SPACEMASTER™ SERIES SM 7000-IO

Description

- Operation mode and max sensing range:
  Thru-beam: 0-20 m
  Diffuse proximity: 0-1 m
  Retro reflective: 0,1-3 m
  Fibre: Dependent on fibre optic
- IO-Link communication interface
- PC software for parameter configuration and diagnostics with optional USB-IO-Link Master 02
- M8 or M12 plug connection
- Sensitivity adjustment via potentiometer
- Switch selectable light or dark function
- Power and output indicators
- High tolerance to hostile environments
- 10-30 V dc supply voltage
- 4 pin, IO-Link / push-pull and NPN or PNP output
- Test input

The 7000-IO series consists of a self-contained transmitter SMT, and a receiver SMR, which are to be used in thru-beam mode, an SMP for diffuse proximity, SMRR for retro reflective and an SMPF for use with fibre optic cables.

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 7000-IO is equipped with an IO-link communication interface which allows a variety of process parameters and settings to be configured and monitored, which includes: sensitivity adjustment, teach-in function, automatic gain adjustment, output mode, on/off time delay, one-shot timer, hysteresis. Sensitivity adjustment and light or dark function may also be manually configured via integral potentiometers.

The SMR is available with either a 0.5 ms response time and a 7 metre range or with a 2 ms response time and a 20 metre range. The test input in the SMT is intended to be used for disabling or enabling the transmitting power temporarily for test purpose or for multiplexing applications.

The complete series is protected against reverse polarity of power supplies, control input and output signals. The output is protected against short circuit and inductive loads.

Technical Data

		SMT	SMR		SMP	SMPF	SMRR
			7x07	7x20			
Supply voltage		10-30 V dc					
Voltage ripple		Max. 15 %					
Reverse polarity protected		Yes					
Short circuit protected		–	Yes				
Current consumption		25 mA	30 mA				
Maximum output load		–	200 mA / 30 V dc				
Maximum residual voltage		–	2 V				
IO-Link communication		Yes					
Maximum operation frequency		–	1000 Hz	250 Hz			
Response time t_{ON} / t_{OFF}		–	0,5 ms / 0,5 ms	2 ms / 2 ms			
Power on indicator		Green LED					
Output indicator		–	Yellow LED				
Hysteresis		–	Approx. 15-20 %		Approx. 3-10 %		
Light source		Infrared (880 nm)	–		Infrared (880 nm)		
Opening angle		–	+/– 6°		+/– 4°		+/– 3,5°
Emission angle		+/– 2°	–				
Housing material	Sensor housing	Stainless Steel (AISI 316 / 1.4401) or Polycarbonate					
	Front lens	Polycarbonate					

Environmental Data							
		SMT	SMR		SMP	SMPF	SMRR
			7x07	7x20			
Vibration		10-55 Hz, 0,5 mm					
Shock		30 g					
Light immunity	@ 5° incidence	–	20 000 lux		–		
	@ 15° incidence	–	–		40 000 lux		25 000 lux
Temperature, operation		–20 to +60 °C					
Temperature, storage		–40 to +80 °C					
Sealing class		IP 67					
Approvals		CE UK CA					

Available Types									
	Type	Power Supply	Control Feature	Output	Connection		4 pin, M8 plug	4 pin, M12 plug	Range
					Housing Material	Housing Type	Order Reference		
Transmitter	7000	10-30 V dc	Test Input	–	Polycarbonate	M18 x 1	SMT 7000-IO TP T4	SMT 7000-IO TP J	20 m
					Stainless Steel		SMT 7000-IO TS T4	SMT 7000-IO TS J	
Receiver	7407	10-30 V dc	Sensitivity pot. and light/dark switch	NPN	Polycarbonate	M18 x 1	SMR 7407-IO TP T4	SMR 7407-IO TP J	0-7 m
					Stainless Steel		SMR 7407-IO TS T4	SMR 7407-IO TS J	
	7507			PNP	Polycarbonate		SMR 7507-IO TP T4	SMR 7507-IO TP J	
					Stainless Steel		SMR 7507-IO TS T4	SMR 7507-IO TS J	
	7420			NPN	Polycarbonate		SMR 7420-IO TP T4	SMR 7420-IO TP J	0-20 m
					Stainless Steel		SMR 7420-IO TS T4	SMR 7420-IO TS J	
	7520			PNP	Polycarbonate		SMR 7520-IO TP T4	SMR 7520-IO TP J	
					Stainless Steel		SMR 7520-IO TS T4	SMR 7520-IO TS J	
Diffuse Proximity	7400	10-30 V dc	Sensitivity pot. and light/dark switch	NPN	Polycarbonate	M18 x 1	SMP 7400-IO TP T4	SMP 7400-IO TP J	0-0,5 m
					Stainless Steel		SMP 7400-IO TS T4	SMP 7400-IO TS J	
	7500			PNP	Polycarbonate		SMP 7500-IO TP T4	SMP 7500-IO TP J	
					Stainless Steel		SMP 7500-IO TS T4	SMP 7500-IO TS J	
	7401			NPN	Polycarbonate		SMP 7401-IO TP T4	SMP 7401-IO TP J	0-1 m
					Stainless Steel		SMP 7401-IO TS T4	SMP 7401-IO TS J	
	7501			PNP	Polycarbonate		SMP 7501-IO TP T4	SMP 7501-IO TP J	
					Stainless Steel		SMP 7501-IO TS T4	SMP 7501-IO TS J	
Fibre Sensor	7400	10-30 V dc	Sensitivity pot. and light/dark switch	NPN	Polycarbonate	M18 x 1	SMPF 7400-IO TP T4	SMPF 7400-IO TP J	Refer to Glass Fibre Optics data sheet
					Stainless Steel		SMPF 7400-IO TS T4	SMPF 7400-IO TS J	
	7500			PNP	Polycarbonate		SMPF 7500-IO TP T4	SMPF 7500-IO TP J	
					Stainless Steel		SMPF 7500-IO TS T4	SMPF 7500-IO TS J	

Note: Glass fibre optic cable to be ordered separately.

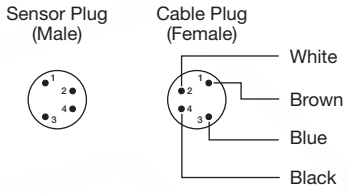
Retro Reflective	7400	10-30 V dc	Sensitivity pot. and light/dark switch	NPN	Polycarbonate	M18 x 1	SMRR 7400-IO TP T4	SMRR 7400-IO TP J	0,1-3 m
					Stainless Steel		SMRR 7400-IO TS T4	SMRR 7400-IO TS J	
	7500			PNP	Polycarbonate		SMRR 7500-IO TP T4	SMRR 7500-IO TP J	
					Stainless Steel		SMRR 7500-IO TS T4	SMRR 7500-IO TS J	

Note: Reflector to be ordered separately.

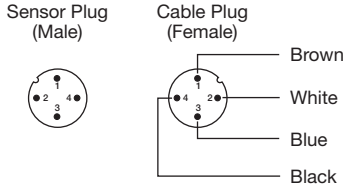
Connections

	M8 Plug / Cable	M12 Plug / Cable
Supply +	Pin 1 / Brown	Pin 1 / Brown
Supply –	Pin 3 / Blue	Pin 3 / Blue
Test input / Output	Pin 2 / White	Pin 2 / White
IO-Link	Pin 4 / Black	Pin 4 / Black

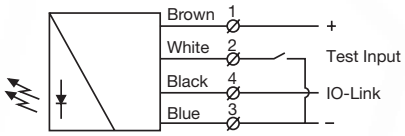
4 pin, M8



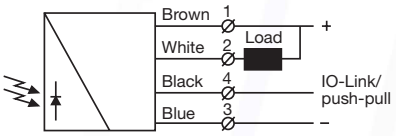
4 pin, M12



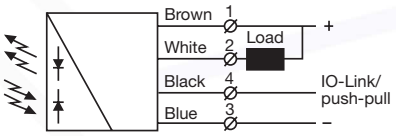
Wiring Diagrams



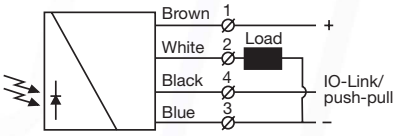
SMT 7000



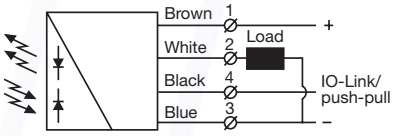
SMR 74xx



SMP / SMPF / SMRR 74xx

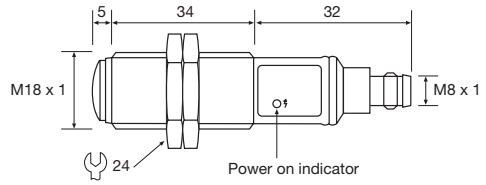


SMR 75xx

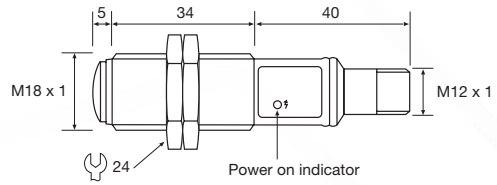


SMP / SMPF / SMRR 75xx

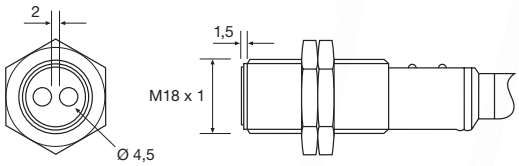
Dimensions and Descriptions



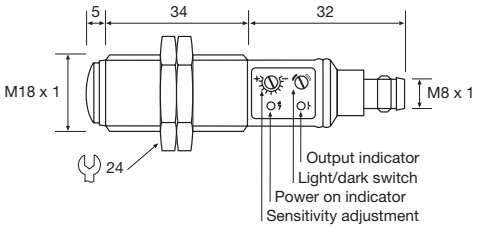
SMT TP/TS T4



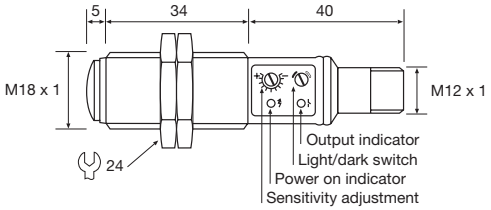
SMT TP/TS J



SMPF*



SMR / SMP / SMRR / SMPF* TP/TS T4

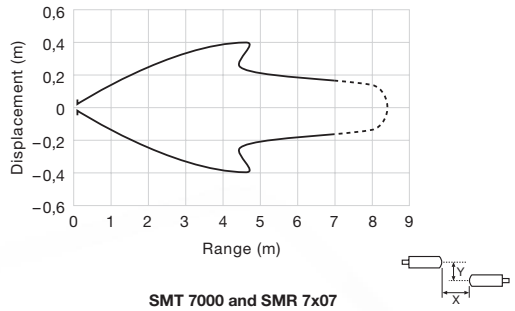


SMR / SMP / SMRR / SMPF* TP/TS J

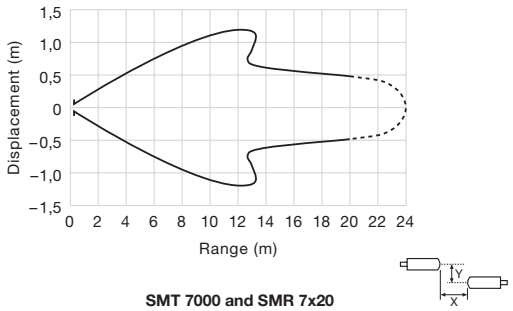
(Units in mm)

Sensing Characteristics

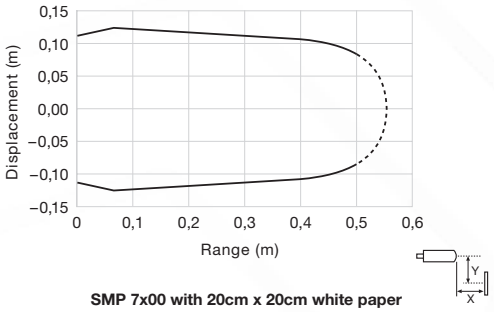
Parallel Displacement



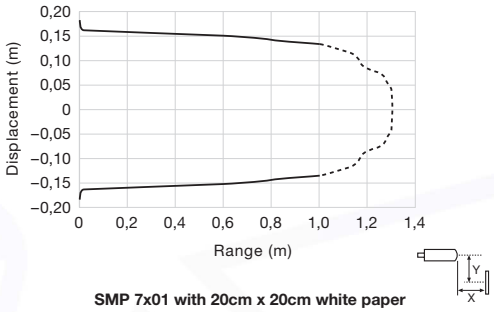
SMT 7000 and SMR 7x07



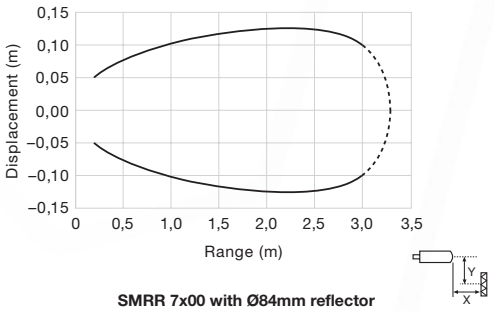
SMT 7000 and SMR 7x20



SMP 7x00 with 20cm x 20cm white paper



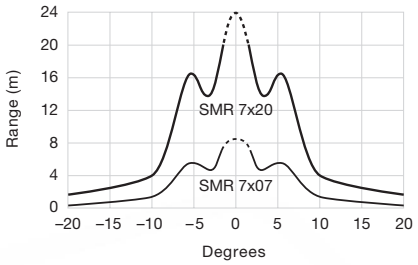
SMP 7x01 with 20cm x 20cm white paper

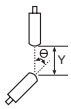


SMRR 7x00 with Ø84mm reflector

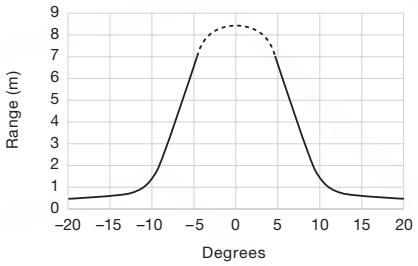
Sensing Characteristics

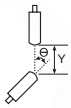
Angular Displacement



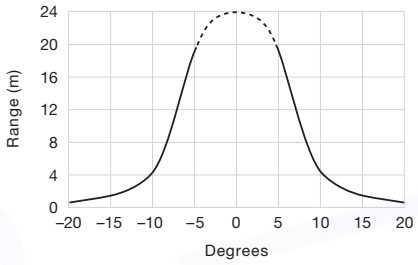


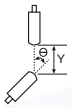
SMT 7000





SMR 7x07





SMR 7x20

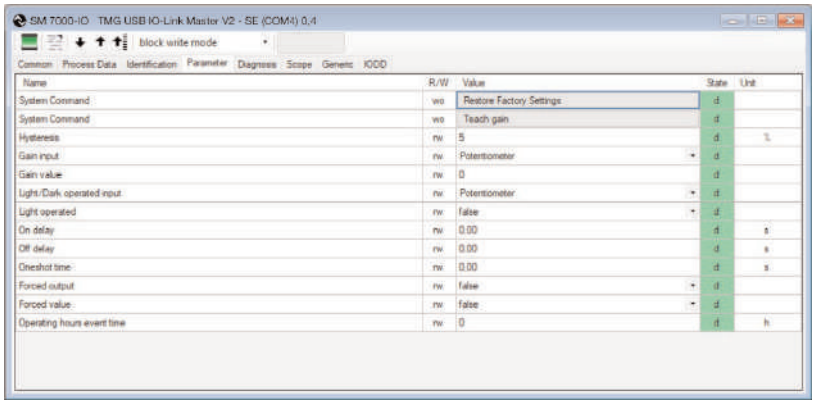
PC Programming and Monitoring

General Setup

	Settings	Function	Parameters
1	System Command – Restore Factory Settings	Restores all user settings to default values	N/A
2	System Command – Teach Gain	Determines the lowest possible gain to switch on	N/A
3	Hysteresis	Adjust the hysteresis level	0-10% / 0-40%*
4	Gain Input	Select gain control mode	Potentiometer / IO-Link
5	Gain Value	Adjust the gain level (applicable when IO-Link Gain Input mode is selected)	0-255
6	Light/Dark Operated Input	Select light/dark operated selection mode	Potentiometer / IO-Link
7	Light Operated	Select to invert output (applicable when IO-Link mode is selected in Light/Dark Operated Input)	True / False
8	On Delay	On delay time between the expression becomes true and the output is switched	0.00-600.00 s
9	Off Delay	Off delay time between the expression becomes false and the output is switched	0.00-600.00 s
10	One-Shot Time	Select duration the output be active when switching from not active to active	0.00-600.00 s
11	Forced Output	Select if output shall be forced to the value in Forced Value or from the sensor input	True / False
12	Forced Value	Select output state if the Forced Output is True	True / False
13	Forced Ctrl. Input *	Select control (test) input selection mode	Cable / IO-Link
14	Forced Ctrl. Input Value *	Select control (test) input configuration to high or low	True (transmitting) / False (not transmitting)
15	Operating Hours Event Time	Initiates an event message when operating hours reaches the value. No event is initiated when 0 is selected.	0-4294967295 hours

Note: Settings marked * are applicable for SMR receiver type only.

USB-IO Link Master 02 PC Software Screenshot



Screenshot example shown with SMP sensor type.

SENSOR PARTNERS

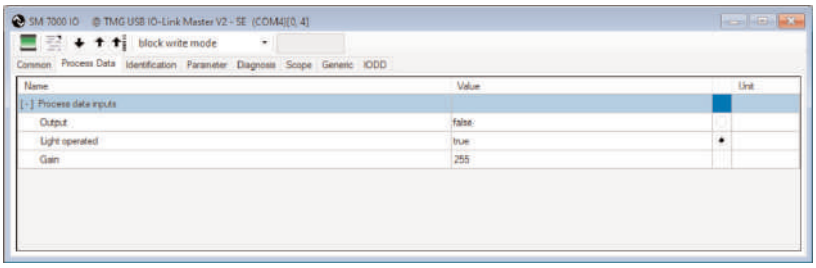
PC Programming and Monitoring

Process Data

	Name	Description	Parameters
1	Output	Indicates status of output	True / False
2	Light Operated	Indicates status of light operated selection	True / False
3	Gain	Indicates status of the gain value	0-255
4	Ctrl. Input *	Indicates status of control/test input	True / False

Note: Data marked * are applicable for SMT transmitter type only.

USB-IO Link Master 02 PC Software Screenshot



Screenshot example shown with SMP sensor type.

Telco reserves the right to change specifications without notice.