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CMVT...
Condition Monitoring Sensors with IO-Link

IO-Link Parameters – IO-Link Version 1.1

Contents

Contents

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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:

- Data sheet
- Instructions for use

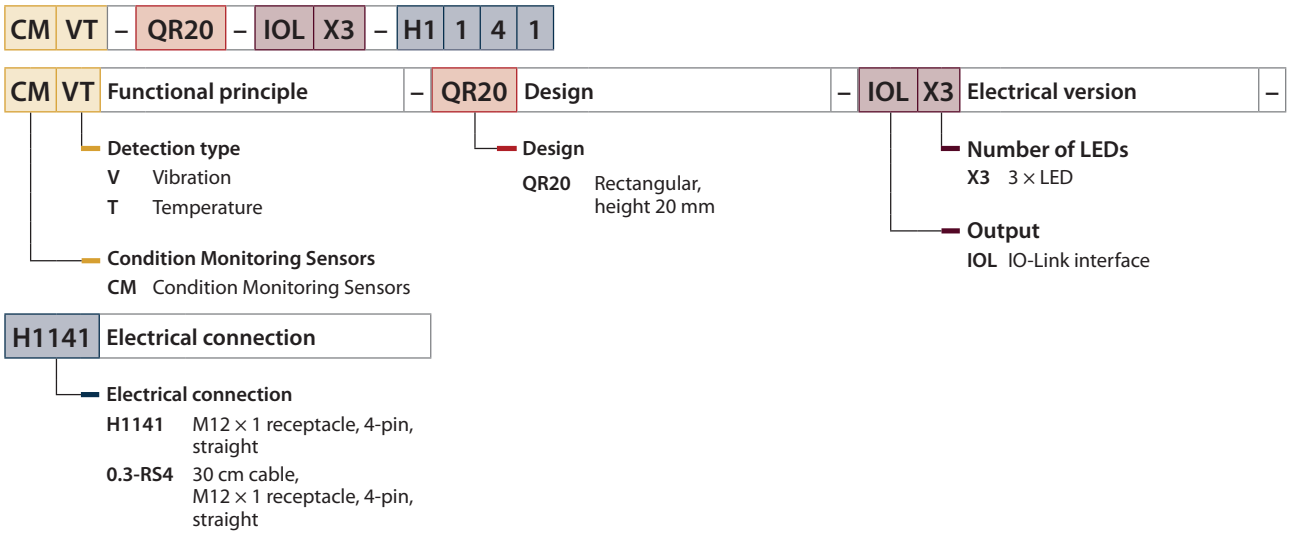
1.4 Feedback about these instructions

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 condition monitoring sensors:



2.2 Turck service

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database under www.turck.com contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats.

The contact details of Turck subsidiaries worldwide can be found on p. [▷ 16].

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

If a port is configured in IOL mode, the IO-Link master tries to wake up 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 the IO-Link function block)
- via tool-based engineering using FDT/DTM (e.g. PACTware with the use of DTM or the IODD or the web demo and Turck configuration tool)

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 data is 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	1114113 (0x110001)
IO-Link version	1.1
Bitrate	COM3
Minimum cycle time	1.3 ms
SIO supported	True
M-Sequence Capability	PREOPERATE = TYPE_1_2 with 2 octets on-request data OPERATE = TYPE_2_V with 2 octets on-request data ISDU supported
Block Parameter	True
Data Storage	True
ProfileCharacteristic	0x8000: Device Identification 0x8003: Device Diagnosis

4.2 Process input data

Eight configurations are available for displaying the process input data. The configurations can be set via the **Process data configuration** parameter (Index 263, 0x107). The default setting is configuration 2. The following configurations can be selected:

- Configuration 0: RMS in g
- Configuration 1: Peak-peak in g
- Configuration 2: RMS in mm/s
- Configuration 3: Peak-peak in mm/s
- Configuration 4: max. RMS in g since switch-on
- Configuration 5: max. peak-peak in g since switch-on
- Configuration 6: max. RMS in mm/s since switch-on
- Configuration 7: max. peak-peak in mm/s since switch-on

All configurations have the same process data display.

Name	Byte.Bit-offset	Bit length	Subindex access supported	Data Type	Value	Description
X-Axis	8.0	16	True	UInteger	0…65535	Resolution in 0.01 g or mm/s
Y-Axis	6.0	16	True	UInteger	0…65535	Resolution in 0.01 g or mm/s
Z-Axis	4.0	16	True	UInteger	0…65535	Resolution in 0.01 g or mm/s
Magnitude (Sum of vectors)	2.0	16	True	UInteger	0…65535	
Actual temperature	0.0	16	True	Integer	-32768… +32767	Resolution in 0.1°C

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
										129		Application 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 Parameterization 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	40	String		Turck	Vendor name
Vendor Text	17	0x11	0	0x0	True	Read	0.0	104	String		www.turck.com	Additional manufacturer information
Product Name	18	0x12	0	0x0	True	Read	0.0	192	String			Manufacturer's device designation
Product ID	19	0x13	0	0x0	True	Read	0.0	72	String			ID
Product Text	20	0x14	0	0x0	True	Read	0.0	512	String			Device category
Serial Number	21	0x15	0	0x0	True	Read	0.0	128	String			Device serial number
Hardware Version	22	0x16	0	0x0	True	Read	0.0	40	String			Hardware revision
Firmware Version	23	0x17	0	0x0	True	Read	0.0	64	String			Firmware revision

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
Application Specific Tag	24	0x18	0	0x0	True	Read/ write	0.0	256	String		***	Any user generated content
Process Data Input	40	0x28	0	0x0	True	Read	0.0	80	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 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.
Minimum temperature	256	0x 100	1	0x1	True	read	2.0	16	Integer	-32768 … +32767	0	The minimum and maximum measured temperatures in °C. The temperature can be measured from -40…+105°C.
Maximum temperature	256	0x 100	2	0x2	True	read	0.0	16	Integer	-32768 … +32767	0	The minimum and maximum measured temperatures in °C. The temperature can be measured from -40…+105°C.
Hysteresis	258	0x 102	0	0x0	True	read/ write	0.0	8	UInteger	0…100	5	Hysteresis in % related to the threshold value

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
ISO 10816-3 Group	259	0x 103	0	0x0	True	read/ write	0.0	8	UInteger	0…9	0	Machine group according to ISO 10816-3
										0		Group 1 rigid
										1		Group 1 flexible
										2		Group 2 rigid
										3		Group 2 flexible
										4		Group 3 rigid
										5		Group 3 flexible
										6		Group 4 rigid
										7		Group 4 flexible
										8		Temperature
										9		Manually
X-Axis prealarm threshold	260	0x 104	1	0x1	True	read/ write	14.0	16	UInteger	10… 65535	450	Threshold
X-Axis alarm threshold	260	0x 104	2	0x2	True	read/ write	12.0	16	UInteger	10… 65535	710	Threshold
Y-Axis prealarm threshold	260	0x 104	3	0x3	True	read/ write	10.0	16	UInteger	10… 65535	450	Threshold
Y-Axis alarm threshold	260	0x 104	4	0x4	True	read/ write	8.0	16	UInteger	10… 65535	710	Threshold
Z-Axis prealarm threshold	260	0x 104	5	0x5	True	read/ write	6.0	16	UInteger	10… 65535	450	Threshold
Z-Axis alarm threshold	260	0x 104	6	0x6	True	read/ write	4.0	16	UInteger	10… 65535	710	Threshold
Temperature prealarm threshold	260	0x 104	7	0x7	True	read/ write	2.0	16	UInteger	10… 65535	500	Threshold
Temperature alarm threshold	260	0x 104	8	0x8	True	read/ write	0.0	16	UInteger	10… 65535	600	Threshold
Operating hours counter	262	0x 106	0	0x0	True	read	0.0	32	UInteger	NaN… NaN	0	Is the time in hours during which the device is in operation.

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 configuration	263	0x 107	0	0x0	True	read/ write	0.0	8	UInteger	0…7	2	Configure the process data.
										0		RMS in g
										1		Peak-to-Peak in g
										2		RMS in mm/s
										3		Peak-to-Peak in mm/s
										4		Max. RMS in g since power up
										5		Max. Peak-to-Peak in g since power up
										6		Max. RMS in mm/s since power up
										7		Max. Peak-to-Peak in mm/s since power up
Time slots	264	0x 108	0	0x0	True	read/ write	0.0	8	UInteger	0…4	4	Time slots
										0		20 ms
										1		100 ms
										2		250 ms
										3		500 ms
										4		1000 ms
Perform self test	265	0x 109	0	0x0	True	write	0.0	8	UInteger			Self test
										1		Self test
Self test result	267	0x 10B	0	0x0	True	read	0.0	8	UInteger	0…2		Result of the self test
										0		Device not tested
										1		Device not ok
										2		Device ok
Output 1	268	0x 10C	0	0x0	True	read/ write	0.0	8	UInteger	0…1	0	Behavior of the first switching output
										0		NO
										1		NC

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
Output 1 configuration	269	0x 10D	0	0x0	True	read/ write	0.0	8	UInteger	0…1	1	Configuration of Output 1
										0		NPN
										1		PNP
Alarm Function	270	0x10E	0	0x0	True	read/ write	0.0	8	UInteger	0…1	0	Alarm Function
										0		Prealarm
										1		Alarm
Output 2	271	0x10F	0	0x0	True	read/ write	0.0	8	UInteger	0…1	0	Behavior of the second switching output
										0		NO
										1		NC
Output 2 configuration	272	0x 110	0	0x0	True	read/ write	0.0	8	UInteger	0…1	1	Configuration of Output 2
										0		NPN
										1		PNP
Alarm Function	273	0x 111	0	0x0	True	read/ write	0.0	8	UInteger	0…1	1	Alarm Function
										0		Prealarm
										1		Alarm
Output 1	274	0x 112	0	0x0	True	read	0.0	8	UInteger	0…1		State of Output 1
										0		Off
										1		On
Output 2	275	0x 113	0	0x0	True	read	0.0	8	UInteger	0…1		State of Output 2
										0		Off
										1		On

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