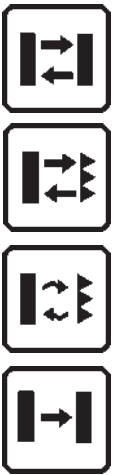


M18 PHOTOELECTRIC SENSOR BASIC LINE



- *Plastic or metal housing with axial or radial optics*
- *Versions with NPN or PNP output, cable or M12 connector*
- *Standard 3 wire connection configuration*
- *Selectable dark or light output*

M18 standard

S51 series

The **S51** series offers the most cost-effective solution for object detection in all industrial automation applications. The standard M18x1 tubular plastic or metal housing is 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.

There are two models of the diffuse proximity function: one with 1 - 10 cm fixed operating distance and the other with 1 - 30 cm adjustable operating distance.

Standard retroreflective models have an operating distance up to 3 m whilst the polarised retroreflective models used for reliable detection of reflective objects are fitted with sensitivity adjustment and have a 2 m maximum operating distance. The emitter and receiver models, used for longer operating distances, reach 12 meters.

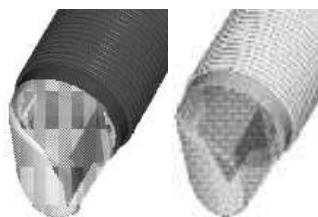
The sensors of the **S51** series, with cable or M12 connector, provide a 3 wire connection configuration in compliance with the EN60947-5-2 standard, having the normally open output present on pin 4, regardless of optic function. The output mode can be inverted using the dark/light selection input wire provided.

M18 STANDARD

AXIAL OPTIC VERSIONS

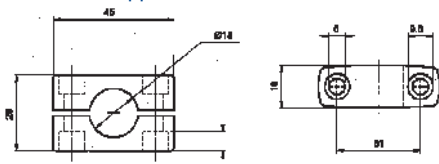


RADIAL OPTIC VERSIONS

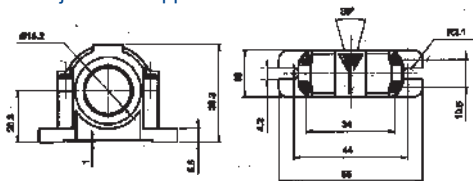


ACCESSORIES

SP-40 (order n° 95ACC1370)
fixed support for M18 tubular sensors



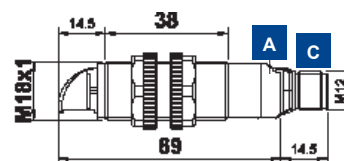
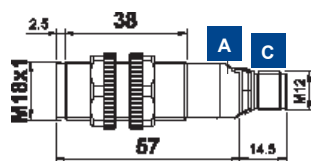
SWING-18 (order n° 895000006)
adjustable support for M18 tubular sensors



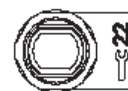
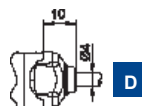
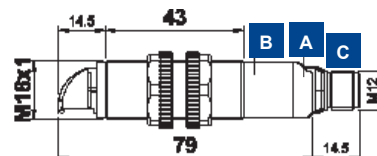
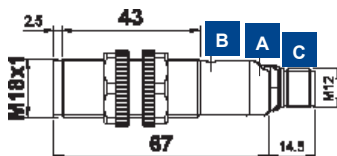
Please refer also to [Sensor accessories](#)

DIMENSIONS

A00/C10/G00 MODELS



B01/C01/F00 MODELS



INDICATORS AND SETTINGS



A



B

A

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

CONNECTIONS



S51-2



S51-5

G00 MODEL

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



A00/B01/C01/C10/F00 MODELS

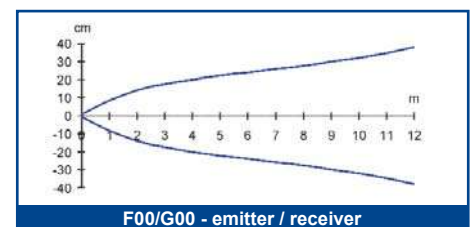
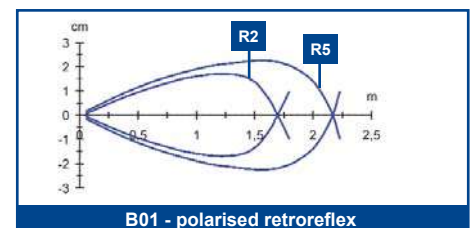
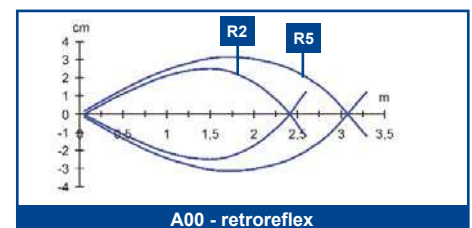
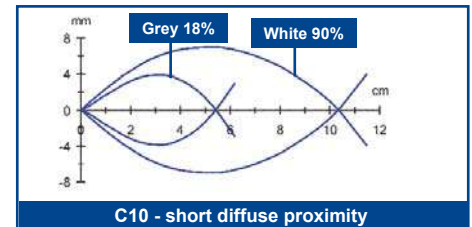
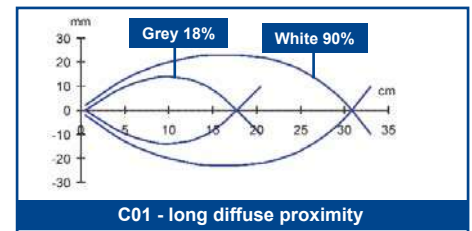
BROWN 1 + 10...30 Vdc
WHITE 2 LIGHT/DARK
BLACK 4 NO OUTPUT
BLUE 3 0 V



TECHNICAL DATA

Long diffuse proximity operating distance:	1 ... 30 cm (25 cm radial vers.)
Short diffuse proximity operating distance:	0 ... 10 cm (8 cm radial vers.)
Retroreflex operating distance:	0.1 ... 3 m (2 m radial vers.)
Polarised retroreflex operating distance:	0.1 ... 2 m (1.5 m radial vers.)
Through beam operating distance:	0 ... 12 m (10 m radial vers.)
Power supply:	10 ... 30 Vdc ¹
Ripple:	≤ 2 Vpp
Consumption:	≤ 35 mA
Light emission ² :	infrared LED 880 nm red LED 650 nm (B01 mod.)
Setting:	sensitivity trimmer (B01, C01 mod.) ³
Indicators:	yellow OUTPUT LED (excl. G00 mod.) green POWER LED (G00 mod.)
Output type:	NPN vers. or PNP vers.
Output current:	≤ 100 mA
Saturation voltage:	≤ 2 V
Response time:	1 ms
Switching frequency:	2 ms (F00 mod.) 500 Hz 250 Hz (F00 mod.)
Operating mode:	dark/light selectable ⁴
Auxiliary functions:	Test + and Test - ⁵
Connection:	2 m Ø 4 mm cable ⁶ M12 4-pole connector ⁷
Electrical protection:	class 2
Mechanical protection:	IP67
Protection devices:	A, B ⁸
Housing material:	ABS (S51-P vers.) nickel-plated brass (S51-M vers.)
Lens material:	PMMA
Weight:	25 g max. (S51-PA-5 vers.) 75 g max. (S51-PA-2 vers.) 60 g max. (S51-MA-5 vers.) 100 g max. (S51-MA-2 vers.)
Operating temperature:	-25 ... +55°C
Storage temperature:	-25 ... +70°C
Reference standard:	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

- ¹ Limit values
- ² Average life of 100.000 h with $T_A = +25^\circ\text{C}$
- ³ 270° single-turn trimmer
- ⁴ 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
- ⁵ Emitter off with Test+ connected to +Vdc and Test- to 0 Vdc
- ⁶ PVC, 4 x 0.14 mm²
- ⁷ M12 connector compatible with quick connection systems
- ⁸ A - reverse polarity protection
B - overload and short-circuit protection

A00	2	2,2
axial on R2		
A00	2,8	3
axial on R5		
A00	1,5	1,7
radial on R2		
A00	2	2,2
radial on R5		
0	1,5	3 (m)

B01	1,5	1,7
axial on R2		
B01	2	2,2
axial on R5		
B01	1,2	1,4
radial on R2		
B01	1,5	1,7
radial on R5		
0	1,25	2,5 (m)

C01	30	
axial		
C01	25	
radial		
0	15	30 (cm)

C10	10	
axial		
C10	8	
radial		
0	5	10 (cm)

F/G	12	13
axial		
F/G	10	11
radial		
0	8	16 (m)

 **Recommended operating distance**

 **Maximum operating distance**

■ 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	952701000
S51-PA-2-A00-NK	plastic	retroreflex	axial	2 m cable	NPN	952701070
S51-PA-5-A00-PK	plastic	retroreflex	axial	M12 connector	PNP	952701260
S51-PA-5-A00-NK	plastic	retroreflex	axial	M12 connector	NPN	952701330
S51-PA-2-B01-PK	plastic	polarised retroreflex	axial	2 m cable	PNP	952701010
S51-PA-2-B01-NK	plastic	polarised retroreflex	axial	2 m cable	NPN	952701080
S51-PA-5-B01-PK	plastic	polarised retroreflex	axial	M12 connector	PNP	952701270
S51-PA-5-B01-NK	plastic	polarised retroreflex	axial	M12 connector	NPN	952701340
S51-PA-2-C01-PK	plastic	long diffuse proximity	axial	2 m cable	PNP	952701020
S51-PA-2-C01-NK	plastic	long diffuse proximity	axial	2 m cable	NPN	952701090
S51-PA-5-C01-PK	plastic	long diffuse proximity	axial	M12 connector	PNP	952701280
S51-PA-5-C01-NK	plastic	long diffuse proximity	axial	M12 connector	NPN	952701350
S51-PA-2-C10-PK	plastic	short diffuse proximity	axial	2 m cable	PNP	952701030
S51-PA-2-C10-NK	plastic	short diffuse proximity	axial	2 m cable	NPN	952701100
S51-PA-5-C10-PK	plastic	short diffuse proximity	axial	M12 connector	PNP	952701290
S51-PA-5-C10-NK	plastic	short diffuse proximity	axial	M12 connector	NPN	952701360
S51-PA-2-F00-PK	plastic	receiver	axial	2 m cable	PNP	952701050
S51-PA-2-F00-NK	plastic	receiver	axial	2 m cable	NPN	952701120
S51-PA-5-F00-PK	plastic	receiver	axial	M12 connector	PNP	952701310
S51-PA-5-F00-NK	plastic	receiver	axial	M12 connector	NPN	952701380
S51-PA-2-G00-XG	plastic	emitter	axial	2 m cable	-	952701060
S51-PA-5-G00-XG	plastic	emitter	axial	M12 connector	-	952701320
S51-PR-2-A00-PK	plastic	retroreflex	radial	2 m cable	PNP	952701130
S51-PR-2-A00-NK	plastic	retroreflex	radial	2 m cable	NPN	952701200
S51-PR-5-A00-PK	plastic	retroreflex	radial	M12 connector	PNP	952701390
S51-PR-5-A00-NK	plastic	retroreflex	radial	M12 connector	NPN	952701460
S51-PR-2-B01-PK	plastic	polarised retroreflex	radial	2 m cable	PNP	952701140
S51-PR-2-B01-NK	plastic	polarised retroreflex	radial	2 m cable	NPN	952701210
S51-PR-5-B01-PK	plastic	polarised retroreflex	radial	M12 connector	PNP	952701400
S51-PR-5-B01-NK	plastic	polarised retroreflex	radial	M12 connector	NPN	952701470
S51-PR-2-C01-PK	plastic	long diffuse proximity	radial	2 m cable	PNP	952701150
S51-PR-2-C01-NK	plastic	long diffuse proximity	radial	2 m cable	NPN	952701220
S51-PR-5-C01-PK	plastic	long diffuse proximity	radial	M12 connector	PNP	952701410
S51-PR-5-C01-NK	plastic	long diffuse proximity	radial	M12 connector	NPN	952701480
S51-PR-2-C10-PK	plastic	short diffuse proximity	radial	2 m cable	PNP	952701160
S51-PR-2-C10-NK	plastic	short diffuse proximity	radial	2 m cable	NPN	952701230
S51-PR-5-C10-PK	plastic	short diffuse proximity	radial	M12 connector	PNP	952701420
S51-PR-5-C10-NK	plastic	short diffuse proximity	radial	M12 connector	NPN	952701490
S51-PR-2-F00-PK	plastic	receiver	radial	2 m cable	PNP	952701180
S51-PR-2-F00-NK	plastic	receiver	radial	2 m cable	NPN	952701250
S51-PR-5-F00-PK	plastic	receiver	radial	M12 connector	PNP	952701440
S51-PR-5-F00-NK	plastic	receiver	radial	M12 connector	NPN	952701510
S51-PR-2-G00-XG	plastic	emitter	radial	2 m cable	-	952701190
S51-PR-5-G00-XG	plastic	emitter	radial	M12 connector	-	952701450
S51-MA-2-A00-PK	metal	retroreflex	axial	2 m cable	PNP	952701540
S51-MA-2-A00-NK	metal	retroreflex	axial	2 m cable	NPN	952701600
S51-MA-5-A00-PK	metal	retroreflex	axial	M12 connector	PNP	952701530
S51-MA-5-A00-NK	metal	retroreflex	axial	M12 connector	NPN	952701800
S51-MA-2-B01-PK	metal	polarised retroreflex	axial	2 m cable	PNP	952701550
S51-MA-2-B01-NK	metal	polarised retroreflex	axial	2 m cable	NPN	952701610
S51-MA-5-B01-PK	metal	polarised retroreflex	axial	M12 connector	PNP	952701760
S51-MA-5-B01-NK	metal	polarised retroreflex	axial	M12 connector	NPN	952701810
S51-MA-2-C01-PK	metal	long diffuse proximity	axial	2 m cable	PNP	952701560
S51-MA-2-C01-NK	metal	long diffuse proximity	axial	2 m cable	NPN	952701620
S51-MA-5-C01-PK	metal	long diffuse proximity	axial	M12 connector	PNP	952701770
S51-MA-5-C01-NK	metal	long diffuse proximity	axial	M12 connector	NPN	952701820
S51-MA-2-C10-PK	metal	short diffuse proximity	axial	2 m cable	PNP	952701570
S51-MA-2-C10-NK	metal	short diffuse proximity	axial	2 m cable	NPN	952701630
S51-MA-5-C10-PK	metal	short diffuse proximity	axial	M12 connector	PNP	952701520
S51-MA-5-C10-NK	metal	short diffuse proximity	axial	M12 connector	NPN	952701830
S51-MA-2-F00-PK	metal	receiver	axial	2 m cable	PNP	952701580
S51-MA-2-F00-NK	metal	receiver	axial	2 m cable	NPN	952701640
S51-MA-5-F00-PK	metal	receiver	axial	M12 connector	PNP	952701780
S51-MA-5-F00-NK	metal	receiver	axial	M12 connector	NPN	952701840
S51-MA-2-G00-XG	metal	emitter	axial	2 m cable	-	952701590
S51-MA-5-G00-XG	metal	emitter	axial	M12 connector	-	952701790
S51-MR-2-A00-PK	metal	retroreflex	radial	2 m cable	PNP	952701650
S51-MR-2-A00-NK	metal	retroreflex	radial	2 m cable	NPN	952701710
S51-MR-5-A00-PK	metal	retroreflex	radial	M12 connector	PNP	952701850
S51-MR-5-A00-NK	metal	retroreflex	radial	M12 connector	NPN	952701910
S51-MR-2-B01-PK	metal	polarised retroreflex	radial	2 m cable	PNP	952701660
S51-MR-2-B01-NK	metal	polarised retroreflex	radial	2 m cable	NPN	952701720
S51-MR-5-B01-PK	metal	polarised retroreflex	radial	M12 connector	PNP	952701860
S51-MR-5-B01-NK	metal	polarised retroreflex	radial	M12 connector	NPN	952701920
S51-MR-2-C01-PK	metal	long diffuse proximity	radial	2 m cable	PNP	952701670
S51-MR-2-C01-NK	metal	long diffuse proximity	radial	2 m cable	NPN	952701730
S51-MR-5-C01-PK	metal	long diffuse proximity	radial	M12 connector	PNP	952701870
S51-MR-5-C01-NK	metal	long diffuse proximity	radial	M12 connector	NPN	952701930
S51-MR-2-C10-PK	metal	short diffuse proximity	radial	2 m cable	PNP	952701680
S51-MR-2-C10-NK	metal	short diffuse proximity	radial	2 m cable	NPN	952701740
S51-MR-5-C10-PK	metal	short diffuse proximity	radial	M12 connector	PNP	952701880
S51-MR-5-C10-NK	metal	short diffuse proximity	radial	M12 connector	NPN	952701940
S51-MR-2-F00-PK	metal	receiver	radial	2 m cable	PNP	952701690
S51-MR-2-F00-NK	metal	receiver	radial	2 m cable	NPN	952701750
S51-MR-5-F00-PK	metal	receiver	radial	M12 connector	PNP	952701890
S51-MR-5-F00-NK	metal	receiver	radial	M12 connector	NPN	952701950
S51-MR-2-G00-XG	metal	emitter	radial	2 m cable	-	952701700
S51-MR-5-G00-XG	metal	emitter	radial	M12 connector	-	952701900

Distributed by:

HEADQUARTERS

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.