Leuze

IO-Link interface description

HTU230
Ultrasonic sensor

The Sensor People

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1 IO-Link interface

Available on pin 4 is the IO-Link interface in accordance with specification 1.1.2 (July 2013) with support of Smart Sensor Profile 1.0 (October 2011). You can easily, quickly and economically configure the devices via the IO-Link interface. Furthermore, the sensor transmits the process data via the IO-Link interface and makes diagnostic information available through it.

1.1 IO-Link identification

VendorID dec/hex	DeviceID dec/hex	Device
338/0x152	3070/0x000BFE	HTU230-3000/L4-M12
	3071/0x000BFF	HTU230-6000/L4-M12

Please refer to the respective product data sheet for the identification data of other IO-Link devices.

1.2 IO-Link process data

Device output data (PDIn - 32-bit data length)

Bit offset	Data width in bits	Assignment	Meaning
2	14	Measured value	Actual measurement value Value range 0 … 16383
0	1	BDC1, Q1	Switching state (BDC1, Q1) Value range 0 … 1
1	1	BDC2, Q2	Switching state (BDC2, Q2) Value range 0 … 1

Byte 0	Measured value							
	7	6	5	4	3	2	1	0

Byte 1	Measured value						BDC2, Q2	BDC1, Q1
	7	6	5	4	3	2	1	0

1.3 Device-specific IODD

At **www.leuze.com** in the download area for IO-Link sensors you will find the IODD zip file with all files required for the installation.

On the IODDfinder platform (https://ioddfinder.io-link.com/), a central cross-manufacturer database, you can also find the description files (IODDs) of the IO-Link sensors.

1.4 IO-Link parameters documentation

The complete description of the IO-Link parameters can be found in the *.html files. Double-click on a language variant in the directory containing the extracted files:

- German: *IODD*-de.html
- English: *IODD*-en.html

If the html file within the ZIP archive is opened, the image files are not displayed.

↳ Extract the ZIP file first.

1.5 Device-specific information

- This is a device with the Data Storage function, i.e., device exchange is possible without additional measures (such as teaching).
- In the PREOPERATE state, this device uses TYPE_1_V with 8 octets of on-request data.
- The system commands "Stop measurement" and "Single measurement" cause the process data to be marked as invalid. The system command "Start measurement" causes the process data to return to the valid state.

Fundamentals:

- IO-Link Interface and System Specification Version 1.1.2, July 2013
- IO-Link Test Specification Version 1.1.2 July 2014

2 Functions configurable via IO-Link

PC configuration and visualization is performed comfortably with the USB-IO-Link Master SET MD12-US2-IL1.1 (part no. 50121098) and the *Sensor Studio* configuration software (in the download area of the sensor at **www.leuze.com**).

System commands

NOTICE
The system commands trigger an action in the device.

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
System command	2	0	UIntegerT, 1	WO	64,		64: Apply teach
					65,		65: Switching point 1, single-value teach
					66,		66: Switching point 2, single-value teach
					67,		67: Two-value teach TP1 SP1
					68,		68: Two-value teach TP2 SP1
					69,		69: Two-value teach TP1 SP2
					70,		70: Two-value teach TP2 SP2
					71,		71: Switching point 1, dynamic teach start
					72,		72: Switching point 1, dynamic teach stop
					73,		73: Switching point 2, dynamic teach start
					74,		74: Switching point 2, dynamic teach stop
					79,		79: Cancel teach
					130,		130: Set factory defaults
					163,		163: Reset diagnostic information
					164,		164: Stop measurement
					165,		165: Start measurement
					166		166: Single measurement

General configuration

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
Device access locks	12	0	UIntegerT, 2	RW	0, 1	0	0: Parameter write access not disabled 1: Parameter write access disabled
Application specific tag	24	0	String, max. 32	RW		***	Application-specific marking
Teach channel	58	0	UIntegerT, 1	RO	1.2	1	Addressing of a specific BDC to which teach-in commands are to be applied: 1: BDC1, Q1 2: BDC2, Q2
Teach status	59	3	UIntegerT, 4 bit	RO	0, 1, 2, 3, 4, 5, 6, 7		Status of teach event: 0: Inactive 1: Switching point set 2: Switching point 2 set 3: Switching point 1 and 2 set 4: Waiting for command 5: Active 6: Reserved 7: Error
BDC1 setpoints	60	1	UIntegerT, 2	RW	300 … 3000	300	Numerical input of switching point SP1 (Device ID 3070)
		2	UIntegerT, 2	RW	300 … 3000	3000	Numerical input of switching point SP2 (Device ID 3070)
BDC1 setpoints	60	1	UIntegerT, 2	RW	600 … 6000	600	Numerical input of switching point SP1 (Device ID 3071)
		2	UIntegerT, 2	RW	600 … 6000	6000	Numerical input of switching point SP2 (Device ID 3071)
BDC1 configuration	61	1	UIntegerT, 1	RW	0, 1	0	Logic: 0: NO 1: NC
		2	UIntegerT, 1	RW	0, 1, 2, 3, 128	2	Operating mode: 0: Deactivated 1: Switching point mode 2: Window mode 3: Two-point mode 128: Reflex mode
		3	UIntegerT, 2	RW	5 … 50	15	Determines the hysteresis at the switching point. A higher hysteresis can help increase the stability in critical applications. (Device ID 3070)
		3	UIntegerT, 2	RW	5 … 50	20	Determines the hysteresis at the switching point. A higher hysteresis can help increase the stability in critical applications. (Device ID 3071)

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
BDC2 setpoints	62	1	UInteger, 2	RW	300 … 3000	300	Numerical input of switching point SP1 (Device ID 3070)
		2	UInteger, 2	RW	300 … 3000	3000	Numerical input of switching point SP2 (Device ID 3070)
BDC2 setpoints	62	1	UInteger, 2	RW	600 … 6000	600	Numerical input of switching point SP1 (Device ID 3070)
		2	UInteger, 2	RW	600 … 6000	6000	Numerical input of switching point SP2 (Device ID 3070)
BDC2 configuration	63	1	UInteger,1	RW	0, 1	0	Logic: 0: NO 1: NC
		2	UInteger,1	RW	0, 1, 2, 3, 128	2	Operating mode: 0: Deactivated 1: Switching point mode 2: Window mode 3: Two-point mode 128: Reflex mode
		3	UInteger,2	RW	5 … 50	15	Determines the hysteresis at the switching point. A higher hysteresis can help increase the stability in critical applications. (Device ID 3070)
		3	UInteger,2	RW	5 … 50	20	Determines the hysteresis at the switching point. A higher hysteresis can help increase the stability in critical applications. (Device ID 3071)
On delay switching output	66	0	UInteger, 2	RW	0 … 10000	0	Switch-on delay of switching output in ms
Off delay switching output	67	0	UInteger, 2	RW	0 … 10000	0	Switch-off delay of switching output in ms
Multi I/O (pin 4)	70	0	UInteger, 1	RW	0, 1, 2	0	Switching output polarity 0: PP 1: NPN 2: PNP
Temperature compensation	74	1	UInteger, 1	RW	0, 1	0	Temperature compensation 0: Off 1: On
BDC1 SP1 teach point	80	1	UInteger, 2	RO			Lower limit for teach BDC1 - TP1
		2	UInteger, 2	RO			Upper limit for teach BDC1 - TP2
BDC1 SP2 teach point	81	1	UInteger, 2	RO			Lower limit for teach BDC1 - TP1
		2	UInteger, 2	RO			Upper limit for teach BDC1 - TP2

Parameter	Index	Subindex	Data type, octets	Access	Value range	Default	Explanation
BDC2 SP1 teach point	82	1	UIntegerT, 2	RO			Lower limit for teach BDC2 - TP1
		2	UIntegerT, 2	RO			Upper limit for teach BDC2 - TP2
BDC2 SP2 teach point	83	1	UIntegerT, 2	RO			Lower limit for teach BDC2 - TP1
		2	UIntegerT, 2	RO			Upper limit for teach BDC2 - TP2
Switch counter BDC1, Q1	85	0	UIntegerT, 4	RO		0	Switching events after switch-on or reset. Can be reset with system command 163 – Reset diagnostic information.
Temperature internal	86	0	UIntegerT, 2	RO			Internal device temperature