SS 01 - IO - USER MANUAL Space Scan Series

Photoelectric measurement light curtains

Product D)ata						
Troduct	Julu						
Electrical D	Data						
			SST (Transm	nitter) S	SR (Receiver)		
Supply volta	age			12 – 30 V dc			
Max. Voltag	e ripple		15	% (within supply ra	ange)		
Current con	sumption		100 mA (RI	MS)	50 mA		
Max. output load (Q1)		-		100 mA			
Reverse polarity protected				Yes			
Short circuit protected							
Inductive loa	ad protection		-		Yes		
Environme	ntal Data						
Light immur	nity @5° incidence			> 100.000 lux			
Temperatur	e, operation		-30 to + 60 °C				
Sealing clas	S		IP 67				
Mandala a							
Marking			čâ (t				
Available N	lodels						
		Model		Beam spacing	Sensing Range		
	SST 01-10-xxx-	xxx-0	5-H-1D1-0.5-J5	5 mm			

Transmitter	SST 01-10-xxx-xxx-10-H-1D1-0.5-J5	10 mm	10 m
	SST 01-10-xxx-xxx-20-H-1D1-0.5-J5	20 mm	
	SSR 01-10-xxx-xxx-05-H-IO-0.5-J5	5 mm	0 m – 4 m
Receiver	SSR 01-10-xxx-xxx-10-H-IO-0.5-J5	10 mm	or
	SSR 01-10-xxx-xxx-20-H-IO-0.5-J5	20 mm	1 m – 10 m

Connection

Wiring Diagrams





SST and SSR 5 pole M12 male connector

Transmitter Model	Black wire	Black wire	Black wire
	connected to (-)	not connected	connected to (+)
SST 01-10-xxx-xxx-xx-H-1D1-0.5-J5	not transmitting	transmitting	transmitting





Installation

EN

The light curtain is configured by the PC program 'IO-Link Device Tool V5.1' from TMG, described in the following pages. Before using it, check the power supply complies with electrical data.

- Mount the transmitter (SST) and receiver (SSR) facing each other and correctly aligned. 1
- Wire the sensor according to the wiring diagram. Notice that the pin 3 on the SSR and the pin 3 on SST (blue wires) must be connected to a common GND (–). Make sure the SSR output load does not exceed 100 mA. 2
- 3 Check for correct wiring before turning power on.
- When the power on indicator (green LED) on SSR and SST is on, the system is 4 operating.
- The position of the receiver and transmitter must not be changed after power-up. The light curtain is only intended for static applications. 5

SST Test Input

The transmitter SST can be externally disabled and enabled via the black control wire for test purposes. When the transmitter is disabled the action of the receiver corresponds to breaking all beams.

Indicators

oon	ReuLED	Status indicator				
SSR	Yellow LED	Follows state of Digital Output 1				
SSR & SST	Green LED	Power on indicator				
Troubleshooting						
Probable Re	eason	Corrective Action				
1. Symptom: Status indic	cator (Red LED) on SS	SR is constant on.				
SST has no power.		Check supply and supply cable to the SST				
SST & SSR white, grey and blue wires are not connected correctly.		Connect the wires.				
2. Symptom: Output indi	icator (Yellow LED) on	SSR is flashing.				
Severe electrical interfer	rence.	Separate SSR and SST supply cable from high voltage cables.				
Severe ambient light.		Swap position of SSR and SST.				
Cross talk from another photo sensor	light curtain or	Swap position of SSR and SST.				
Cross talk from a nearby	/ HF strip light	Swap position of SSR and SST or remove the strip light.				
3. Symptom: Digital outp	outs do not response w	when IR beams are obstructed.				

One or more beams are blocked, or the Remove obstruction or reduce the distance rails are out of sensing range. between the rails. Remove SST pin 4 (black wire) from ground. The test input on SST is activated If needed, factory reset the SSR using the Parameter tab in the PC program '

Outputs are not configured for simple detection of obstructions



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.







SSR 01-IO and PC connection

To setup or adjust a SS 01-IO, 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.

File	Options View Help	Log	ged in as Specialist -			- 3 >
DM5) TMG US	BIO-Link Master V2 - TS				Topology	Search Master
ommon Port (Ports	R. ● I ↑ ■ ■ ∮ Config	3 ₀			0.** 6-	USB ↔ (COM5) TMG USB IO-Link Master V2 ·
Port	Mode	Vendor	Device		0 1	
0.4	🕄 K) Link	Telco Sensora	SpaceScan			
					Catebo D D D D D D D D D D D D D D D D D D D	Riter O Take Take
Fort Config D Vendor ID IODD	etala <u>0x0677</u> Device ID Telco-SS01-ID_B1-20230	0x050100 Product ID 106402D1.1.xml	5501-0 B1	IO-Link 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 SS 01-IO.

Please contact to your Telco Sensors supplier for the IODD files and TMG IO-Link Device Tool. Install the TMG IO-Link Device Tool V5.1.1-5122 SE – Setup file and run the program. Import the SS 01-IO-IODD files selecting all of them and "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 SpaceScan (SS 01-IO) device. Double click on the row with the SS 01, to open the Device menus.

Click on "Upload from Device" + to upload the SS 02 settings.

For more information see TMG's User Manual for the IO-Link Device Tool.

Popup windows:

Import	IODD			×	Master Discovery			×
Path	C:\temp		×	IODDFinder	C IP =>			
Filter	Vendor ID Device ID Revision all	~	C) include subdirectories	IO-Link Master	Vendor Name	Device Name	Address
	KODD	Subdirectory	Vendor ID	Device ID	USB	TMG TE GmbH	TMG USB IO-Link Master V2 - TS	COM6
	Telco-SS01-IO_B1-20230608-IODD1.1.xml		0x0577	0x050101				
	Telco-SS01-IO_82-20230608-IODD1.1.xml		0x0577	0x050201				
	Telco-SS01-IO_B3-20230608-IODD1.1.xml		0x0577	0x050301				
	Telco-SS01-IO_B4-20230608-IODD1.1.xml		0x0577	0x050401				
	elect al		Cancel	Import				

r	Check Dev	rices					
		IL	Engineering	Rev	IO-Link Master		Rev
	0	n			SpaceScan		1.1
	0	n					
4			(Takeo	ver devices into engineering	Exit	



Warning

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



Telco

Parameters

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

General settings

~							
File Options View Help Logged in as Spec	ialist	•					- 8)
COM4) TMG USB IO-Link Master V2 - SE COM4)(0, 4) SpaceScan						Topology	Search Master
■ = + + + block write mode +						🖂 +++ USB	
Common Process Data Identification Parameter Diagnosis Scope Generic IODD						E (COM4) TMG U	SB KHunk Master V2
Name	R/W	Value		State	Unit	- C (u, +) spans	Cacart
Range	10	Long		d	NATE:		
Scan Mode	TW	Crossed Beam Scanning		d			
Hole detection	TW	fake	-	d			
[-] SIO							
SID Light Operated	10	true		d		Catalog	Ches.
SIO. Mmmum coherent area	7.0	0		d			/ Rel
Si0.On delay	TW.	0.00		d	6	- Br C] Master	
SUC/m delay SUC/m delay SUC/meednal time		0,00		d	9	8-C) Telco Sensors	
		0.00		d	8	E C] 55 0140	r:
SIO.Force Set Enable	rw.	fake	-	d	1.1	alk ji ma relatori	
SIO.Forced On	78	false		d			
- Channel 1							
Channel 1 Light Operated	79	true		d			
Channel 1.Minimum coherent area	TW.	1	1	d			
Channel 1.On delay	rw.	0,00		d	3		
Channel 1.0ff delay	-	0,00		d.	8		
Channel 1.Oneshot time	SW.	0.00		d.	18		
Channel 1.Force Set Enable	78	false		d			
Channel 1.Forsed On	10	false		d			
System Command	wu	Measure Banking From Light Curtain					
[-] Write Blanking to Light Curtain							
Blanking [1]	til.	0		d			
Blanking (2)	in.	0		d			
Blanking [3]	rw.	0		d			
Filenismo (4)	500	0	1	d			

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

Range

Select short or long range. In both cases with autogain, but different target excess gain. Long range setting is used for rough applications with risk of false obstructions, short range is selected if for more delicate applications, where there is risk of bypass of light.

Scan mode

Select between Parallel or Cross beam

On cross beam mode, the number of actual beams is increased from N straight beams to (3*N)-2 beams giving a denser beam pattern, with larger detection certainty If objects are positioned in the centre, or close to the centre, between transmitter and receiver the measurement resolution is increased to the double, i.e. the crossed beam mode adds an additional virtual beam between each of the straight beams, in total N-1 extra virtual beams. When crossed beam mode is selected the number of beams is increased to (2*N)-1 in total.

Hole detection If Hole Detection is activated, the status of all beams will be individually inverted, that means that 'made beams' are converted to 'broken beams' (and inversely), whereby holes (unbroken beams) will be perceived as objects obstructing beams for the following analysis

Light operated

Operation mode of the output channel.

Minimum coherent area

The Smoothing Function tells the SSR to ignore objects which are smaller than a specific size. If the Smoothing Function is set to 3, any object that interrupts 3 or less adjacent beams will be ignored. Smoothing can be used, e.g., to ignore interference caused by wood chips while sawing a log. The effect is obtained by a pre-processing of the beam's status where all groups of adjacent broken beams with less than or equal to 3 beams are substituted by made beams. This smoothing function is carried out after the 'hole detection' pre-processing.

On delay

Delay in seconds of the output switching when an object enters the beams. Minimum value 0.01 s = 10 ms, maximum 60.00 s.

Off delay

Delay in seconds of the output switching when an object is moving out of the beams. Minimum value 0.01 s = 10 ms, maximum 60.00 s.

One shot time

The time the output is activated when an object enters the beams. Minimum value 0.01 s = 10 ms, maximum 60.00 s.

Force set enable

The output of the channel can be forced to specific value if set to true.

Forced On

The output of the channel is forced to On (true) if the value true is selected, otherwise it is Off (false).

Standard Command - Measure Blanking from Light Curtain

When the 'Measure Blanking from Light Curtain' is pressed, those beams that are obstructed, will be blanked out permanently, which means that their beam status will be ignored, until their blanking status is changed again.

Blanking [1]

Each of the 8 bits of this byte corresponds to the blanking status of each of the straight beams. Bit 0 corresponds to 'not blanked' and bit 1 corresponds to 'blanked'. The crossed beams between blanked straight beams are automatically blanked.

Note: It is recommended to press "Download to Device" after every change in the parameters tab to ensure that the settings have been stored in the SS 02.





Process data

On the Process data tab, you will see status of standard IO (SIO) and the output of the digital channel that are not corresponding to any physical output. Short Range indicate which range is selected in the Parameter tab. The data field 'Error' is true if the supply voltage is too low or there is a synchronization failure. Further details can be seen under 'Diagnosis tab'. The number of the maximum contiguously blocked beams. The status of the beams are given as bits in one or more bytes, depending on the total number of beams. A bit which is 1 corresponds to an unbroken beam and 0 corresponds to a broken beam. The least significant bit is closer to the cable end.

File Options View Help Logged in as Sp	ecialist 🔹			- ē >
COM4) TMG USB IO-Link Master V2 - SE (COM4)[0, 4] SpaceScan			Topology	Search Master
□ □ ↓ ↑ Identification ↓ Common Process Data Identification Parameter Diagnosis Scope Generic IODD				TMG USB IO-Link Master V2 1 SpaceScan
Name	Value	Unit		• • • • • • • • • • • • • • • • • • •
[-] Input and Output Status				
SIO	true	۲		
Channel 1	true	۲		
Short Range	false	0		
Crossed Beam Scanning	false	0	Catalog	Filter
Error	false	0		
Contiguous Beams Blocked	0		🗄 🗂 IO-Link	
Beams 1 to 8	255		I Telco S	ensors
Beams 9 to 16	0		tima i	E GMDH
Beams 17 to 24	0			
Beams 25 to 32	0			

Identification

On the Identification tab, you will see the information about the light curtain.

COM9) TMG USB IO-Link Master V2 - TS COM9)[0, 4] SpaceScan					Topology	Search Master
■ + + block write mode • Common Process Data Identification Parameter Diagnosis Scope Generic						
Name	R/W	Value	State	Unit		
Vendor Name	o	Telco Sensors	d			
Vendor Text	ro	https://www.telcosensors.com	d			
Product Name	ro	SpaceScan	d			
Product ID	ro	SS 01-IO B1	d			
Product Text	ro	Telco Light Curtain	d			
Firmware Revision	ro	SS 01-IO v1.04	d		Catalog	Filter
Production Year	o	2000	d		⊕-C] Master	
Production Month	ro	0	d		ii -⊂] IO-Link	
iRed Spacing	01	20	d	mm		
iRed Count	ro	8	d			
Function Tag	rw.		d			
Location Tag	rw		d			
Application-specific Tag	rw	***	d			
System Command	wo	Application Reset				



Warning