

## HIGH-PERFORMANCE SENSORS



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

### Standard 50X50

## S62 SERIES

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

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

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

Furthermore, versions with visible red Laser emission are available with both 3-15 or 5-35 cm background suppression proximity and polarised retroreflex reaching more than 22 m.

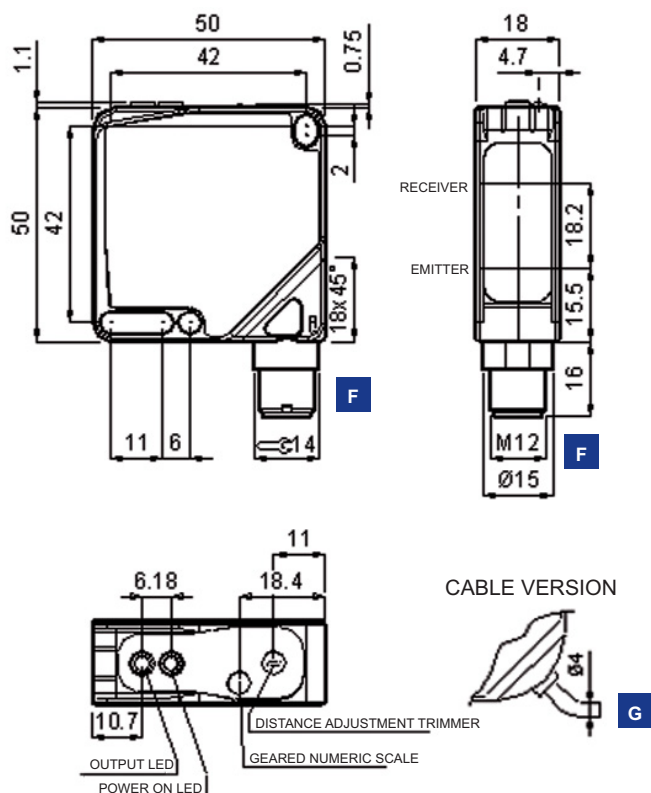
These Laser sensors are characterised by a very small light spot, as well as a low response time that guarantee excellent detection repeatability, even of very small objects or movements.

# S62 SERIES

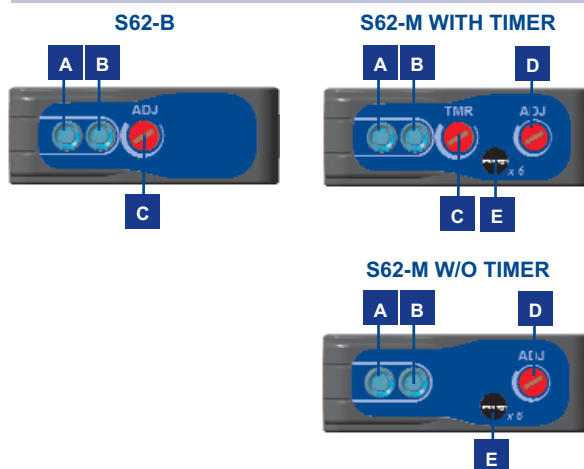
The background suppression proximity can set very precisely the limit over which the object is not detected, with minimum differences also between objects with material or colour differences. The threshold switching adjustment is easier and more precise thanks to the multiturn mechanical trimmer and the gear numeric scale.

The polarised retroreflex, thanks to high-polarisation optic filters, detects also very reflective objects also with mirror surfaces, that however do not rotate the polarisation plane of the reflected light, like the prismatic reflector.

## DIMENSIONS



## INDICATORS AND SETTINGS



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

## ACCESSORIES

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

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

## CONNECTIONS



S62-PA-2



S62-PA-5

BROWN	10 ... 30 Vdc
WHITE	NC OUTPUT
BLACK	NO OUTPUT
BLUE	0V -



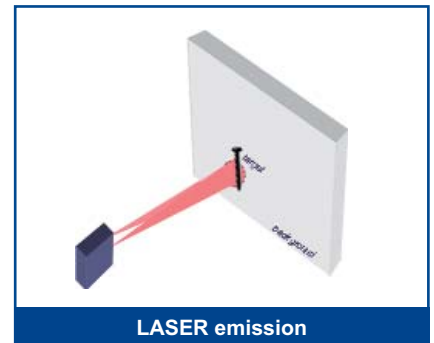
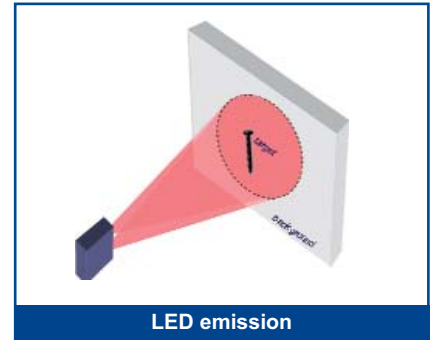
## EMISSION TYPE

The very low black/white difference of background suppression sensors allows to detect a dark-coloured target presence, or absence, even onto a light-coloured very reflective background. However, if the target is much smaller than the light spot and smaller than the background area, the detection can be critical either for the low resolution and for the 'cross-eyed effect' (excessive light reflected by the background).

The narrow collimated light beam of the **S62** LASER background suppression sensor is the right solution able to offer the requested resolution and avoid the cross-eyed effect, thus permitting the detection of the smallest objects or their minimal movements, even in presence of large and reflective background area.

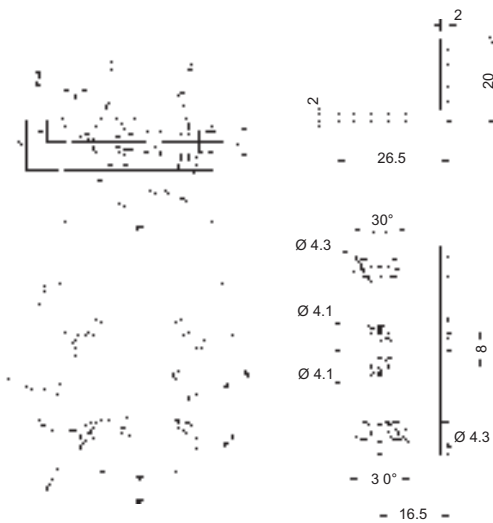
The LASER polarised retroreflex sensor of the **S62** series, as well as increasing the maximum operating distance, offers the improvement of the detection resolution thanks to the smaller dimensions of the light beam respect to the LED emission beam.

Basically, the minimum detectable dimension corresponds to the emission beam diameter at the detection distance. The maximum resolution can be obtained only with micropismatic reflectors (0.8 mm microcubes), such as the small **R8** suitable for short distances up to 2 m, or the **R7** and **R20** models for distance up to 22 m.

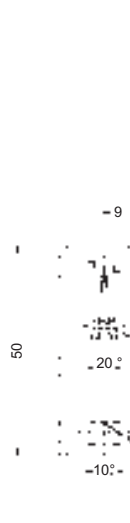


## ACCESSORIES

ST-504



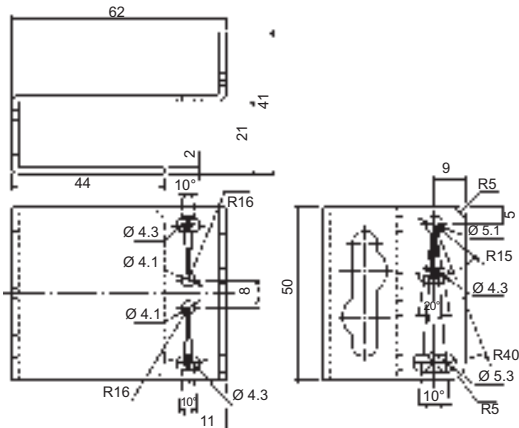
ST-5020



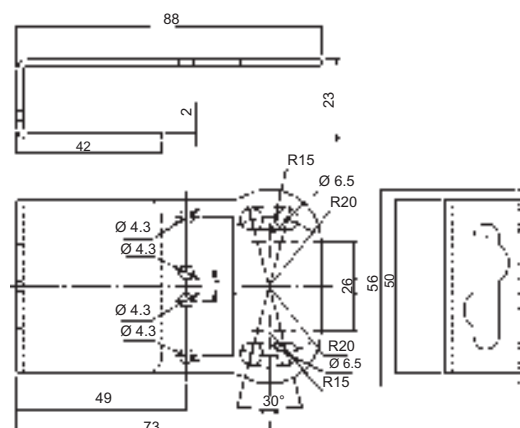
ST-5021



ST-5053



ST-5054



mm

**Joint-62:** as ST-5054 with jointed support

## TECHNICAL DATA OF MODELS WITH LED EMISSION

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



### TECHNICAL NOTES

<sup>1</sup> Average life of 100.000 h with  $T_A = +25\text{ °C}$

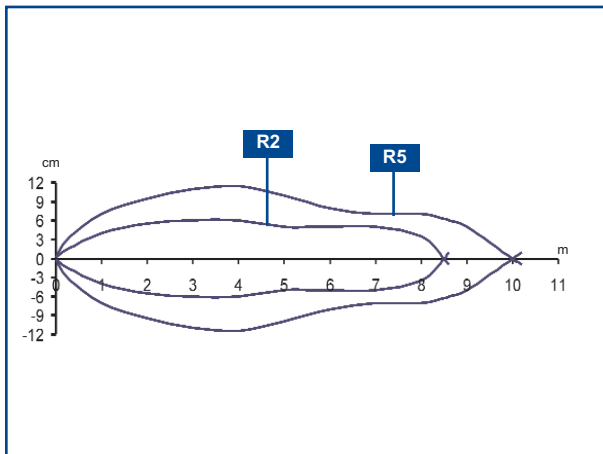
<sup>2</sup> PVC, 4 x 0.14 mm<sup>2</sup>

<sup>3</sup> Connettore bloccabile in two positions

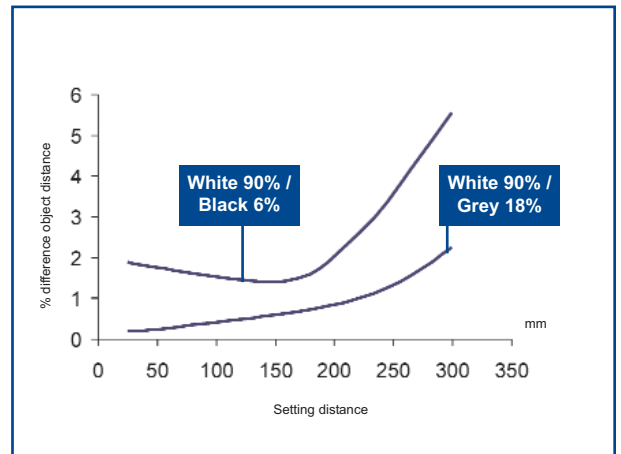
<sup>4</sup> A - reverse polarity protection

B - overload and short-circuit protection

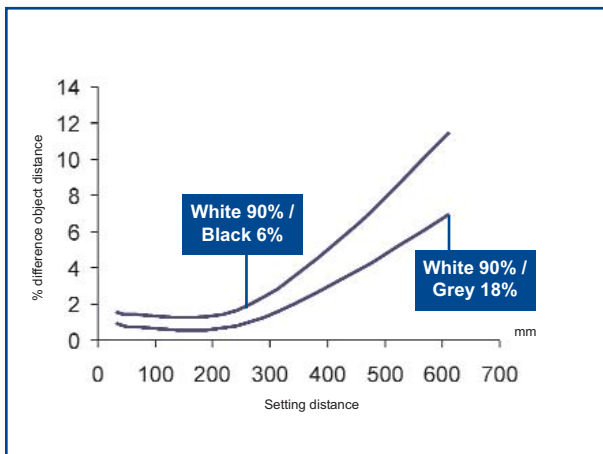
## DETECTION DIAGRAMS OF MODELS WITH LED EMISSION



Polarised retroreflex



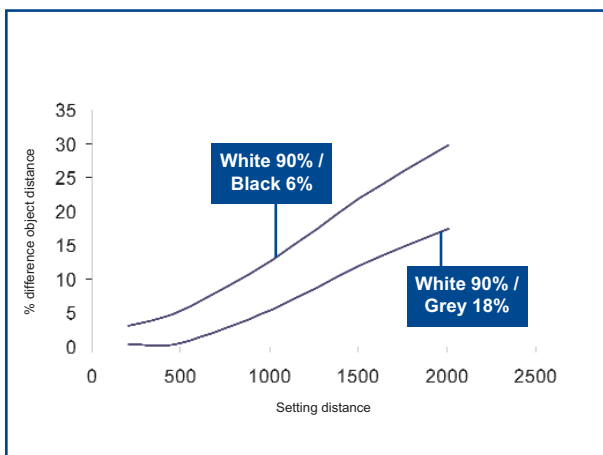
30 ... 300 mm background suppression



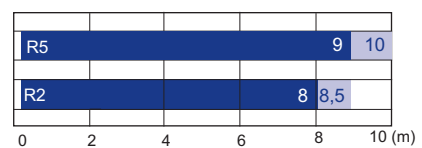
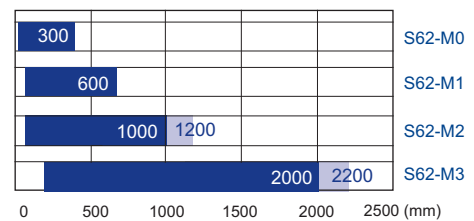
60 ... 600 mm background suppression



60 ... 1200 mm background suppression



200 ... 2000 mm background suppression



■ Recommended operating distance  
 ■ Maximum operating distance

## TECHNICAL DATA OF MODELS WITH LASER EMISSION

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



## TECHNICAL NOTES

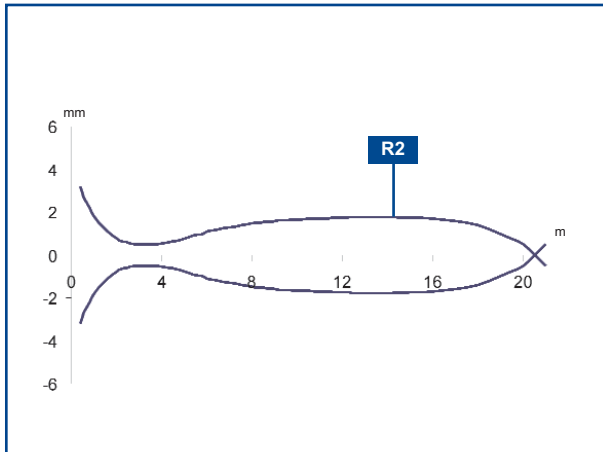
<sup>1</sup> Average life of 50.000 h with T<sub>A</sub> = +25 °C

<sup>2</sup> Connettore bloccabile in two positions

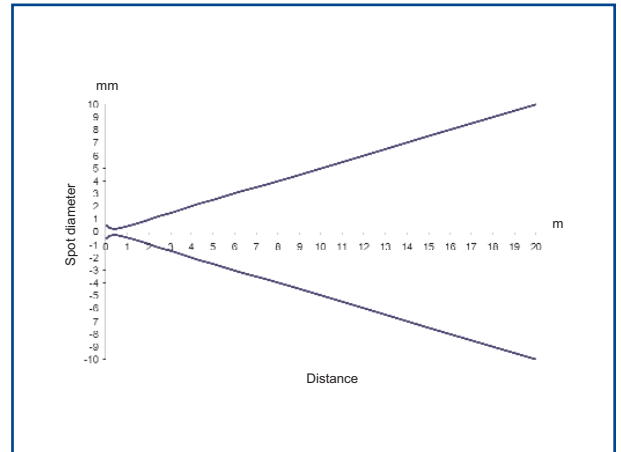
<sup>3</sup> A - reverse polarity protection

B - overload and short-circuit protection

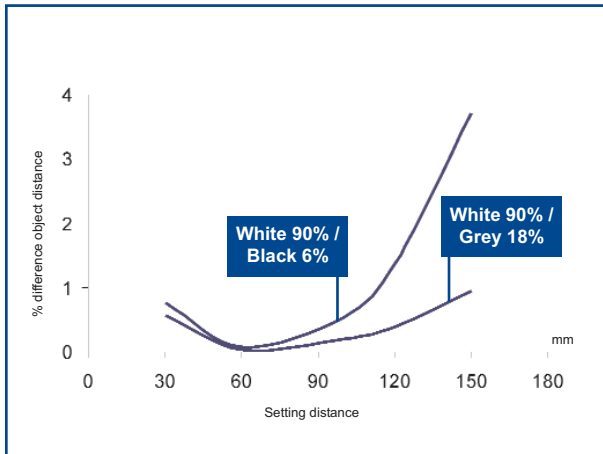
## DETECTION DIAGRAMS OF MODELS WITH LASER EMISSION



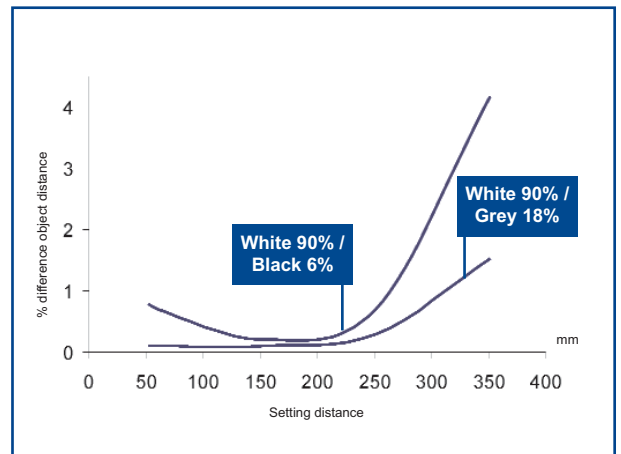
Laser polarised retroreflex



Light spot dimension -  
Laser polarised retroreflex



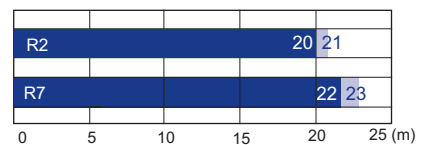
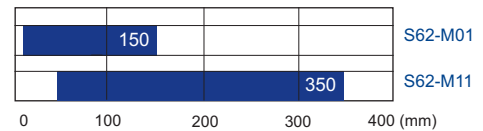
30 ... 150 mm laser background suppression



50 ... 350 mm laser background suppression

Reflector operating distances (m)				
R1	R2	R6	R7 / R20	R8
0.3 ... 16	0.3 ... 20	0.4 ... 22	0.3 ... 22	0.2 ... 2

The use of the RT3970 reflecting tape is suggested.



■ Recommended operating distance  
■ Maximum operating distance



## MODEL SELECTION AND ORDER INFORMATION

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

## ACCESSORY SELECTION AND ORDER INFORMATION

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

Please refer also to **DATASENSOR connectors and reflectors**

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# UNIVERSAL COMPACT SENSORS