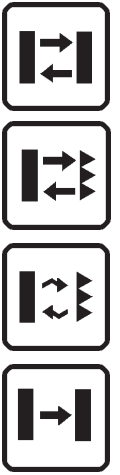


## M18 PHOTOELECTRIC SENSOR BASIC LINE



- *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*

### World class standard

## 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.

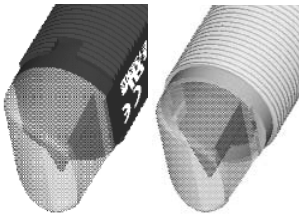
The sensors of the **S51** series, with cable or M12 connector and PNP or NPN output, provide a 3 wire connection configuration in compliance with the EN60947-5-2 standard, having the normally open output which is activated in the light mode in the proximity models and in the dark mode in the retroreflex models. The output mode can be inverted using the dark/light selection input wire provided.

## M18STANDARD

### AXIAL OPTIC VERSIONS



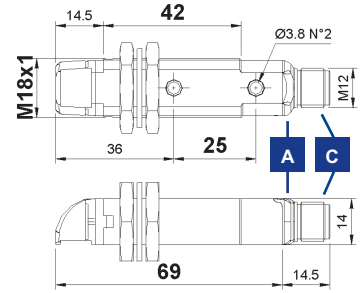
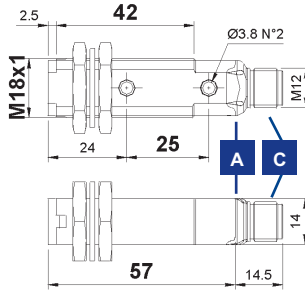
### RADIAL OPTIC VERSIONS



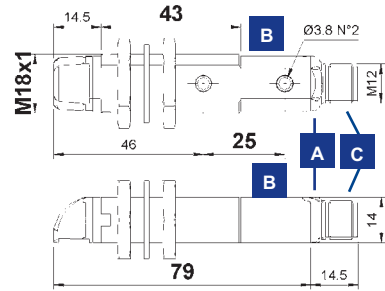
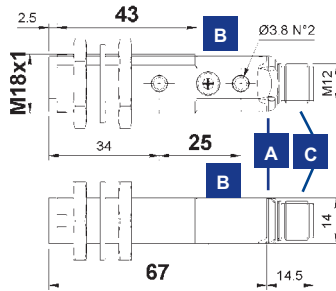
## DIMENSIONS

### PLASTIC HOUSING

#### A00/C10/G00/F00 MODELS

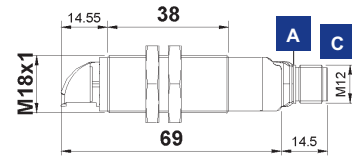
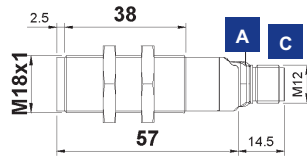


#### B01/C01 MODELS

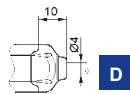
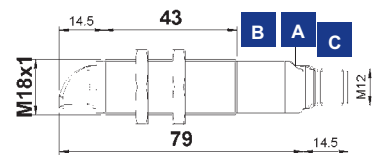
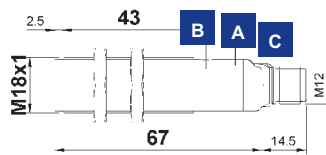


### METAL HOUSING

#### A00/C10/C20/G00/F00 MODELS



#### B01/C01 MODELS



## ACCESSORIES

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

## CONNECTIONS

### G00 MODEL

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

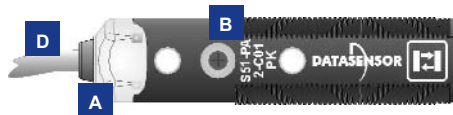


### A00/B01/C01/C10/C20/F00 MODELS

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

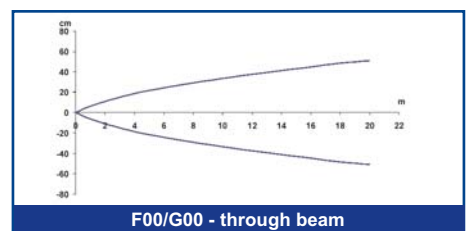
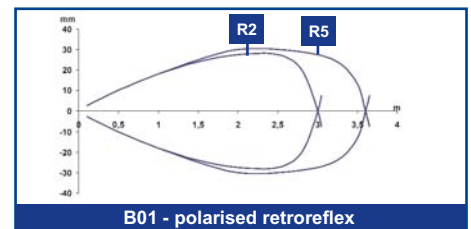
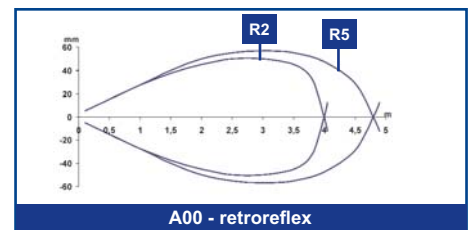
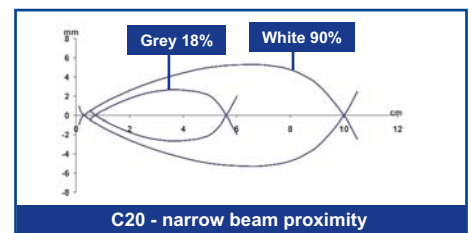
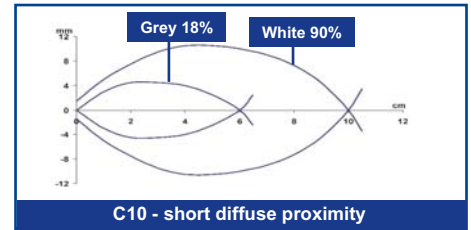
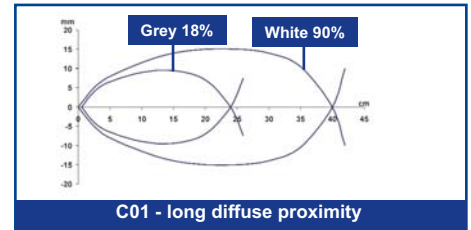
Trimmer for sensitivity adjustment. Rotate in a clockwise direction to increase the operating distance.



## TECHNICAL DATA

<b>Long diffuse proximity operating distance:</b>	1 ... 40 cm (radial version 30 cm)
<b>Short diffuse proximity operating distance:</b>	0 ... 10 cm (radial version 8 cm)
<b>Narrow beam proximity operating distance:</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...18 m (radial version 15 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
<b>Switching frequency:</b>	4 ms (F00 mod.) ≤ 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

## 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



## TECHNICAL NOTES

- Limit values
- Average life of 100.000 h with  $T_A = +25 \text{ °C}$
- 270° single-turn trimmer
- 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
- Emitter off with Test+ connected to +Vdc and Test- to 0 Vdc
- PVC, 4 x 0.14 mm<sup>2</sup>
- M12 connector compatible with quick connection systems
- A - reverse polarity protection  
B - overload and short-circuit protection

<b>A00</b>	3,5	4
Axial on R2		
<b>A00</b>	4	4,5
Axial on R5		
<b>A00</b>	2,5	3
Radial on R2		
<b>A00</b>	3	3,5
Radial on R5		

0 2,5 5 (m)

<b>B01</b>	2,5	3
Axial on R2		
<b>B01</b>	3	3,5
Axial on R5		
<b>B01</b>	2	2,5
Radial on R2		
<b>B01</b>	2,5	3
Radial on R5		

0 2 4 (m)

<b>C01</b>	40	45
Axial		
<b>C01</b>	30	35
Radial		

0 25 50 (cm)

<b>C10/C20</b>	10
Axial	
<b>C10</b>	8
Radial	

0 5 10 (cm)

<b>F/G</b>	18	20
Axial		
<b>F/G</b>	15	18
Radial		

0 10 20 (m)

- Recommended operating distance
- Maximum operating distance

## MODEL LIST

MODEL	HOUSING	OPTIC FUNCTION	OPTICS	CONNECTION	OUTPUT	ORDER N°
S51-PA-2-A00-PK	plastic	retroreflex	axial	2 m cable	PNP	952701001
S51-PA-2-A00-NK	plastic	retroreflex	axial	2 m cable	NPN	952701071
S51-PA-5-A00-PK	plastic	retroreflex	axial	M12 connector	PNP	952701261
S51-PA-5-A00-NK	plastic	retroreflex	axial	M12 connector	NPN	952701331
S51-PA-2-B01-PK	plastic	polarised retroreflex	axial	2 m cable	PNP	952701011
S51-PA-2-B01-NK	plastic	polarised retroreflex	axial	2 m cable	NPN	952701081
S51-PA-5-B01-PK	plastic	polarised retroreflex	axial	M12 connector	PNP	952701271
S51-PA-5-B01-NK	plastic	polarised retroreflex	axial	M12 connector	NPN	952701341
S51-PA-2-C01-PK	plastic	long diffuse proximity	axial	2 m cable	PNP	952701021
S51-PA-2-C01-NK	plastic	long diffuse proximity	axial	2 m cable	NPN	952701091
S51-PA-5-C01-PK	plastic	long diffuse proximity	axial	M12 connector	PNP	952701281
S51-PA-5-C01-NK	plastic	long diffuse proximity	axial	M12 connector	NPN	952701351
S51-PA-2-C10-PK	plastic	short diffuse proximity	axial	2 m cable	PNP	952701031
S51-PA-2-C10-NK	plastic	short diffuse proximity	axial	2 m cable	NPN	952701101
S51-PA-5-C10-PK	plastic	short diffuse proximity	axial	M12 connector	PNP	952701291
S51-PA-5-C10-NK	plastic	short diffuse proximity	axial	M12 connector	NPN	952701361
S51-PA-2-F00-PK	plastic	receiver	axial	2 m cable	PNP	952701051
S51-PA-2-F00-NK	plastic	receiver	axial	2 m cable	NPN	952701121
S51-PA-5-F00-PK	plastic	receiver	axial	M12 connector	PNP	952701311
S51-PA-5-F00-NK	plastic	receiver	axial	M12 connector	NPN	952701381
S51-PA-2-G00-XG	plastic	emitter	axial	2 m cable	-	952701061
S51-PA-5-G00-XG	plastic	emitter	axial	M12 connector	-	952701321
S51-PR-2-A00-PK	plastic	retroreflex	radial	2 m cable	PNP	952701131
S51-PR-2-A00-NK	plastic	retroreflex	radial	2 m cable	NPN	952701201
S51-PR-5-A00-PK	plastic	retroreflex	radial	M12 connector	PNP	952701391
S51-PR-5-A00-NK	plastic	retroreflex	radial	M12 connector	NPN	952701461
S51-PR-2-B01-PK	plastic	polarised retroreflex	radial	2 m cable	PNP	952701141
S51-PR-2-B01-NK	plastic	polarised retroreflex	radial	2 m cable	NPN	952701211
S51-PR-5-B01-PK	plastic	polarised retroreflex	radial	M12 connector	PNP	952701401
S51-PR-5-B01-NK	plastic	polarised retroreflex	radial	M12 connector	NPN	952701471
S51-PR-2-C01-PK	plastic	long diffuse proximity	radial	2 m cable	PNP	952701151
S51-PR-2-C01-NK	plastic	long diffuse proximity	radial	2 m cable	NPN	952701221
S51-PR-5-C01-PK	plastic	long diffuse proximity	radial	M12 connector	PNP	952701411
S51-PR-5-C01-NK	plastic	long diffuse proximity	radial	M12 connector	NPN	952701481
S51-PR-2-C10-PK	plastic	short diffuse proximity	radial	2 m cable	PNP	952701161
S51-PR-2-C10-NK	plastic	short diffuse proximity	radial	2 m cable	NPN	952701231
S51-PR-5-C10-PK	plastic	short diffuse proximity	radial	M12 connector	PNP	952701421
S51-PR-5-C10-NK	plastic	short diffuse proximity	radial	M12 connector	NPN	952701491
S51-PR-2-F00-PK	plastic	receiver	radial	2 m cable	PNP	952701181
S51-PR-2-F00-NK	plastic	receiver	radial	2 m cable	NPN	952701251
S51-PR-5-F00-PK	plastic	receiver	radial	M12 connector	PNP	952701441
S51-PR-5-F00-NK	plastic	receiver	radial	M12 connector	NPN	952701511
S51-PR-2-G00-XG	plastic	emitter	radial	2 m cable	-	952701191
S51-PR-5-G00-XG	plastic	emitter	radial	M12 connector	-	952701451
S51-MA-2-A00-PK	metal	retroreflex	axial	2 m cable	PNP	952701541
S51-MA-2-A00-NK	metal	retroreflex	axial	2 m cable	NPN	952701601
S51-MA-5-A00-PK	metal	retroreflex	axial	M12 connector	PNP	952701531
S51-MA-5-A00-NK	metal	retroreflex	axial	M12 connector	NPN	952701801
S51-MA-2-B01-PK	metal	polarised retroreflex	axial	2 m cable	PNP	952701551
S51-MA-2-B01-NK	metal	polarised retroreflex	axial	2 m cable	NPN	952701611
S51-MA-5-B01-PK	metal	polarised retroreflex	axial	M12 connector	PNP	952701761
S51-MA-5-B01-NK	metal	polarised retroreflex	axial	M12 connector	NPN	952701811
S51-MA-2-C01-PK	metal	long diffuse proximity	axial	2 m cable	PNP	952701561
S51-MA-2-C01-NK	metal	long diffuse proximity	axial	2 m cable	NPN	952701621
S51-MA-5-C01-PK	metal	long diffuse proximity	axial	M12 connector	PNP	952701771
S51-MA-5-C01-NK	metal	long diffuse proximity	axial	M12 connector	NPN	952701821
S51-MA-2-C10-PK	metal	short diffuse proximity	axial	2 m cable	PNP	952701571
S51-MA-2-C10-NK	metal	short diffuse proximity	axial	2 m cable	NPN	952701631
S51-MA-5-C10-PK	metal	short diffuse proximity	axial	M12 connector	PNP	952701521
S51-MA-5-C10-NK	metal	short diffuse proximity	axial	M12 connector	NPN	952701831
S51-MA-5-C20-PK	metal	narrow beam proximity	axial	M12 connector	PNP	952701961
S51-MA-2-F00-PK	metal	receiver	axial	2 m cable	PNP	952701581
S51-MA-2-F00-NK	metal	receiver	axial	2 m cable	NPN	952701641
S51-MA-5-F00-PK	metal	receiver	axial	M12 connector	PNP	952701781
S51-MA-5-F00-NK	metal	receiver	axial	M12 connector	NPN	952701841
S51-MA-2-G00-XG	metal	emitter	axial	2 m cable	-	952701591
S51-MA-5-G00-XG	metal	emitter	axial	M12 connector	-	952701791
S51-MR-2-A00-PK	metal	retroreflex	radial	2 m cable	PNP	952701651
S51-MR-2-A00-NK	metal	retroreflex	radial	2 m cable	NPN	952701711
S51-MR-5-A00-PK	metal	retroreflex	radial	M12 connector	PNP	952701851
S51-MR-5-A00-NK	metal	retroreflex	radial	M12 connector	NPN	952701911
S51-MR-2-B01-PK	metal	polarised retroreflex	radial	2 m cable	PNP	952701661
S51-MR-2-B01-NK	metal	polarised retroreflex	radial	2 m cable	NPN	952701721
S51-MR-5-B01-PK	metal	polarised retroreflex	radial	M12 connector	PNP	952701861
S51-MR-5-B01-NK	metal	polarised retroreflex	radial	M12 connector	NPN	952701921
S51-MR-2-C01-PK	metal	long diffuse proximity	radial	2 m cable	PNP	952701671
S51-MR-2-C01-NK	metal	long diffuse proximity	radial	2 m cable	NPN	952701731
S51-MR-5-C01-PK	metal	long diffuse proximity	radial	M12 connector	PNP	952701871
S51-MR-5-C01-NK	metal	long diffuse proximity	radial	M12 connector	NPN	952701931
S51-MR-2-C10-PK	metal	short diffuse proximity	radial	2 m cable	PNP	952701681
S51-MR-2-C10-NK	metal	short diffuse proximity	radial	2 m cable	NPN	952701741
S51-MR-5-C10-PK	metal	short diffuse proximity	radial	M12 connector	PNP	952701881
S51-MR-5-C10-NK	metal	short diffuse proximity	radial	M12 connector	NPN	952701941
S51-MR-2-F00-PK	metal	receiver	radial	2 m cable	PNP	952701691
S51-MR-2-F00-NK	metal	receiver	radial	2 m cable	NPN	952701751
S51-MR-5-F00-PK	metal	receiver	radial	M12 connector	PNP	952701891
S51-MR-5-F00-NK	metal	receiver	radial	M12 connector	NPN	952701951
S51-MR-2-G00-XG	metal	emitter	radial	2 m cable	-	952701701
S51-MR-5-G00-XG	metal	emitter	radial	M12 connector	-	952701901

Distributed by:

### DATASENSOR SpA

via Lavino, 265 - 40050 Monte San Pietro, BO - Italy

Tel. +39 051/6765611 • Fax +39 051/6759324

www.datasensor.com • e-mail info@datasensor.com

Datasensor SpA 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 Datasensor SpA can guarantee only the data indicated in the instruction manual supplied with the products.

