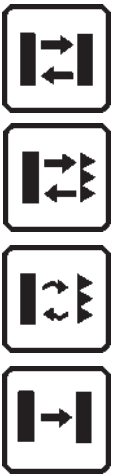


M18 PHOTOELECTRIC SENSOR BASIC LINE



- *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.

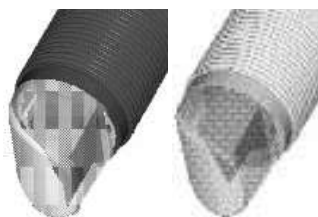
The sensors of the **S51** series, with cable or M12 connector, provide a 3 wire connection configuration in compliance with the EN60947-5-2 standard, having the normally open output present on pin 4, regardless of optic function. The output mode can be inverted using the dark/light selection input wire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

M18 STANDARD

AXIAL OPTIC VERSIONS

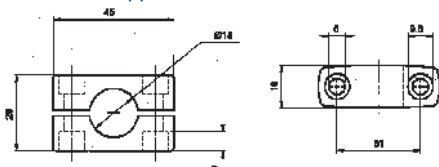


RADIAL OPTIC VERSIONS

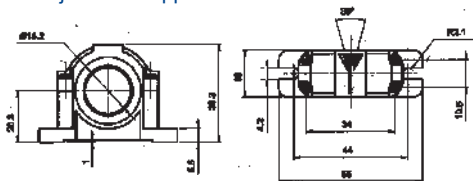


ACCESSORIES

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



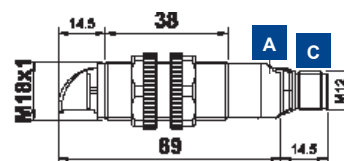
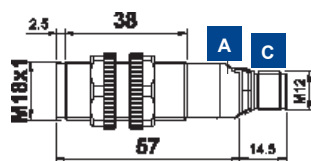
SWING-18 (order n° 895000006)
adjustable support for M18 tubular sensors



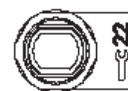
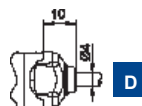
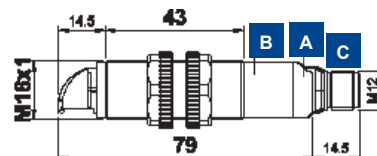
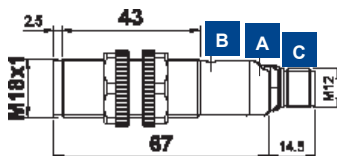
Please refer also to [Sensor accessories](#)

DIMENSIONS

A00/C10/G00 MODELS



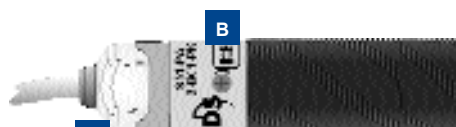
B01/C01/F00 MODELS



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

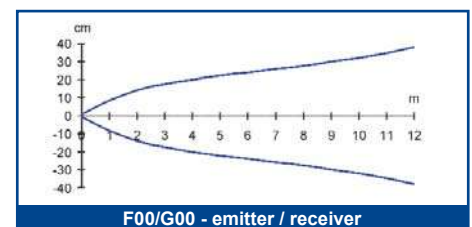
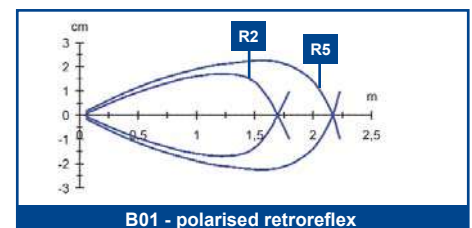
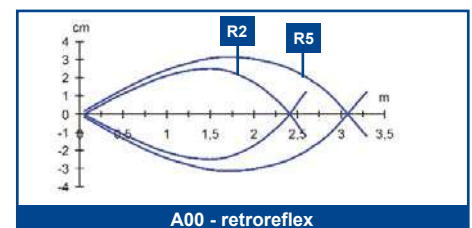
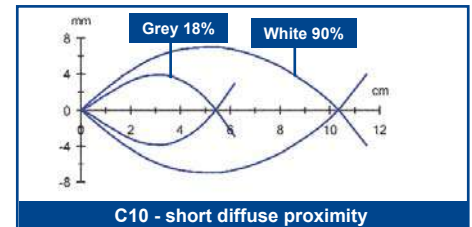
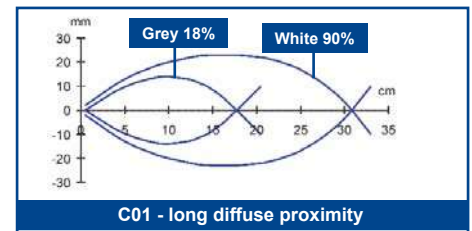
BROWN	1	+ 10...30 Vdc
WHITE	2	LIGHT/DARK
BLACK	4	NO OUTPUT
BLUE	3	0 V



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

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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

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