Your Global Automation Partner

TURCK

uprox
Inductive Sensors

IO-Link Parameters – IO-Link Version 1.1

Contents

Contents

Hans Turck GmbH & Co. KG | T +49 208 4952-0 | F +49 208 4952-264 | more@turck.com | www.turck.com

1 About This Manual

This manual describes the parameterization of devices using IO-Link. The manual contains general information on IO-Link and a list of the available parameters.

1.1 Target groups

These instructions are aimed a qualified personal and must be carefully read by anyone mounting, commissioning, operating, maintaining, dismantling or disposing of the device.

1.2 Explanation of symbols used

The following symbols are used in these instructions:

	**DANGER** DANGER indicates a dangerous situation with high risk of death or severe injury if not avoided.
	**WARNING** WARNING indicates a dangerous situation with medium risk of death or severe injury if not avoided.
	**CAUTION** CAUTION indicates a dangerous situation of medium risk which may result in minor or moderate injury if not avoided.
	**NOTICE** NOTICE indicates a situation which may lead to property damage if not avoided.
	**NOTE** NOTE indicates tips, recommendations and useful information on specific actions and facts. The notes simplify your work and help you to avoid additional work.
▶	**CALL TO ACTION** This symbol denotes actions that the user must carry out.
⇨	**RESULTS OF ACTION** This symbol denotes relevant results of actions.

1.3 Other documents

Besides this document the following material can be found on the Internet at www.turck.com:

- Data sheet
- Instructions for use

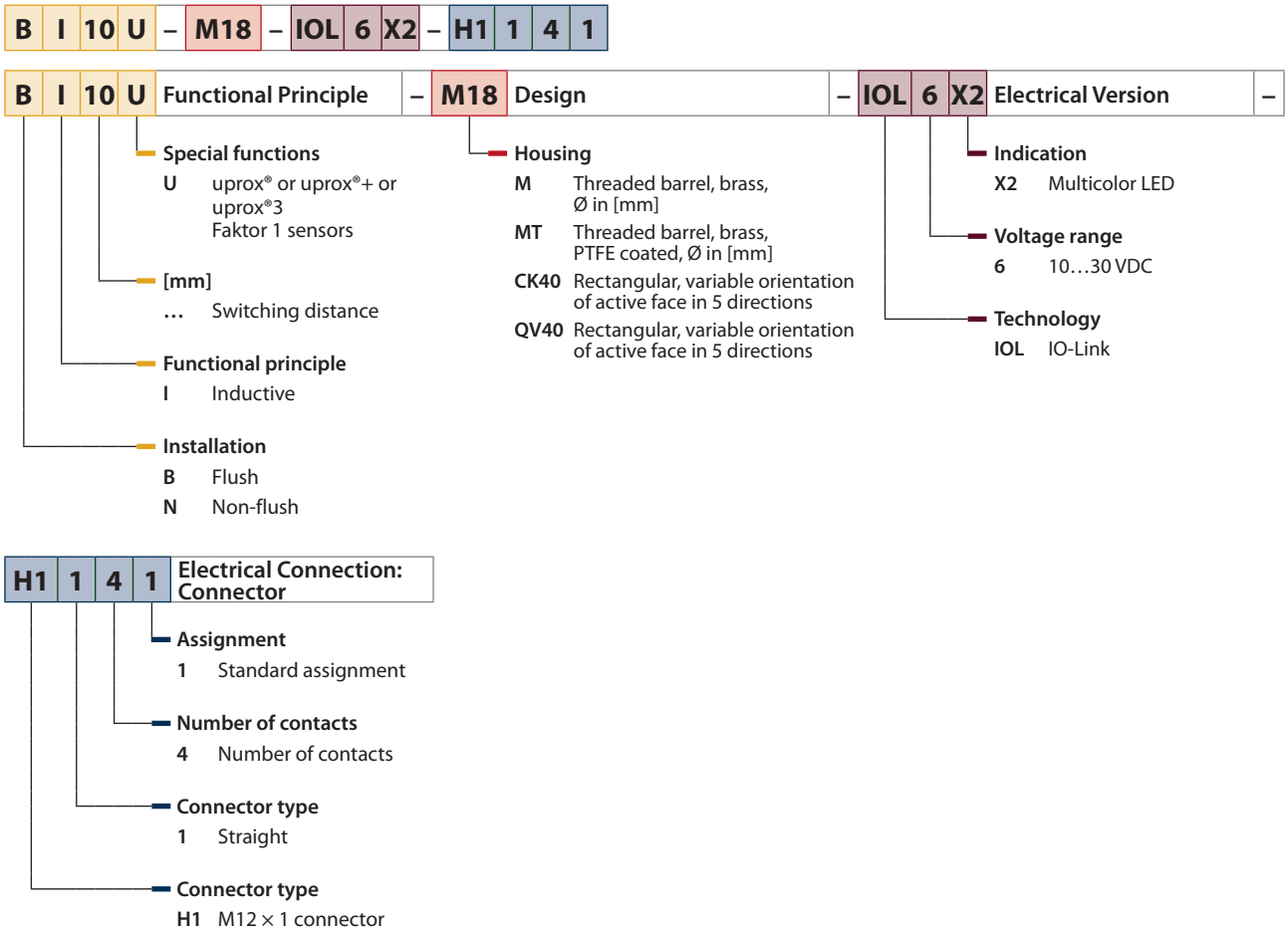
1.4 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to techdoc@turck.com.

2 Notes on the Product

2.1 Product identification

These instructions apply to the following inductive sensors:



2.2 Manufacturer and service

Hans Turck GmbH & Co. KG
Witzlebenstraße 7
45472 Muelheim an der Ruhr
Germany

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats. You can access the product database at the following address: www.turck.de/products
For further inquiries in Germany contact the Sales and Service Team on:

- Sales: +49 208 4952-380
- Technology: +49 208 4952-390

Outside Germany, please contact your local Turck representative.

3 Software-supported IO-Link Parameter Setting

The ports of the IO-Link master can be configured in IO-Link mode (IOL) or in the standard-IO mode (SIO).

If a port is configured in SIO mode, the IO-Link master on this port behaves like a normal digital input. The connected IO-Link device sends the standard switching output to the IO-Link master – there is no communication between the device and the master.

If the port is configured in IOL mode, the IO-Link master tries to "wake" the connected IO-Link device using the "wake-up request." If the master receives a response from the signal processor, master and device start to communicate with each other. First the communication parameters are exchanged, and then the cyclic data exchange of process data (objects) starts.

In the case of active IO-Link communication (IOL mode), both cyclic and acyclic communication services are available.

Parameterization via IO-Link can occur in two different ways:

- via on-request data objects (e.g. IO-Link function block close to the control)
- via tool-based engineering using FDT/DTM (e.g. PACTware™ with the use of DTM or the IODD)

Device parameters (on-request data objects)

Device parameters are exchanged in an acyclic manner and upon the request of the IO-Link master. The IO-Link master always sends a request to the device first, and then the device responds. This is the case when the data is both written into the device and read from the device. With the help of on-request data objects (ORDO), the parameters can be written into the device (write) or the device status can be read from the device (read).

IO-Link configuration in PROFINET

Using SIDI (Simple IO-Link Device Integration), IO-Link devices can be configured in PROFINET applications directly in the programming environment (e.g. TIA Portal). The Turck IO-Link devices are integrated in the GSDML file of the IO-Link masters in the TBEN, TBPN and FEN20 product series and can be configured in the programming environment as submodules of a modular I/O system. During this process, the user has access to all device properties and parameters.

4 IO-Link Parameters

4.1 General parameters

Parameter	Content
Vendor ID	317 (0x13D)
Device ID	851969 (0xD0001)
IO-Link version	1.1
Bitrate	COM2 (38.4 kbit/s)
Minimum cycle time	8 ms
SIO supported	True
M-Sequence Capability	PREOPERATE = TYPE_1_V with 8 byte on-request data ISDU supported
Block Parameter	True
Data Storage	True

4.2 Process input data

Name	Byte.Bit-offset	Bit Length	Subindex access supported	Data Type	Value	Description
Output 1	0.0	1	False	Boolean	false/true	
					false	inactive
					true	active
Output 2	0.1	1	False	Boolean	false/true	
					false	inactive
					true	active
active switchpoint	0.2	3	False	UInteger	0...5	
					0	target not detected
					1	100 %
					2	80 %
					3	60 %
					4	40 %
					5	20 %
Start-up Delay	0.5	1	False	Boolean	false/true	
					false	inactive
					true	active
Temperature Alert	0.6	1	False	Boolean	false/true	
					false	inactive
					true	active
Inspection Alert	0.7	1	False	Boolean	false/true	
					false	inactive
					true	active
Application Specific Tag (first character)	1.0	8	False	String		

4.3 Standard parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit-offset	Bit Len-gth	Data Type	Value	Default	Description
Min Cycle Time	0	0x0	3	0x3	True	read	2.0	8	UInteger			
IO-Link Ver-sion ID	0	0x0	5	0x5	True	read	4.0	8	UInteger		17	
Vendor ID 1	0	0x0	8	0x8	True	read	7.0	8	UInteger			
Vendor ID 2	0	0x0	9	0x9	True	read	8.0	8	UInteger			
Device ID 1	0	0x0	10	0xA	True	read	9.0	8	UInteger			
Device ID 2	0	0x0	11	0xB	True	read	10.0	8	UInteger			
Device ID 3	0	0x0	12	0xC	True	read	11.0	8	UInteger			
Standard Command	2	0x2	0	0x0	True	write	0.0	8	UInteger	0...159		System command
										128		Device Reset
										129		Application Reset
										130		Restore Fact-ory Settings
Parameter (write) Access Lock	12	0xC	1	0x1	False	read/ write	0.0	1	Boolean	false/ true		Device access locks
Data Storage Lock	12	0xC	2	0x2	False	read/ write	0.1	1	Boolean	false/ true		Device access locks
Local Para-meterization Lock	12	0xC	3	0x3	False	read/ write	0.2	1	Boolean	false/ true		Device access locks
Local User Interface Lock	12	0xC	4	0x4	False	read/ write	0.3	1	Boolean	false/ true		Device access locks
Vendor Name	16	0x10	0	0x0	True	read	0.0	512	String		Turck	Vendor name
Vendor Text	17	0x11	0	0x0	True	read	0.0	512	String		www. turck. com	Additional manufacturer information
Product Name	18	0x12	0	0x0	True	read	0.0	512	String		uprox®	Manufac-turer's device designation
Product ID	19	0x13	0	0x0	True	read	0.0	512	String			Ident-No.
Product Text	20	0x14	0	0x0	True	read	0.0	512	String		Induct-ive Sensor for IO-Link	Device category
Serial Number	21	0x15	0	0x0	True	read	0.0	128	String			Device serial number
Firmware Ver-sion	23	0x17	0	0x0	True	read	0.0	512	String			Firmware revision

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit-offset	Bit Len-gth	Data Type	Value	Default	Description
Application Specific Tag	24	0x18	0	0x0	True	read/ write	0.0	32	String			Any user generated content
Process Data Input	40	0x28	0	0x0	True	read	0.0	0	Process-DataIn-Union			

4.4 Parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit Offset	Bit Len-gth	Data Type	Value	Default	Description
Output 2 usage	64	0x40	1	0x1	True	read/ write	3.3	1	Boolean	false/ true	true	
										false		disabled
										true		enabled
PNP / NPN / Push-Pull	64	0x40	2	0x2	True	read/ write	3.4	2	UInteger	0...2	0	
										0		PNP
										1		push-pull
										2		NPN
Inversion	64	0x40	3	0x3	True	read/ write	3.7	1	Boolean	false/ true	true	
										false		N.O. / non-inverted
										true		N.C. / inverted
Output 1 usage	64	0x40	4	0x4	True	read/ write	2.3	1	Boolean	false/ true	true	
										true		enabled
PNP / NPN / Push-Pull	64	0x40	5	0x5	True	read/ write	2.4	2	UInteger	0...2	0	
										0		PNP
										1		push-pull
										2		NPN
Inversion	64	0x40	6	0x6	True	read/ write	2.7	1	Boolean	false/ true	false	
										false		N.O. / non-inverted
										true		N.C. / inverted
Switch Point 2	64	0x40	7	0x7	True	read/ write	1.0	8	UInteger	0...4	0	
										0		100 %
										1		80 %
										2		60 %
										3		40 %
										4		20 %
Switch Point 1	64	0x40	8	0x8	True	read/ write	0.0	8	UInteger	0...4	0	
										0		100 %
										1		80 %
										2		60 %
										3		40 %
										4		20 %
Operating Mode	64	0x40	9	0x9	True	read/ write	0.0	3	UInteger	0...4	0	
										0		One Switching Point

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit Offset	Bit Len-gth	Data Type	Value	Default	Description
										1		Two Switching Points
										2		Low res. Analoge Mode
										3		Rotation Speed Monitor
										4		Impulse Divider
Application High Temp. Alert	65	0x41	1	0x1	True	read/ write	3.0	8	Integer	NaN... NaN	70	
Application Low Temp. Alert	65	0x41	2	0x2	True	read/ write	2.0	8	Integer	NaN... NaN	-25	
Maximum Specified Temperature	65	0x41	3	0x3	True	read/ write	1.0	8	Integer	NaN... NaN	70	
Minimum Specified Temperature	65	0x41	4	0x4	True	read/ write	0.0	8	Integer	NaN... NaN	-25	
Temperature Unit	65	0x41	5	0x5	True	read/ write	0.0	2	UInteger	0...2	0	
										0		°C
										1		°F
										2		K
Actual Pulses [1/min]	66	0x42	1	0x1	True	read	0.0	16	UInteger	NaN... NaN		
Actual Sensor Temperature	66	0x42	2	0x2	True	read	2.0	8	Integer	NaN... NaN		
Pulses per minute upper limit [10...30000/ min]	67	0x43	1	0x1	True	read/ write	4.0	16	UInteger	10... 30000	30000	
Pulses per minute lower limit [0...30000/ min]	67	0x43	2	0x2	True	read/ write	2.0	16	UInteger	0... 30000	0	
Start-up Delay [0...60000ms]	67	0x43	3	0x3	True	read/ write	0.0	16	UInteger	0... 60000	0	
Dividing Factor [1...128]	68	0x44	1	0x1	True	read/ write	1.0	8	UInteger	1...128	1	
Minimum Output Pulse Length	68	0x44	2	0x2	True	read/ write	0.0	8	UInteger	0...100	0	
										0		Target
										1		1ms

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit Offset	Bit Len-gth	Data Type	Value	Default	Description
										10		10ms
										100		100ms
Switch-on Delay [0...60000ms]	69	0x45	1	0x1	True	read/ write	3.0	16	UInteger	0... 60000	0	
Switch-off Delay [0...60000ms]	69	0x45	2	0x2	True	read/ write	1.0	16	UInteger	0... 60000	0	
Oscillator Fre-quency	69	0x45	3	0x3	True	read/ write	1.0	1	Boolean	false/ true	false	
										false		F1 active
										true		F2 active
Output 2 Function	69	0x45	4	0x4	True	read/ write	1.1	2	UInteger	0...3	0	
										0		Standard Function
										1		Temperature Alert
										2		Inspection Alert
										3		Temperature or Inspection Alert
Hysteresis	69	0x45	5	0x5	True	read/ write	0.3	1	Boolean	false/ true	false	
										false		Standard Function
										true		small
LED mode	69	0x45	6	0x6	True	read/ write	0.0	2	UInteger	0...2	0	
										0		pwr (gn) / out (ye)
										1		inactive
										2		Out (ye)
LED temperat-ure indication	69	0x45	7	0x7	True	read/ write	0.2	1	Boolean	false/ true	false	
										false		inactive
										true		active
BI/NI Mount Type	71	0x47	1	0x1	False	read	0.0	1	Boolean	false/ true	false	
										false		BI (flush-mount)
										true		NI (non-flush-mount)
Operating Hours Monitor	72	0x48	0	0x0	True	read	0.0	32	UInteger	NaN... NaN		

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit Offset	Bit Len-gth	Data Type	Value	Default	Description
Switching Counter Mon-itor	73	0x49	0	0x0	True	read	0.0	32	UInteger	NaN... NaN		
Operating Hours Alert	74	0x4A	0	0x0	True	read/ write	0.0	32	UInteger	0... 16777 215	1000000	
Switching Counter Alert	75	0x4B	0	0x0	True	read/ write	0.0	32	UInteger	NaN... NaN	1000000000	

TURCK

Over 30 subsidiaries and over
60 representations worldwide!

100014072 | 2019/12

www.turck.com