SPACEMASTER™ SERIES   SM 9000-IO

SENSOR PARTNERS

Description

- Operation mode and max sensing range:
  Thru-beam: 1-70 m
- IO-Link communication interface
- PC software for parameter configuration and diagnostics with optional USB-IO-Link Master 02
- M12 plug connection
- Transmitting power adjustment
- Power and output indicators
- High tolerance to hostile environments
- 10-30 V dc supply voltage
- 5 pin, IO-Link / push-pull and NPN or PNP output
- Test input
- High excess gain
- Optical cross talk elimination of 4 independent sensor channels selectable via IO-Link

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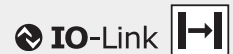
The SM 9000-IO series consists of a high-power self-contained transmitter SMT, and receiver SMR, which are to be used in thru-beam mode. The complete series is available in stainless steel or plastic housing with either cable or plug connection.

The complete series is available with a 10-30 V dc supply voltage. All sensors offer a combined IO-Link and push-pull output, together with a supplementary NPN or PNP output.

The SM 9000-IO is equipped with an IO-Link communication interface which allows a variety of process parameter and setting to be configured and monitored, which includes: transmitter power, channel selection, light or dark selection, on/off time delay, one-shot timer, signal alarm.

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 series features cross talk elimination which enables up to 4 individual sensor pairs to operate independently, configurable via IO-Link 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		Max. 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	
IO-Link communication		Yes			
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 %	
Light source		Infrared (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
Temperature, operation		−20 to +60 °C		
Temperature, storage		−40 to +80 °C		
Sealing class		IP 69K		
Approvals		CE UK CA		

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

Available Types

	Type	Control Feature	Output	Connection		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-IO TP 0.1-J5**	1- 20 m
				Stainless Steel		**SMT 9020C-IO TS 0.1-J5**	
Receiver	**9420**	–	NPN	Polycarbonate	M18 x 1	**SMR 9420-IO TP 0.1-J5**	20 m
				Stainless Steel		**SMR 9420-IO TS 0.1-J5**	
	9520		PNP	Polycarbonate		**SMR 9520-IO TP 0.1-J5**	
				Stainless Steel		**SMR 9520-IO TS 0.1-J5**	
Transmitter	**9070C**	Adjustable range and test input	–	Polycarbonate	M18 x 1	**SMT 9070C-IO TP 0.1-J5**	1- 70 m
				Stainless Steel		**SMT 9070C-IO TS 0.1-J5**	
Receiver	**9470**	–	NPN	Polycarbonate	M18 x 1	**SMR 9470-IO TP 0.1-J5**	70 m
				Stainless Steel		**SMR 9470-IO TS 0.1-J5**	
	9570		PNP	Polycarbonate		**SMR 9570-IO TP 0.1-J5**	
				Stainless Steel		**SMR 9570-IO TS 0.1-J5**	

SENSOR PARTNERS

Connections

	M12 Plug / Cable
Supply +	Pin 1 / Brown
Supply –	Pin 3 / Blue
Control Input / Output	Pin 2 / White
IO-Link	Pin 4 / Black
Not Connected	Pin 5 / Grey

5 pin, M12

Sensor Plug
(Male)

Cable Plug
(Female)

Blue
Black
Grey
Brown
White

Wiring Diagrams

Brown 1
White 2
Blue 3
Black 4
Grey 5

1,6 – 10 kohm

R

+
Control Switch
–
IO-Link
NC*
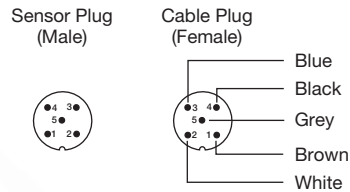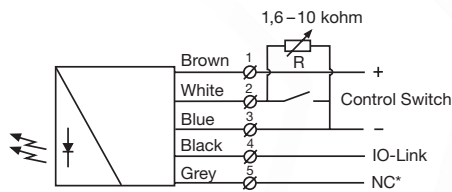
*Do not connect grey wire

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

Brown 1
White 2
Blue 3
Black 4
Grey 5

Load

+
–
IO-Link push-pull
NC*

*Do not connect grey wire

SMR 94xx

Brown 1
White 2
Blue 3
Black 4
Grey 5

Load

+
–
IO-Link push-pull
NC*

*Do not connect grey wire

SMR 95xx

Dimensions and Descriptions

53
45
35
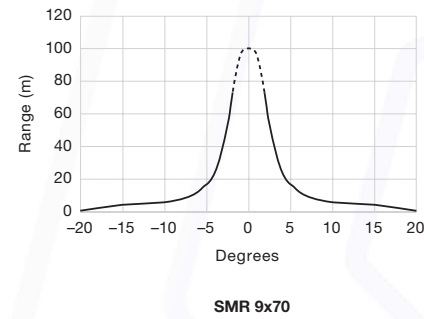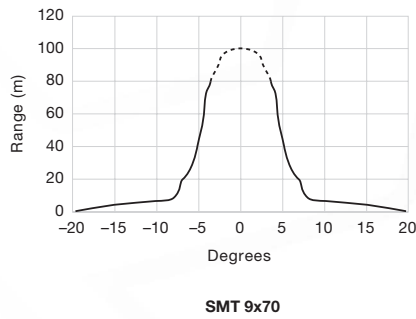LED
Ø 4,9
M18 x 1
M12 x 1
Ø 14,8
24
100
47
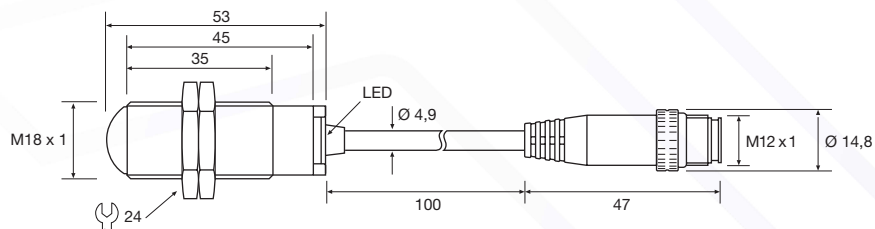
TP/TS 0.1-J5

(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

SENSOR PARTNERS
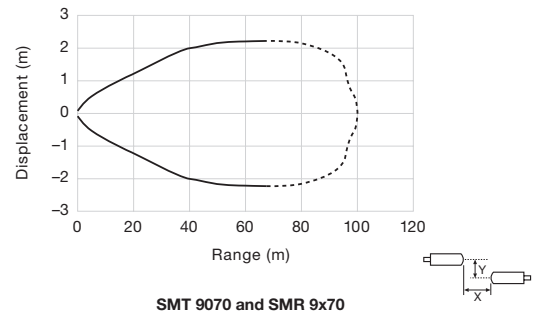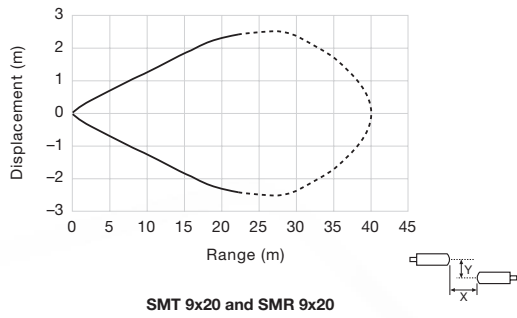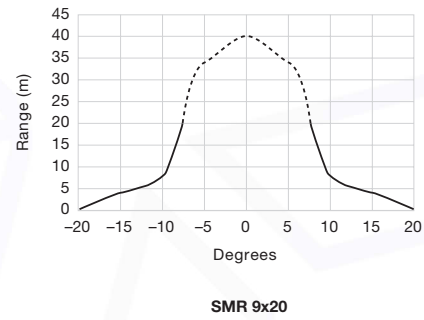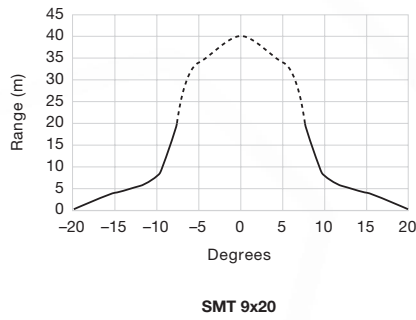
PC Programming and Monitoring

General Setup

Transmitter

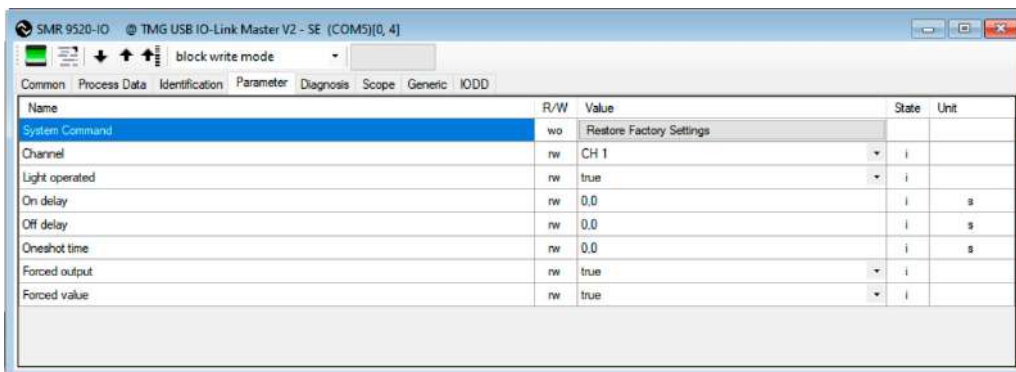|	Settings	Function	Parameters
1	System Command – Restore Factory Settings	Restores all user settings to default values	N/A
2	Channel	Select channel. Same channel selected for matching SMT and SMR pair	CH 1 / CH 2 / CH 3 / CH 4
3	Power Input	Select power input mode	Cable / IO-Link
4	Power Value	Adjust the transmitter power of the transmitter	0-100 %

USB-IO Link Master 02 PC Software Screenshot
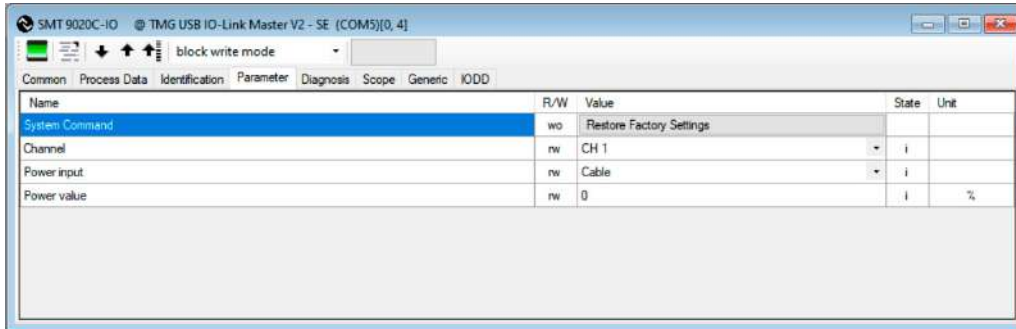
Receiver

|	Settings	Function	Parameters
1	System Command – Restore Factory Settings	Restores all user settings to default values	N/A
2	Channel	Select channel. Same channel selected for matching SMT and SMR pair	CH 1 / CH 2 / CH 3 / CH 4
3	Light Operated	Select between light or dark operation	True / False
4	On Delay	On delay time between the expression becomes true and the output is switched	0.00-600.00 s
5	Off Delay	Off delay time between the expression becomes false and the output is switched	0.00-600.00 s
6	One-Shot Time	Select duration the output be active when switching from not active to active	0.00-600.00 s
7	Forced Output	Select if output shall be forced to the value in Forced Value or from the sensor input	True / False
8	Forced Value	Select output state if the Forced Output is True	True / False

USB-IO Link Master 02 PC Software Screenshot

SENSOR
P A R T N E R S

PC Programming and Monitoring		
Process Data		
Transmitter		

	Name	**Description**	**Parameters**
1	Power	Indicates transmitter power setting	0-100 %

USB-IO Link Master 02 PC Software Screenshot
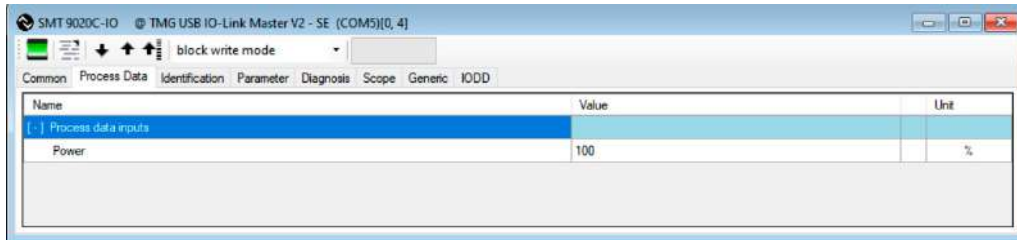
Receiver		

	Name	**Description**	**Parameters**
1	Output	Indicates status of output	True / False

USB-IO Link Master 02 PC Software Screenshot
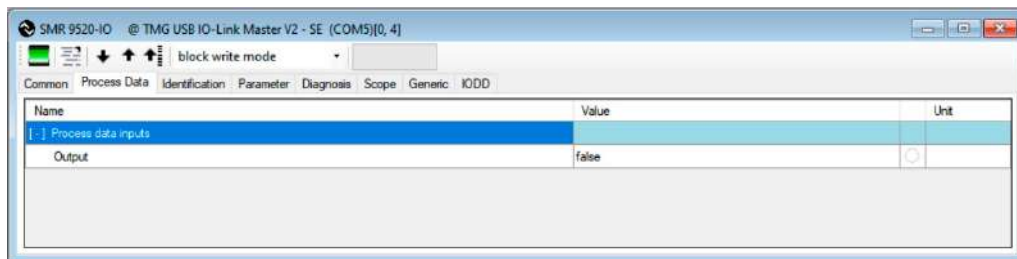
Telco reserves the right to change specifications without notice.

SENSOR PARTNERS