

Description

- Operation mode and max sensing range:
Thru-beam: 1-70 m
- Cable or plug connection
- Sensitivity adjustment via control input
- Light / dark selection via wire connection
- Power and output indicators
- High tolerance to hostile environments
- 10-30 V dc supply voltage
- 5 wire, solid state relay output
- Test input
- High excess gain
- Optical cross talk elimination with 4 independent sensor channels



The SM 9000 series consists of a high-power self-contained transmitter SMT, and receiver SMR, which are to be used in thru-beam mode. The complete series is available in stainless steel or plastic housing with either cable or plug connection.

The complete series is available with a 10-30 V dc supply voltage with a 5 wire, opto-isolated solid state output. Light or dark function is selectable by wire connection. The control input in the SMT may be used for either disabling or enabling the transmitting power temporarily for test purpose, multiplexing applications or as gradual regulation of the transmitting power level.

The SM 9000 series features cross talk elimination which enables up to 4 individual sensor pairs to operate independently ensuring that optical cross talk interference between the channels is prevented. The channels are selectable by control input in the transmitter, and chosen individually by type in the receiver. Both the transmitter and receiver are protected against reverse polarity of power supplies, control input and output signals. The output is also protected against short circuit and inductive loads.

| Technical Data | | | | |
|--|--------------------------|--|------------------|--------|
| | SMT | | SMR | |
| | 9020C | 9070C | 942x | 947x |
| Supply voltage | 10-30 V dc | | | |
| Voltage ripple | 15 % | | | |
| Reverse polarity protected | Yes | | | |
| Short circuit protected | - | | Yes | |
| Current consumption | Max. 40 mA | | | |
| Maximum output load | - | | 100 mA / 30 V dc | |
| Maximum residual voltage | - | | 2,5 V | |
| Maximum operation frequency | - | | 20 Hz | |
| Response time t _{ON} / t _{OFF} | - | | 25 ms / 25 ms | |
| Power on indicator | Green LED | | - | |
| Output indicator | - | | Yellow LED | |
| Hysteresis | - | | Approx. 20 % | |
| Transmitter diode | Ga Al As (880 nm) | | - | |
| Opening angle | - | | +/- 7° | +/- 3° |
| Emission angle | +/- 7° | +/- 4° | - | |
| Housing material | Sensor housing | Stainless Steel (AISI 316 / 1.4401) or Polycarbonate | | |
| | Front lens | Polycarbonate | | |
| Cable, PVC Ø 4,9 mm | 5 x 0,14 mm ² | | | |

| Environmental Data | | | |
|--------------------------------|------------------|--------------|--------------|
| | SMT | SMR | |
| | | 942x | 947x |
| Vibration | 10-55 Hz, 0,5 mm | | |
| Shock | 30 g | | |
| Light immunity, @ 5° incidence | - | > 10 000 lux | > 20 000 lux |
| Temperature, operation | -20 to +60 °C | | |
| Temperature, storage | -40 to +80 °C | | |
| Sealing class | IP 69K | | |
| Approvals | CE | | |

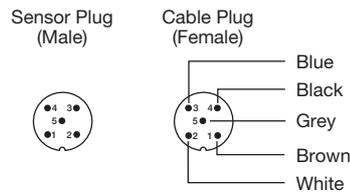
Note: Sensors are IP 69K rated if the cable is protected from high-pressure spray.

| Available Types | | | | | | | | | |
|-----------------|-------|---------------------------------|-------------------|------------------|--------------|----------------|-----------------|----------------------------------|--------|
| | Type | Control Feature / Output | Channels | Connection | | 5 m cable | 15 m cable | 0,1 m cable with 5 pin, M12 plug | Range |
| | | | | Housing Material | Housing Type | | | | |
| Transmitter | 9020C | Adjustable range and test input | Selectable 1 to 4 | Polycarbonate | M18 x 1 | SMT 9020C TP 5 | SMT 9020C TP 15 | SMT 9020C TP 0.1-J5 | 1-20 m |
| | | | | Stainless Steel | | SMT 9020C TS 5 | SMT 9020C TS 15 | SMT 9020C TS 0.1-J5 | |
| Receiver | 9421 | Solid State Relay LO/DO | 1 | Polycarbonate | M18 x 1 | SMR 9421 TP 5 | SMR 9421 TP 15 | SMR 9421 TP 0.1-J5 | 20 m |
| | | | | Stainless Steel | | SMR 9421 TS 5 | SMR 9421 TS 15 | SMR 9421 TS 0.1-J5 | |
| | 9422 | | 2 | Polycarbonate | | SMR 9422 TP 5 | SMR 9422 TP 15 | SMR 9422 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9422 TS 5 | SMR 9422 TS 15 | SMR 9422 TS 0.1-J5 | |
| | 9423 | | 3 | Polycarbonate | | SMR 9423 TP 5 | SMR 9423 TP 15 | SMR 9423 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9423 TS 5 | SMR 9423 TS 15 | SMR 9423 TS 0.1-J5 | |
| | 9424 | | 4 | Polycarbonate | | SMR 9424 TP 5 | SMR 9424 TP 15 | SMR 9424 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9424 TS 5 | SMR 9424 TS 15 | SMR 9424 TS 0.1-J5 | |
| Transmitter | 9070C | Adjustable range and test input | Selectable 1 to 4 | Polycarbonate | M18 x 1 | SMT 9070C TP 5 | SMT 9070C TP 15 | SMT 9070C TP 0.1-J5 | 1-70 m |
| | | | | Stainless Steel | | SMT 9070C TS 5 | SMT 9070C TS 15 | SMT 9070C TS 0.1-J5 | |
| Receiver | 9471 | Solid State Relay LO/DO | 1 | Polycarbonate | M18 x 1 | SMR 9471 TP 5 | SMR 9471 TP 15 | SMR 9471 TP 0.1-J5 | 70 m |
| | | | | Stainless Steel | | SMR 9471 TS 5 | SMR 9471 TS 15 | SMR 9471 TS 0.1-J5 | |
| | 9472 | | 2 | Polycarbonate | | SMR 9472 TP 5 | SMR 9472 TP 15 | SMR 9472 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9472 TS 5 | SMR 9472 TS 15 | SMR 9472 TS 0.1-J5 | |
| | 9473 | | 3 | Polycarbonate | | SMR 9473 TP 5 | SMR 9473 TP 15 | SMR 9473 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9473 TS 5 | SMR 9473 TS 15 | SMR 9473 TS 0.1-J5 | |
| | 9474 | | 4 | Polycarbonate | | SMR 9474 TP 5 | SMR 9474 TP 15 | SMR 9474 TP 0.1-J5 | |
| | | | | Stainless Steel | | SMR 9474 TS 5 | SMR 9474 TS 15 | SMR 9474 TS 0.1-J5 | |

Connections

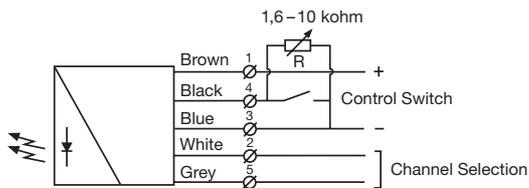
| | Cable | M12 Plug / Cable |
|---------------------|-------|------------------|
| Supply + | Brown | Pin 1 / Brown |
| Supply - | Blue | Pin 3 / Blue |
| SMT control input | Black | Pin 4 / Black |
| SMR output | Black | Pin 4 / Black |
| SMR output | White | Pin 2 / White |
| SMR LO/DO selection | Grey | Pin 5 / Grey |

5 pin, M12

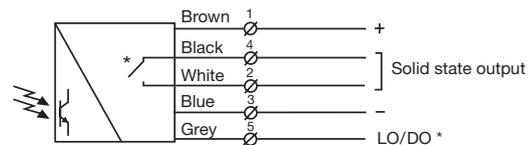


Refer to page 161 for extension cables

Wiring Diagrams

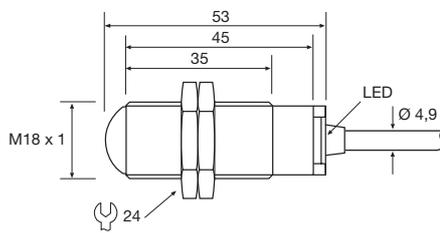


SMT 90xxC
Variable range and ON/OFF switch for transmitting power



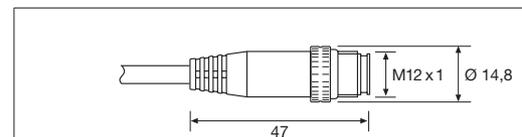
SMR 94xx
* Connect grey wire to + for LO and to - supply for DO

Dimensions and Descriptions



TP/TS 5/15/0.1-J5

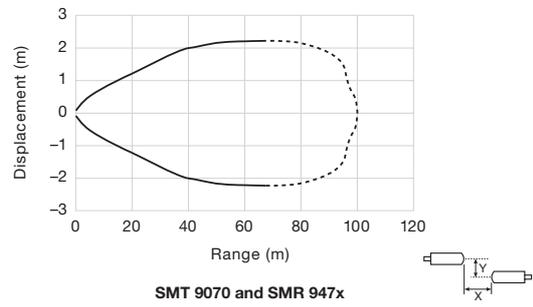
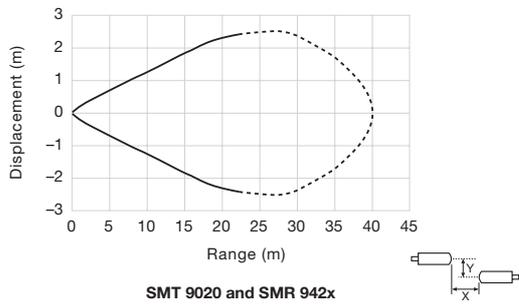
(Units in mm)



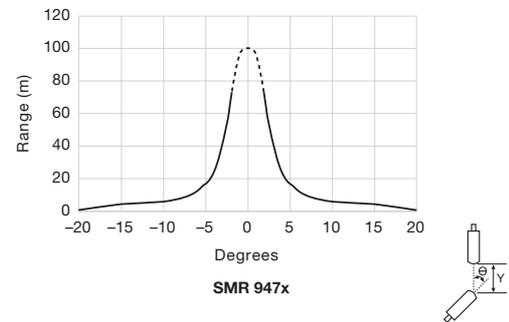
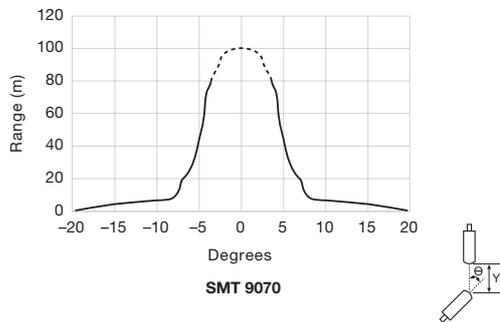
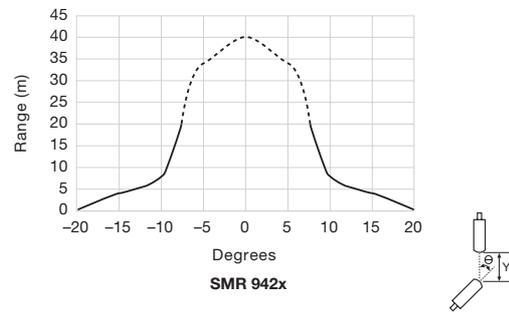
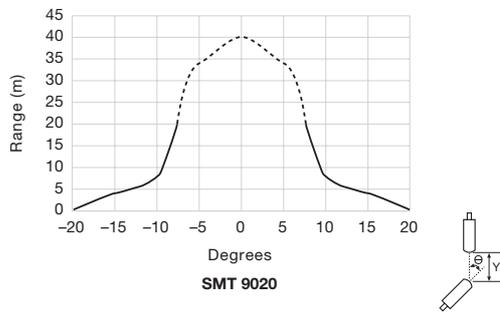
0.1-J5

Sensing Characteristics

Parallel Displacement

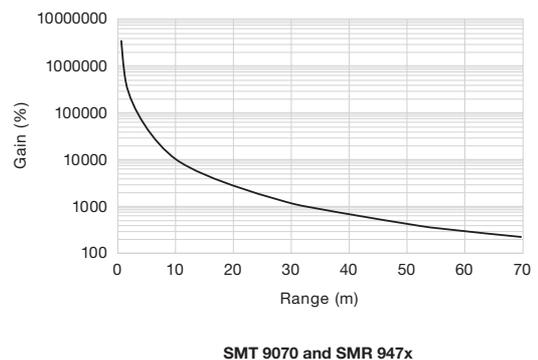
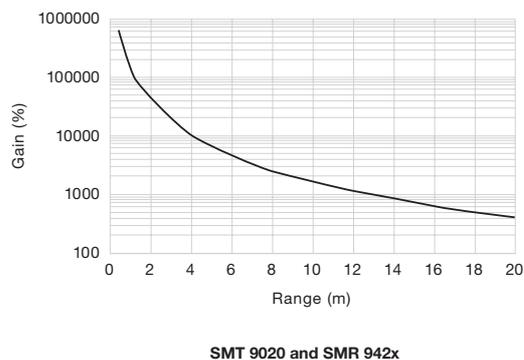


Angular Displacement



Sensing Characteristics

Excess Gain



Telco reserves the right to change specifications without notice.