

IO-Link interface description

DMU230

Ultrasonic sensor



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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	3093/0x000C15	DMU230-3000/LA-M12
	3094/0x000C16	DMU230-3000/LV-M12
	3095/0x000C17	DMU230-6000/LA-M12
	3096/0x000C18	DMU230-6000/LV-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	In- dex	Sub- in- dex	Data type, octets	Ac- cess	Value range	De- fault	Explanation
System command	2	0	UIntegerT, 1	WO	64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 79, 130, 161, 162, 163, 164, 165, 166		64: Apply teach 65: Switching point 1, single-value teach 66: Switching point 2, single-value teach 67: Two-value teach TP1 SP1 68: Two-value teach TP2 SP1 69: Two-value teach TP1 SP2 70: Two-value teach TP2 SP2 71: Switching point 1, dynamic teach start 72: Switching point 1, dynamic teach stop 73: Switching point 2, dynamic teach start 74: Switching point 2, dynamic teach stop 79: Cancel teach 130: Set factory defaults 161: Set lower analog limit 162: Set upper analog limit 163: Reset diagnostic information 164: Stop measurement 165: Start measurement 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 3093 & 3094)
		2	UIntegerT, 2	RW	300 ... 3000	3000	Numerical input of switching point SP2 (Device ID 3093 & 3094)
BDC1 setpoints	60	1	UIntegerT, 2	RW	600 ... 6000	600	Numerical input of switching point SP1 (Device ID 3095 & 3096)
		2	UIntegerT, 2	RW	600 ... 6000	6000	Numerical input of switching point SP2 (Device ID 3095 & 3096)
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 3093 & 3094)
		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 3095 & 3096)

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
BDC2 setpoints	62	1	UIntegerT, 2	RW	300 ... 3000	300	Numerical input of switching point SP1 (Device ID 3093 & 3094)
		2	UIntegerT, 2	RW	300 ... 3000	3000	Numerical input of switching point SP2 (Device ID 3093 & 3094)
BDC2 setpoints	62	1	UIntegerT, 2	RW	600 ... 6000	600	Numerical input of switching point SP1 (Device ID 3095 & 3096)
		2	UIntegerT, 2	RW	600 ... 6000	6000	Numerical input of switching point SP2 (Device ID 3095 & 3096)
BDC2 configuration	63	1	UIntegerT, 1	RW	0, 1	0	Logic: 0: NO 1: NC
		2	UIntegerT, 1	RW	0, 1, 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 3093 & 3094)
		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 3095 & 3096)
On delay switching output	66	0	UIntegerT, 2	RW	0 ... 10000	0	Switch-on delay of switching output in ms
Off delay switching output	67	0	UIntegerT, 2	RW	0 ... 10000	0	Switch-off delay of switching output in ms
Multi I/O (pin 4)	70	0	UIntegerT, 1	RW	0, 1, 2, 3, 4, 5	0	Switching output polarity 0: PP 1: NPN 2: PNP 3: Teach-in analog output 4: Synchronization 5: Multiplex
Multi I/O (pin 2)	71	0	UIntegerT, 1	RW	0, 1, 2, 3	0	Operating mode for multi I/O (pin 2): (Only valid for Device ID 3093 & 3095) 0: Deactivated 1: 0 ... 20 mA 2: 4 ... 20 mA 3: 0 ... 10 V

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
Analog range	72	1	UIntegerT, 2	RW	300 ... 3000	300	Lower limit (Device ID 3093 & 3094)
		2	UIntegerT, 2	RW	300 ... 3000	3000	Upper limit (Device ID 3093 & 3094)
Analog range	72	1	UIntegerT, 2	RW	600 ... 6000	600	Lower limit (Device ID 3095 & 3096)
		2	UIntegerT, 2	RW	600 ... 6000	6000	Upper limit (Device ID 3095 & 3096)
Temperature compensation	74	1	UIntegerT, 1	RW	0, 1	0	Temperature compensation 0: Off 1: On
BDC1 SP1 teach point	80	1	UIntegerT, 2	RO			Lower limit for teach BDC1 - TP1
		2	UIntegerT, 2	RO			Upper limit for teach BDC1 - TP2
BDC1 SP2 teach point	81	1	UIntegerT, 2	RO			Lower limit for teach BDC1 - TP1
		2	UIntegerT, 2	RO			Upper limit for teach BDC1 - TP2
Teach point BDC2 SP1	82	1	UIntegerT, 2	RO			Lower limit for teach BDC2 - TP1
		2	UIntegerT, 2	RO			Upper limit for teach BDC2 - TP2
Teach point BDC2 SP2	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
Network	88	1	UIntegerT, 1	RW	0, 1	0	Role in network: 0: Master 1: Slave
		2	UIntegerT, 1	RW	0 ... 10		Device no. (Master highest number)