

**S15 SERIES**

The new S15 series of M18 tubular sensors offers both plastic case version S15-PA and stainless steel IP69K housing version S15-NA. S15-PA plastic version is recommended for cost and space savings with a wide selection of optic functions, ranging from 5 m retroreflex to 1 m diffuse proximity and 12 cm background suppression. Each model is available with or without trimmer setting to fit the most varied applications in assembling and conveyor lines, processing and packaging machinery.

In order to maximize the installation flexibility, the sensor connectivity is available with 2 m cable, M12 4-pole connector or even a pig-tail version. A dedicated input allows the Light/Dark model selection.

S15-NA metal version include a widest optic function selection, all equipped with trimmer setting and metal M12 connector to improve the sensor robustness.

Thanks to the IP69K protection to frequent washdowns and corrosion-resistant AISI316L stainless steel housing, these sensors are recommended for processing and packaging machinery in food, beverage, dairy, and pharmaceutical industries, as well as paper and printing machinery, conveyor lines, and material handling in general.

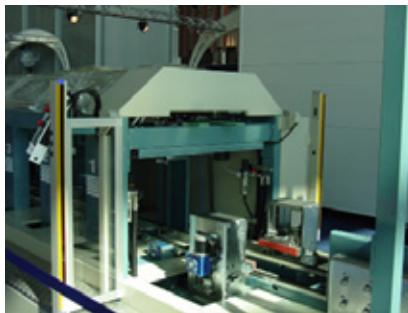


**HIGHLIGHTS**

- Plastic short case version for cost and space saving
- Stainless steel case version for IP69K protection
- All optic functions at optimal operating distance
- Models with fixed setting or trimmer adjustment
- Cable, M12 connector and pig-tail versions

**APPLICATIONS**

**Ceramics**



**Beverage & Bottling**



**Transportation lines**



**Packaging lines for food and pharma**



## INSTALLATION

The sensor can be fixed by means of the M18x1 threaded body using CH.24 nuts (1.5 Nm maximum tightening torque) or low-profile flared nut provided specifically supplied for various orientable fixing brackets are available to ease sensor positioning (please refer to the accessories listed in the general catalogue).

The operating distance is measured from the front surface of the sensor lens.

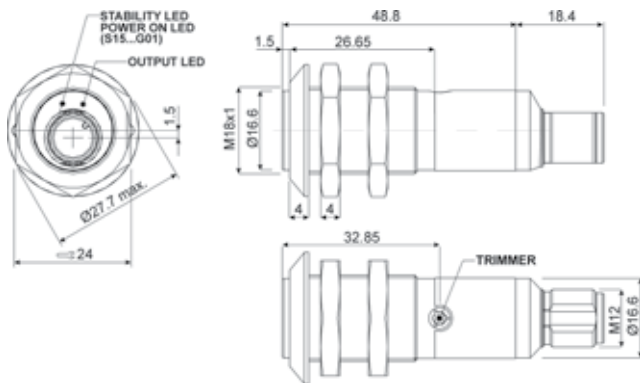
Proximity (C and D) models: the object has to be moved closer or further away from the front surface of the sensor lens to improve detection. In case of lateral translation, the object must move as indicated in the figure.

In models with the sensitivity trimmer and the green LED (STABILITY), we can obtain an optimal installation. Turn the trimmer and move sensor until the yellow LED (OUT) and the green LED (STABILITY) switch ON permanently, in order to mount the sensor in the correct position.

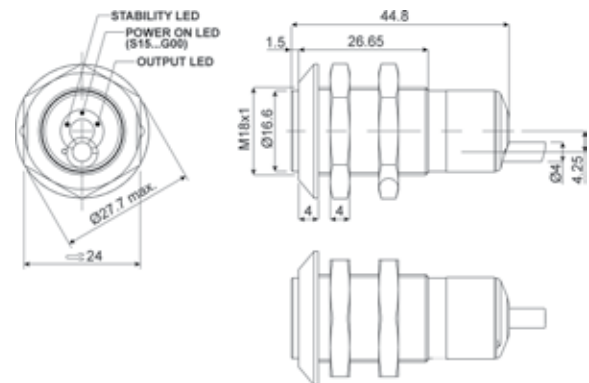


## DIMENSIONS

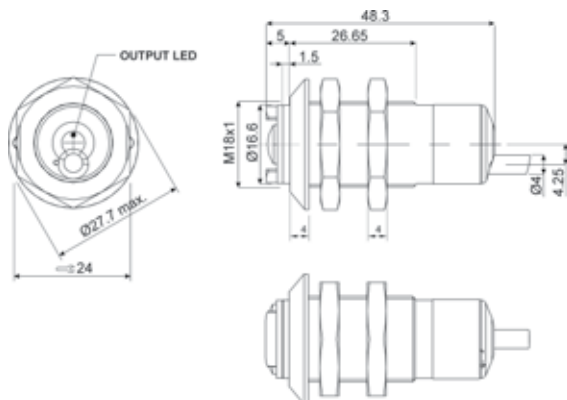
S15-PA/NA-5



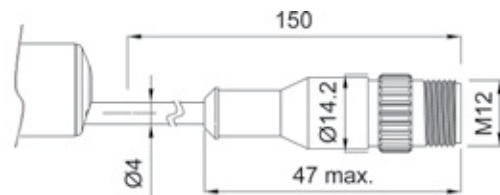
S15-PA-2/3



S15-PA-2/3-D50



S15-PA-3 (pig-tail)

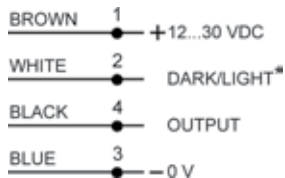


dimensions in mm

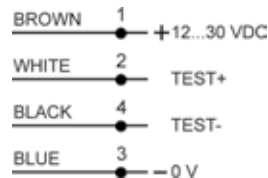
## CONNECTIONS

### Cable and Pig Tail

S15...A00/B00/C00/C10/F00/D50

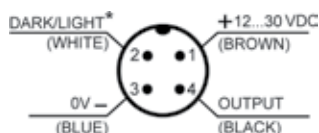


S15...G00

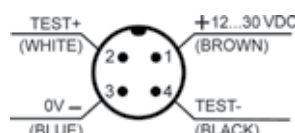


### M12 Connector

S15...A01/B01/C11/C31/T01/F01



S15...G01



\* in case of white wire or pin 2 not connected the sensor operates in LIGHT mode for the proximity models (S15...Cxx/D50) and in DARK mode for the retroreflex (S15...A0x/B0x/T01) and receiver models (S15...F0x).

**TECHNICAL DATA**

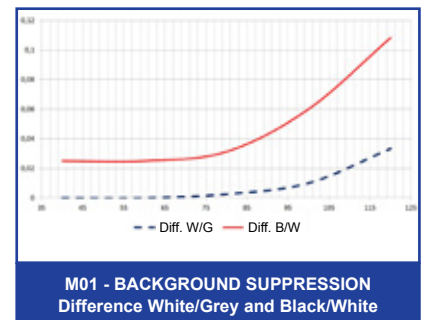
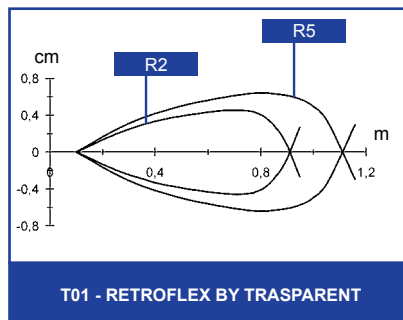
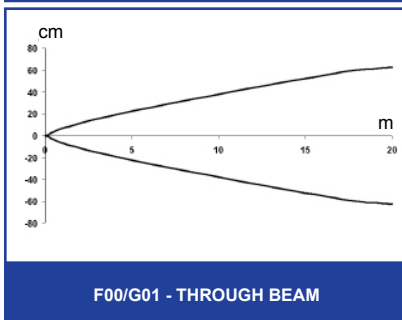
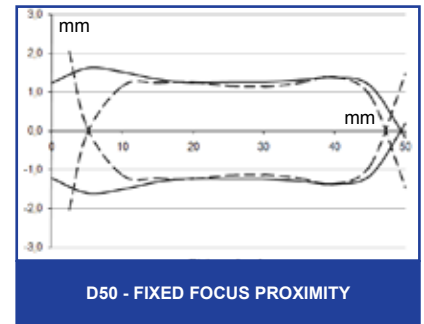
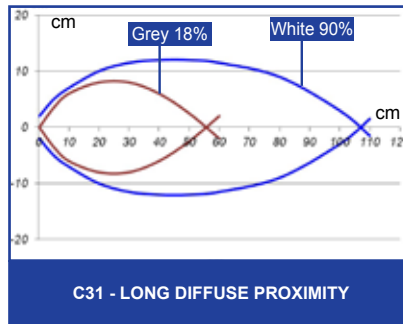
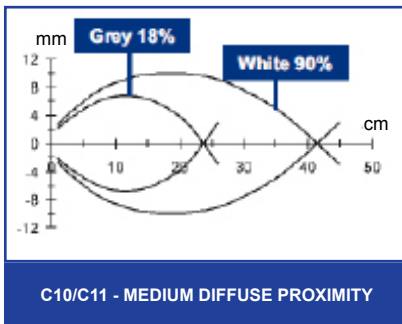
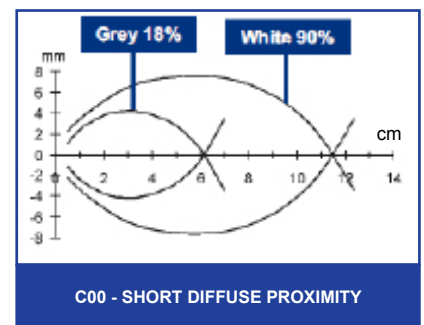
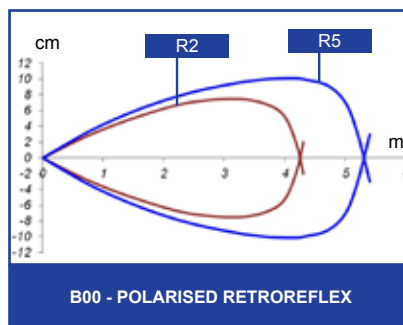
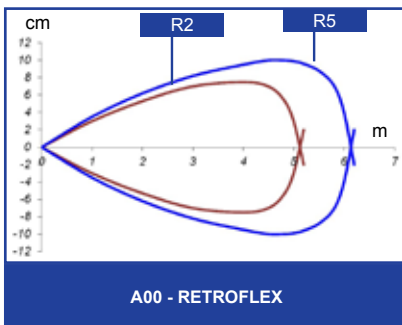
|                                |   |
|--------------------------------|---|
| <b>Power supply</b>            | 12 ... 30 Vdc <sup>1</sup>  |
| <b>Ripple</b>                  | ≤ 2 Vpp   |
| <b>Consumption</b>             | ≤ 25 mA   |
| <b>Output current</b>          | ≤ 100 mA  |
| <b>Saturation voltage</b>      | ≤ 2 V   |
| <b>Dielectric strength</b>     | 500 Vac 1 min., between electronics and housing   |
| <b>Insulation resistance</b>   | >20 MΩ 500 Vdc, between electronics and housing   |
| <b>Mechanical protection</b>   | IP65, IP67, IP69K   |
| <b>Ambient light rejection</b> | According to EN 60947-5-2   |
| <b>Vibrations</b>              | 0.5 mm amplitude, 10 ... 55 Hz frequency, for each axis (EN60068-2-6)   |
| <b>Protection devices</b>      | A, B <sup>2</sup>   |
| <b>Housing</b>                 | Plastic version ABS TERLURAN<br>Metal version INOX AISI 316L  |
| <b>Indicators</b>              | yellow OUTPUT LED<br>green STABILITY LED, POWER LED (through beam emitter S15-xx-x-G0x)   |
| <b>Operating mode</b>          | selectable dark/light <sup>3</sup>  |
| <b>Auxiliary functions</b>     | Test + and Test - Emitter off with Test+ on Vdc and Test- on 0 V  |
| <b>Connection</b>              | Cable vers. 2 m Ø 4 mm (PVC, 4 x 0,14 mm <sup>2</sup> )<br>Connector vers. M12 4-pole connector<br>pig-tail vers. 150 mm cable + M12 4-pole connector |
| <b>Lens material</b>           | plastic PMMA  |
| <b>Weight</b>                  | 40 g max mod. M12<br>55 g max mod. cable<br>35 g max mod. pig-tail  |
| <b>Operating temperature</b>   | -25 ... +55°C   |
| <b>Storage temperature</b>     | -25 ... +70°C   |
| <b>Reference directives</b>    | EN 60947-5-2, UL 508  |

**TECHNICAL NOTE**

<sup>1</sup>Limit values  
<sup>2</sup>A - reverse polarity protection  
 B - overload and short-circuit protection  
<sup>3</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.



**DETECTION DIAGRAMS**



## S15 - PA (PLASTIC VERS.)

| OPTIC FUNCTION              | LIGHT EMISSION <sup>1</sup> | OPERATING DISTANCE | CONNECTION    | SETTING                      | SWITCH FREQUENCY | RESPONSE TIME |
|-----------------------------|-----------------------------|--------------------|---------------|------------------------------|------------------|---------------|
| non-polarised retroflex     | infrared LED 880 nm         | 0,1...5 m on R2    | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
|                             |                             |                    | cable         | fixed                        |                  |               |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
| polarised retroflex         | red LED 660 nm              | 0,1...4 m on R2    | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
|                             |                             |                    | cable         | fixed                        |                  |               |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
| diffuse proximity           | infrared LED 880 nm         | short: 1...10 cm   | cable         | fixed                        | 500 Hz           | 1 ms          |
|                             |                             |                    | pig tail      | fixed                        |                  |               |
|                             |                             | medium: 1...35 cm  | connector M12 | sensitivity trimmer          |                  |               |
|                             |                             |                    | cable         | fixed                        |                  |               |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
|                             |                             | long: 1...100 cm   | connector M12 | sensitivity trimmer          |                  |               |
| fixed focus proximity       | red LED 660 nm              | 1...5 cm           | cable         | fixed                        | 1 KHz            | 500 µs        |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
| through beam receiver       | n/a                         | 0...20 m           | connector M12 | sensitivity trimmer          | 250 Hz           | 2 ms          |
|                             |                             |                    | cable         | fixed                        |                  |               |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
| through beam emitter        | infrared LED 880 nm         | 0...20 m           | connector M12 | light emission power trimmer | n/a              | 2 ms          |
|                             |                             |                    | cable         | fixed                        |                  |               |
|                             |                             |                    | pig-tail      | fixed                        |                  |               |
| retro-reflex by transparent | red LED 660 nm              | 0,1...0,8 m on R2  | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
| background suppression      | red LED 660 nm              | 40...120 mm        | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |

<sup>1</sup> Average life of 100.000 h with TA = +25 °C

## S15 - NA (METAL VERS.)

| OPTIC FUNCTION              | LIGHT EMISSION <sup>1</sup> | OPERATING DISTANCE | CONNECTION    | SETTING                      | SWITCH FREQUENCY | RESPONSE TIME |
|-----------------------------|-----------------------------|--------------------|---------------|------------------------------|------------------|---------------|
| non-polarised retroflex     | infrared LED 880 nm         | 0,1...5 m on R2    | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
| polarised retroflex         | red LED 660 nm              | 0,1...4 m on R2    | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
| diffuse proximity           | infrared LED 880 nm         | medium: 1...35 cm  | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
|                             |                             | long: 1...100 cm   | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
| through beam receiver       | n/a                         | 0...20 m           | connector M12 | sensitivity trimmer          | 250 Hz           | 2 ms          |
| through beam emitter        | infrared LED 880 nm         | 0...20 m           | connector M12 | light emission power trimmer | n/a              | 2 ms          |
| retro-reflex by transparent | red LED 660 nm              | 0,1...0,8 m on R2  | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |
| background suppression      | red LED 660 nm              | 40...120 mm        | connector M12 | sensitivity trimmer          | 500 Hz           | 1 ms          |

<sup>1</sup> Average life of 100.000 h with TA = +25 °C

## MODEL SELECTION AND ORDER INFORMATION

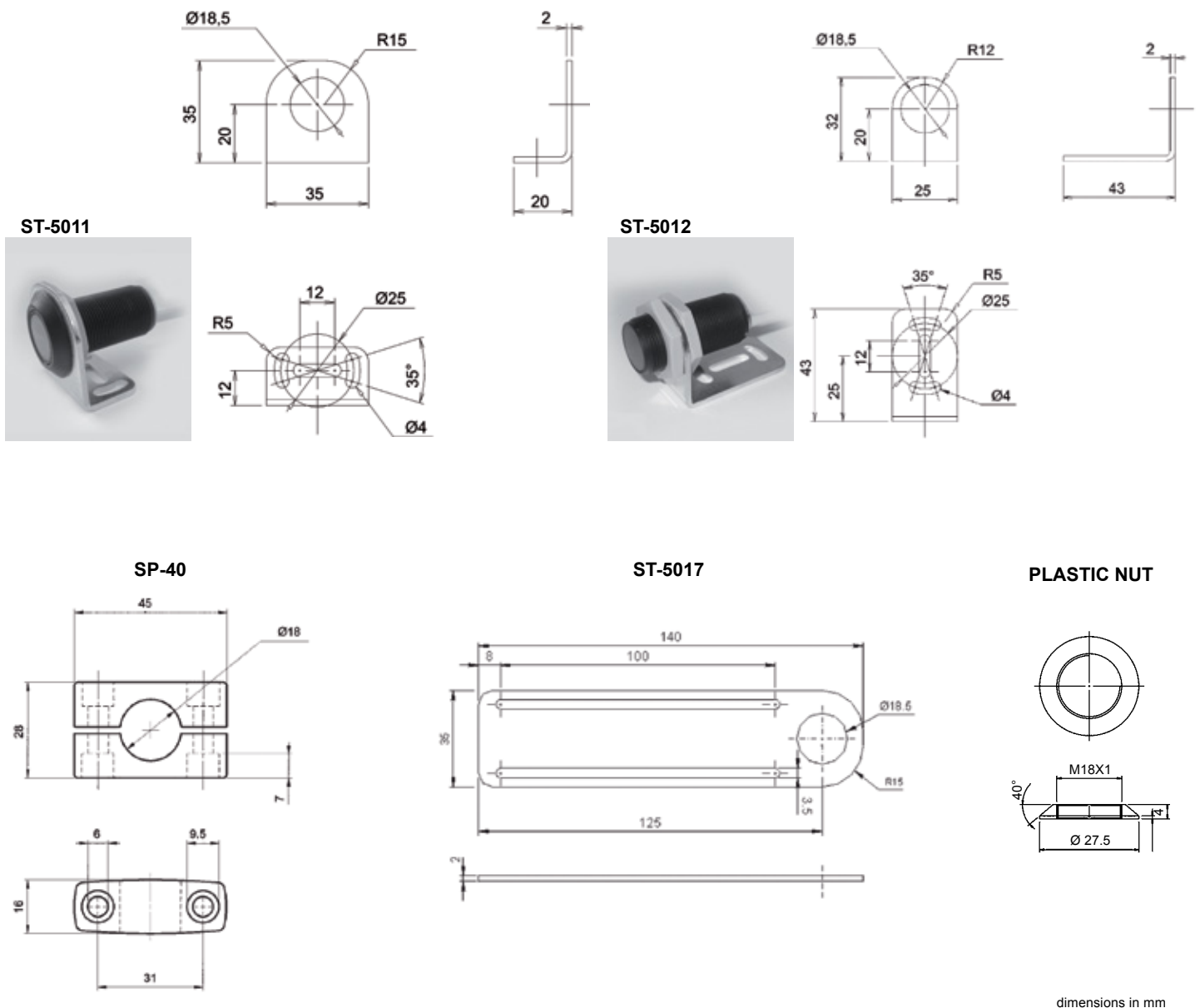
| OPTIC FUNCTION                    | HOUSING                          | CONNECTION    | OUTPUT    | MODEL           | ORDER NO.       |           |
|-----------------------------------|----------------------------------|---------------|-----------|-----------------|-----------------|-----------|
| retroreflex                       | PLASTIC                          | connector M12 | PNP       | S15-PA-5-A01-PK | 952301220       |           |
|                                   |                                  |               | NPN       | S15-PA-5-A01-NK | 952301300       |           |
|                                   |                                  | 2 m cable     | PNP       | S15-PA-2-A00-PK | 952301001       |           |
|                                   |                                  |               | NPN       | S15-PA-2-A00-NK | 952301051       |           |
|                                   |                                  | pig-tail      | PNP       | S15-PA-3-A00-PK | 952301111       |           |
|                                   |                                  |               | NPN       | S15-PA-3-A00-NK | 952301161       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-A01-PK | 952301370       |           |
|                                   |                                  |               | NPN       | S15-NA-5-A01-NK | 952301450       |           |
| polarised retroreflex             | PLASTIC                          | connector M12 | PNP       | S15-PA-5-B01-PK | 952301230       |           |
|                                   |                                  |               | NPN       | S15-PA-5-B01-NK | 952301310       |           |
|                                   |                                  | 2 m cable     | PNP       | S15-PA-2-B00-PK | 952301011       |           |
|                                   |                                  |               | NPN       | S15-PA-2-B00-NK | 952301061       |           |
|                                   |                                  | pig-tail      | PNP       | S15-PA-3-B00-PK | 952301121       |           |
|                                   |                                  |               | NPN       | S15-PA-3-B00-NK | 952301171       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-B01-PK | 952301380       |           |
|                                   |                                  |               | NPN       | S15-NA-5-B01-NK | 952301460       |           |
|                                   | short distance diffuse proximity | PLASTIC       | 2 m cable | PNP             | S15-PA-2-C00-PK | 952301021 |
|                                   |                                  |               |           | NPN             | S15-PA-2-C00-NK | 952301071 |
|                                   |                                  |               | pig-tail  | PNP             | S15-PA-3-C00-PK | 952301131 |
|                                   |                                  |               |           | NPN             | S15-PA-3-C00-NK | 952301181 |
| medium distance diffuse proximity | PLASTIC                          | connector M12 | PNP       | S15-PA-5-C11-PK | 952301250       |           |
|                                   |                                  |               | NPN       | S15-PA-5-C11-NK | 952301330       |           |
|                                   |                                  | 2 m cable     | PNP       | S15-PA-2-C10-PK | 952301031       |           |
|                                   |                                  |               | NPN       | S15-PA-2-C10-NK | 952301081       |           |
|                                   |                                  | pig-tail      | PNP       | S15-PA-3-C10-PK | 952301141       |           |
|                                   |                                  |               | NPN       | S15-PA-3-C10-NK | 952301191       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-C11-PK | 952301400       |           |
|                                   |                                  |               | NPN       | S15-NA-5-C11-NK | 952301480       |           |
| long distance diffuse proximity   | PLASTIC                          | connector M12 | PNP       | S15-PA-5-C31-PK | 952301260       |           |
|                                   |                                  |               | NPN       | S15-PA-5-C31-NK | 952301340       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-C31-PK | 952301410       |           |
|                                   |                                  |               | NPN       | S15-NA-5-C31-NK | 952301490       |           |
| fixed focus proximity             | PLASTIC                          | 2 m cable     | PNP       | S15-PA-2-D50-PK | 952301520       |           |
|                                   |                                  |               | NPN       | S15-PA-2-D50-NK | 952301530       |           |
|                                   |                                  | pig-tail      | PNP       | S15-PA-3-D50-PK | 952301540       |           |
|                                   |                                  |               | NPN       | S15-PA-3-D50-NK | 952301550       |           |
| retro-reflex by transparent       | PLASTIC                          | connector M12 | PNP       | S15-PA-5-T01-PK | 952301240       |           |
|                                   |                                  |               | NPN       | S15-PA-5-T01-NK | 952301320       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-T01-PK | 952301390       |           |
|                                   |                                  |               | NPN       | S15-NA-5-T01-NK | 952301470       |           |
| through beam (receiver)           | PLASTIC                          | connector M12 | PNP       | S15-PA-5-F01-PK | 952301280       |           |
|                                   |                                  |               | NPN       | S15-PA-5-F01-NK | 952301360       |           |
|                                   |                                  | 2 m cable     | PNP       | S15-PA-2-F00-PK | 952301041       |           |
|                                   |                                  |               | NPN       | S15-PA-2-F00-NK | 952301091       |           |
|                                   |                                  | pig-tail      | PNP       | S15-PA-3-F00-PK | 952301151       |           |
|                                   |                                  |               | NPN       | S15-PA-3-F00-NK | 952301201       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-F01-PK | 952301430       |           |
|                                   |                                  |               | NPN       | S15-NA-5-F01-NK | 952301510       |           |
| through beam (emitter)            | PLASTIC                          | connector M12 | -         | S15-PA-5-G01-XG | 952301290       |           |
|                                   |                                  | 2 m cable     | -         | S15-PA-2-G00-XG | 952301101       |           |
|                                   |                                  | pig-tail      | -         | S15-PA-3-G00-XG | 952301211       |           |
|                                   | METAL                            | connector M12 | -         | S15-NA-5-G01-XG | 952301440       |           |
| background suppression            | PLASTIC                          | connector M12 | PNP       | S15-PA-5-M01-PK | 952301270       |           |
|                                   |                                  |               | NPN       | S15-PA-5-M01-NK | 952301350       |           |
|                                   | METAL                            | connector M12 | PNP       | S15-NA-5-M01-PK | 952301420       |           |
|                                   |                                  |               | NPN       | S15-NA-5-M01-NK | 952301500       |           |



## ACCESSORY SELECTION AND ORDER INFORMATION

| DESCRIPTION                           | MODEL       | ORDER NO. |
|---------------------------------------|-------------|-----------|
| M18 fixing bracket                    | ST-5011     | 95ACC5240 |
| M18 fixing bracket                    | ST-5012     | 95ACC5250 |
| flared fixing nut                     | PLASTIC NUT | 95ACC2630 |
| M18 fixing bracket                    | ST-5017     | 95ACC5270 |
| fixed support for tubular M18 sensors | SP-40       | 95ACC1370 |

## ACCESSORIES



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.

