SM 9000-IO USER MANUAL SpaceMaster Series

Photoelectric DC thru beam sensors

Product Data		
Electrical Data		
	Transmitter	Receiver
Supply Voltage	10-30) V dc
Voltage ripple	+/	15%
Reverse polarity protected	Y	es
Short circuit protected	-	Yes
Power consumption	Max.	40 mA
Max. Output load	-	100 mA

Environmental Data	
Temperature, operation	-20 to +60 °C
Sealing class	IP 69K
Approvals	诺 (E

Available Models

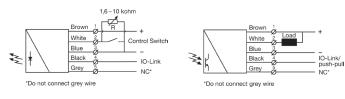
		Model	Output	Sensing Range
	Transmitter	SMT 9020C-IO	IO-Link	1 - 20 m, adjustable
	Hansmiller	SMT 9070C-IO	IO-Link	1 - 70 m, adjustable
	Descise	SMR 9420-IO	IO-Link/NPN	20 m
		SMR 9520-IO	IO-Link/PNP	20 m
Receiver	Receiver	SMR 9470-IO	IO-Link/NPN	70 m
		SMR 9570-IO	IO-Link/PNP	70 m

Connection

Transmitter

Wiring Diagrams

Receivers



SMT 90X0C-IO Variable range & test input setup



SMR 95X0-IO Transistor PNP

SMR 94X0-IO

Transistor NPN

Connection Wires/Pins				
	Cable	5 pin, M12 plug, male		
Supply +	Brown	Pin 1		
Supply -	Blue	Pin 3	● 4 3 ●	
Control /output	White	Pin 2	(⁵ ● ●1 2●	
IO-link	Black	Pin 4		
Not connected	Gray	Pin 5	Sensor plug	

Mounting & Alignment

Mounting & Alignment

- Mount the transmitter and receiver sensors facing each other. Make sure the distance 1 between the sensors does not exceed the specified sensing range of the system
- Align the sensors by moving, either the transmitter or receiver sensor, horizontally and vertically making sure they are pointing at each other until the output is: - Deactivated when no object is present. (Dark operated) 2
- Activated when no object is present. (Light operated) Fasten the transmitter and receiver sensors securely
- 3 Avoid acute angles on cable close to sensor.

Adjustments

General

The transmitter power and 4 different channels can be selected. The channel is selected via IO-Link and must be the same on corresponding transmitter and receiver. The transmitter power is selected either with the white wire or with IO-Link. The power can be from 0 to 100 %.

Output Logic

output Logio					
		(Output status	S	Yellow
Detection	Output Mode	IO-link / C/Q	PNP	NPN	LED
Object absent	Dark operated (N.O)	Low	Open	Closed	Off
Transmitter Receiver	Light operated (N.C.)	High	Closed	Open	On
Object present	Dark operated (N.O)	High	Closed	Open	On
Transmitter Receiver	Light operated (N.C.)	Low	Open	Closed	Off

Transmitter Power Adjustment

SMT 9020C-IO / SMT 9070C-IO

Maximum transmitting power can be used for most applications. Maximum transmitter power (factory set) is advised for applications with contaminated environments.

The transmitting power can be adjusted externally via the 'White' control wire of the transmitter SMT unit. The transmitter level can be adjusted using a resistor (e.g. potentiometer) of 1.6k to 10K ohm or a voltage source of 0.5 - 2.0 V dc connected respectively between the 'White' control wire and - (negative) 'Blue' supply wires. Adjustment of transmitter SMT power may be required in applications where objects to be detected are small or translucent.

Furthermore, the transmitting power can be adjusted via IO-link, under the parameter tab, using the 'Power value' parameter and the 'Power input' parameter. From the factory, the 'Power input' will be set as 'Cable', i.e. the transmitting power is adjusted externally. To control the power via IO-link, change 'Power input' to 'IO-link', and adjust the 'power value' parameter.

Proceed with the following steps:

Set transmitter power to maximum. The default setting is using the wire and it 1 should be 10K ohm or greater. 2 Select target object with the smallest dimensions and most translucent surface. Place target object between transmitter and receiver sensors. If the output status 3 changes, adjustment is not required. If the output status has not changed proceed to step 3.

Decrease the transmitter power (by reducing the resistance or lowering the 'Power value') until the output status changes. If the output status has not changed, attempt 4 to move the sensors further apart or angle one of the sensors, and then repeat procedure.

Remove target object. Observe the output status has changed. 5









PC connection

To setup or adjust a SMT/R, it is required to use TMG IO-Link Device Tool together with TMG-USB IO-Link Master, or another IO-Link PC application with its USB-adaptor.

SMT 9020C-10 @	TMG USB IO-Link Maste	r V2 - SE (COM5)[0,	1]		
<mark>-</mark> [문] + + ·	block write mode	•			
Common Process Data	a Identification Paramete	r Diagnosis Scope	Generic IODD		
Overview					
-		Vendor	Telco Sensors		
@ IO -	Link	Vendor Text	Telco Sensors		See.
•-•		Vendor ID	0x0577 URL	https://www.telcosensors.com	Telco
Device	SMT 9020C-IO				
Description	Telco Sensors				
Device ID Bitrate	0×030000	IO-Link Revision MinCycleTime	1.1 SIO mo	de yes	- T
IO Device Description					
IODD Tel	co-SMT_9020C_IO-202109	01-IODD1.1 xml		Revision V1.02	Date 2021-09-01
Connection					
Description M1	2-4 A-Coding				2.
nb name	function		color		^ (3• 1•)
1	Lplus		BN		
2	Other		WH		4•
3	Lminus		BU		M12-4
4	CQ		BK		v IVI12-4

SMR 9520-IO @ TMG USB IO-Link Ma	ster V2 - SE (COM5)[0, 4]		
📕 📑 🛨 🕈 🕇 📕 block write mo	de •		
ommon Process Data Identification Para	meter Diagnosis Scope	Generic IODD	
Overview			
	Vendor	Telco Sensors	_
ð IO -Link	Vendor Text	Telco Sensors	
			Telco
	Vendor ID	0x0577 URL https://www.telcosensors.com	sensors
			_
Device SMR 9520-IO			
Description Telco Sensors			
			and the second se
			V Rotor
Device ID 0x030300	IO-Link Revision	1.1 SIO mode yes	
Btrate COM2	MinCycle Time	500	I
IO Device Development			
IO Device Description			
IODD Telco-SMR_9520_IO-202	10901-IODD1.1.xml	Revision V1.02	Date 2021-09-01
Connection			
M12-4 A-Coding Description			^
Description			2
nb name funct	ion.	color	
1 Lolus		BN	1•)
2 Other		WH	4.
3 Lminu	8	BU	
4 CQ		вк	v M12-4

	G USB IO-Link Master V2 - SE					1		JSB IO-Link Master V2				
Port	Mode	Vendor	Device		0 1		Port	Mode	Vendor	Device		0 1
0, 4	💽 IO-Link	Telco Sensors	SMT 9020C-IO				0, 4	😧 10-Link	Telco Sensors	SMR 9520-IO		
0.2	🕑 nc						0.2	🕙 nc				
Port Config E	Vetails						Port Config Deta	als				
Vendor ID IODD	0x0577 Device ID Telco-SMT_9020C_IO-2021 Device PD Length	0x030000 Product ID 10901-00DD1.1.xml Inputs 1	SMT 9020C-IO Outputs 0	IO-Link Mode	no check			0x0577 Device ID Telco-SMR_9520_IO-20 Device PD Length	0x030300 Product ID 210901-IODD 1.1 xml Inputs 1	SMR 9520-IO Outputs 0	10-La	k Mode no check

How to connect Connect the TMG-USB IO-Link Master USB-adaptor to the USB-port of the PC and to the cable of the SMT/R.

Download the IO-Link Device Tool software and the SMT/R-IODD file from the Telco Sensors website in https://www.telcosensors.com/downloads, selecting Software in Document type section. Install the TOG IO-Link Device Tool V5.1.1-5122 SE – Setup file and run the program. Import the SMT/R-IODD by selecting "Import IODD" in the Options menu, if not already done in a previous session.

Click on "Search Master" and select the Master in the popup window.

Click on "Go Online" Click on "Check Devices" C. Click on "Takeover devices into engineering" to the SMT/R device. Double click on the row with the SMT/R, to open the Device menus.

Click on "Upload from Device" to upload the SMT/R settings. For more information see TMG's User Manual for the IO-Link Device Tool.

Popup windows:

Import IODD			×	Import IO	סכ				×
Path C:\1_TMG IO-Link\SM 9000 IO-Link\UODD SMT 9000-IO Filter Vendor ID			IODDFinder include subdirectories	Path Filter	C:\1_TMG IO-Link\SM 9000 IO-Link\IODD SMR 900 Vendor ID Device ID	00-IO Revision all	v	· · · · · ·	IODDFinder include subdirectories
KODD .	Subdirectory	Vendor ID	Device ID	ю	DD		Subdirectory	Vendor ID	Device ID
Telco-SMT_9020C_IO-20210901-IODD1.1.xml		0x0577	0x030000		co-SMR_9420_IO-20210901-IODD1.1.xml			0x0577	0x030200
Telco-SMT_9070C_IO-20210901-IODD1.1.xml		0x0577	0x030100		co-SMR_9470_IO-20210901-IODD1.1.xml			0x0577	0x030400
					co-SMR_9520_IO-20210901-IODD1.1.xml			0x0577	0x030300
				L Tel	co-SMR_9570_IO-20210901-IODD1.1.xml			0x0577	0x030500
Select all		Cancel	Import	Sele	zt all			Cancel	Import
Master Discovery			×	Check De	vices IL Engineering n		Rev IO-Link Master SMT 9020C-ł0		Rev 1.1
IO-Link Master Vendor Name Device Name	ne	A	Address	0	n				
USB TMG TE GmbH TMG USB	D-Link Master V2 - SE	C	OM5				Takeover devices into engineering		Exit
				Check De	vices IL Engineering n		Rev IO-Link Master SMR 9520-IO		Rev 1.1
							Takeover devices into engineering		Exit







Parameters

On the Parameter tab, you can set up all the parameters of the sensor.

Parameters SMT:

/W	Value		
/W	Value		
/W	Value	-	
	Value	State	Unit
vo	Restore Factory Settings		
w	CH 1 -	i.	
w	Cable 🔹	i	
w	0	i	%
w	,	/ CH1 - /	/ CH1 · i / Cable · i

Parameters SMR:

Common Process Data Identification Parameter Diagnosis Scope Generic IODD					
Name	R/W	Value		State	Unit
System Command	wo	Restore Factory Settings			
Channel	rw	CH 1	-	i	
Light operated	rw	true	-	i	
On delay	rw	0.0		i.	S
Off delay	rw	0.0		i	s
Oneshot time	rw	0.0		i.	S
Forced output	rw	true	-	i	
Forced value	rw	true	-	i	

Standard Command - Restore Factory Settings Restores all user-settings to default values.

Channel

SM 9000 can run in 4 different channels. The same channel should be selected for matching SMT and SMR.

Power input

Select between Cable and IO-Link to control the power of the SMT 9000.

Power value

Select a value for how much power the SMT 9000 should send with. From 0 to 100 %

Light Operated

Select between true or false. Changing the selection will invert the outputs.

Off delay

On delay Select delay on output when going from object absent to object present. Can be set from 0.1 to 600.0 seconds.

Select delay on output when going from object present to object absent. Can be set from 0.1 to 600.0 seconds.

Oneshot time Select how long time the outputs will be active when going from object absent to object present. Can be set from 0.1 to 600.0 seconds.

Forced output

Select if the output should be forced to the value in Forced value.

Forced value

Select the output state if the Forced output is true.

Website: www.telcosensors.com E-Mail: info@telcosensors.com Made in Denmark



Telco

Process Data

SMT 9020C-IO @ TMG USB IO-Link Master V2 - SE (COM5)[0, 4]		
Image: State		
Name	Value	Unit
[-] Process data inputs		
Power	100	%

SMR 9520-IO @ TMG USB IO-Link Master V2 - SE (COM5)[0, 4]			x
E E I I I I I I I I I I I I I I I I I I			
Common Process Data Identification Parameter Diagnosis Scope Generic IODD			
Name	Value	Unit	
[-] Process data inputs			
Output	false	0	

Power Shows the transmitters power setting from 0 to 100%

Output Shows the state of the receiver output. It follows the state of the yellow led.

Identification

On the Identification tab, you will see the information about the sensor

E ≥ + + + block write mode				
ommon Process Data Identification Parameter Diagnosis Scope Generic IODD				
Name	R/W	Value	State	Unit
Vendor Name	ro	Telco Sensors	i.	
Vendor Text	ro	https://www.telcosensors.com	i	
Product Name	ro	SMT 9020C-IO	i	
Product Text	ro	Telco Sensors	ï	
Firmware Revision	ro		1	
Function Tag	rw		i	
Location Tag	rw		i	
Application-specific Tag	rw		i	
Production year	ro	0	i	
Production month	ro	0	i	

SMR 9520-IO @ TMG USB IO-Link Master V2 - SE (COM5)[0, 4]				
E ≥ + + + I block write mode				
Common Process Data Identification Parameter Diagnosis Scope Generic IODD				
Name	R/W	Value	State	Unit
Vendor Name	ro	Telco Sensors	1	
Vendor Text	ro	https://www.telcosensors.com	i.	
Product Name	ro	SMR 9520-IO	1	
Product Text	ro	Telco Sensors	i	
Firmware Revision	ro		i	
Function Tag	rw		i.	
Location Tag	rw		i	
Application-specific Tag	rw	***	i.	
Production year	ro	0	i	
Production month	ro	0	1	





Diagnosis

SMT 9020C-IO @ TMG USB IO-Link Master V2 - SE (COM5)[0, 4]				
E ≥ + + + block write mode -				
Common Process Data Identification Parameter Diagnosis Scope Generic IODD				
Name	R/W	Value	State	Unit
Device Status	ro		е	
Detailed Device Status [1]	ro		е	

SMR 9520-IO @ TMG USB IO-Link Master V2 - SE (COM5)[0, 4]				, • 💌
E E + ↑ ↑ block write mode				
Common Process Data Identification Parameter Diagnosis Scope Generic IODD				
Name	R/W	Value	State	Unit
Device Status	го		е	
Detailed Device Status [1]	го		e	

Device Status "Device is OK" will show at the "Device Status" under normal operation. "Failure" will show in the SMT menu if it has a failure on the light emitting diode. "Maintenance required" will show in the SMR menu if it has a "Signal Alarm". This happens if the signal has less than 40% excess gain for more than 3 seconds.

