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**TURCK**

B2NF85H-QR20-IOLX3-...

Inclinometer

IO-Link Parameters – IO-Link Version 1.1



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# 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.



**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](http://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](mailto:techdoc@turck.com).

## 2 Notes on the Product

### 2.1 Product identification

This manual applies to the following inclinometers:

- B2NF85H-QR20-IOLX3-H1141

### 2.2 Manufacturer and service

Hans Turck GmbH & Co. KG  
Witzlebenstraße 7  
45472 Mülheim 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](http://www.turck.de/products)

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- Sales: +49 208 4952-380
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### 3 Software-Supported IO-Link Parameterization

The ports of the IO-Link master are configured in IO-Link mode (IOL).

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

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

## 4 IO-Link Parameters

### 4.1 General parameters

Parameter	Content
Vendor ID	317 (0x13D)
Device ID	720904 (0xB0008)
IO-Link version	1.1
Bitrate	COM3
Minimum cycle time	1.3 ms
SIO supported	False
M-Sequence Capability	PREOPERATE = TYPE_1_V with 8 octets on-request data ISDU supported
Block Parameter	True
Data Storage	True
ProfileCharacteristic	



## 4.2 Process input data

Name	Byte.Bit-offset	Bit length	Subindex access supported	Data Type	Value	Description
Angle of X-Axis	4.0	16	True	Integer	-8500...+8500	Signed
					0...17000	Unsigned
Angle of Y-Axis	2.0	16	True	Integer	-8500...+8500	Signed
					0...17000	Unsigned
Scale: 10 <sup>x</sup>	1.0	8	True	Integer	-127...127	
Vendor specific	0.0	8	True	UInteger	0...3	

## 4.3 Process output data

Name	Byte.Bit-offset	Bit length	Subindex access supported	Data Type	Value	Description
Process data output	0.0	8	False	UInteger	0...3	

## 4.4 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...159		System command
										128		Device Reset
										129		Application Reset
										130		Restore Factory Settings
Data Storage Lock	12	0xC	2	0x2	False	read/write	0.1	1	Boolean	false/true		Device access locks
Vendor Name	16	0x10	0	0x0	True	read	0.0	5	String		Turck	Vendor name
Vendor Text	17	0x11	0	0x0	True	read	0.0	13	String		www.turck.com	Additional manufacturer information
Product Name	18	0x12	0	0x0	True	read	0.0	24	String		B2N-F85H-QR20-IOLX3-H1141	Manufacturer's device designation
Product ID	19	0x13	0	0x0	True	read	0.0	9	String		100020901	Ident-No.
Product Text	20	0x14	0	0x0	True	read	0.0	28	String		Dual-Axis Inclination Sensor	Device category
Serial Number	21	0x15	0	0x0	True	read	0.0	16	String		0012345678-0012	Device serial number
Hardware Version	22	0x16	0	0x0	True	read	0.0	5	String		x.x.x	Hardware revision
Firmware Version	23	0x17	0	0x0	True	read	0.0		String			Firmware revision
Application Specific Tag	24	0x18	0	0x0	True	read/write	0.0	256	String		***	Any user generated content

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
Process Data Input	40	0x28	0	0x0	True	read	0.0	48	Process-DataIn-Union			
Process Data Input	40	0x28	1	0x01	True	write	0.0	8	UInteger	0x01		Center point teach function for the X axis
										0x02		Center point teach function for the Y axis
										0x03		Center point teach function for the X and Y axis
Process Data Output	41	0x29	0	0x0	True	write	0.0	8	Process-Data-OutUnion			

## 4.5 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
Function specific tag	25	0x19	0	0x0	True	read/write	0.0	256	String	NaN ... NaN	***	The parameter Function specific tag contains the description of the function of a profile Device within an application.
Location specific tag	26	0x1A	0	0x0	True	read/write	0.0	256	String	NaN ... NaN	***	The parameter Location specific tag contains the description of the location of a profile Device within an application.
Operating hours counter	72	0x48	0	0x0	True	read	0.0	32	UInteger	NaN ... NaN	0	Time in hours during which the device is in operation.
Filter	257	0x101	0	0x0	True	read/write	0.0	3	UInteger	0..4	4	Filter function
										0		Very slow
										1		Slow
										2		Well balanced
										3		Fast
4		Very fast										
Center point	258	0x102	0	0x0	True	write	0.0	1	Boolean	false/ true		Sets the current position of the device as the center point.
										true		Set center point now
X-Axis	259	0x103	1	0x1	True	read/write	0.0	1	Boolean	false/ true		Direction of rotation of the device
										false		Clockwise
										true		Counterclockwise

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
Y-Axis	259	0x103	2	0x2	True	read/ write	0.1	1	Boolean	false/ true		Direction of rotation of the device
										false		Clockwise
										true		Counterclockwise
Perform	260	0x104	1	0x1	True	write	0.0	1	Boolean	false/ true		
										true		Perform selftest now.
										false		
Result	260	0x104	2	0x2	True	read	0.1	1	UInteger	0... 127	2	Result of selftest
										0		Device not OK
										2		Device not tested
										127		Device OK
Spirit level	274	0x112	0	0x0	True	read/ write	0.0	1	Boolean	false/ true	true	The parameter Spirit level serves as a setup help for the X- and Y-Axis via the blinking frequency.
										false		Off
										true		On
Actual temperature	299	0x12B	1	0x1	True	read	2.0	8	Integer	-127 ... 127	0	Currently measured temperature in °C (-40...+105 °C)
Maximum temperature	299	0x12B	2	0x2	True	read	1.0	8	Integer	-127 ... 127	0	Maximum measured temperature in °C (-40...+105 °C)
Minimum temperature	299	0x12B	3	0x3	True	read	0.0	8	Integer	-127 ... 127	0	Minimum measured temperature in °C (-40...+105 °C)

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
Prozess data configuration	302	0x12E	0	0x0	True	read/write	0.0	8	Integer	0...1	1	The process data configuration parameter specifies whether the process data are sent with ( $\pm 85.00^\circ$ ) or without sign (0.00°... 170.00°).
											0	Unsigned
											1	Signed

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