Description

- Operation mode and max sensing range: **Thru-beam: 1-70 m**
- Cable or plug connection
- Sensitivity adjustment via control input
- Power and output indicators
- High tolerance to hostile environments
- 10-30 V dc supply voltage
- 5 wire, NPN or PNP output
- Test input
- High excess gain
- Optical cross talk elimination of 4 independent sensor channels selectable via wire connection
- UL Hazloc compliant models optionally available

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, NPN or PNP transistor output with a choice between light or dark function. 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, configurable with the use of a 2-wire channel selection in the SMT and SMR, ensuring that optical cross talk interference between the channels is prevented.

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	9x20	9x70
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	
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 mm²			

Environmental Data				
		SMT	SMR	
			9x20	9x70
Vibration		10-55 Hz, 0,5 mm		
Shock		30 g		
Light immunity	@ 5° incidence	–	> 10 000 lux	> 20 000 lux
	@ 20° incidence		> 100 000 lux	
Temperature, operation		–20 to +60 °C		
Temperature, storage		–40 to +80 °C		
Sealing class		IP 69K		
Approvals		CE UKCA		

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

Available Types

	Type	Control Feature	Output	Connection		5 m cable	15 m cable	0,1 m cable with 5 pin, M12 plug	Range
				Housing Material	Housing Type	Order Reference			
Transmitter	9020C	Adjustable range and test input	–	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	9020	–	NPN LO (NC)	Polycarbonate	M18 x 1	SMR 9020 TP 5	SMR 9020 TP 15	SMR 9020 TP 0.1-J5	20 m
				Stainless Steel		SMR 9020 TS 5	SMR 9020 TS 15	SMR 9020 TS 0.1-J5	
	9120		NPN DO (NO)	Polycarbonate		SMR 9120 TP 5	SMR 9120 TP 15	SMR 9120 TP 0.1-J5	
				Stainless Steel		SMR 9120 TS 5	SMR 9120 TS 15	SMR 9120 TS 0.1-J5	
	9220		PNP LO (NC)	Polycarbonate		SMR 9220 TP 5	SMR 9220 TP 15	SMR 9220 TP 0.1-J5	
				Stainless Steel		SMR 9220 TS 5	SMR 9220 TS 15	SMR 9220 TS 0.1-J5	
	9320		PNP DO (NO)	Polycarbonate		SMR 9320 TP 5	SMR 9320 TP 15	SMR 9320 TP 0.1-J5	
				Stainless Steel		SMR 9320 TS 5	SMR 9320 TS 15	SMR 9320 TS 0.1-J5	

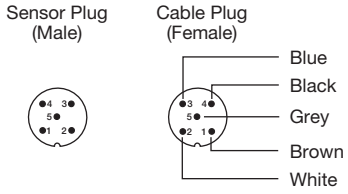
Transmitter	9070C	Adjustable range and test input	–	Polycarbonate	M18 x 1	SMT 9070C TP 5	SMT 9070C TP 15	SMT 9070C TP 0.1-J5	1-70 m
				Stainless Steel		SMT 9070C TS 5	SMT 9070C TS 15	SMT 9070C TS 0.1-J5	
Receiver	9070	–	NPN LO (NC)	Polycarbonate	M18 x 1	SMR 9070 TP 5	SMR 9070 TP 15	SMR 9070 TP 0.1-J5	70 m
				Stainless Steel		SMR 9070 TS 5	SMR 9070 TS 15	SMR 9070 TS 0.1-J5	
	9170		NPN DO (NO)	Polycarbonate		SMR 9170 TP 5	SMR 9170 TP 15	SMR 9170 TP 0.1-J5	
				Stainless Steel		SMR 9170 TS 5	SMR 9170 TS 15	SMR 9170 TS 0.1-J5	
	9270		PNP LO (NC)	Polycarbonate		SMR 9270 TP 5	SMR 9270 TP 15	SMR 9270 TP 0.1-J5	
				Stainless Steel		SMR 9270 TS 5	SMR 9270 TS 15	SMR 9270 TS 0.1-J5	
	9370		PNP DO (NO)	Polycarbonate		SMR 9370 TP 5	SMR 9370 TP 15	SMR 9370 TP 0.1-J5	
				Stainless Steel		SMR 9370 TS 5	SMR 9370 TS 15	SMR 9370 TS 0.1-J5	

Note: SM 9000 series is available with c UL us approved for Class II, Division 2, Groups F and G Hazardous Locations (E488233).
Add "UL-EX" after end of type name e.g. SMT 9070C TS 5 UL-EX.

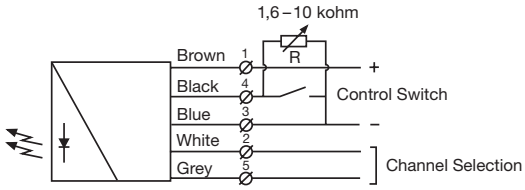
Connections

	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
SMT/SMR channel selection	Grey	Pin 5 / Grey
SMT/SMR channel selection	White	Pin 2 / White

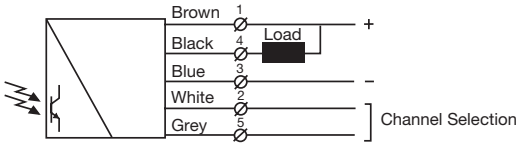
5 pin, M12



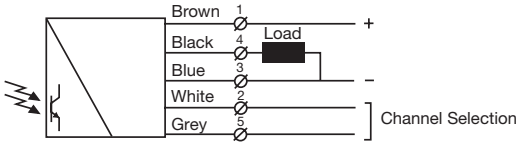
Wiring Diagrams



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



SMR 90xx / 91xx

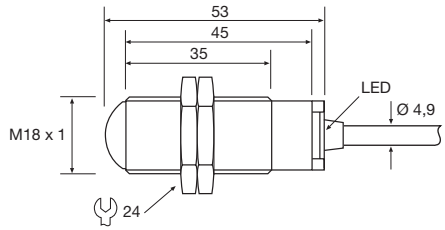


SMR 92xx / 93xx

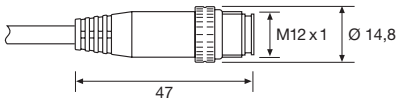
Channel Selection — SMT / SMR

Channel Number	Connection Configuration	
	Grey wire	White wire
1	Supply – (blue wire)	Supply – (blue wire)
2	Supply + (brown wire)	Supply – (blue wire)
3	Supply – (blue wire)	Supply + (brown wire)
4	Supply + (brown wire)	Supply + (brown wire)

Dimensions and Descriptions



TP/TS 5/15/0.1-J5

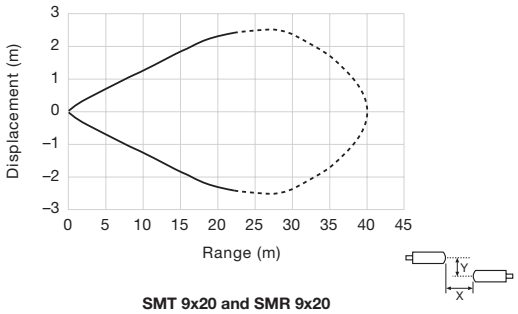


0.1-J5

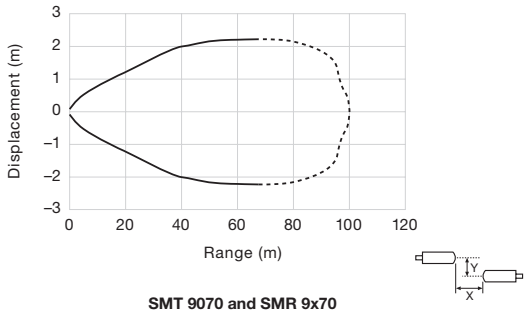
(Units in mm)

Sensing Characteristics

Parallel Displacement

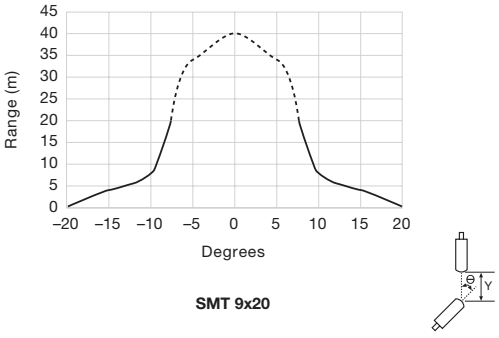


SMT 9x20 and SMR 9x20

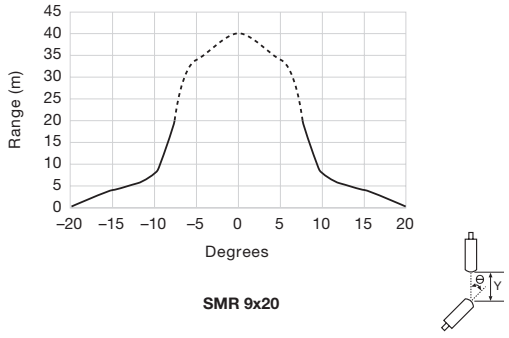


SMT 9070 and SMR 9x70

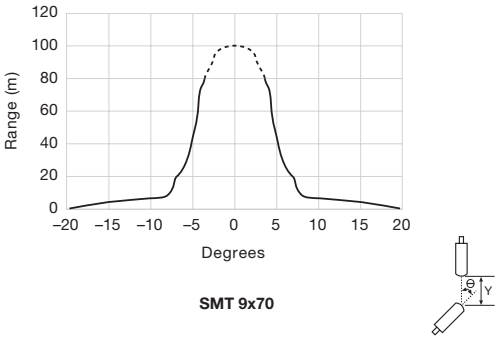
Angular Displacement



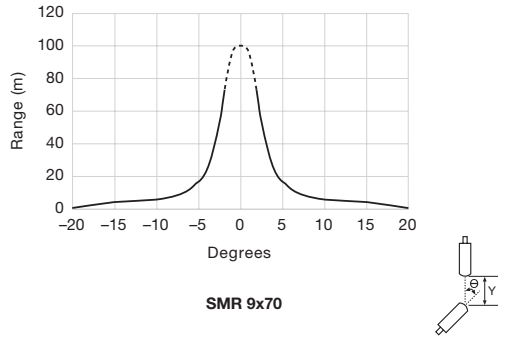
SMT 9x20



SMR 9x20



SMT 9x70



SMR 9x70

Telco reserves the right to change specifications without notice.