SM 9000-IO USER MANUAL
SpaceMaster Series
Photoelectric DC thru beam sensors

EN

Product Data

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

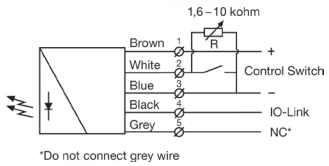
Environmental Data	
Temperature, operation	-20 to +60 ºC
Sealing class	IP 69K
Approvals	UK CA CE

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

Connection

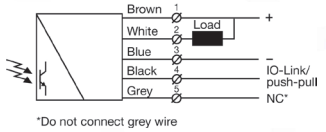
Wiring Diagrams

Transmitter

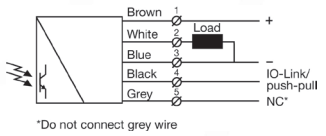


SMT 90X0C-IO
Variable range & test input setup

Receivers



SMR 94X0-IO
Transistor NPN



SMR 95X0-IO
Transistor PNP

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

Mounting & Alignment

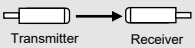
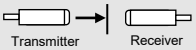
Mounting & Alignment	
1	Mount the transmitter and receiver sensors facing each other. Make sure the distance between the sensors does not exceed the specified sensing range of the system.
2	Align the sensors by moving, either the transmitter or receiver sensor, horizontally and vertically making sure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

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

1	Set transmitter power to maximum. The default setting is using the wire and it should be 10K ohm or greater.
2	Select target object with the smallest dimensions and most translucent surface.
3	Place target object between transmitter and receiver sensors. If the output status changes, adjustment is not required. If the output status has not changed proceed to step 3.
4	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 to move the sensors further apart or angle one of the sensors, and then repeat procedure.
5	Remove target object. Observe the output status has changed.

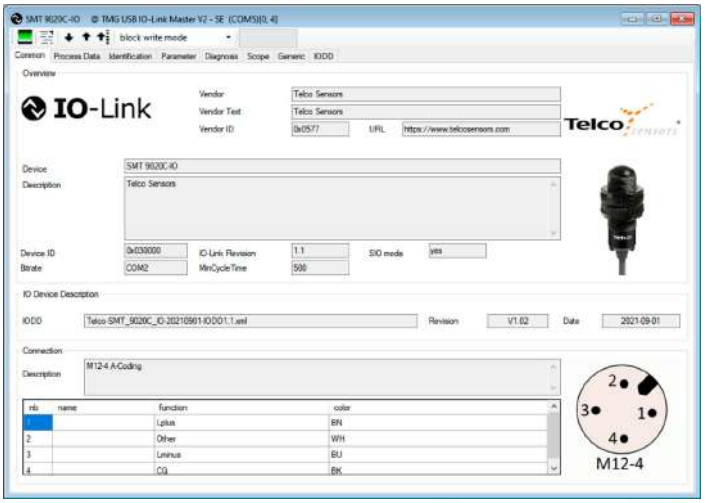
Warning

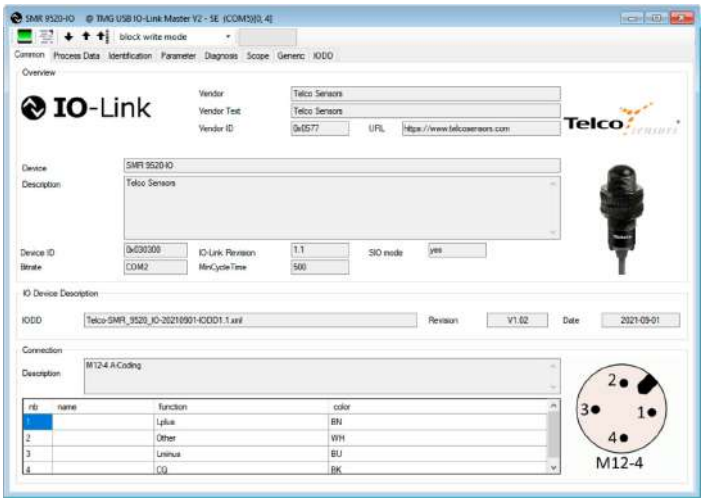
This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

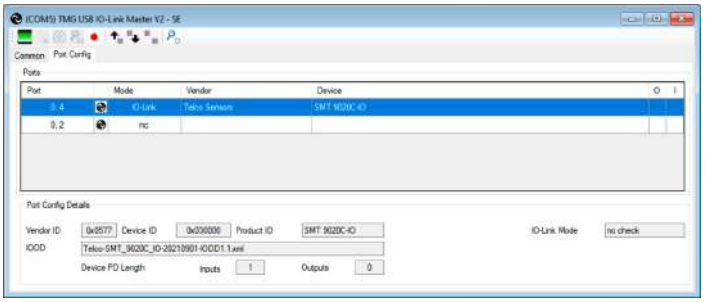
V.1.3 Part Number: L40-0666220955
June 2022 edition
Telco A/S reserves the right to make changes without prior notice

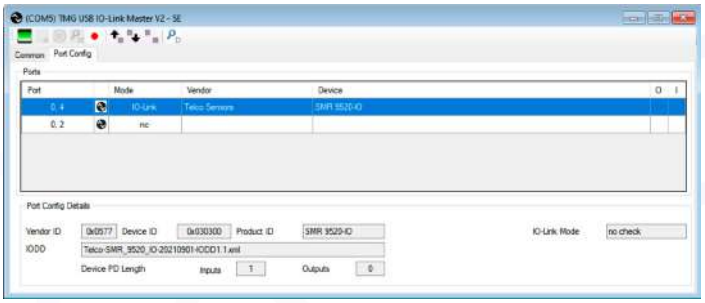
PC connection

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.









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 TMG 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.

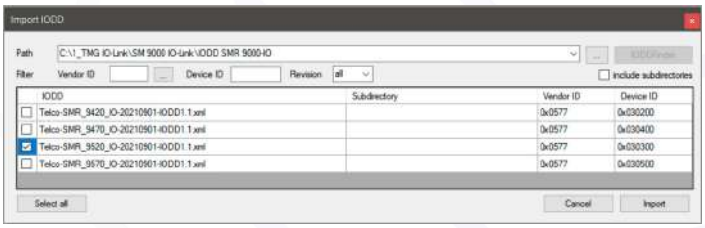
Click on “Search Master” and select the Master in the popup window.

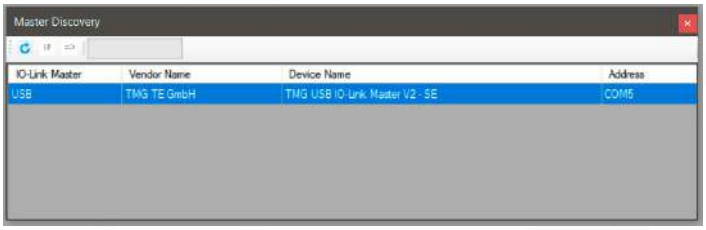
Click on “Go Online” .

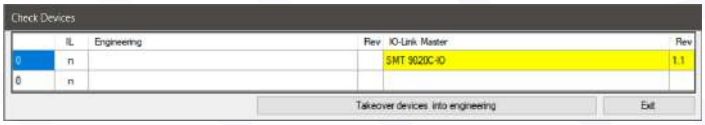
Click on “Check Devices” .
Click on “Takeover devices into engineering” to the SMT/R device.
Double click on the row with the SMT/R, to open the Device menus.

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:







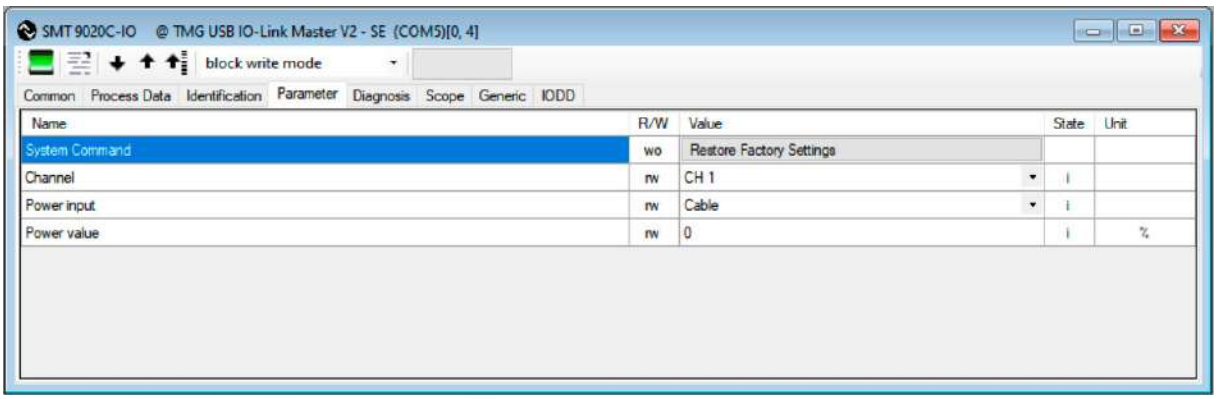
Warning
This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

V.1.3 Part Number: L40-0666220955
June 2022 edition
Telco A/S reserves the right to make changes without prior notice

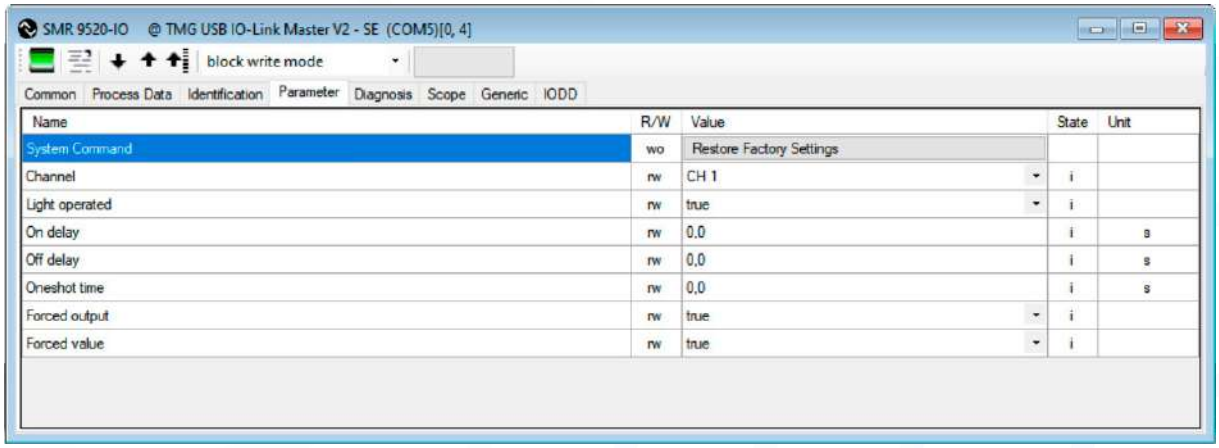
Parameters

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

Parameters SMT:



Parameters SMR:



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.

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

Off delay
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.

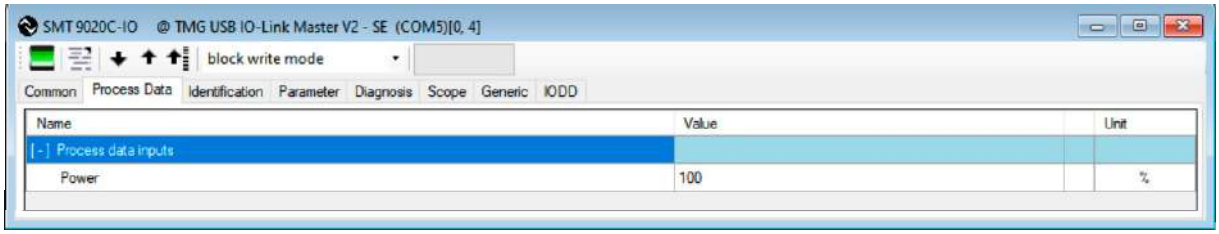
Forced output
Select if the output should be forced to the value in Forced value.

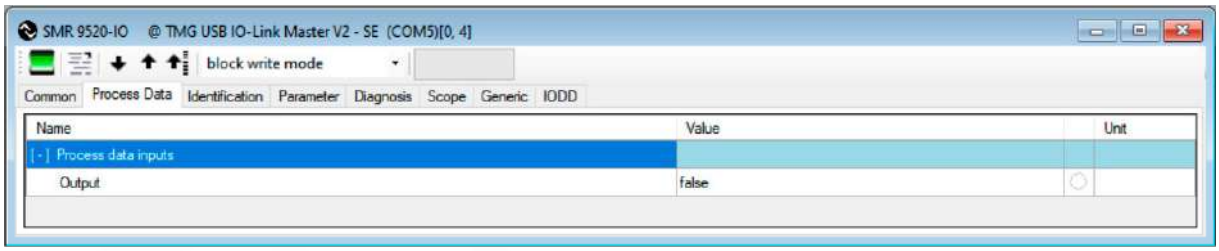
Forced value
Select the output state if the Forced output is true.

Warning
This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

V.1.3 Part Number: L40-0666220955
June 2022 edition
Telco A/S reserves the right to make changes without prior notice

Process Data



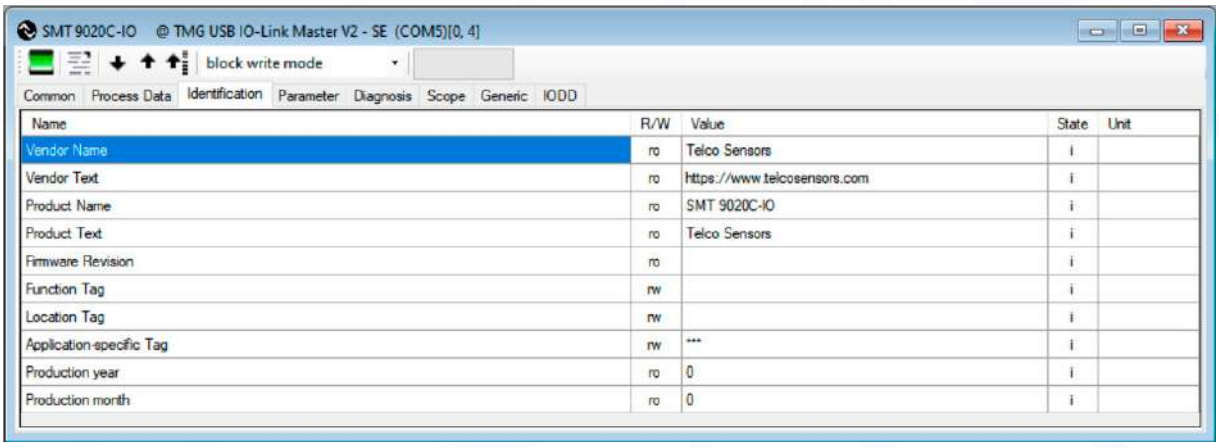


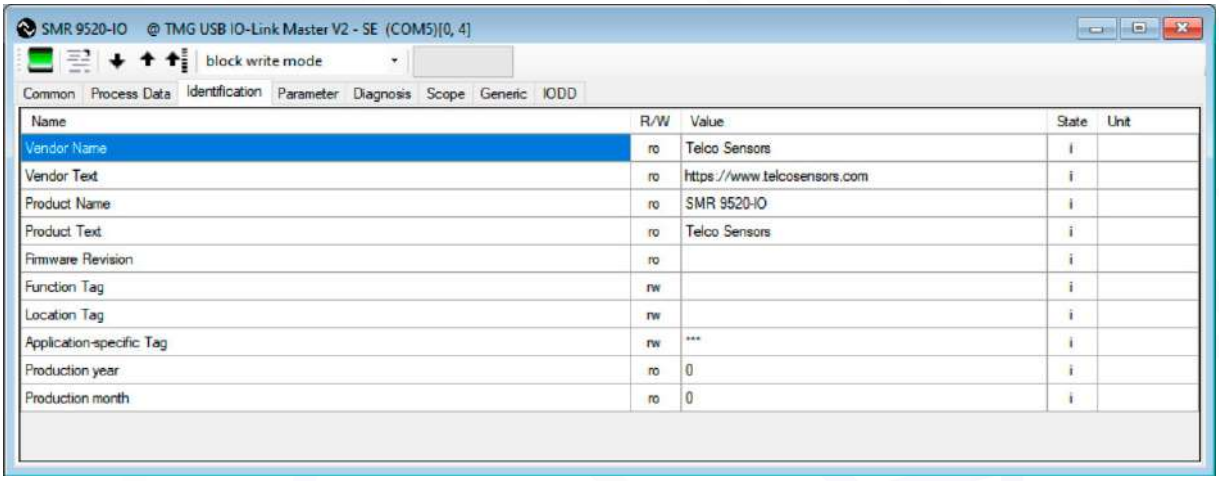
Power
Shows the transmitters power setting from 0 to 100%

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

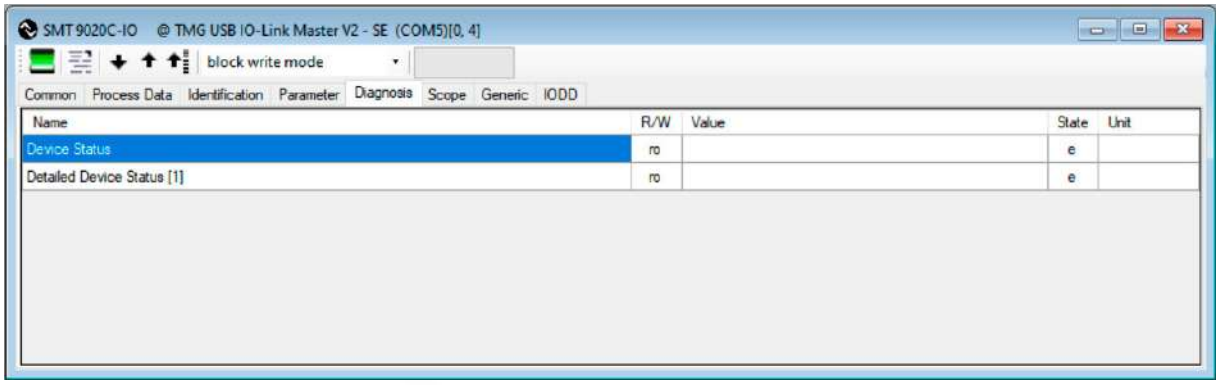


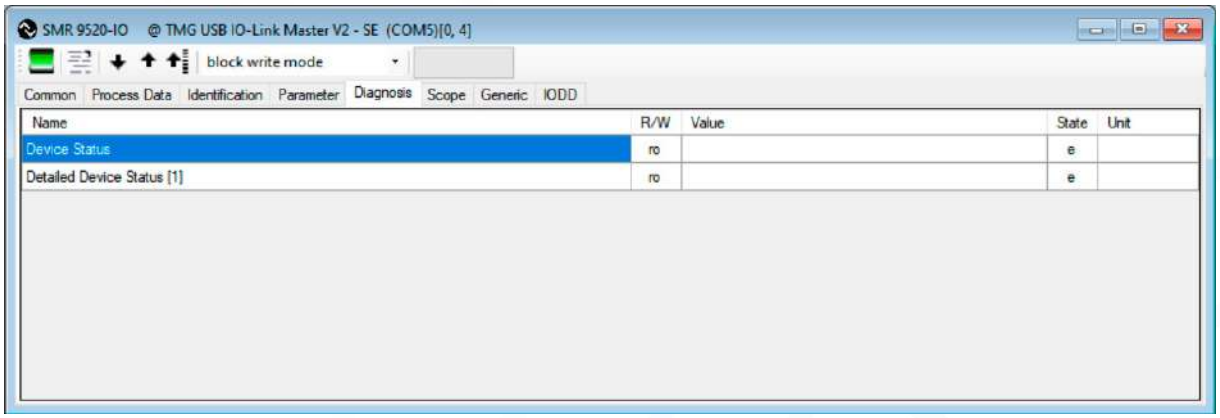


Warning
This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

V.1.3 Part Number: L40-0666220955
June 2022 edition
Telco A/S reserves the right to make changes without prior notice

Diagnosis





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.

Warning

This device is not to be used for Personnel Protection in Machine Guarding Safety applications. This device does not include the self-checking redundant circuitry necessary to allow its use in personnel machine guarding stand-alone safety applications.

V.1.3 Part Number: L40-0666220955

June 2022 edition

Telco A/S reserves the right to make changes without prior notice

Sensor Partners BV
James Wattlaan 15
5151 DP Drunen
Nederland

+31 (0)416 - 378239
info@sensorpartners.com
sensorpartners.com

BTW NL807226841B01
BANK NL93HAND0784527083
KVK 18128491