MULTIFUNCTION OPTOELECTRONIC SENSORS

- Complete range of optic functions, basic, advanced and laser class 1
- Models with coaxial optics for polarised retroreflex, contrast and luminescence sensors
- Trimmer or EASYtouch™ setting with Remote, Keylock and Delay functions
- Standard cable or M12 connection with standard NPN or PNP configuration

S60 SERIES

The S60 series, standard 50x50x15 mm compact housing, offers all the most advanced optic functions, as well as the universal, available with safety class 1 laser emission. The series presents a complete range of models, including retroreflex with coaxial optics and polarisation filters for the detection of shiny and/or transparent objects, background and foreground suppression, contrast sensors with white light emission for the detection of coloured marks, the sensor with UV emission for the detection of luminescence references and the distance sensor with analogue output. The basic models for presence detection present trimmer sensitivity adjustment, while the models with the advanced optics are microprocessor controlled and have the patent-covered EASYtouch™ setting, which gives rapid and precise setting of the switching threshold, with the possibility of remote control, keyboard block and selection of the output delay function. The S60 series offers versions with cable or M12 connection that can be rotated for either straight or right-angle positions. All versions have NPN or PNP output and standard configuration conforming to the EN 60947-5-2 standard.
The detection system with two separate emitter and receiver units allows the user to reach larger operating distances. The trimmer, present on the receiver, allows to adjust sensitivity and to detect objects that obscure, even partially, the light emission. The IR emission is modulated to avoid interference with other light sources and can be turned off to test the functioning even without the object to detect.

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>Operating distance:</td>
<td>0 ... 20 m</td>
</tr>
<tr>
<td>Power supply:</td>
<td>10 ... 30 Vdc</td>
</tr>
<tr>
<td>Ripple:</td>
<td>≤ 2 Vpp</td>
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<tr>
<td>Consumption:</td>
<td>≤ 35 mA</td>
</tr>
<tr>
<td>Light emission:</td>
<td>infrared LED 880 nm</td>
</tr>
<tr>
<td>Spot dimension:</td>
<td>approx. 200 mm at 4 m</td>
</tr>
<tr>
<td>Setting:</td>
<td>sensitivity trimmer</td>
</tr>
<tr>
<td>Indicators:</td>
<td>yellow OUTPUT LED</td>
</tr>
<tr>
<td>Output type:</td>
<td>PNP, NO and NC</td>
</tr>
<tr>
<td>Output current:</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Saturation voltage:</td>
<td>≤ 2 V</td>
</tr>
<tr>
<td>Response time:</td>
<td>1 ms</td>
</tr>
<tr>
<td>Switching frequency:</td>
<td>500 Hz</td>
</tr>
<tr>
<td>Operating mode:</td>
<td>dark on NO / light on NC</td>
</tr>
<tr>
<td>Auxiliary functions:</td>
<td>Test + and Test +</td>
</tr>
<tr>
<td>Connection:</td>
<td>2 m Ø 4 mm cable</td>
</tr>
<tr>
<td>Electrical protection:</td>
<td>IP67</td>
</tr>
<tr>
<td>Mechanical protection:</td>
<td>ABS</td>
</tr>
<tr>
<td>Protection devices:</td>
<td>A, B</td>
</tr>
<tr>
<td>Housing material:</td>
<td>window in PMMA</td>
</tr>
<tr>
<td>Weight:</td>
<td>90 g max.</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-25 ... +55°C</td>
</tr>
<tr>
<td>Storage temperature:</td>
<td>-25 ... +70°C</td>
</tr>
<tr>
<td>Reference standard:</td>
<td>EN 60947-5-2</td>
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</table>

**SELECTION TABLE**

<table>
<thead>
<tr>
<th>Camera Type</th>
<th>Ordering Code</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiver - 2 m cable</td>
<td>S60-PA-2-F01-NN</td>
<td>956201490</td>
</tr>
<tr>
<td></td>
<td>S60-PA-2-F01-PP</td>
<td>956201330</td>
</tr>
<tr>
<td>Emitter - 2 m cable</td>
<td>S60-PA-2-G00-XG</td>
<td>956201340</td>
</tr>
<tr>
<td>Receiver - M12 connector</td>
<td>S60-PA-5-F01-NN</td>
<td>956201210</td>
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<tr>
<td></td>
<td>S60-PA-5-F01-PP</td>
<td>956201060</td>
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<tr>
<td>Emitter - M12 connector</td>
<td>S60-PA-5-G00-XG</td>
<td>956201070</td>
</tr>
</tbody>
</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

**TECHNICAL NOTES**

1. Limit values
2. Average life of 100,000 h with $T_A = +25^\circ$C
3. 270° trimmer
4. Emitter off with Test+ on Vdc and Test- on 0 V
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
   B - overload and short-circuit protection on receiver outputs
8. Internal lenses in Polycarbonate

**DETECTION DIAGRAMS**

- **Recommended operating distance**
- **Maximum operating distance**

**Excess gain**

**Detection area**
The high operating distance, typical of the emitter and receiver system, is notably increased thanks to the use of visible red laser emission. The laser beam can be easily aligned and offers excellent detection resolution of even small objects. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.

**INDICATORS AND SETTINGS**

- A: Output status and stability LEDs (receiver); power on LED (emitter)
- B: Adjustment trimmer (receiver)
- C: M12 connector output
- D: Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance. Decrease sensitivity to increase resolution.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

**CONNECTIONS**

**EMITTER**

S60-PA-2

- BROWN: 1 Vcc - 12...36 Vdc
- WHITE: 2 TEST + (WHITE)
- BLACK: 4 NOT USED
- BLUE: 3 0V

**RECEIVER**

S60-PA-5

- BROWN: 1 0V - (BROWN)
- WHITE: 2 NOT USED (BLACK)
- BLACK: 4 NC OUTPUT (WHITE)
- BLUE: 3 0V (BLUE)
### TECHNICAL DATA

**Operating distance:**
- 0 ... 60 m

**Power supply:**
- 10 ... 30 Vdc

**Ripple:**
- ≤ 2 Vpp

**Consumption:**
- ≤ 35 mA

**Light emission:**
- Red laser 650 nm
  - Class I EN 60825-1
  - Class II CDRH 21 CFR 1040.10

**Resolution:**
- Approx. 6 mm at 0.5 m
- Approx. 10 mm over 2 m

**Setting:**
- Sensitively trimmer 1

**Indicators:**
- Yellow OUTPUT LED
- Green POWER ON LED

**Output type:**
- PNP, NA and NC
- NPN, NA and NC

**Output current:**
- ≤ 100 mA

**Saturation voltage:**
- ≤ 2 V

**Response time:**
- 333 μs

**Switching frequency:**
- 1.5 kHz

**Operating mode:**
- Dark on NO / light on NC

**Auxiliary functions:**
- Test +

**Connection:**
- 2 m Ø 4 mm cable 1
- M12 4-pole connector 1

**Electrical protection:**
- Class 2

**Mechanical protection:**
- IP 67

**Protection devices:**
- A, B 7

**Housing material:**
- ABS

**Lens material:**
- Window in PMMA

**Weight:**
- 90 g max.
- 40 g max.

**Operating temperature:**
- -10 ... +50°C

**Storage temperature:**
- -25 ... +70°C

**Reference standard:**
- EN 60947-5-2
- EN 60825-1, CDRH 21 CFR 1040.10

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### SELECTION TABLE

**receiver - 2 m cable**
- S60-PL-2-F01-NN 956201570 NPN
- S60-PL-2-F01-PP 956201420 PNP

**emitter - 2 m cable**
- S60-PL-2-G00-XG 956201430

**receiver - M12 connector**
- S60-PL-5-F01-NN 956201270 NPN
- S60-PL-5-F01-PP 956201140 PNP

**emitter - M12 connector**
- S60-PL-5-G00-XG 956201150

All the ordering codes and information are summarised in the last pages of this catalogue.

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### TECHNICAL NOTES

1 Limit values
2 Average life of 50,000 h with T_a = +25 °C
3 Trimmer
4 Emitter off with Test+ connected to +Vdc
5 Emitter on with Test+ not connected or connected to 0V
6 PVC, 4 x 0.14 mm²
7 Connector can be blocked on two positions
8 Internal lenses in glass and Polycarbonate
With retroreflex sensors the object is detected when it interrupts the light beam generated between the sensor and its associated prismatic reflector. High-polarisation optic filters also allow reliable detection of very reflective objects, such as mirrored surfaces that, differently from the prismatic reflector, reflect the light beam without rotating the polarisation plane.

For **dedicated accessories** refer to the **ACCESSORIES** section of this catalogue.

Refer also to **Reflectors (A.01)**, **Connectors (A.03)** and **Fixing Brackets (A.04)** of the **General Catalogue**

**ACCESSORIES**

**CONNECTIONS**

**INDICATORS AND SETTINGS**

**DIMENSIONS**

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

**OUTPUT STATUS AND STABILITY LEDS**

**ADJUSTMENT TRIMMER**

**M12 CONNECTOR OUTPUT**

**CABLE OUTPUT**

**S60-PA-2**

**S60-PA-5**

**BROWN** 1 15 ... 30 Vdc

**NC OUTPUT** (WHITE)

**BLUE** 2

**NO OUTPUT** (BLUE)

**BLACK** 3

**NO OUTPUT** (BLACK)
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Operating distance</td>
<td>0.1 ... 8 m (on R5)</td>
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<tr>
<td>Power supply</td>
<td>10 ... 30 Vdc</td>
</tr>
<tr>
<td>Ripple</td>
<td>≤ 2 Vpp</td>
</tr>
<tr>
<td>Consumption</td>
<td>≤ 40 mA</td>
</tr>
<tr>
<td>Light emission</td>
<td>red LED 660 nm</td>
</tr>
<tr>
<td>Spot dimension</td>
<td>approx. 90 mm at 3 m</td>
</tr>
<tr>
<td>Setting</td>
<td>sensitivity trimmer</td>
</tr>
<tr>
<td>Indicators</td>
<td>yellow OUTPUT LED</td>
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<tr>
<td></td>
<td>green STABILITY LED</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP, NO and NC</td>
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<tr>
<td></td>
<td>NPN, NO and NC</td>
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<tr>
<td>Output current</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Saturation voltage</td>
<td>≤ 2 V</td>
</tr>
<tr>
<td>Response time</td>
<td>500 µs</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Operating mode</td>
<td>dark on NO / light on NC</td>
</tr>
<tr>
<td>Connection</td>
<td>2 m Ø 4 mm cable</td>
</tr>
<tr>
<td></td>
<td>M12 4-pole connector</td>
</tr>
<tr>
<td>Electrical protection</td>
<td>class 2</td>
</tr>
<tr>
<td>Mechanical protection</td>
<td>IP67</td>
</tr>
<tr>
<td>Protection devices</td>
<td>A, B, B⁺</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
</tr>
<tr>
<td>Lens material</td>
<td>window in PMMA</td>
</tr>
<tr>
<td>Weight</td>
<td>90 g max</td>
</tr>
<tr>
<td></td>
<td>40 g max</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25 ... +55°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25 ... +70°C</td>
</tr>
<tr>
<td>Reference standard</td>
<td>EN 60947-5-2</td>
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**SELECTION TABLE**

<table>
<thead>
<tr>
<th></th>
<th>axial optics - 2 m cable</th>
<th>axial optics - M12 connector</th>
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</thead>
<tbody>
<tr>
<td>S60-PA-2-B01-NN</td>
<td>956201460 NPN</td>
<td>S60-PA-5-B01-NN 956201180 NPN</td>
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<tr>
<td>S60-PA-2-B01-PP</td>
<td>956201300 PNP</td>
<td>S60-PA-5-B01-PP 956201040 PNP</td>
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</tbody>
</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

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**TECHNICAL NOTES**

1 Limit values
2 Average life of 100.000 h with $T_A = +25 \, ^\circ C$
3 270° trimmer
4 PVC, 4 x 0.14 mm²
5 Connector can be blocked on two positions
6 A - reverse polarity protection
   B - overload and short-circuit protection on outputs
7 Internal lenses in Polycarbonate

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**DETECTION DIAGRAMS**

- **Excess gain**
- **Detection area**

High efficiency reflectors can be used to obtain larger operating distances. Refer to Reflectors (A.01) of the General Catalogue.
The visible red laser emission increases the operating distance and resolution of the polarised retroreflex sensor. Specific R7 or R8 reflectors with 0.8 mm micro-prisms are available for high-resolution detection of small objects. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.

**DIMENSIONS**

**INDICATORS AND SETTINGS**

- A: Output status and power on LEDs
- B: Adjustment trimmer
- C: M12 connector output
- D: Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance. Decrease sensitivity to increase resolution.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Reflectors (A.01), Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

**CONNECTIONS**

S60-PA-2

BROWN 1 10...30 Vdc
WHITE 2 NC OUTPUT
BLACK 4 NO OUTPUT
BLUE 3 0V

S60-PA-5

NC OUTPUT (WHITE) 2 0V - (BLUE)
NO OUTPUT (WHITE) 4
TECHNICAL DATA

<table>
<thead>
<tr>
<th>Operating distance:</th>
<th>0.1 ... 20 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power supply:</td>
<td>10 ... 30 Vdc</td>
</tr>
<tr>
<td>Ripple:</td>
<td>≤ 2 Vpp</td>
</tr>
<tr>
<td>Consumption:</td>
<td>≤ 35 mA</td>
</tr>
<tr>
<td>Light emission:</td>
<td>red Laser 650 nm</td>
</tr>
<tr>
<td></td>
<td>class I EN 60825-1</td>
</tr>
<tr>
<td></td>
<td>class II CDRH21 CFR 1040.10</td>
</tr>
<tr>
<td>Resolution:</td>
<td>approx. 10 mm</td>
</tr>
<tr>
<td>Setting:</td>
<td>sensitivity trimmer</td>
</tr>
<tr>
<td>Indicators:</td>
<td>yellow OUTPUT LED</td>
</tr>
<tr>
<td></td>
<td>green POWER ON LED</td>
</tr>
<tr>
<td>Output type:</td>
<td>PNP, NO and NC</td>
</tr>
<tr>
<td></td>
<td>NPN, NO and NC</td>
</tr>
<tr>
<td>Output current:</td>
<td>≤ 100 mA</td>
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<tr>
<td>Saturation voltage:</td>
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<tr>
<td>Response time:</td>
<td>250 µs</td>
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<tr>
<td>Switching frequency:</td>
<td>2 kHz</td>
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<tr>
<td>Operating mode:</td>
<td>dark on NO / light on NC</td>
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<tr>
<td>Connection:</td>
<td>2 m Ø 4 mm cable</td>
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<tr>
<td></td>
<td>M12 4-pole connector</td>
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<tr>
<td>Electrical protection:</td>
<td>class 2</td>
</tr>
<tr>
<td>Mechanical protection:</td>
<td>IP67</td>
</tr>
<tr>
<td>Protection devices:</td>
<td>A, B</td>
</tr>
<tr>
<td>Housing material:</td>
<td>ABS</td>
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<tr>
<td>Lens material:</td>
<td>window in PMMA</td>
</tr>
<tr>
<td>Weight:</td>
<td>90 g max.</td>
</tr>
<tr>
<td></td>
<td>40 g max.</td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>-10 ... +50°C</td>
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<tr>
<td>Storage temperature:</td>
<td>-25 ... +70°C</td>
</tr>
<tr>
<td>Standard reference:</td>
<td>EN 60947-5-2, EN 60825-1, CDRH21 CFR 1040.10</td>
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</table>

TECHNICAL NOTES

1 Limit values
2 Average life of 50,000 h with $T_A = +25 \, ^\circ C$
3 270° trimmer
4 PVC, 4 x 0.14 mm²
5 Connector can be blocked on two positions
6 A - reverse polarity protection
   B - overload and short-circuit protection on outputs
7 Internal lenses in glass and Polycarbonate

SELECTION TABLE

<table>
<thead>
<tr>
<th>Selection Table</th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>axial optics - 2 m cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S60-PL-2-B01-NN</td>
<td>956201560</td>
<td>NPN</td>
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<tr>
<td>S60-PL-2-B01-PP</td>
<td>956201410</td>
<td>PNP</td>
</tr>
<tr>
<td>axial optics - M12 connector</td>
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<td></td>
</tr>
<tr>
<td>S60-PL-5-B01-NN</td>
<td>956201260</td>
<td>NPN</td>
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<tr>
<td>S60-PL-5-B01-PP</td>
<td>956201120</td>
<td>PNP</td>
</tr>
</tbody>
</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

DETECTION DIAGRAMS

- Operating distance
- Detection area
- Resolution on R7 reflector

High efficiency reflectors can be used to obtain larger operating distances. Refer to Reflectors (A.01) of the General Catalogue.
The polarised retroreflex sensor with a coaxial optics offers the best resolution of the detection point as the optic emitting axis coincides with the optic receiving axis. The coaxial system also allows to reduce drastically the sensor’s blind zone and consents the detection of objects very close to the sensor’s frontal lens.

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Reflectors (A.01), Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.
TECHNICAL DATA

Operating distance: 0 ... 4 m
Power supply: 10 ... 30 Vdc
Ripple: ≤ 2 Vpp
Consumption: ≤ 40 mA
Light emission: red LED 660 nm
Spot dimension: approx. 50 mm at 1.5 m
Setting: sensitivity trimmer ¹
Indicators:
  yellow OUTPUT LED
  green STABILITY LED
Output type:
  PNP, NO and NC
  NPN, NO and NC
Output current:
  ≤ 100 mA
Saturation voltage:
  ≤ 2 V
Response time:
  500 µs
Switching frequency:
  1 kHz
Operating mode:
  dark on NO / light on NC
Connection:
  2 m Ø 4 mm cable ²
  M12 4-pole connector ³
Electrical protection:
  class 2
Mechanical protection:
  IP67
Housing material:
  ABS
Lens material:
  window in glass (tilted anti-reflection)¹
Weight:
  90 g max.
  40 g max.
Operating temperature:
  -25 ... +55°C
Storage temperature:
  -25 ... +70°C
Reference standard:
  EN 60947-5-2

SELECTION TABLE

coaxial optics - 2 m cable
S60-PA-2-B51-NN 956201610 NPN
S60-PA-2-B51-PP 956201600 PNP

coaxial optics - M12 connector
S60-PA-5-B51-NN 956201630 NPN
S60-PA-5-B51-PP 956201620 PNP

All the ordering codes and information are summarised in the last pages of this catalogue

TECHNICAL NOTES
¹ Limite values
² Average life of 100,000 h with $T_a = +25°C$
³ 270° trimmer
⁴ PVC, 4 x 0.14 mm²
⁵ Connector can be blocked on two positions
⁶ A - reverse polarity protection
  B - overload and short-circuit protection on outputs
⁷ Internal lenses in glass

DETECTION DIAGRAMS

High efficiency reflectors can be used to obtain larger operating distances. Refer to Reflectors (A.01) of the General Catalogue

Excess gain
Detection area
The high sensitivity and reduced hysteresis of this retroreflex sensor allow to detect even the slightest attenuation of the received light emission, caused by the presence of transparent objects, such as glass or PET bottles or plastic film sheets for packaging. The presence of polarisation filters avoids false switching on shiny surfaces and the coaxial optics improves the detection precision on the entire operating range.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Reflectors (A.01), Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

**CONNECTIONS**

**INDICATORS AND SETTINGS**

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

**DIMENSIONS**

**OUTPUTS**

- Output status LED
- Adjustment trimmer
- M12 connector output
- Cable output

**S60-PA-2**

<table>
<thead>
<tr>
<th>PIN</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>BROWN (+ 10 ... 30 Vdc)</td>
</tr>
<tr>
<td>2</td>
<td>WHITE (NC OUTPUT)</td>
</tr>
<tr>
<td>3</td>
<td>BLACK (NO OUTPUT)</td>
</tr>
<tr>
<td>4</td>
<td>BLUE (OV - (BLUE))</td>
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**S60-PA-5**

<table>
<thead>
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<th>PIN</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
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<td>BROWN (+ 10 ... 30 Vdc)</td>
</tr>
<tr>
<td>2</td>
<td>WHITE (NC OUTPUT)</td>
</tr>
<tr>
<td>3</td>
<td>BLACK (NO OUTPUT)</td>
</tr>
<tr>
<td>4</td>
<td>BLUE (OV - (BLUE))</td>
</tr>
</tbody>
</table>
TECHNICAL DATA

Operating distance: 0 ... 2 m
Power supply: 10 ... 30 Vdc
Ripple: ≤ 2 Vpp
Consumption: ≤ 40 mA
Light emission: red LED 660 nm
Spot dimension: approx. 50 mm at 1.5 m
Setting: sensitivity trimmer
Indicators: yellow OUTPUT LED
Output type: PNP, NO and NC
Output current: ≤ 100 mA
Saturation voltage: ≤ 2 V
Response time: 500 µs
Switching frequency: 1 kHz
Operating mode: dark on NO / light on NC
Connection: 2 m Ø 4 mm cable
Electrical protection: class 2
Mechanical protection: IP67
Protection devices: A, B
Housing material: ABS
Lens material: window in glass (tilted anti-reflection)
Weight: 90 g max.
40 g max.
Operating temperature: -25 ... +55°C
Storage temperature: -25 ... +70°C
Reference standard: EN 60947-5-2

TECHNICAL NOTES

1 Limit values
2 Average life of 100,000 h with TA = +25 °C
3 270° trimmer
4 PVC, 4 x 0.14 mm²
5 Connector can be blocked on two positions
6 A - reverse polarity protection
B - overload and short-circuit protection on outputs
7 Internal lenses in glass

DETECTION DIAGRAMS

Excess gain
Detection area
This diffuse proximity sensor represents a reliable, simple and cost-effective solution for the direct detection of any object within the operating distance, that can be set using the sensitivity adjustment trimmer. The visible red emission facilitates the alignment of the sensor or of the object to detect and in particular in short operating distances.

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

Connections:

- S60-PA-2
- S60-PA-5

Indicators and Settings:

- Output status LED
- Adjustment trimmer
- M12 connector output
- Cable output

Dimensions:
**TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Operating distance</td>
<td>0 ... 100 cm</td>
</tr>
<tr>
<td>Power supply</td>
<td>10 ... 30 Vdc</td>
</tr>
<tr>
<td>Ripple</td>
<td>≤ 2 Vpp</td>
</tr>
<tr>
<td>Consumption</td>
<td>≤ 40 mA</td>
</tr>
<tr>
<td>Light emission</td>
<td>red LED 660 nm</td>
</tr>
<tr>
<td>Spot dimension</td>
<td>approx. 50 mm at 90 cm</td>
</tr>
<tr>
<td>Setting</td>
<td>sensitivity trimmer</td>
</tr>
<tr>
<td>Indicators</td>
<td>yellow OUTPUT LED, green STABILITY LED</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP, NO and NC, NPN, NO and NC</td>
</tr>
<tr>
<td>Output current</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Saturation voltage</td>
<td>≤ 2 V</td>
</tr>
<tr>
<td>Response time</td>
<td>500 µs</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>1 kHz</td>
</tr>
<tr>
<td>Operating mode</td>
<td>light on NO, dark on NC</td>
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<tr>
<td>Connection</td>
<td>2 m Ø 4 mm cable, M12 4-pole connector</td>
</tr>
<tr>
<td>Electrical protection</td>
<td>class 2</td>
</tr>
<tr>
<td>Mechanical protection</td>
<td>IP67</td>
</tr>
<tr>
<td>Protection devices</td>
<td>A, B</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
</tr>
<tr>
<td>Lens material</td>
<td>window in PMMA</td>
</tr>
<tr>
<td>Weight</td>
<td>90 g max, 40 g max</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-25 ... +55°C</td>
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<tr>
<td>Storage temperature</td>
<td>-25 ... +70°C</td>
</tr>
<tr>
<td>Reference standard</td>
<td>EN 60947-5-2</td>
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</table>

**SELECTION TABLE**

| Type                  | Code          | Description |
|-----------------------|---------------|
| Axial optics - 2 m cable | S60-PA-2-C01-NN 956201470 NPN |
| Axial optics - 2 m cable | S60-PA-2-C01-PP 956201310 PNP |
| Axial optics - M12 connector | S60-PA-5-C01-NN 956201190 NPN |
| Axial optics - M12 connector | S60-PA-5-C01-PP 956201050 PNP |

All the ordering codes and information are summarised in the last pages of this catalogue.

**TECHNICAL NOTES**

1. Limit values
2. Average life of 100.000 h with $T_A = +25 \degree$ C
3. 270° trimmer
4. PVC, 4 x 0.14 mm²
5. Connector can be blocked on two positions
6. A - reverse polarity protection, B - overload and short-circuit protection on outputs
7. Internal lenses in Polycarbonate

**DETECTION DIAGRAMS**

- **Recommended operating distance**
- **Maximum operating distance**

---

**Excess gain**

- Grey 18%
- White 90%

**Detection area**

- Grey 18%
- White 90%
This version of diffuse proximity sensor offers the maximum operating distance for the direct detection of objects, without the use of separate reflectors or receivers. The detection distance can be set using the sensitivity adjustment trimmer. The green stability LED indicates that the received signal is higher than the minimum signal for stable output switching.

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.
### TECHNICAL DATA

<table>
<thead>
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<th>Parameter</th>
<th>Specification</th>
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<tr>
<td>Operating distance</td>
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<tr>
<td>Power supply</td>
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<tr>
<td>Ripple</td>
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<tr>
<td>Consumption</td>
<td>≤ 40 mA</td>
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<tr>
<td>Light emission</td>
<td>infrared LED 880 nm²</td>
</tr>
<tr>
<td>Spot dimension</td>
<td>approx. 250 mm at 1 m</td>
</tr>
<tr>
<td>Setting</td>
<td>sensitivity trimmer ¹</td>
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<tr>
<td>Indicators</td>
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</tr>
<tr>
<td>Output type</td>
<td>PNP, NO and NC, NPN, NO and NC</td>
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<tr>
<td>Output current</td>
<td>≤ 100 mA</td>
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<tr>
<td>Saturation voltage</td>
<td>≤ 2 V</td>
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<tr>
<td>Response time</td>
<td>500 µs</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>1 kHz</td>
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<tr>
<td>Operating mode</td>
<td>light on NO / dark on NC</td>
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<tr>
<td>Connection</td>
<td>2 m Ø 4 mm cable ², M12 4-pole connector ³</td>
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<tr>
<td>Electrical protection</td>
<td>class 2</td>
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<td>Mechanical protection</td>
<td>IP67</td>
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<td>Housing material</td>
<td>ABS</td>
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<td>Lens material</td>
<td>window in PMMA</td>
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<tr>
<td>Weight</td>
<td>90 g max.</td>
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<tr>
<td>Operating temperature</td>
<td>-25 ... +55°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-25 ... +70°C</td>
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<tr>
<td>Reference standard</td>
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### SELECTION TABLE

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<th>Description</th>
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<td>956201480 NPN</td>
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<td>956201320 PNP</td>
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<td>S60-PA-5-C11-NN</td>
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<td>956201110 PNP</td>
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</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

### TECHNICAL NOTES

1. Limite values
2. Average life of 100,000 h with $T_A = +25$ °C
3. 270° trimmer
4. PVC, 4 x 0.14 mm²
5. Connector can be blocked on two positions
6. A - reverse polarity protection
   B - overload and short-circuit protection on outputs
7. Internal lenses in Polycarbonate

### DETECTION DIAGRAMS

**Detection area**

- Grey 18%
- White 90%

**Excess gain**

- Grey 18%
- White 90%
The visible red laser emission allows the accurate detection of very small objects. The sensors operate as a proximity device up to 60 cm and can be used as a contrast sensor for high contrast mark detection. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.

**INDICATORS AND SETTINGS**

- **A**: Output status and power on LEDs
- **B**: Adjustment trimmer
- **C**: M12 connector output
- **D**: Cable output

Single-turn trimmer for sensitivity adjustment. Rotate clockwise to increase the operating distance.

**CONNECTIONS**

- **S60-PA-2**
  - BROWN 1 11...36 Vac
  - WHITE 2 NC OUTPUT
  - BLACK 4 NO OUTPUT
  - BLUE 3 0V

- **S60-PA-5**
  - NC OUTPUT (WHITE) 2 +10...30 Vac (BROWN)
  - BV - (BLUE) 3 NO OUTPUT (BL-A-A)
TECHNICAL DATA

Operating distance: 0 ... 60 cm
Power supply: 10 ... 30 Vdc
Ripple: ≤ 2 Vpp
Consumption: ≤ 35 mA
Light emission: red Laser 650 nm ²
Resolution:
- approx. 0.2 mm at 15 cm
- approx. 1 mm at 35 cm
- approx. 2 mm at 50 cm
Setting: sensitivity trimmer ³
Indicators:
- yellow OUTPUT LED
- green POWER ON LED
Output type:
- PNP, NO and NC
- NPN, NO and NC
Output current: ≤ 100 mA
Saturation voltage: ≤ 2 V
Response time: 250 µs
Switching frequency: 2 kHz
Operating mode:
- light on NO / dark on NC
Connection:
- 2 m Ø 4 mm cable ⁴
- M12 4-pole connector ⁶
Electrical protection: class 2
Mechanical protection: IP67
Protection devices: A, B, ⁶
Housing material: ABS
Lens material: window in PMMA ⁷
Weight:
- 90 g max.
- 40 g max.
Operating temperature: -10 ... +50°C
Storage temperature: -25 ... +70°C
Reference standard:
- EN 60947-5-2, EN 60825-1,
- CDRH21 CFR 1040.10

SELECTION TABLE

<table>
<thead>
<tr>
<th>Operating optics - 2 m cable</th>
<th>Operating optics - M12 connector</th>
</tr>
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<tbody>
<tr>
<td>S60-PL-2-C01-NN</td>
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<tr>
<td>S60-PL-2-C01-PP</td>
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<td>S60-PL-5-C01-NN</td>
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<td>S60-PL-5-C01-PP</td>
<td>956201670</td>
</tr>
</tbody>
</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

1 Limit values
2 Average life of 50,000 h with TA = +25 °C
3 270° trimmer
4 PVC, 4 x 0.14 mm²
5 Connector can be blocked on two positions
6 A - reverse polarity protection
   B - overload and short-circuit protection on outputs
7 Internal lenses in glass and Polycarbonate

DETECTION DIAGRAMS

Operating distance

Detection area

Resolution
Background suppression proximity allows to precisely adjust the distance over which the object is not detected, with the minimum difference between different coloured objects. The EASYtouch™ setting procedure fixes automatically the best detection conditions with medium or high precision, simply pressing once the teach-in push-button, in presence of the background to suppress.

**DIMENSIONS**

**INDICATORS AND SETTINGS**

A: Output status and READY/ERROR LEDs
B: Teach-in push-button
C: M12 connector output
D: Cable output

Teach-in button for setting. EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

**CONNECTIONS**

S60-PA-2

**BROWN**

1 10 ... 30 Vdc

**WHITE**

2 REMOTE

**BLACK**

4 NO OUTPUT

**BLUE**

3 0 V (BLUE)

S60-PA-5

**REMOTE**

1 10 ... 30 Vdc (BROWN)

**REMOTE (WHITE)**

2 0 V (WHITE)

**NO OUTPUT**

3 (BROWN)

No OUTPUT (BLUE)
### TECHNICAL DATA

- **Operating distance:** 7 ... 20 cm
- **Power supply:** 10 ... 30 Vdc
- **Ripple:** ≤ 2 Vpp
- **Consumption:** ≤ 30 mA
- **Light emission:** red LED 670 nm
- **Spot dimension:** approx. 16 mm at 20 cm
- **Setting:**
  - teach-in push-button
  - remote on cable
- **Setting procedure:** EASYtouch™
- **Indicators:**
  - yellow OUTPUT LED
  - green / red READY / ERROR LED
- **Output type:**
  - PNP, NO
  - NPN, NO
- **Output current:** ≤ 100 mA
- **Saturation voltage:** ≤ 2 V
- **Response time:** 500 µs
- **Max. switching frequency:** 1 kHz
- **Operating mode:**
  - light with EASYtouch™
  - dark / light configurable
- **Timing function:** 20 ms minimum output ON
- **Auxiliary functions:**
  - remote
  - keylock
- **Connection:**
  - 2 m Ø 4 mm cable
  - M12 4-pole connection
- **Electrical protection:** class 2
- **Mechanical protection:** IP67
- **Protection devices:** A, B
- **Housing material:** ABS
- **Lens material:** window in PMMA
- **Weight:** 90 g max.
- **Operating temperature:** -25 ... +55 °C
- **Storage temperature:** -25 ... +70 °C
- **Reference standard:** EN 60947-5-2

### SELECTION TABLE

**Axial optics - 2 m cable**

- S60-PA-2-M08-NH 956201500 NPN
- S60-PA-2-M08-PH 956201350 PNP

**Axial optics - M12 connector**

- S60-PA-5-M08-NH 956201220 NPN
- S60-PA-5-M08-PH 956201080 PNP

All the ordering codes and information are summarised in the last pages of this catalogue.

### TECHNICAL NOTES

1. Limit values
2. Average life of 100.000 h with $T_A = +25$ °C
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
8. B - overload and short-circuit protection
9. Internal lenses in Polycarbonate

### DETECTION DIAGRAMS

![Detection difference with EASYtouch™ acquisition](image-url)

**Operating distance**

- 20 cm
  - White 90% / Grey 18%
  - White 90% / Black 6%

**Setting distance on white 90% background**

- 70 mm
  - 100 mm
  - 120 mm
  - 140 mm
  - 160 mm
  - 180 mm
  - 200 mm

**% difference object distance**

- 0 mm
  - 5 mm
  - 10 mm
  - 15 mm
  - 20 mm

**Setting distance on white 90% background**

- White 90% / Grey 18%
- White 90% / Black 6%
The background suppression with red laser emission offers the best precision in terms of resolution and for background suppression, over which the object is not detected. The class 1 laser emission, according to EN 60825-1, guarantees maximum safety for the operators in all applications.

**DIMENSIONS**

**INDICATORS AND SETTINGS**

A. Output status and LASER ON ERROR LEDs
B. Teach-in push-button
C. M12 connector output
D. Cable output

Teach-in button for setting. EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

**CONNECTIONS**

S60-PA-2
S60-PA-5
### TECHNICAL DATA

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<td>10 ... 30 Vdc</td>
</tr>
<tr>
<td>Ripple:</td>
<td>≤ 2 Vpp</td>
</tr>
<tr>
<td>Consumption:</td>
<td>≤ 60 mA</td>
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<tr>
<td>Light emissions:</td>
<td>red Laser 650 nm²</td>
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<tr>
<td></td>
<td>class I EN 60825-1</td>
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<tr>
<td>Resolution:</td>
<td>approx. 0.5 mm at 6 cm</td>
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<tr>
<td>Setting:</td>
<td>teach-in push-button</td>
</tr>
<tr>
<td></td>
<td>remote on cable</td>
</tr>
<tr>
<td>Setting procedure:</td>
<td>EASYtouch™</td>
</tr>
<tr>
<td>Indicators:</td>
<td>yellow OUTPUT LED</td>
</tr>
<tr>
<td></td>
<td>green / red LASER ON / ERROR LED</td>
</tr>
<tr>
<td>Output type:</td>
<td>PNP, NO</td>
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<td></td>
<td>NPN, NO</td>
</tr>
<tr>
<td>Output current:</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Saturation voltage:</td>
<td>≤ 2 V</td>
</tr>
<tr>
<td>Response time:</td>
<td>500 µs</td>
</tr>
<tr>
<td>Switching frequency:</td>
<td>1 kHz</td>
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<tr>
<td>Operating mode:</td>
<td>light with EASYtouch™</td>
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<tr>
<td></td>
<td>dark / light configurable</td>
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<tr>
<td>Timing function:</td>
<td>20 ms minimum output ON</td>
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<tr>
<td>Auxiliary functions:</td>
<td>remote</td>
</tr>
<tr>
<td></td>
<td>keylock °</td>
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<tr>
<td>Connection:</td>
<td>2 m Ø 4 mm cable °</td>
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<tr>
<td></td>
<td>M12 4-pole connector °</td>
</tr>
<tr>
<td>Electrical protection:</td>
<td>class 2</td>
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<tr>
<td>Mechanical protection:</td>
<td>IP67</td>
</tr>
<tr>
<td>Protection devices:</td>
<td>A, B °</td>
</tr>
<tr>
<td>Housing material:</td>
<td>ABS</td>
</tr>
<tr>
<td>Lens material:</td>
<td>window in PMMA °</td>
</tr>
<tr>
<td>Weight:</td>
<td>90 g max.</td>
</tr>
<tr>
<td></td>
<td>40 g max.</td>
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<tr>
<td>Operating temperature:</td>
<td>-10 ... +50 °C</td>
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<td>Storage temperature:</td>
<td>-25 ... +70 °C</td>
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<tr>
<td>Reference standard:</td>
<td>EN 60825-1, CDRH21 CFR 1040.10</td>
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### TECHNICAL NOTES

1. Limit values  
2. Average life of 50,000 h with $T_A = +25\, ^\circ\text{C}$  
3. Connect to 0 V when remote wire not used  
4. Active with remote at $+Vdc$ at power on  
5. PVC, 4 x 0.14 mm²  
6. Connector can be blocked on two positions  
7. A - reverse polarity protection  
8. B - overload and short-circuit protection  
9. Internal lenses in glass and Polycarbonate

### DETECTION DIAGRAMS

#### Detection difference with EASYtouch™ acquisition

![Detection diagram showing operating distances and percentage difference](image_url)

- Operating distance

---

### SELECTION TABLE

<table>
<thead>
<tr>
<th>Product Code</th>
<th>Code</th>
<th>Description</th>
<th>Setting</th>
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<td>S60-PL-2-M08-PH</td>
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<td>956201280</td>
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<td>S60-PL-5-M08-PH</td>
<td>956201160</td>
<td>PNP</td>
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</table>
The foreground and background suppression proximity allows to precisely adjust the minimum and maximum detection distance. The EASYTouch™ setting procedure fixes automatically the best detection conditions with medium or high precision, simply pressing once the teach-in push-button.

### TECHNICAL DATA

- **Operating distance:** 7...18 cm
- **Power supply:** 10...30 Vdc
- **Ripple:** ≤ 2 Vpp
- **Consumption:** ≤ 50 mA
- **Light emission:** red LED 670 nm
- **Spot dimension:** approx. 16 mm at 20 cm
- **Setting:** teach-in push-button, remote on cable
- **Setting procedure:** EASYtouch™
- **Indicators:** yellow OUTPUT LED, green / red READY / ERROR LED
- **Output type:** PNP, NO, NPN, NO
- **Output current:** ≤ 100 mA
- **Saturation voltage:** ≤ 2 V
- **Response time:** 500 μs
- **Max. switching frequency:** 1 kHz
- **Operating mode:** light with EASYtouch™ dark / light configurable
- **Auxiliary functions:** remote keylock
- **Connection:** 2 m Ø 4 mm cable, M12 4-pole connector
- **Electrical protection:** class 2
- **Mechanical protection:** IP67
- **Protection devices:** A, B
- **Housing material:** ABS
- **Lens material:** window in PMMA
- **Weight:** 90 g max., 40 g max.
- **Operating temperature:** -25...+55 °C
- **Storage temperature:** -25...+70 °C
- **Reference standard:** EN 60947-5-2

---

Note: in the acquisition mode, the foreground suppression points are programmable.

Teach-in button for setting. EASYTouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

### ACCESSORIES

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

---

### DIMENSIONS

![Diagram of the sensor dimensions]

### INDICATORS AND SETTINGS

![Diagram of the indicators and settings]

- **A** Output status and READY/ERROR LEDs
- **B** Teach-in push-button
- **C** M12 connector output
- **D** Cable output

### CONNECTIONS

- **S60-PA-2**
  - **Wiring**:
    - BROWN: 1
    - WHITE: 2
    - BLACK: 4
    - BLUE: 3
    - 5...30 Vdc
  - **Remote Wiring**: 1 (white), 2 (green), 3 (blue), 4 (black)
    - REMOTE (WHITE): 2
    - 0V: 3
    - NO OUTPUT (WHITE): 4

- **S60-PA-5**
  - **Wiring**:
    - BROWN: 1
    - WHITE: 2
    - BLACK: 4
    - BLUE: 3
    - 5...30 Vdc
  - **Remote Wiring**: 1 (white), 2 (green), 3 (blue), 4 (black)
    - REMOTE (WHITE): 2
    - 0V: 3
    - NO OUTPUT (WHITE): 4
For dedicated accessories refer to the ACCESSORIES section of this catalogue. Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

**Output status and READY/ERROR LEDs**

- Teach-in push-button M12 connector output orientable in two positions
- Cable output

EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

**CONNECTIONS**

- The white light LED emission is designed for the detection of a large number of coloured or grey-scale contrasts, in order to detect print registration marks or similar.
- The patent-covered EASYtouch™ setting procedures automatically selects the best detection conditions, simply by pressing the teach-in push-button once. A higher level of accuracy can be obtained or the dark/light operating mode can be inverted.

**CONTRAST SENSOR WITH WHITE EMISSION**

**REMOTE**

- 0V - (BLUE)
- +10 ... 30 Vdc (BROWN)
- (WHITE)
- (BLACK)
- NO OUTPUT

**TECHNICAL NOTES**

1. Limit values
2. Average life of 100,000 h with $T_A = +25^\circ C$
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
   B - overload and short-circuit protection
8. Internal lenses in Polycarbonate

**DATASENSOR**
The white light LED emission is designed for the detection of a large number of coloured or grey-scale contrasts, in order to detect print registration marks or similar. The patent-covered EASYtouch™ setting procedures automatically selects the best detection conditions, simply by pressing the teach-in push-button once. A higher level of accuracy can be obtained or the dark/light operating mode can be inverted.

**INDICATORS AND SETTINGS**

Teach-in button for setting. EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

**CONNECTIONS**

S60-PA-2

S60-PA-5

**TECHNICAL DATA**

- **Operating distance:** 19 mm
- **Max. field of depth:** – 2 mm
- **Power supply:** 10...30 Vdc
- **Ripple:** ≤ 2 Vpp
- **Consumption:** ≤ 30 mA
- **Light emission:** white LED 400 - 700 nm
- **Spot dimension:** aprox. 3.5 mm at 19 mm
- **Resolution:** 0.5 mm
- **Setting:** teach-in push-button, remote on cable
- **Setting procedure:** EASYtouch™
- **Indicators:** yellow OUTPUT LED, green / red READY / ERROR LED
- **Output type:** PNP, NO, NPN, NO
- **Output current:** ≤ 100 mA
- **Saturation voltage:** ≤ 2 V
- **Response time:** 100 µs
- **Max. switching frequency:** 5 kHz
- **Operating mode:** dark with EASYtouch™ automatic dark / light with fine acquisition
- **Timing function:** 20 ms minimum output ON
- **Auxiliary functions:** remote keylock
- **Connection:** 2 m Ø 4 mm cable, M12 4-pole connector
- **Electrical protection:** class 2
- **Mechanical protection:** IP67
- **Protection devices:** A, B
- **Housing material:** ABS
- **Lens material:** window in glass (tilted anti-reflection)
- **Weight:** 90 g max., 40 g max.
- **Operating temperature:** -25...+55°C
- **Storage temperature:** -25...+70°C
- **Reference standard:** EN 60947-5-2

**DIMENSIONS**

See the diagram for dimensional details.

**TECHNICAL NOTES**

1. Limit values
2. Average life of 100,000 h with TA = +25 °C
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
   B - overload and short-circuit protection
8. Internal lenses in glass

All the ordering codes and information are summarised in the last pages of this catalogue.
**TECHNICAL DATA**

<table>
<thead>
<tr>
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<tr>
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<tr>
<td>Max. field of depth:</td>
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<tr>
<td>Power supply:</td>
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<td>Resolution:</td>
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<tr>
<td>Setting:</td>
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<tr>
<td>Setting procedure:</td>
<td>EASYtouch™</td>
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<tr>
<td>Indicators:</td>
<td>yellow OUTPUT LED</td>
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<tr>
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<td>green / red READY / ERROR LED</td>
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<td>Saturation voltage:</td>
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<td>Protection devices:</td>
<td>A, B</td>
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<tr>
<td>Lens materiale:</td>
<td>window in glass (tilted anti-reflection)</td>
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**SELECTION TABLE**

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<th>Model</th>
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<th>Code</th>
<th>Code</th>
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</table>

All the ordering codes and information are summarised in the last pages of this catalogue.

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**TECHNICAL NOTES**

1. Limit values
2. Average life of 100,000 h with $T_A = +25$ °C
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
8. B - overload and short-circuit protection
9. Internal lenses in glass

---

**DETECTION DIAGRAMS**

Contrast sensor
The UV light LED emission detects any luminescent reference, even on very reflective surfaces, such as ceramics, metal or mirrored glass. The patent-covered EASYtouch™ setting procedures fixes automatically the best detection conditions, simply by pressing the teach-in push-button once, with the reference to detect. The threshold between two different luminescence degrees can be set by a second pressure of the button.

**TECHNICAL DATA**

- **Operating distance:** 0 ... 40 mm
- **Power supply:** 10 ... 30 Vdc
- **Ripple:** ≤ 2 Vpp
- **Consumption:** ≤ 30 mA
- **Light emission:** LED UV 370 nm
- **Spot dimension:** approx. 1.5 mm at 10 mm (max. signal)
- **Resolution:** 0.5 mm
- **Setting:** teach-in push-button, remote on cable
- **Setting procedure:** EASYtouch™
- **Indicators:** yellow OUTPUT LED, green / red READY / ERROR LED
- **Output type:** PNP, NO, NPN, NO
- **Output current:** ≤ 100 mA
- **Saturation voltage:** ≤ 2 V
- **Response time:** 250 µs
- **Max. switching frequency:** 2 kHz
- **Operating mode:** light with EASYtouch™ automatic dark / light with fine acquisition
- **Timing function:** 20 ms minimum output ON
- **Auxiliary functions:** remote keylock
- **Connection:** 2 m Ø 4 mm cable, M12 4-pole connector
- **Electrical protection:** class 2
- **Mechanical protection:** IP67
- **Protection devices:** A, B
- **Housing material:** ABS
- **Lens material:** window in glass (tilted anti-reflection)
- **Weight:** 90 g max., 40 g max.
- **Operating temperature:** -25 ... +55 °C
- **Storage temperature:** -25 ... +70 °C
- **Reference standard:** EN 60947-5-2

**ACCESSORIES**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue.

**COMMENTS**

1. Limit values
2. Average life of 100,000 h with TA = +25 °C
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm2
6. Connector can be blocked on two positions
7. A - reverse polarity protection
   B - overload and short-circuit protection
8. Internal lenses in glass

**DIMENSIONS**

**INDICATORS AND SETTINGS**

A Output status and READY/ERROR LEDs
B Teach-in push-button
C M12 connector output orientable in two positions
D Cable output

Teach-in button for setting.
EASYtouch™ provides two setting modes: standard or fine. Please refer to instructions manual for operating details.

**CONNECTIONS**
### TECHNICAL DATA

<table>
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<td>Protection devices</td>
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<td>Lens material</td>
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### SELECTION TABLE

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All the ordering codes and information are summarised in the last pages of this catalogue.

### TECHNICAL NOTES

1. Limit values
2. Average life of 100,000 h with $T_A = +25$ °C
3. Connect to 0 V when remote wire not used
4. Active with remote at +Vdc at power on
5. PVC, 4 x 0.14 mm²
6. Connector can be blocked on two positions
7. A - reverse polarity protection
8. B - overload and short-circuit protection
9. Internal lenses in glass

### DETECTION DIAGRAMS

![Detection Diagram](image-url)
This sensor gives an analogue 0-10 Vdc output proportional to the target distance in the measurement range, with the possibility of setting a threshold for the other switching output. The yellow LED indicates the activation of the output during switching while the red LED turns on when the object is outside the measurement range.

**TECHNICAL DATA**

**DIE NETZWERK DIAGRAMME**

**SELECTION TABLE**

**Operating distance:**
- 60...
- 150 mm

**Power supply:**
- 18...
- 30 Vdc

**Ripple:**
- ≤ 2 Vpp

**Consumption:**
- ≤ 60 mA

**Light emission:**
- red LED 670 nm

**Spot dimensions:**
- approx. 16 mm at 150 mm

**Setting:**
- teach-in push-button

**Setting procedure:**
- EASYtouch™

**Indicators:**
- yellow OUTPUT LED
- red FIELD LED

**Output type:**
- PNP, NO
- NPN, NO
- analogue with 0...
- 10 V (8 bit)

**Minimum resistance load:**
- 1 KΩ

**Output current:**
- ≤ 100 mA

**Saturage voltage:**
- ≤ 2 V

**Response time:**
- 1 ms

**Switching frequency:**
- 500 Hz

**Resolution:**
- 1 mm (linearity ± 2.5 %)

**Operating mode:**
- light with EASYtouch™
- automatic dark / light fine acquisition
- configurable direct/inverse proportionality

**Switching output hysterisis:**
- 10 % max.

**Connection:**
- 2 m Ø 4 mm cable
- M12 4-pole connector

**Electrical protection:**
- class 2

**Mechanical protection:**
- IP67

**Protection devices:**
- A, B

**Housing material:**
- ABS

**Lens material:**
- window in PMMA

**Weight:**
- 90 g max.
- 40 g max.

**Operating temperature:**
- -25...
- +55°C

**Storage temperature:**
- -25...
- +70°C

**Reference standard:**
- EN 60947-5-2

**Accessories**

For dedicated accessories refer to the ACCESSORIES section of this catalogue.

Refer also to Connectors (A.03) and Fixing Brackets (A.04) of the General Catalogue

**Connections**

**S60-PA-2**

**S60-PA-5**

**TECHNICAL NOTES**

1. Measurement field can be reduced at device setting
2. Limit values
3. Average life of 100,000 h with TA = +25 °C
4. PVC, 4 x 0.14 mm²
5. Connector can be blocked on two positions
6. A - reverse polarity protection
   B - overload and short-circuit protection
7. Internal lenses in Polycarbonate

**INDICATORS AND SETTINGS**

A - Output status and range LEDs
B - Teach-in push-button
C - M12 connector output
D - Cable output

Teach-in button for setting.
EASYouc™ provides two setting modes: standard or fine.
Please refer to instructions manual for operating details.
TECHNOLOGY ADVANTAGES

The S60 series establishes the new market standard in the compact 50 x 50 mm photoelectric sensors, offering a complete family of optic functions with only 15 mm housing width. The standard dimensions, reduced housing width and the multi-hole fixing system make the S60 series compatible with the majority of compact sensors present on the market.

All the models are available in cable or M12 connector versions, with NPN or PNP type static output, conforming to the EN 60947-5-2 European standard. The M12 connector can be easily rotated to 90° and can be blocked in the straight or right-angle positions respect to the optic axis, the cable emerges at 45° and thanks to its flexibility can rotate practically 360°. Thanks to these characteristics the sensor can be easily fixed on all sides and at all angles.

All the basic optic functions such as the through beam, polarised retroreflex, diffuse proximity and background suppression are available also in the version with visible red laser emission, with all the safety characteristics for the user in class 1 conforming to the EN 60825-1 European standard and in class II according to CDRH 21 CFR Part 1040 USA standard.

Besides the evident advantages for the alignment of sensors and of the object to detect, thanks to the high spot visibility and concentration, the laser emissions offer an improved detection resolution, millimetric for the through beam and polarised retroreflex versions, or decimillimetric for the diffuse proximity and background suppression.

The polarised retroreflex model is available also in the coaxial optic version that, with the emitter optic axis coinciding with the receiver one, offers a better detection axis precision and the elimination of the blind zone near to the sensor.

TECHNICAL NOTES

1. Measurement field can be reduced at device setting
2. Limit values
3. Average life of 100,000 h with $T_A = +25^\circ C$
4. PVC, 4 x 0.14 mm²
5. Connector can be blocked on two positions
6. A - reverse polarity protection
   B - overload and short-circuit protection
7. Internal lenses in Polycarbonate

DETECTION DIAGRAMS

Analogue output on max. measurement range in inverse proportionality
The **S60** series establishes the new market standard in the compact 50 x 50 mm photoelectric sensors, offering a complete family of optic functions with only 15 mm housing width.

The standard dimensions, reduced housing width and the multi-hole fixing system make the **S60** series compatible with the majority of compact sensors present on the market.

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The polarised retroreflex model is available also in the coaxial optic version that, with the emitter optic axis coinciding with the receiver one, offers a better detection axis precision and the elimination of the blind zone near to the sensor.
The coaxial optics is present also in the polarised retroreflex model for the detection of transparent objects, notably increasing the performances of this optic function and its immunity to object movements inside the detection area.

The contrast sensor with white LED emission has an operating distance ranging from 17 to 21 mm and detects coloured or grey-scale marks, with a minimum dimension of 0.5 mm and an operating frequency reaching 5 kHz.

The luminescence sensor with UV LED emission has an operating distance ranging from 0 to 40 mm and detects fluorescent or luminescent targets, with a minimum dimension of 0.5 mm and an operating frequency reaching 2 kHz.

The setting of these sensors is extremely rapid and easy, thanks to the patent-covered EASYtouch™ system that allows to automatically fix the object detection threshold, with a single pressure of the teach-in push-button.

It is possible to set the sensor to detect more critical differences between the mark and the background, or invert the dark or light operating mode, by pressing twice the push-button.

The EASYtouch™ system allows to select the ‘Remote’ function for the remote sensor setting through the cable or connector, the ‘Keylock’ function to block the keyboard, ‘Delay OFF’ function for the 20 ms timing of the output deactivation.

The sensor technology with background and/or foreground suppression of the S60 series has allowed to develop also a cost-effective distance sensor with a double output: a 0 - 10 V analogue output and a digital NPN or PNP switching output.

The measurement range and the switching threshold output can be selected in the 50 - 150 mm range, with a ±1 mm precision; the direct or inverse proportionality and the light or dark operating mode can be selected.