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TURCK

TBIL-M1-8DOP
IO-Link I/O Hub

IO-Link Parameters – IO-Link Version 1.1

Contents

Contents

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 at 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.
ℹ	**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
- Quick Start Guide
- Operating instructions

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 IO-Link I/O hubs

■ TBIL-M1-8DOP

2.2 Manufacturer and service

Hans Turck GmbH & Co. KG
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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 Parameterization

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

If a port is set to SIO mode, the IO-Link master at this port behaves like a normal digital input. The connected IO-Link device transfers its conventional switching output to the IO-Link master – no communication takes place between the device and the IO-Link master.

If the port is configured in IOL mode, the IO-Link master tries to wake the connected IO-Link device via the "Wake-up Request". If the master receives a response from the IO-Link device, both devices start to communicate with each other. The communication parameters are exchanged first of all; the cyclic data exchange of the process data (process data objects) then starts.

When IO-Link communication (IOL mode) is active, both a cyclic and acyclic communication service is available.

There are two ways of setting the parameters via IO-Link:

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

Device parameters (on-request data objects)

Device parameters are exchanged acyclically and on request of the IO-Link master. The IO-Link master always sends a request to the device first, then the device responds. This applies when the data is written into the device and also when read from the device. On-request data objects (ORDO) enable parameter values to be written into the device (write) or device states to 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	1966595 (0x1E0203)
IO-Link version	1.1
Bitrate	COM2 (38.4 kbit/s)
Minimum cycle time	2.3 ms
SIO supported	False
M-Sequence Capability	PREOPERATE = TYPE_0 with 1 octet on-request data OPERATE = TYPE_0 with 1 octet on-request data ISDU supported
Block Parameter	True
Data Storage	True
ProfileCharacteristic	

4.2 Process output data

Name	Byte.Bit-offset	Bit length	Subindex access supported	Data Type	Value	Description
Connector 8-A, Pin 4	0.7	1	False	Boolean	false/true	
Connector 7-A, Pin 4	0.6	1	False	Boolean	false/true	
Connector 6-A, Pin 4	0.5	1	False	Boolean	false/true	
Connector 5-A, Pin 4	0.4	1	False	Boolean	false/true	
Connector 4-A, Pin 4	0.3	1	False	Boolean	false/true	
Connector 3-A, Pin 4	0.2	1	False	Boolean	false/true	
Connector 2-A, Pin 4	0.1	1	False	Boolean	false/true	
Connector 1-A, Pin 4	0.0	1	False	Boolean	false/true	

4.3   Standard parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit-offset	Bit length	Data Type	Value	Default	Description
Min Cycle Time	0	0x0	3	0x3	True	read	2.0	8	UInteger			
IO-Link Version 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…130		System command
										128		Device Reset
										130		Restore Factory 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		TBIL-M1-8DOP	Manufac-turer's device designation
Product ID	19	0x13	0	0x0	True	read	0.0	512	String		6814101	Ident-No.
Product Text	20	0x14	0	0x0	True	read	0.0	512	String		I/O-Hub	Device category
Serial Number	21	0x15	0	0x0	True	read	0.0	128	String			Device serial number
Firmware Version	23	0x17	0	0x0	True	read	0.0	512	String			Firmware revision
Application Specific Tag	24	0x18	0	0x0	True	read/write	0.0	256	String			Any user generated content
Process Data Output	41	0x29	0	0x0	True	read	0.0	8	Process-Data OutUnion			

4.4 Parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit Offset	Bit length	Data Type	Value	Default	Description
Parameter ID	64	0x40	0	0x0	True	read/ write	0.0	32	UInteger	NaN … NaN	0	Free number to identify, e.g. module-number

4.5   Events

Code	Type	Name	Description
20480	Error	Device hardware fault	Device exchange
20752	Warning	Primary supply voltage over-run	Check tolerance
20753	Warning	Primary supply voltage under-run	Check tolerance
30480	Error	Short circuit	Check installation

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