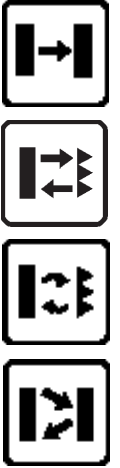


SUBMINIATURE PHOTOELECTRIC SENSORS



actual dimensions



- 15 mm, 20 mm, 30 mm and 50 mm fixed focus proximity
- 1.5 m retroreflex and 1 m polarised retroreflex
- 2 m through beam models
- Amplified NPN or PNP output with NO-NC double output

SMall SERIES

The new **SMall** series offers a complete line of subminiature amplified photoelectric sensors, ideal for mounting in reduced spaces or in presence of particular mechanical obstacles.

The extremely compact dimensions and wide detection field of all modes suit most of the applications on automatic machinery for packaging, assembling, printing as well as in automatic distribution and vending machines.

The series offers many different optic functions including 1.5 m retroreflex, 1 m polarised retroreflex, and 2 m through beam. The 15 mm, 20 mm, 30 mm and 50 mm fixed focus proximity models represent a valid alternative to fibre-optic systems and can be used to detect objects with small profiles and poorly reflective materials.

All models of the subminiature **SMall** series have visible red emission facilitating alignment, cable connection and are available in the NPN or PNP versions with NO-NC double output. The plastic housing guarantees an IP67 protection degree.



SMa// SUBMINIATURE PHOTOELECTRIC SENSORS

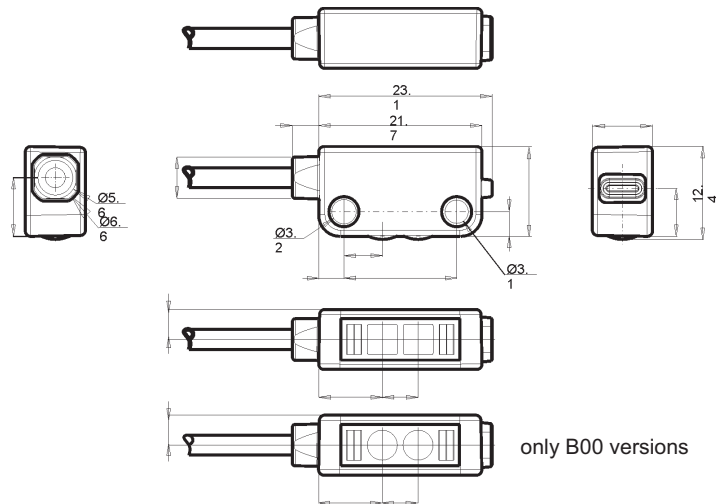
The range offers versions with PNP or NPN output and each are available with a normally open and normally closed output.

The sensor functions in the light mode if the normally open output is used and is activated, like the output LED, in presence of light. The opposite effect is obtained when the sensor functions in dark mode and the normally closed output is used.

In presence of short-circuit output, the green LED blinks signalling the fault.



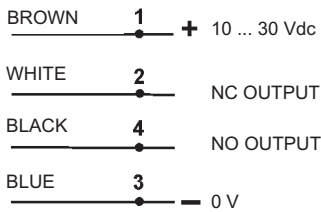
DIMENSIONS



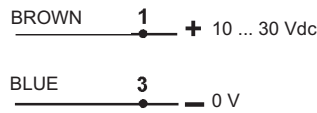
mm

CONNECTIONS

SM ... F00/A00/B00/D00/D10/D20

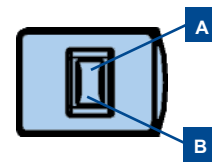


SM ... G00



Versions and options: refer to **MODEL SELECTION TABLE**

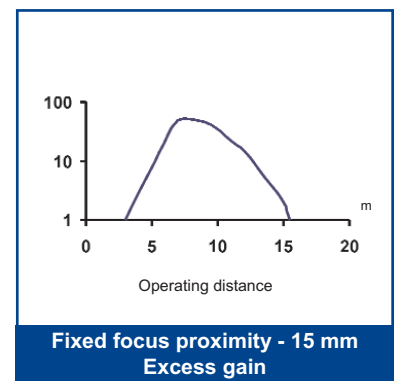
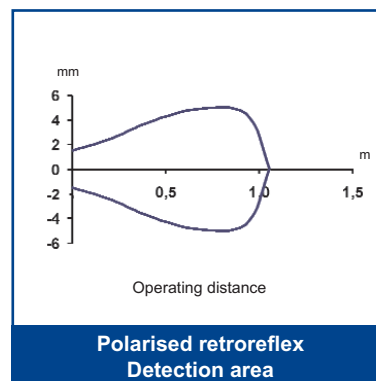
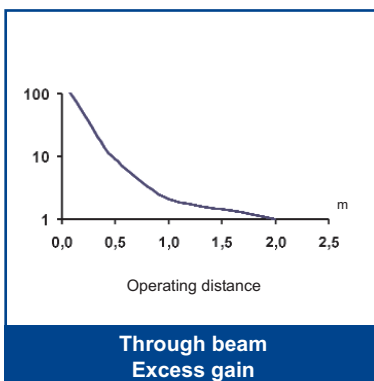
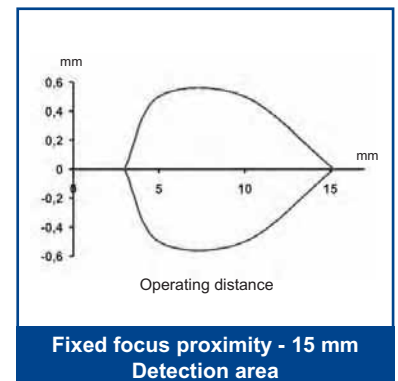
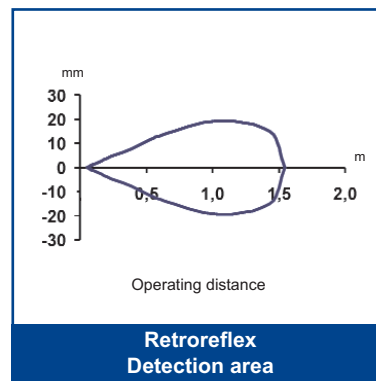
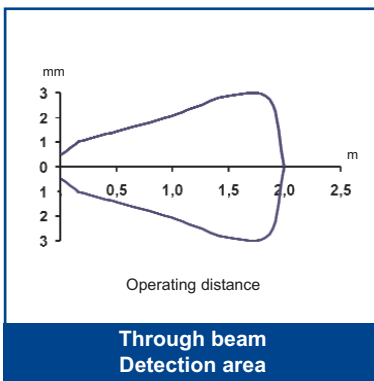
INDICATORS AND SETTINGS



A Output status LED

B Power on LED

DETECTION DIAGRAMS



TECHNICAL DATA

| | | SM-PR-2-G00-XG | SM-PR-2-F00-PP | SM-PR-2-F00-NN | SM-PR-2-A00-PP | SM-PR-2-A00-NN | SM-PR-2-B00-PP | SM-PR-2-B00-NN | SM-PR-2-D00-PP | SM-PR-2-D00-NN | SM-PR-2-D10-PP | SM-PR-2-D10-NN | SM-PR-2-D20-PP | SM-PR-2-D20-NN | SM-PR-2-D30-PP | SM-PR-2-D30-NN |
|--|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Power supply: | 10 ... 30 Vdc | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Consumption: | 20 mA max. | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Light emission: | red LED 640 nm | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Through beam operating distance: | 0 ... 2 m | ● | ● | | | | | | | | | | | | | |
| Retroreflex operating distance: | 5 ... 150 cm | | | | ● | ● | | | | | | | | | | |
| Polarised retroreflex operating distance: | 10 ... 100 cm | | | | | | ● | ● | | | | | | | | |
| Fixed focus operating distance: | 3 ... 15 mm | | | | | | | | ● | | | | | | | |
| | 3 ... 20 mm | | | | | | | | | ● | ● | | | | | |
| | 3 ... 30 mm | | | | | | | | | | | ● | ● | | | |
| | 3 ... 50 mm | | | | | | | | | | | | | ● | ● | |
| Indicators: | yellow OUTPUT LED | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | green POWER LED | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Output type: | PNP, NO-NC | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | NPN, NO-NC | | | ● | | | ● | ● | | ● | | | ● | | | ● |
| Operating mode: | light on NO, dark on NC | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Saturation voltage: | 1.45 V max. at 50 mA | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Output current: | 50 mA max. | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Response time: | 0.7 ms | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 1.3 ms | | ● | ● | | | | | | | | | | | | |
| Switching frequency: | 700 Hz | | | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | 385 Hz | ● | ● | | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Connection: | 2 m cable, Ø 2.5 mm | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Electrical protection: | class 2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Mechanical protection: | IP67 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Protection devices: | A, B | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Housing material: | Polycarbonate | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Lens material: | PMMA | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| | glass | | | | | | | ● | ● | | | | | | | |
| Weight: | 22 g | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Operating temperature: | -20 ... +55°C | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Storage temperature: | -30 ... +75°C | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| Reference standard: | EN 60947-5-2 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |

SELECTION TABLE

| through beam | | |
|----------------|-----|-----------|
| SM-PR-2-G00-XG | | 95B000160 |
| SM-PR-2-F00-PP | PNP | 95B000120 |
| SM-PR-2-F00-NN | NPN | 95B000130 |

| retroreflex | | |
|----------------|-----|-----------|
| SM-PR-2-A00-PP | PNP | 95B000060 |
| SM-PR-2-A00-NN | NPN | 95B000070 |

| polarised retroreflex | | |
|-----------------------|-----|-----------|
| SM-PR-2-B00-PP | PNP | 95B000080 |
| SM-PR-2-B00-NN | NPN | 95B000000 |

| fixed focus proximity - 15 mm | | |
|-------------------------------|-----|-----------|
| SM-PR-2-D00-PP | PNP | 95B000020 |
| SM-PR-2-D00-NN | NPN | 95B000030 |

| fixed focus proximity - 20 mm | | |
|-------------------------------|-----|-----------|
| SM-PR-2-D10-PP | PNP | 95B000140 |
| SM-PR-2-D10-NN | NPN | 95B000150 |

| fixed focus proximity - 30 mm | | |
|-------------------------------|-----|-----------|
| SM-PR-2-D20-PP | PNP | 95B000040 |
| SM-PR-2-D20-NN | NPN | 95B000050 |

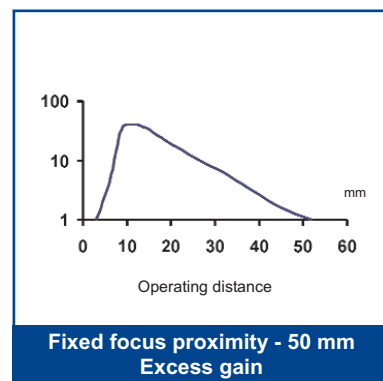
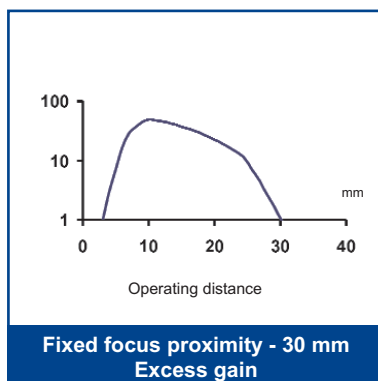
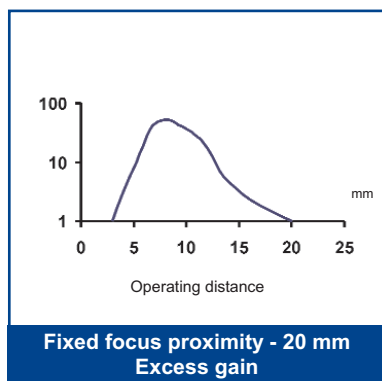
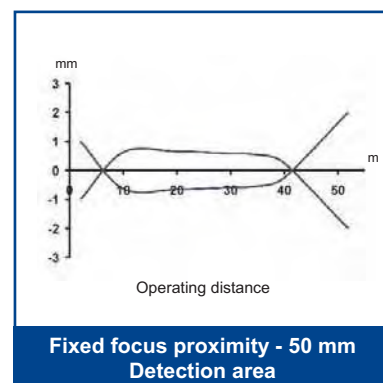
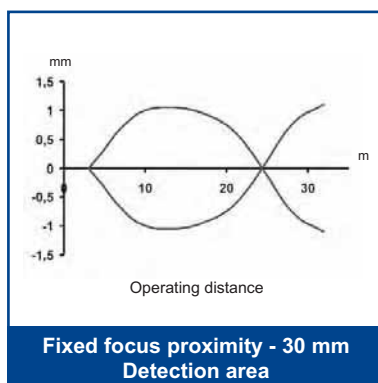
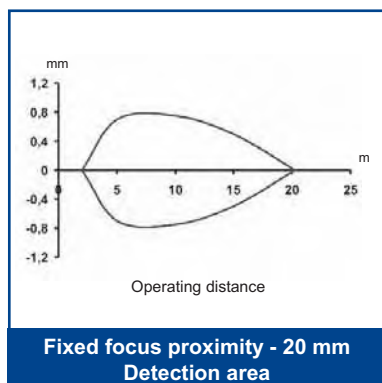
| fixed focus proximity - 50 mm | | |
|-------------------------------|-----|-----------|
| SM-PR-2-D30-PP | PNP | 95B000000 |
| SM-PR-2-D30-NN | NPN | 95B000010 |

TECHNICAL NOTES

- 1 On white 90 % target
- 2 Limit value
- 3 A - reverse polarity protection
B - overload and short-circuit protection



DETECTION DIAGRAMS



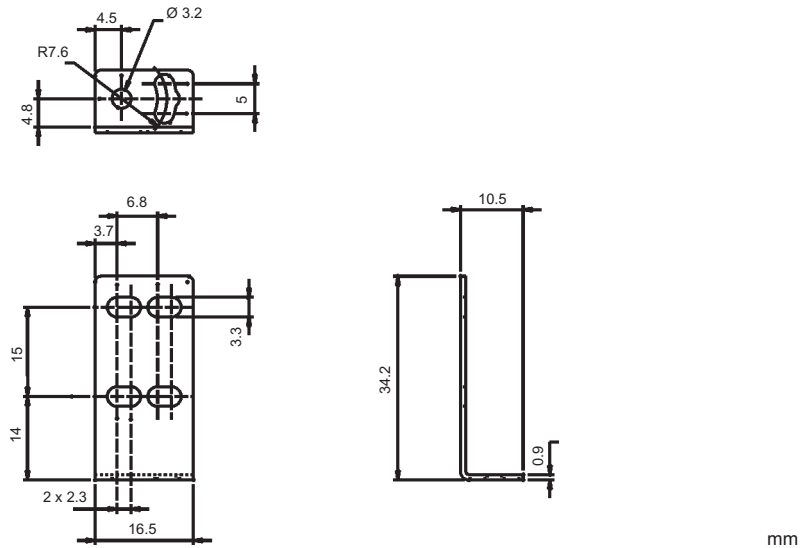
MODEL SELECTION AND ORDER INFORMATION

| MODEL | FUNCTION | OUTPUT | ORDER N° |
|----------------|-----------------------------|--------|-----------|
| SM-PR-2-G00-XG | emitter | - | 95B000160 |
| SM-PR-2-F00-PP | receiver | PNP | 95B000120 |
| SM-PR-2-F00-NN | receiver | NPN | 95B000130 |
| SM-PR-2-A00-PP | retroreflex | PNP | 95B000060 |
| SM-PR-2-A00-NN | retroreflex | NPN | 95B000070 |
| SM-PR-2-B00-PP | polarised retroreflex | PNP | 95B000080 |
| SM-PR-2-B00-NN | polarised retroreflex | NPN | 95B000090 |
| SM-PR-2-D00-PP | 15 mm fixed focus proximity | PNP | 95B000020 |
| SM-PR-2-D00-NN | 15 mm fixed focus proximity | NPN | 95B000030 |
| SM-PR-2-D10-PP | 20 mm fixed focus proximity | PNP | 95B000140 |
| SM-PR-2-D10-NN | 20 mm fixed focus proximity | NPN | 95B000150 |
| SM-PR-2-D20-PP | 30 mm fixed focus proximity | PNP | 95B000040 |
| SM-PR-2-D20-NN | 30 mm fixed focus proximity | NPN | 95B000050 |
| SM-PR-2-D30-PP | 50 mm fixed focus proximity | PNP | 95B000000 |
| SM-PR-2-D30-NN | 50 mm fixed focus proximity | NPN | 95B000010 |

ACCESSORIES

DIMENSIONS

ST-5049



ACCESSORY SELECTION AND ORDER INFORMATION

| MODEL | DESCRIPTION | ORDER N° |
|---------|-------------------------|-----------|
| ST-5049 | L-shaped fixing bracket | 95ACC6650 |