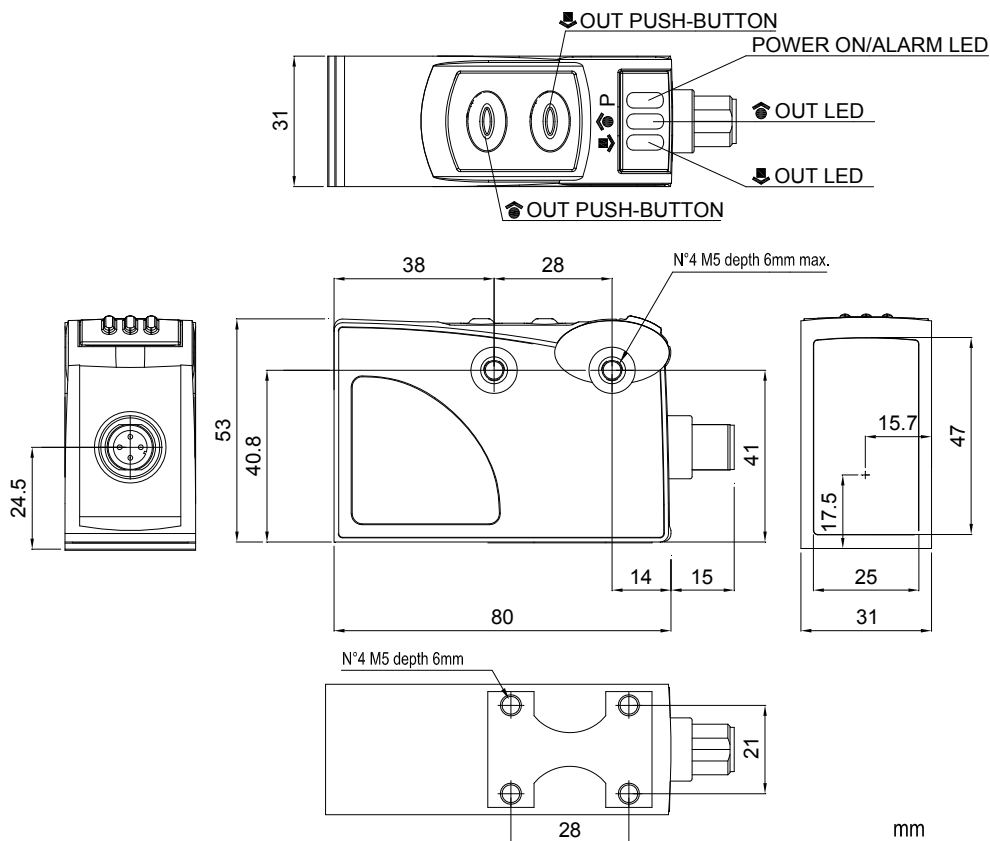


S81		
Distance sensor		0,3...4 m
Repeatability		± 4 mm
Switching frequency		80 Hz
Light emission		red LASER (class 2)
Response time		5 ms
Setting		push buttons
Power supply	Vdc	24 V
	Vac	
	Vac/dc	
Output	PNP	▪
	NPN	▪
	NPN/PNP	
	relay	
	other	0...10 V Analog output (S81-Y), Alarm output (S81-M)
Connection	cable	
	connector	▪
	pig-tail	
Approximate dimensions (mm)		31x53x80
Housing material		ABS
Mechanical protection		IP67

TECHNICAL DATA

Power supply	24 Vdc ± 20% (limit values)
Ripple	2 Vpp max.
Consumption (output current excluded)	120 mA max. (100 mA at 24 V)
Light emission	red Laser 665 nm
Setting	OUT1 and OUT2 push-buttons
Indicators	yellow OUTPUT1 and OUTPUT2 LEDs green POWER/READY LED
Output	2 PNP or NPN analog output with 0-10 V (mod. S81-Y), alarm output (S81-M)
Output current	100 mA max.
Response time	5 ms
Switching frequency	80 Hz
Connection	M12 5-pole connector
Dielectric strength	500 Vac, 1 min between electronics and housing
Insulating resistance	20 MΩ, 500 Vdc between electronics and housing
Electrical protection	class 2
Mechanical protection	IP67
Ambient light rejection	according to EN 60947-5-2
Vibrations	0,5 mm amplitude, 10 ... 55 Hz frequency, for every axis (EN60068-2-6)
Shock resistance	11 ms (30 G) 6 shock for every axis (EN60068-2-27)
Housing material	ABS
Lens material	PMMA
Operating temperature	0 ... 50 °C
Storage temperature	-20 ... 70 °C
Weight	92 g max.

DIMENSIONS



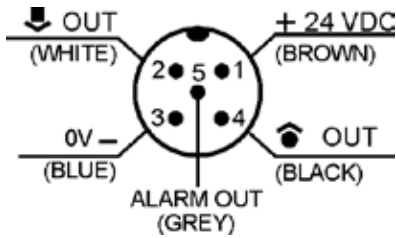


# DISTANCE SENSORS

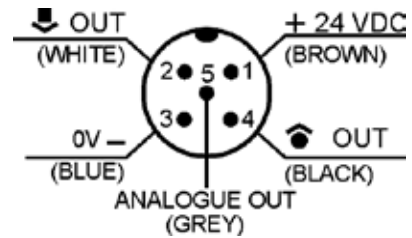
## CONNECTIONS

### M12 Connector

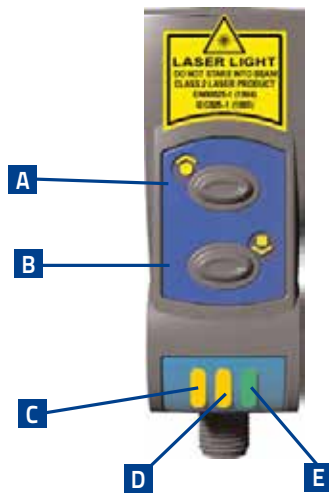
Background suppression S81-M



Distance S81-Y

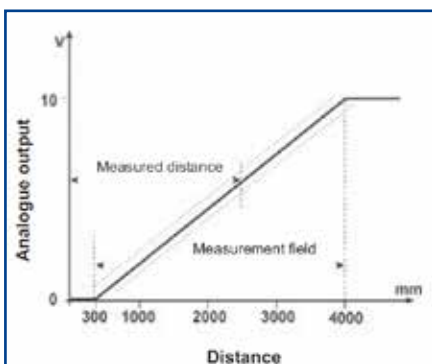


## INDICATORS AND SETTINGS

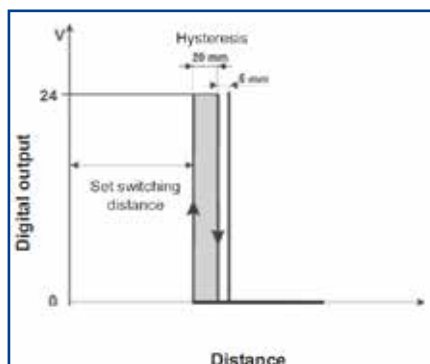


- A Output2 push-button
- B Output1 push-button
- C Output1 LED
- D Output2 LED
- E Power/Alarm LED

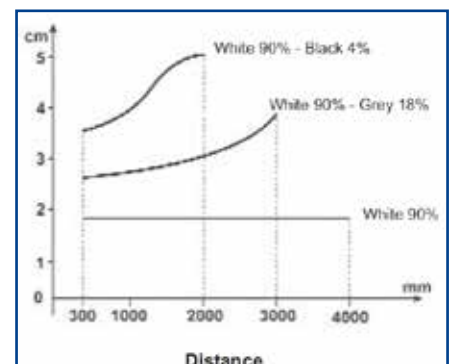
## DETECTION DIAGRAMS



Analogue output



Digital outputs



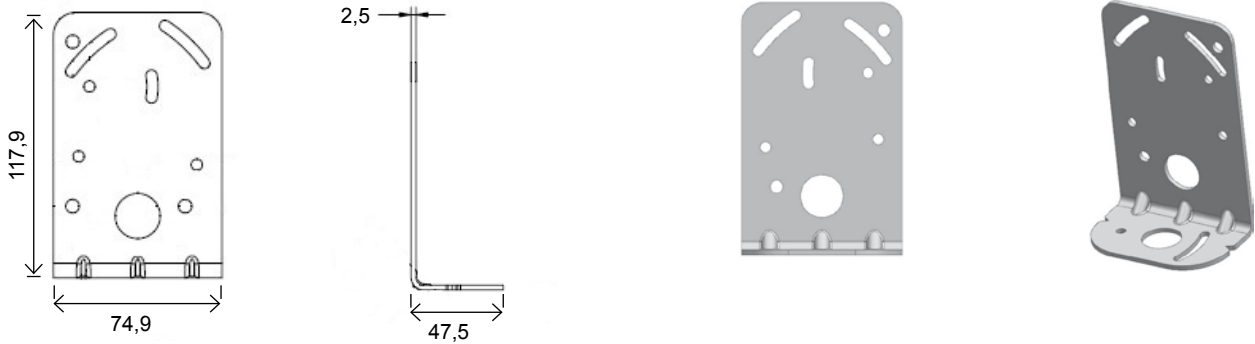
White/Black difference

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	HOUSING	CONNECTION	OUTPUT	MODEL	ORDER No.
Background suppression	Plastic	M12 Connector	NPN, Alarm	S81-PL-5-M03-NNC	951551000
			PNP, Alarm	S81-PL-5-M03-PPC	951551110
NPN, Analog 0...10V			S81-PL-5-Y03-NNV	951551120	
PNP, Analog 0...10V			S81-PL-5-Y03-PPV	951551030	
PNP, Analog 0...10V, Scalable			S81-PL-5-Y03-PPVK	951551040	
Distance					

## ACCESSORIES

### ST-S85-STD



MODEL	DESCRIPTION	ORDER No.
ST-S85-STD	mounting bracket	95ACC7840

## CABLES

TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.
Axial M12 connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110
		5 m	CS-A1-03-G-05	95ACC2120
		10 m	CS-A1-03-G-10	95ACC2140
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170
		5 m	CS-A1-03-U-05	95ASE1180
		10 m	CS-A1-03-U-10	95ASE1190
		15 m	CS-A1-03-U-15	95ASE1200
		25 m	CS-A1-03-U-25	95ASE1210
		50 m	CS-A1-03-U-50	95A252700

# DISTANCE SENSORS

## S85

*LASER distance sensor for precise measurement up to 20 m with a millimeter of resolution and repeatability through the Time of Flight technique*

- Time of Flight technology
- Class 2 visible red LASER for an easy alignment with the target
- Measuring range up to 10m or 20m in the advanced model
- 1 mm resolution, 7 mm accuracy, 1 mm repeatability
- 4-20 mA or 0-10 V scalable analog output and 2 digital outputs
- RS485 serial interface in the advanced model
- Standard M12 connector
- IP67 Industrial metal housing



### APPLICATIONS

- Automated warehousing
- Processing and Packaging machinery
- Industrial vehicles
- Automotive

S85		
Distance sensor (90% White target)		0,2...20 m (S85...Y13) 0,2...10 m (S85...Y03)
Repeatability		1...2 mm
Accuracy		7...10 mm
Resolution		1 mm
Light emission		red LASER (class 2)
Response time		30 ms (S85...Y03) 15...30 ms (S85...Y13)
Serial interface		RS485 (S85...Y13)
Setting		Display (S85...Y13) push-buttons (S85...Y03)
Power supply	Vdc	24 V
	PNP	▪
Output	NPN	▪
	Push pull	▪
	other	Analog output: 4...20 mA or 0...10 V
Connection	connector	▪
Approximate dimensions (mm)		60x72x37
Housing material		Zamak
Mechanical protection		IP67

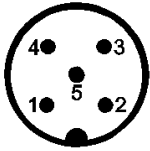


# DISTANCE SENSORS

## CONNECTIONS

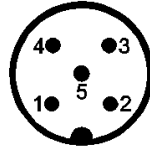
### M12 CONNECTOR - BASIC

S85-Y03-00V  
Voltage version



1 (BROWN): +24 V  $\pm$  20 %  
2 (WHITE): Q2 100mA max.  
3 (BLUE): 0 V  
4 (BLACK): Q1 100mA max.  
5 (GREY): ANALOG. OUT 0-10V

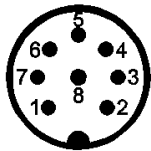
S85-Y03-00I  
Current version



1 (BROWN): +24 V  $\pm$  20 %  
2 (WHITE): Q2 100mA max.  
3 (BLUE): 0 V  
4 (BLACK): Q1 100mA max.  
5 (GREY): ANALOG. OUT 4-20mA

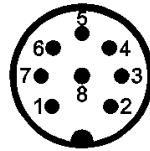
### M12 CONNECTOR - ADVANCED

S85-Y13-00IVY  
Analog version



1 (WHITE): RS485 -  
2 (BROWN): +24 V  $\pm$  20 %  
3 (GREEN): ANALOGUE OUT  
4 (YELLOW): Q1 100mA max.  
5 (GREY): Q2 100mA max.  
6 (PINK): RS485 +  
7 (BLUE): 0 V  
8 (RED): MULTIFUNC.INPUT

S85-Y13-00Y



1 (WHITE): RS485 -  
2 (BROWN): +24 V  $\pm$  20 %  
3 (GREEN): RESERVED  
4 (YELLOW): Q1 100mA max.  
5 (GREY): Q2 100mA max.  
6 (PINK): RS485 +  
7 (BLUE): 0 V  
8 (RED): MULTIFUNC.INPUT

## INDICATORS AND SETTINGS

Without the procedure setting the sensor is configured to measure distances on a white target from a minimum value of 200 mm and a maximum of 20000 mm, with both switching point placed at 500 mm.

The parameters can be changed by the menu on the display pointing the LASER on the target in the different interested points.

### INDICATORS

LED 1 | Q1 (yellow)  
LED 2 | Q2 (yellow)  
LED 3 | POWER ON (green),  
OUT OF RANGE (red)



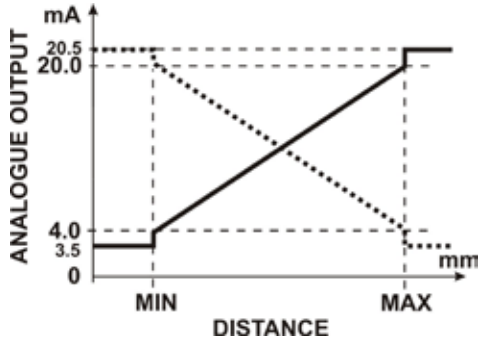
DISPLAY | Run/W.UP → Run mode or Warm-up mode  
| Q+Q → Digital Output setting → PNP/NPN/Push-Pull  
| I/V → Analog Output Setting → Ampere/Volt  
| Lock Symbol → Keylock or unlock  
| 5-digit display → Value corresponds to Distance in mm

Menu	Functions
OUT 1	Switching point1: Light/Dark; Switching point value; PNP, NPN, Push-pull; Alarm
OUT 2	Switching point 2: Light/Dark; Switching point value; PNP, NPN, Push-pull; Alarm
HYSTERESIS	Hysteresis level: 5...1000 mm
ANALOG OUT	Voltage (0...10 V); Current (4...20 mA)
MULTIFUNCTION IN	LASER OFF; Teach IN (Thresholds); RS485 Send Data
AVERAGE	Response time: SLOW; MEDIUM; FAST
RS485	Node N°; Enable; Termination; Output mode; Delay (0...254 ms)
SCALABLE OUT	Analog output range: Reset, MIN and MAX distance
FACTORY RESET	Factory default values
INFO	Software version

## DETECTION DIAGRAMS

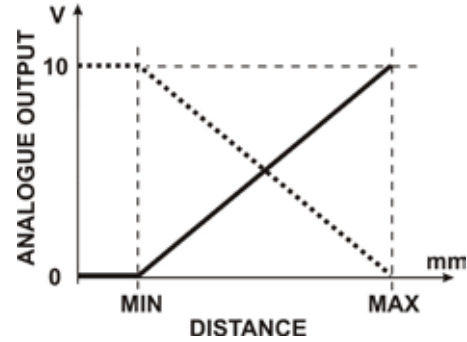
### CURRENT ANALOG OUTPUT

MEASUREMENT RANGE (4...20 mA)  
OUT OF RANGE (3,95...4 mA; 20...20,5 mA)



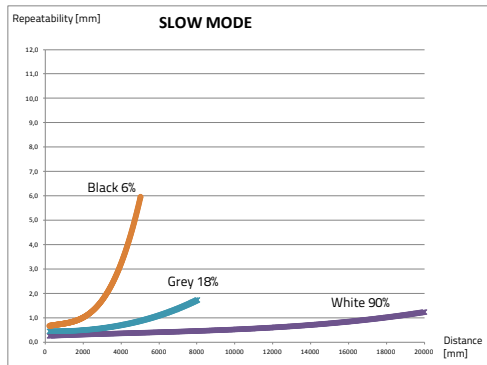
### VOLTAGE ANALOG OUTPUT

MEASUREMENT RANGE (0...10 V)



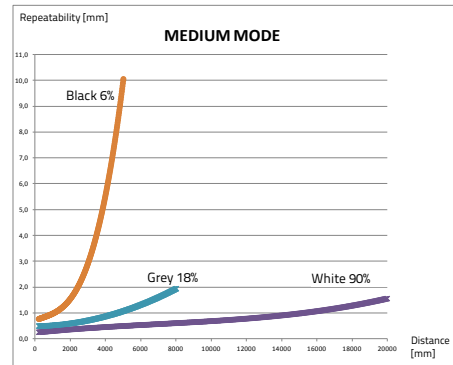
### S85-...-Y13 ADVANCED REPEATABILITY (SLOW MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



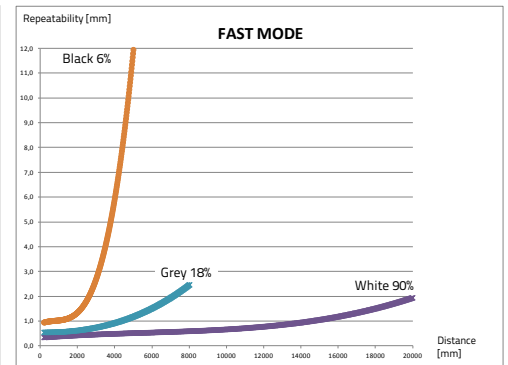
### S85-...-Y13 ADVANCED REPEATABILITY (MEDIUM MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



### S85-...-Y13 ADVANCED REPEATABILITY (FAST MODE)

[WHITE 90%; GREY 18%; BLACK 6%]



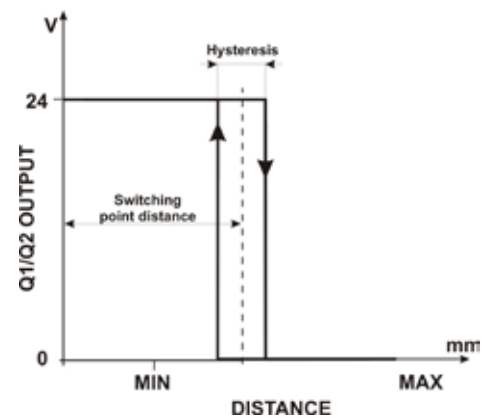
### S85-...-Y13 ADVANCED

#### REPEATABILITY/RESPONSE TIME

(90% WHITE TARGET @ 20 m)

Mode	Response time	Repeatability
Slow	45 ms	< 1,5 mm
Medium	30 ms	1,5 mm
Fast	15 ms	< 2 mm

### HYSTERESIS



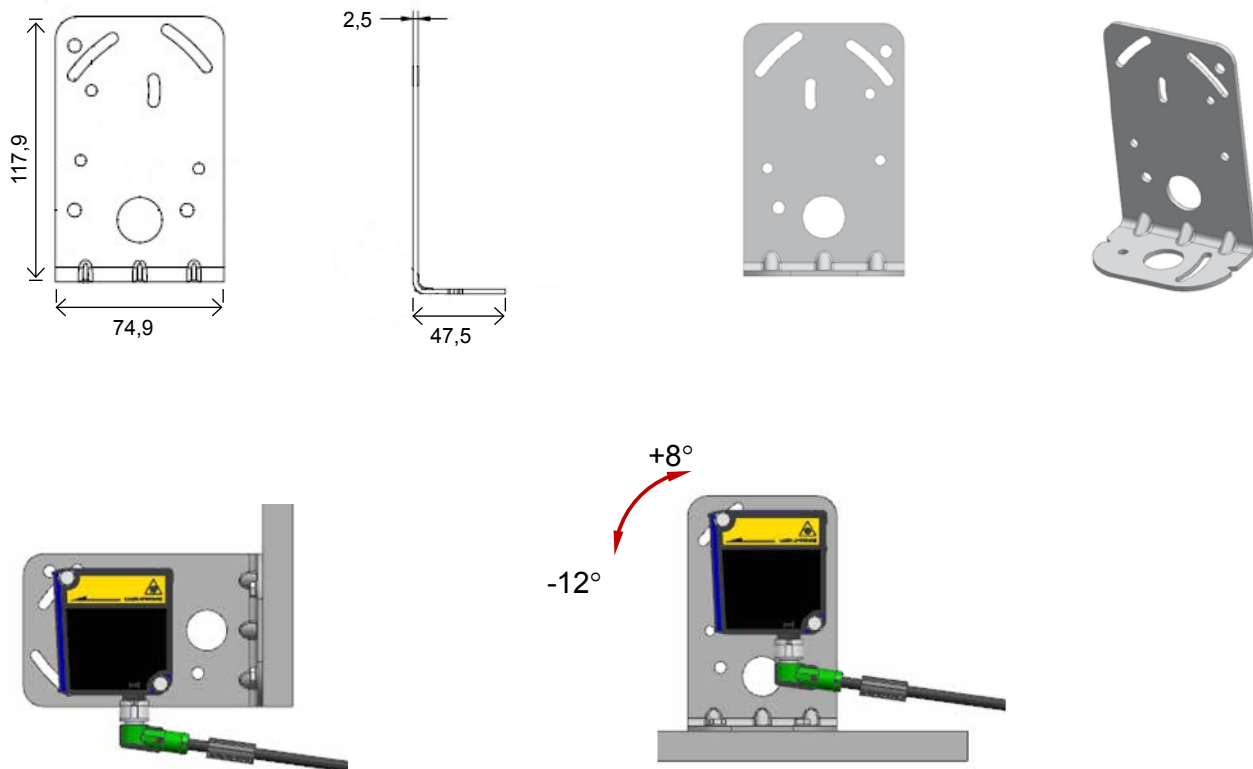
# DISTANCE SENSORS

## MODEL SELECTION AND ORDER INFORMATION

OPTIC FUNCTION	OPERATING DISTANCE	CONNECTION	OUTPUT & INPUT	MODELS	ORDER No.
Distance sensor (Basic)	10 m	M12 5-pole connector	2 Digital outputs; Analog output: Voltage (0...10 V)	S85-MH-5-Y03-00V	951511010
			2 Digital outputs; Analog output: Current (4... 20mA)	S85-MH-5-Y03-00I	951511030
Distance sensor (Advanced)	20 m	M12 8-pole connector	2 Digital outputs; Analog output: Current (4... 20mA) or Voltage (0...10 V); RS485; Multifunction input	S85-MH-5-Y13-00IVY	951511020
			2 Digital outputs; RS485; Multifunction input	S85-MH-5-Y13-00Y	951511040

## ACCESSORIES

### ST-S85-STD



MODEL	DESCRIPTION	ORDER No.
ST-S85-STD	mounting bracket	95ACC7840

## CABLES

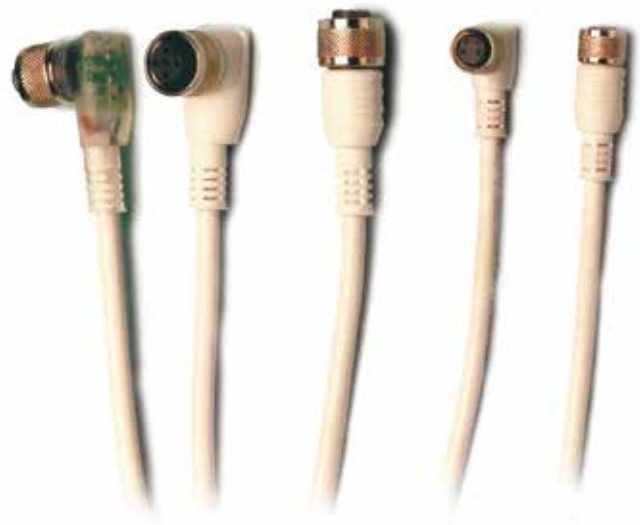
TYPE	DESCRIPTION	LENGTH	MODEL	ORDER No.		
Axial M12 connector	5-pole, grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110		
		5 m	CS-A1-03-G-05	95ACC2120		
		10 m	CS-A1-03-G-10	95ACC2140		
	5-pole, U.L., black, P.V.C	3 m	CS-A1-03-U-03	95ASE1170		
		5 m	CS-A1-03-U-05	95ASE1180		
		10 m	CS-A1-03-U-10	95ASE1190		
		15 m	CS-A1-03-U-15	95ASE1200		
		25 m	CS-A1-03-U-25	95ASE1210		
	50 m	CS-A1-03-U-50	95A252700			
Axial M12 Connector	8-pole, black, P.V.C.	3 m	CS-A1-06-B-03	95ACC2230		
		5 m	CS-A1-06-B-05	95ACC2240		
		10 m	CS-A1-06-B-10	95ACC2250		
Radial M12 Connector		3 m	CV-A2-26-B-03	95ACC1600		
		5 m	CV-A2-26-B-05	95ACC1610		
		10 m	CV-A2-26-B-10	95ACC1620		
	8-pole, shielded, black, P.V.C.	3 m	CV-A1-26-B-03	95ACC1510		
		5 m	CV-A1-26-B-05	95ACC1520		
		10 m	CV-A1-26-B-10	95ACC1530		
		15 m	CV-A1-26-B-15	95ACC2080		
		25 m	CV-A1-26-B-25	95ACC2100		
		Axial M12 Connector	8-pole, U.L., black, P.V.C.	3 m	CS-A1-06-U-03	95ASE1220
				5 m	CS-A1-06-U-05	95ASE1230
10 m	CS-A1-06-U-10			95ASE1240		
15 m	CS-A1-06-U-15			95ASE1250		
25 m	CS-A1-06-U-25			95ASE1260		
	50 m	CS-A1-06-U-50	95A252710			
	8-pole, black	Connector-not cabled	CS-A1-06-B-NC	95ACC2550		



# CS series – Cables & Connectors

*The right connection for your photoelectric sensors*

- M8 and M12, axial or radial female connectors
- Standard length cables: 3, 5, 7, 10, 15 or 25 m
- 3, 4, 5 or 8 poles
- Shielded or unshielded models
- P.U.R. coated models for use in harsh environments
- P.V.C. coated models for standard use
- Standard M12 4 pole non-cabled connectors



CS	
Connectors	M8 axial or radial(90°) 3 poles M12 axial or radial(90°) 3 poles M8 axial or radial(90°) 4 poles M12 axial or radial(90°) 4 poles M12 axial 5 poles M12 axial 8 poles
Cable lengths	3, 5, 7, 10, 15, 25 m
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 material	annealed non-tinned electrolytic copper
Flammability class	CEI 20-22, IEC 332/3 flame-retardant and non-propagate
Housing material	P.U.R., P.V.C.
Mechanical protection	IP67, with locked ring

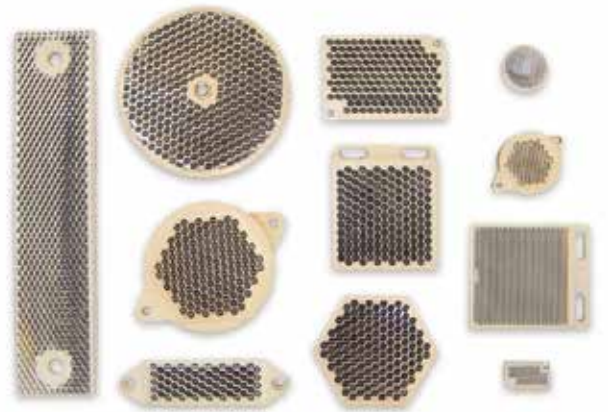
CONNECTOR & DIRECTION	POLES	STYLE	CABLE LENGTH	MODEL	ORDER No.	
M12 Connector (Axial)	3-pole	Grey, P.V.C.	3 m	CS-A1-01-G-03	95A251290	
			5 m	CS-A1-01-G-05	95A251300	
			7 m	CS-A1-01-G-07	95A251320	
			10 m	CS-A1-01-G-10	95A251340	
	4-pole	Grey, P.V.C.	3 m	CS-A1-02-G-03	95A251380	
			5 m	CS-A1-02-G-05	95A251270	
			7 m	CS-A1-02-G-07	95A251280	
			10 m	CS-A1-02-G-10	95A251390	
			P.U.R.	2 m	CS-A1-02-R-02	95A251540
				5 m	CS-A1-02-R-05	95A251560
	5-pole	Grey, P.V.C.	3 m	CS-A1-03-G-03	95ACC2110	
			5 m	CS-A1-03-G-05	95ACC2120	
			10 m	CS-A1-03-G-10	95ACC2140	
	8-pole	Black, P.V.C.	3 m	CS-A1-06-B-03	95ACC2230	
			5 m	CS-A1-06-B-05	95ACC2240	
			10 m	CS-A1-06-B-10	95ACC2250	

M12 Connector (Radial 90°)	3-pole	Grey, P.V.C.	3 m	CS-A2-01-G-03	95A251200			
			5 m	CS-A2-01-G-05	95A251210			
			7 m	CS-A2-01-G-07	95A251220			
			10 m	CS-A2-01-G-10	95A251230			
		OIL resistant (CEI 2034-01)	3 m	CS-A2-01-O-03	95A251660			
	5 m		CS-A2-01-O-05	95A251670				
	10 m		CS-A2-01-O-10	95A251680				
	4-pole		Grey, P.V.C.	3 m	CS-A2-02-G-03	95A251360		
				5 m	CS-A2-02-G-05	95A251240		
		7 m		CS-A2-02-G-07	95A251245			
10 m		CS-A2-02-G-10		95A251260				
P.U.R.		2 m	CS-A2-02-R-02	95A251550				
	5 m	CS-A2-02-R-05	95A251570					
OIL resistant (CEI 2034-01)	4-pole	Grey, P.V.C.	5 m	CS-A2-02-O-05	95A251690			
			10 m	CS-A2-02-O-10	95A251700			
			M12 Connector with LED (for PNP N.O. sensors) (Radial 90°)	3-pole	Grey, P.V.C.	5 m	CS-A2-11-G-05	95A251310
						10 m	CS-A2-11-G-10	95A251330
				4-pole	Grey, P.V.C.	3 m	CS-A2-12-G-03	95A251400
5 m	CS-A2-12-G-05	95A251350						
10 m	CS-A2-12-G-10	95A251370						
M8 Connector (Axial)	3-pole	Grey, P.V.C.	3 m	CS-B1-01-G-03	95A251490			
			5 m	CS-B1-01-G-05	95A251510			
		P.U.R.	2 m	CS-B1-01-R-02	95A251580			
			5 m	CS-B1-01-R-05	95A251600			
			4-pole	Grey, P.V.C.	3 m	CS-B1-02-G-03	95A251420	
	5 m	CS-B1-02-G-05			95A251430			
	7 m	CS-B1-02-G-07			95A251440			
	10 m	CS-B1-02-G-10			95A251480			
	P.U.R.	2 m		CS-B1-02-R-02	95A251620			
		5 m	CS-B1-02-R-05	95A251640				
OIL resistant (CEI 2034-01)	4-pole	Grey, P.V.C.	5 m	CS-B1-02-O-05	95A251730			
			10 m	CS-B1-02-O-10	95A251100			
			M8 Connector (Radial 90°)	3-pole	Grey, P.V.C.	3 m	CS-B2-01-G-03	95A251500
						5 m	CS-B2-01-G-05	95A251520
					P.U.R.	2 m	CS-B2-01-R-02	95A251590
5 m	CS-B2-01-R-05	95A251610						
4 pole	Grey, PVC	3 m		CS-B2-02-G-03	95A251450			
		5 m	CS-B2-02-G-05	95A251460				
		7 m	CS-B2-02-G-07	95A251470				
		10 m	CS-B2-02-G-10	95A251530				
	P.U.R.	2 m	CS-B2-02-R-02	95A251630				
		5 m	CS-B2-02-R-05	95A251650				
		OIL resistant (CEI 2034-01)	5 m	CS-B2-02-O-05	95A251720			
10 m	CS-B2-02-O-10		95A251110					
Shielded M12 Connector (Axial)	3-pole	Grey, P.V.C.	10 m	CV-A1-21-G-10	95ACC2060			
			3 m	CV-A1-22-B-03	95ACC1480			
	4-pole	Black, P.V.C.	5 m	CV-A1-22-B-05	95ACC1490			
			10 m	CV-A1-22-B-10	95ACC1500			
			15 m	CV-A1-22-B-15	95ACC2070			
			25 m	CV-A1-22-B-25	95ACC2090			
			8-pole	Black, P.V.C.	3 m	CV-A1-26-B-03	95ACC1510	
	5 m	CV-A1-26-B-05			95ACC1520			
	10 m	CV-A1-26-B-10			95ACC1530			
	15 m	CV-A1-26-B-15			95ACC2080			
25 m	CV-A1-26-B-25	95ACC2100						
Shielded M12 Connector (Radial 90°)	4-pole	Black, P.V.C.	3 m	CV-A2-22-B-03	95ACC1540			
			5 m	CV-A2-22-B-05	95ACC1550			
			10 m	CV-A2-22-B-10	95ACC1560			
	8-pole	Black, P.V.C.	3 m	CV-A2-26-B-03	95ACC1600			
			5 m	CV-A2-26-B-05	95ACC1610			
M12 Connector (Axial)	4-pole	U.L., Black, P.V.C.	10 m	CS-A1-02-U-10	95ASE1140			
			15 m	CS-A1-02-U-15	95ASE1150			
			25 m	CS-A1-02-U-25	95ASE1160			
			5-pole	U.L., Black, P.V.C.	3 m	CS-A1-03-U-03	95ASE1170	
					5 m	CS-A1-03-U-05	95ASE1180	
	10 m	CS-A1-03-U-10			95ASE1190			
	15 m	CS-A1-03-U-15			95ASE1200			
	25 m	CS-A1-03-U-25			95ASE1210			
	8-pole	U.L., Black, P.V.C.	50 m	CS-A1-03-U-50	95A252700			
			3 m	CS-A1-06-U-03	95ASE1220			
			5 m	CS-A1-06-U-05	95ASE1230			
			10 m	CS-A1-06-U-10	95ASE1240			
			15 m	CS-A1-06-U-15	95ASE1250			
	M12 Connector (Axial)	4-pole	Black	25 m	CS-A1-06-U-25	95ASE1260		
				50 m	CS-A1-06-U-50	95A252710		
Connector- not cabled				CS-A1-02-B-NC	G5085002			
8-pole				Black	Connector- not cabled	CS-A1-06-B-NC	95ACC2550	
M12 Connector (Radial 90°)				4-pole	Black	Connector- not cabled	CS-A2-02-B-NC	G5085003

## R series – REFLECTORS

*Excellent performance with infrared, red light and polarized emission*

- Prismatic reflectors for retroreflective sensors
- High efficiency models for long operating distances
- Microprism reflectors for sensors with LASER emission
- Self-adhesive reflectors and reflector tape

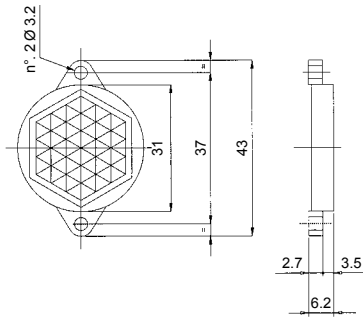


REFLECTORS	
Prismatic reflector material	Reflector in PMMA plastic
Support material	Support in ABS
Mechanical protection	IP67, IP69K (R4K)
Operating temperature	-30 ... +70°C

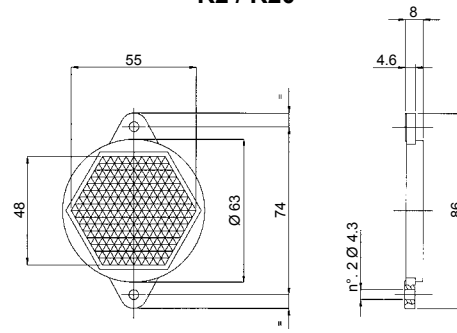
MODELS	DESCRIPTION	ORDER No.
R1	Ø 23 mm with Ø 31 mm support	S940700023
R2	Ø 48 mm with Ø 63 mm support	S940700048
R3	18 x 54 mm with 22 x 82 mm support	S940700972
R4	47x 47 mm with 51.5 x 61 mm support	95A151340
R4K	51X61 mm IP69K protection	95A151220
R5	Ø 75 mm with Ø 82 mm support	S940700075
R6	36 x 55 mm with 40.5 x 60 mm support	95A151350
R7	47x47 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 with Ø 25 mm self-adhesive support	95A151080
R10	36 x 176 mm with 41 x 181 mm support	S19120000
R11	146 x 15 mm with 150 x 18 mm support	95A155050
R14	Ø 24 mm with Ø 25 mm support	95A151310
R16	9.7 x 19 mm reflector with 14 x 23 mm support	95A151330
R20	Ø 48 mm microprism reflector with Ø 63 mm support	95A151090
R35	Ø 33 mm with Ø 35 mm support	95A151530
S12	Ø 48 mm with ch.52 mm hexagon support	S940710048
RT3870	200 x 300 mm self-adhesive reflective tape	S940000600
RT3970	200 x 300 mm self-adhesive reflective tape for polarized light	S940000900
RT3970	60 x 40 mm self-adhesive reflective tape for polarized light	S940000604

# DIMENSIONS

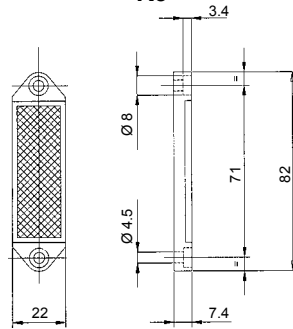
**R1**



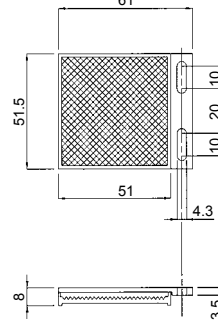
**R2 / R20**



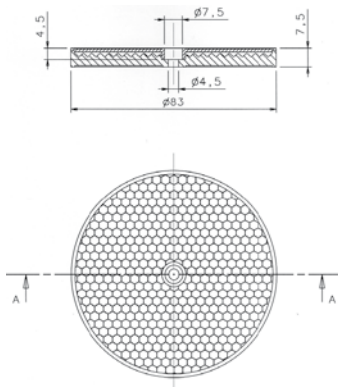
**R3**



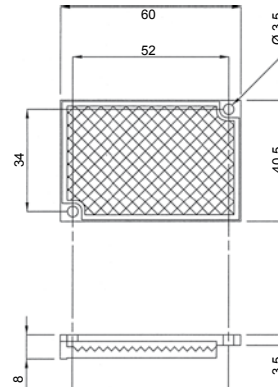
**R4**



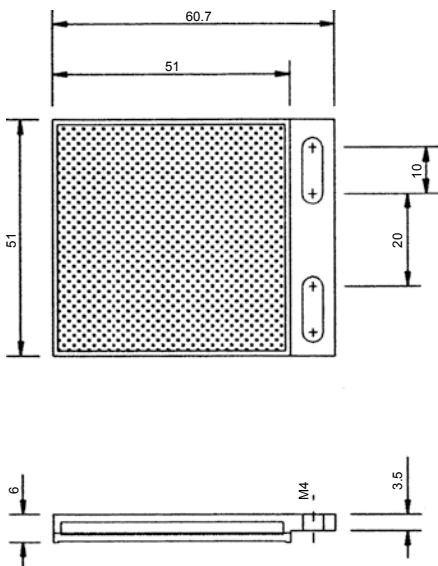
**R5**



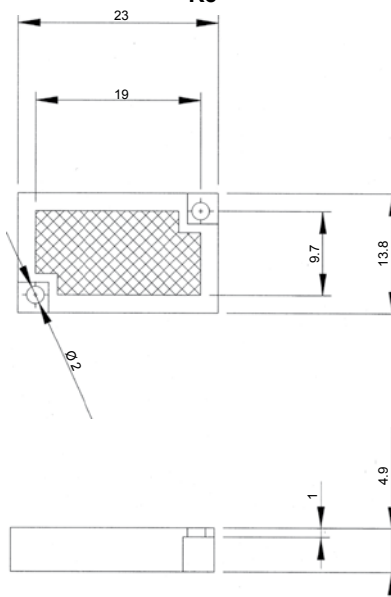
**R6**



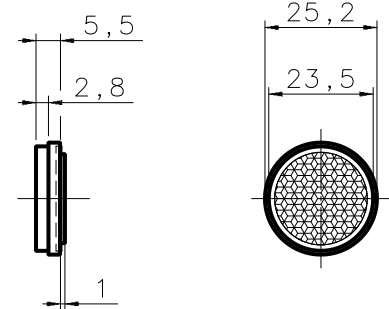
**R7**



**R8**

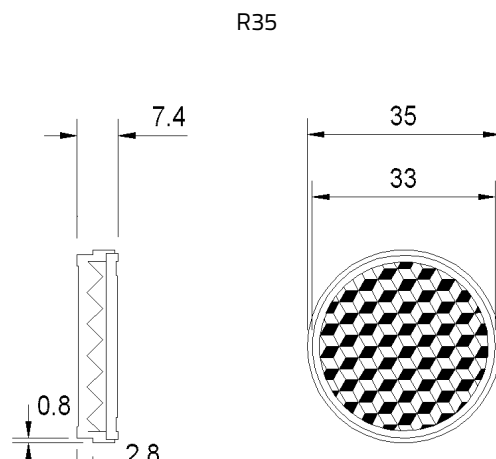
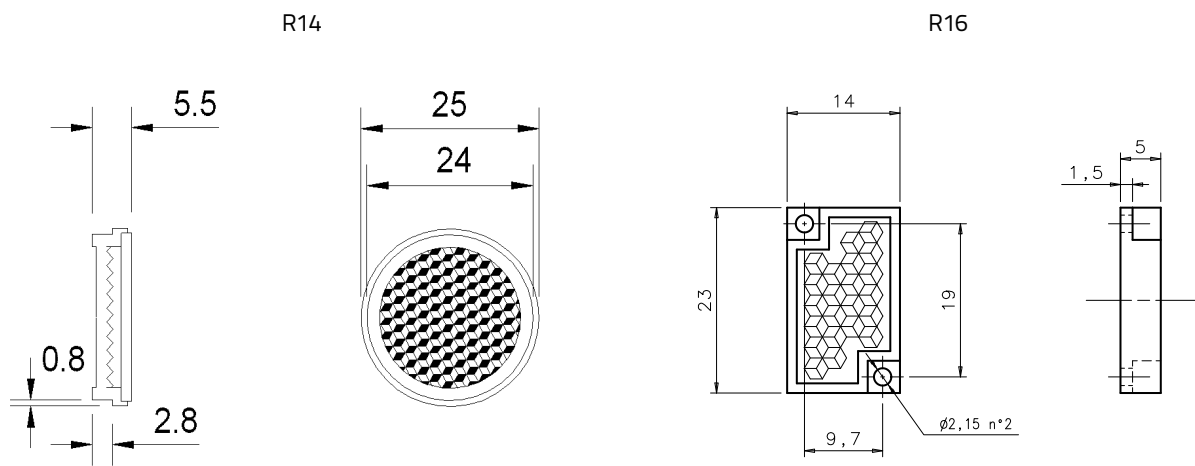
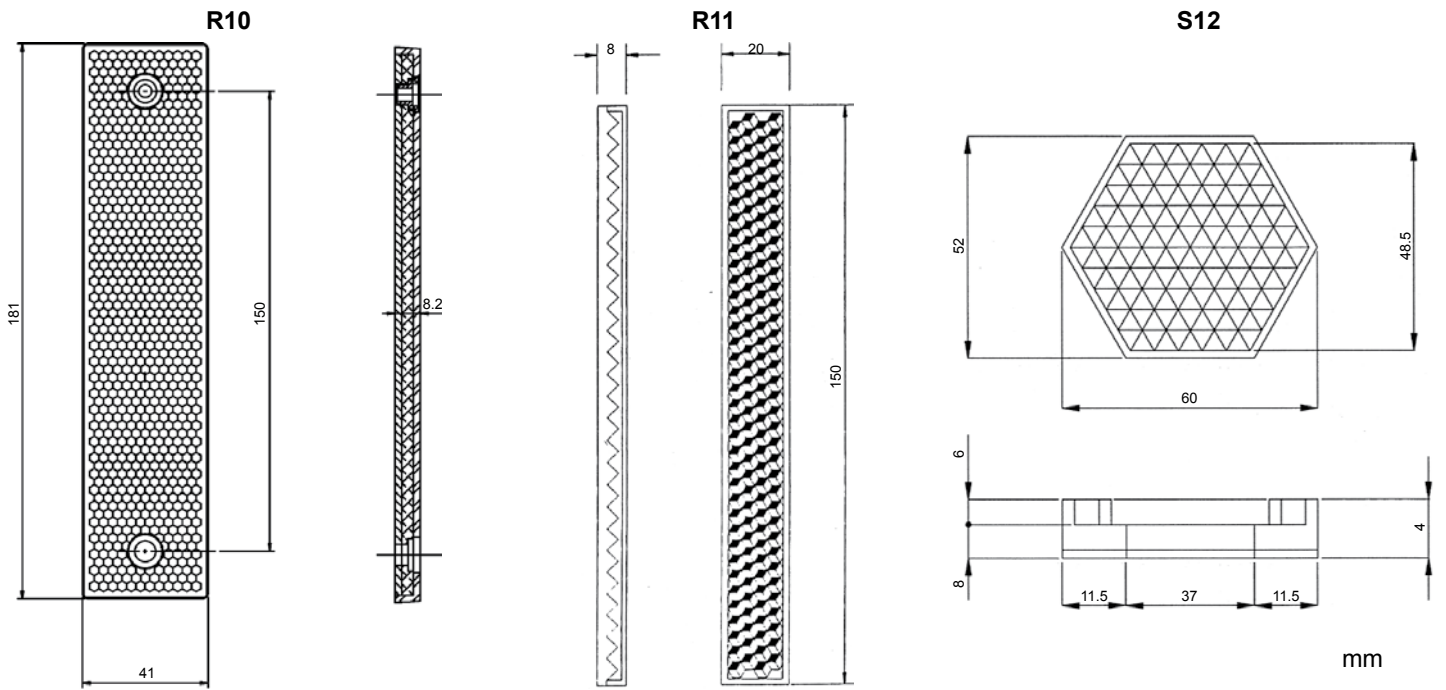


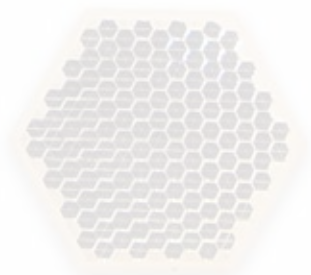
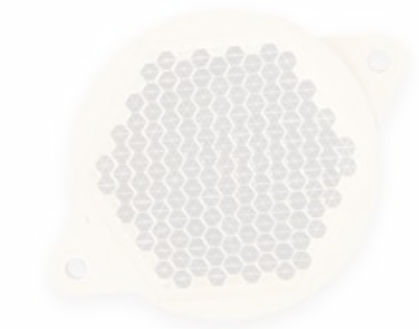
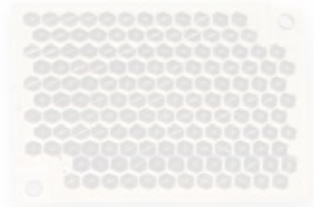
**R9**



mm

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