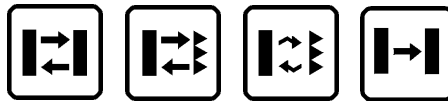


**S51 SERIES**

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

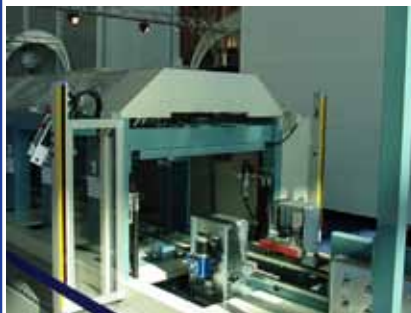


**HIGHLIGHTS**

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

**APPLICATIONS**

**Ceramics**



**Transportation lines**



**Beverage & Bottling**



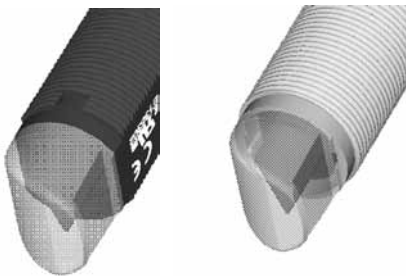
**Packaging lines**



## M18 STANDARD



RADIAL OPTICS



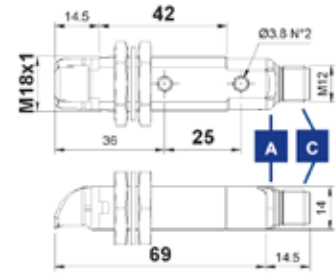
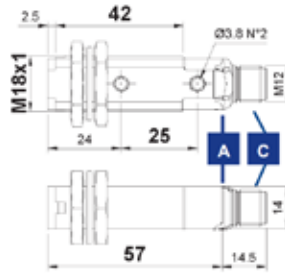
## ACCESSORIES

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

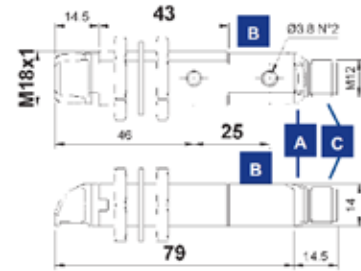
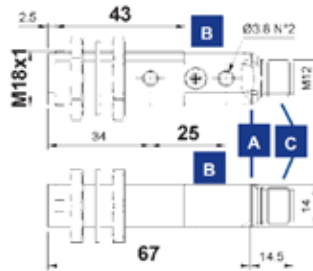
## DIMENSIONS

### A00/C10/G00 MODELS

#### PLASTIC HOUSING

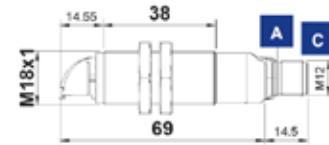
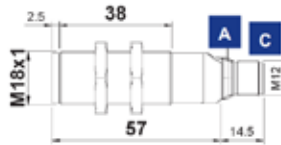


### B01/C01/F00 MODELS

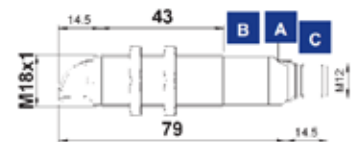
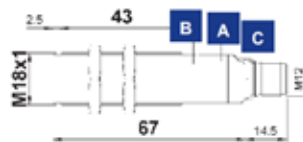


#### METAL HOUSING

### A00/C10/C20/G00 MODELS



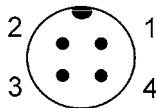
### B01/C01/F00 MODELS



## CONNECTIONS

### G00 MODEL

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

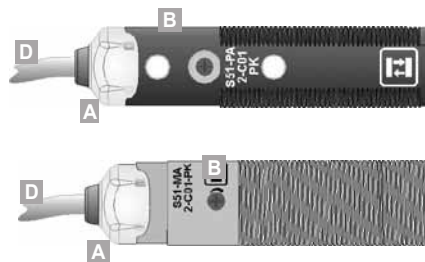


### A00/B01/C01/C10/C20/F00 MODELS

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



## INDICATORS AND SETTINGS



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

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

**TECHNICAL DATA**

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

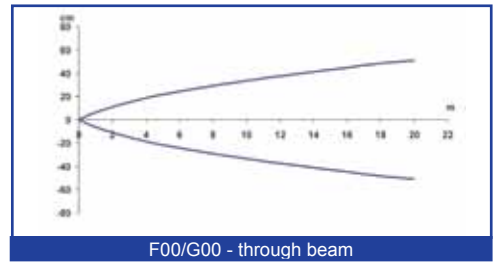
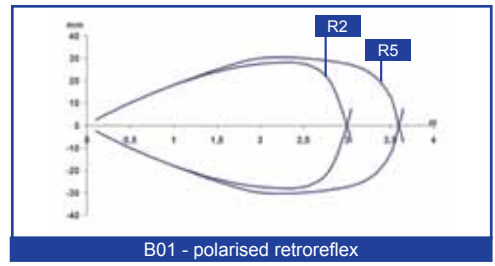
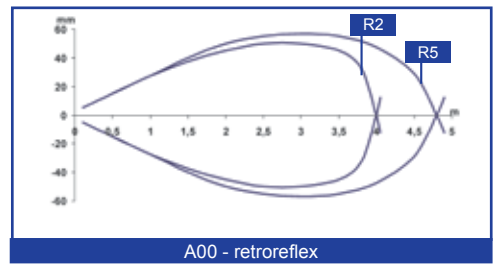
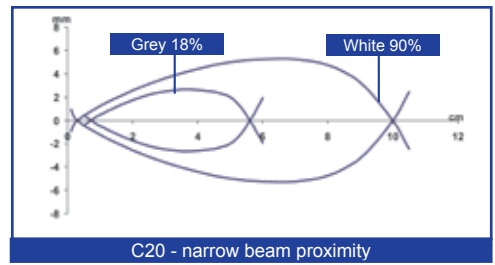
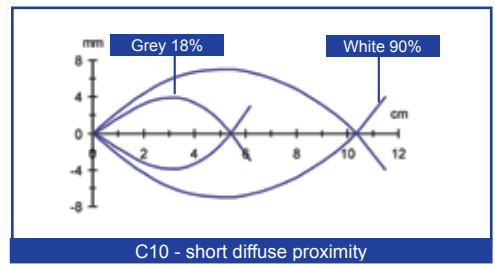
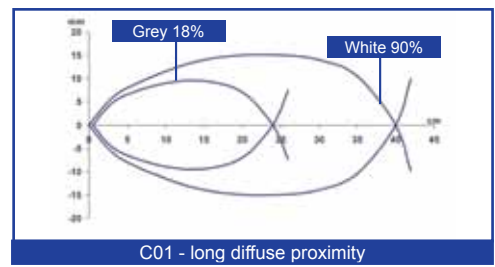
**TECHNICAL NOTES**

- <sup>1</sup>Limit values
- <sup>2</sup>Average life of 100.000 h with TA = +25 °C
- <sup>3</sup>270° single-turn trimmer
- <sup>4</sup>With L/D input not connected the proximity models function in the light mode and the retroreflex and through beam models in the dark mode; the light mode can be selected connecting the L/D input to +Vdc, the dark mode connecting it to 0Vdc
- <sup>5</sup>Emitter off with Test+ connected to +Vdc and Test- to 0 Vdc
- <sup>6</sup>PVC, 4 x 0.14 mm<sup>2</sup>
- <sup>7</sup>M12 connector compatible with quick connection systems
- <sup>8</sup>A - reverse polarity protection  
B - overload and short-circuit protection



Recommended operating distance  
Maximum operating distance

**DETECTION DIAGRAMS**



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



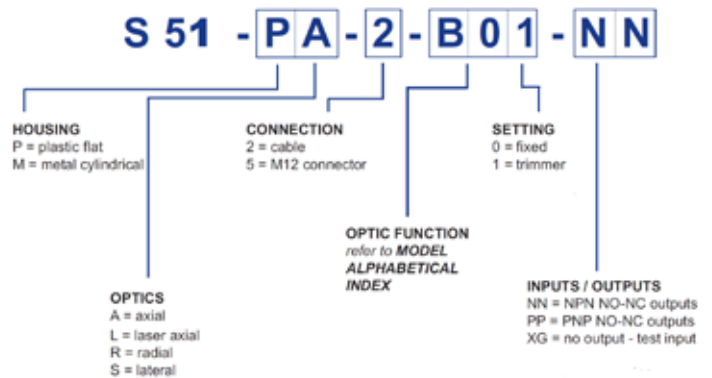
\*Only on axial optic models

## MODEL SELECTION AND ORDER INFORMATION

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

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

## MODEL CODING TABLE



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