



IO-Link data sheet

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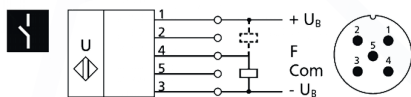
IO-Link data sheet



mic+25/F/TC

Ultrasonic proximity switch with one push-pull switching output and IO-Link interface

Pin assignment



IO-Link mode

The sensor mic+25/F/TC is IO-Link capable in accordance with IO-Link specification 1.1. The sensor has an IO-Link communication interface on pin 4.

Direct access to process and diagnosis data is possible via the IO-Link interface. The parameterization of the sensor is possible during operation.

Smart Sensor Profile

mic+ sensors support the Smart Sensor Profile. The following profiles and function classes are integrated:

- › 0x000A - Device Profile: Digital measuring sensors
- › 0x8000 - Device Identification
- › 0x8001 - Multichannel: Binary Data Channel
- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach Channel
- › 0x800A - Measurement Data Channel (standard resolution)

SSC1 configuration

The sensor has five modes:

- › Single point (SP1: switching point)
- › Window (SP1, SP2: window mode)
- › Two point (SP1, SP2: hysteresis mode)
- › Single point + set point offset (SP1 switching point + offset)
- › Window ± set point offset (SP1 two-way reflective barrier)

IODD description file

Each device has its own electronic device description, the IODD file (IO Device Description). The IODD contains comprehensive data for the purpose of better system integration:

- › Communication features
- › Device parameter with allowed values and default value
- › Identification-, processing and diagnosis data
- › Device data
- › Text description
- › Picture of the device
- › Logo of the manufacturer

Physical layer

Vendor Name	microsonic GmbH
Vendor ID	419 (0x01a3)
Product Name	mic+25/F/TC
Product ID	22180
Device ID	50 (0x000032)
IO-Link Specification	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	8.4 ms
IO-Link Port Type	A (<200mA)
SIO Mode Supported	Yes
Smart Sensor Profile	Yes, Digital Measuring Sensor
Block Parameter	Yes
Data Storage	Yes

The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at www.microsonic.de/IODD.

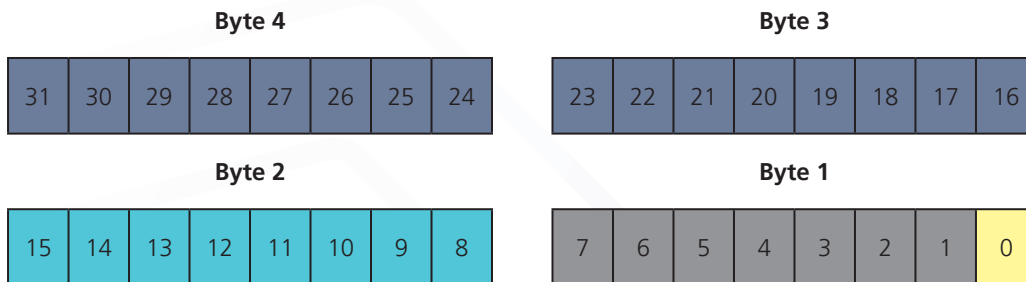






Process data

The process data are cyclically transmitted data. The length of the process data of mic+25/F/TC is 4 byte.

Note

microsonic sensors with an operating range of up to 1000 mm indicate distance values with a resolution of 0.1 mm. Operating ranges greater than 1000 mm have distance values with a resolution of 1 mm.



	Description	Value range
	= Switched Signal Channel 1 (SSC1) state	0; 1
	= Vacant	
	= Process Data Scale	-1; 0; Default: -1
	= Process Data Measuring Value	0-32,000; -32,760-32,760; 32,764

Switched Signal Channel 1 state:

- › 0: inactive
- › 1: active

Process Data Measuring Value

- › 0-32,000: Process data measuring value
- › 32,764: No measuring value
- › -32,760: Outside the detection range (-)
- › 32,760: Outside the detection range (+)

Measurement data channel description

Index	Subindex	Term	Format	Access
16512	1	Lower Limit	UInt32	RO
	2	Upper Limit	UInt32	RO
	3	Unit Code	UInt16	RO
	4	Scale	Int8	RO

Lower Limit:

The value of the Lower Limit corresponds to the foreground suppression currently set.

Upper limit:

The value of the Upper Limit corresponds to the maximum range currently set.

Unit Code:

The Unit Code is based on the official IO-Link Unit Code:

- › 1013: [mm]

Scale:

The sensor outputs the scale of the current process data. The sensor uses the scale in accordance with the following scheme to calculate the measured values:

$$\text{Process data value} * 10^{(\text{scale})} * [\text{Unit Code}] = \text{measured value in mm}$$



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
2		System Command	UInt8	WO		130: Restore factory settings	
12		Device Access Locks	Record	R/W			
16		Vendor Name	OctetString	RO	microsonic GmbH		
17		Vendor Text	OctetString	RO	Unser Herz schallt ultra.		
18		Product Name	OctetString	RO	mic+25/F/TC		
19		Product ID	OctetString	RO	22180		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
22		Hardware Revision	OctetString	RO			
23		Firmware Revision	OctetString	RO			
24		Application Specific Tag	OctetString [32]	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0-4: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure	
37		Detailed Device Status	ARRAY[10]	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in Channel	UInt8	R/W	0	0; 1: 0: SSC1: pin 4 (push-pull) 1: SSC1: pin 4 (push-pull)	
59		Teach-in Status	UInt8	RO	0	0-3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: SP12 successful 4: Waiting for command 5: Busy 7: Error	
60	0	SSC1 Parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	250	30 - 348: Setpoint 1 for switching output	0.1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	280	30 - 348: Setpoint 2 for switching output	0.1 mm



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
61	0	SSC1 Configuration	Record				
	1	Logic	UInt16	R/W	0	0; 1: 0: High active mode 1: Low active mode	
	2	Mode	UInt8	R/W	1	0-3; 128-129: 0: Deactivated 1: Single point (SP1: switching point) 2: Window (SP1, SP2: window mode) 3: Two point (SP1, SP2: hysteresis mode) 128: Single point + set point offset (SP1: switching point + offset) 129: Window ± set point offset (SP1: two way reflective barrier)	
	3	Hysteresis	UInt8	R/W	3	1 - 318: Hysteresis for SP1 and SP2	0.1 mm
100	0	SSC1 Advanced Configuration	Record				
	1	Switch-on delay	UInt8	R/W	0	0-20	1 s
	2	Switch-off delay	UInt8	R/W	0	0-20	1 s
	3	Set point offset	UInt8	R/W	8	1-20	1%
200	0	Measurement configuration	Record				
	1	Foreground suppression	Int16	R/W	27	27-90	0.1 mm
	2	Maximum range	Int16	R/W	350	350-999	0.1 mm
220	0	Detection zone sensitivity	Record				
	1	Type	UInt8	R/W	2	0-3	0.1 mm
	2	Lowest sensitivity until	UInt16	R/W	33	33-350	0.1 mm
	3	Highest sensitivity above	UInt16	R/W	500	104-28382	0.1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0-4: 0 = F00: no filter 1 = F01: standard filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	
	2	Strength	UInt8	R/W	0	0-9: 0 = P00 ... 9 = P09 For each measured value filter a filter strength between 0, weak filtering up to 9, strong filtering, can be selected.	
257	1	Interfering noise suppression	UInt8	R/W	0	0; 1: 0: Inactive 1: Active	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	0-1: 0: Reference temperature 1: Internal Temperature	
	2	Reference temperature	UInt16	R/W	20	-25-70	1° C



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
350	0	Synchronisation and multiplex operation	Record				
	1	Mode	UInt8	R/W	1	0; 1: 0: inactive 1: Active	
	2	Sensor operation	UInt8	R/W	0	0-10: 0: Synchronisation active 1: Multiplex address 1 2: Multiplex address 2 3: Multiplex address 3 4: Multiplex address 4 5: Multiplex address 5 6: Multiplex address 6 7: Multiplex address 7 8: Multiplex address 8 9: Multiplex address 9 10: Multiplex address 10	
	3	Multiplex number of participants	UInt8	R/W	10	2-10: 2: 2 participants 3: 3 participants 4: 4 participants 5: 5 participants 6: 6 participants 7: 7 participants 8: 8 participants 9: 9 participants 10: 10 participants	
370	1	Button	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
371	1	Display	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
1000	1	Echo diagnosis	UInt16	RO	0		

Events

Code		Type	Name	Description
dezimal	hex			
16384	0x4000	Error	Temperature fault	Overload
30480	0x7710	Error	Short circuit	Check installation
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.

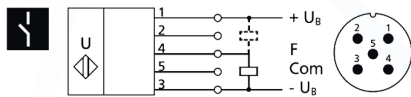
IO-Link data sheet



mic+35/F/TC

Ultrasonic proximity switch with one push-pull switching output and IO-Link interface

Pin assignment



IO-Link mode

The sensor mic+35/F/TC is IO-Link capable in accordance with IO-Link specification 1.1. The sensor has an IO-Link communication interface on pin 4.

Direct access to process and diagnosis data is possible via the IO-Link interface. The parameterization of the sensor is possible during operation.

Smart Sensor Profile

mic+ sensors support the Smart Sensor Profile. The following profiles and function classes are integrated:

- › 0x000A - Device Profile: Digital measuring sensors
- › 0x8000 - Device Identification
- › 0x8001 - Multichannel: Binary Data Channel
- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach Channel
- › 0x800A - Measurement Data Channel (standard resolution)

SSC1 configuration

The sensor has five modes:

- › Single point (SP1: switching point)
- › Window (SP1, SP2: window mode)
- › Two point (SP1, SP2: hysteresis mode)
- › Single point + set point offset (SP1 switching point + offset)
- › Window ± set point offset (SP1 two-way reflective barrier)

IODD description file

Each device has its own electronic device description, the IODD file (IO Device Description). The IODD contains comprehensive data for the purpose of better system integration:

- › Communication features
- › Device parameter with allowed values and default value
- › Identification-, processing and diagnosis data
- › Device data
- › Text description
- › Picture of the device
- › Logo of the manufacturer

Physical layer

Vendor Name	microsonic GmbH
Vendor ID	419 (0x01a3)
Product Name	mic+35/F/TC
Product ID	22280
Device ID	51 (0x000033)
IO-Link Specification	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	16 ms
IO-Link Port Type	A (<200mA)
SIO Mode Supported	Yes
Smart Sensor Profile	Yes, Digital Measuring Sensor
Block Parameter	Yes
Data Storage	Yes

The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at www.microsonic.de/IODD.

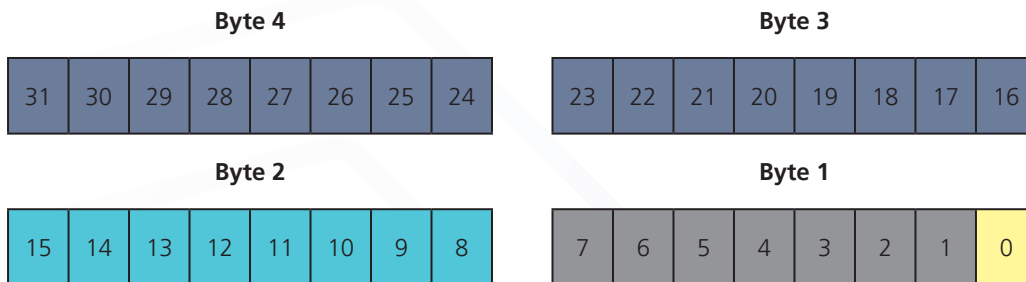






Process data

The process data are cyclically transmitted data. The length of the process data of mic+35/F/TC is 4 byte.

Note

microsonic sensors with an operating range of up to 1000 mm indicate distance values with a resolution of 0.1 mm. Operating ranges greater than 1000 mm have distance values with a resolution of 1 mm.



	Description	Value range
	Switched Signal Channel 1 (SSC1) state	0; 1
	Vacant	
	Process Data Scale	-1; 0; Default: -1
	Process Data Measuring Value	0-32.000; -32.760-32.760; 32.764

Switched Signal Channel 1 state:

- › 0: inactive
- › 1: active

Process Data Measuring Value

- › 0-32,000: Process data measuring value
- › 32,764: No measuring value
- › -32,760: Outside the detection range (-)
- › 32,760: Outside the detection range (+)

Measurement data channel description

Index	Subindex	Term	Format	Access
16512	1	Lower Limit	UInt32	RO
	2	Upper Limit	UInt32	RO
	3	Unit Code	UInt16	RO
	4	Scale	Int8	RO

Lower Limit:

The value of the Lower Limit corresponds to the foreground suppression currently set.

Upper limit:

The value of the Upper Limit corresponds to the maximum range currently set.

Unit Code:

The Unit Code is based on the official IO-Link Unit Code:

- › 1013: [mm]

Scale:

The sensor outputs the scale of the current process data. The sensor uses the scale in accordance with the following scheme to calculate the measured values:

$$\text{Process data value} * 10^{(\text{scale})} * [\text{Unit Code}] = \text{measured value in mm}$$



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
2		System Command	UInt8	WO		130: Restore factory settings	
12		Device Access Locks	Record	R/W			
16		Vendor Name	OctetString	RO	microsonic GmbH		
17		Vendor Text	OctetString	RO	Unser Herz schallt ultra.		
18		Product Name	OctetString	RO	mic+35/F/TC		
19		Product ID	OctetString	RO	22280		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
22		Hardware Revision	OctetString	RO			
23		Firmware Revision	OctetString	RO			
24		Application Specific Tag	OctetString [32]	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0-4: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure	
37		Detailed Device Status	ARRAY[10]	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in Channel	UInt8	R/W	0	0; 1: 0: SSC1: pin 4 (push-pull) 1: SSC1: pin 4 (push-pull)	
59		Teach-in Status	UInt8	RO	0	0-3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: SP12 successful 4: Waiting for command 5: Busy 7: Error	
60	0	SSC1 Parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	350	65 - 598: Setpoint 1 for switching output	0.1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	400	65 - 598: Setpoint 2 for switching output	0.1 mm



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
61	0	SSC1 Configuration	Record				
	1	Logic	UInt16	R/W	0	0; 1: 0: High active mode 1: Low active mode	
	2	Mode	UInt8	R/W	1	0-3; 128-129: 0: Deactivated 1: Single point (SP1: switching point) 2: Window (SP1, SP2: window mode) 3: Two point (SP1, SP2: hysteresis mode) 128: Single point + set point offset (SP1: switching point + offset) 129: Window ± set point offset (SP1: two way reflective barrier)	
	3	Hysteresis	UInt8	R/W	5	1 - 533: Hysteresis for SP1 and SP2	0.1 mm
100	0	SSC1 Advanced Configuration	Record				
	1	Switch-on delay	UInt8	R/W	0	0-20	1 s
	2	Switch-off delay	UInt8	R/W	0	0-20	1 s
	3	Set point offset	UInt8	R/W	8	1-20	1%
200	0	Measurement configuration	Record				
	1	Foreground suppression	Int16	R/W	59	59-195	0.1 mm
	2	Maximum range	Int16	R/W	600	600-999	0.1 mm
220	0	Detection zone sensitivity	Record				
	1	Type	UInt8	R/W	2	0-3	0.1 mm
	2	Lowest sensitivity until	UInt16	R/W	65	65-600	0.1 mm
	3	Highest sensitivity above	UInt16	R/W	769	136-28632	0.1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0-4: 0 = F00: no filter 1 = F01: standard filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	
	2	Strength	UInt8	R/W	0	0-9: 0 = P00 ... 9 = P09 For each measured value filter a filter strength between 0, weak filtering up to 9, strong filtering, can be selected.	
257	1	Interfering noise suppression	UInt8	R/W	0	0; 1: 0: Inactive 1: Active	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	0-1: 0: Reference temperature 1: Internal Temperature	
	2	Reference temperature	UInt16	R/W	20	-25-70	1° C



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
350	0	Synchronisation and multiplex operation	Record				
	1	Mode	UInt8	R/W	1	0; 1: 0: inactive 1: Active	
	2	Sensor operation	UInt8	R/W	0	0-10: 0: Synchronisation active 1: Multiplex address 1 2: Multiplex address 2 3: Multiplex address 3 4: Multiplex address 4 5: Multiplex address 5 6: Multiplex address 6 7: Multiplex address 7 8: Multiplex address 8 9: Multiplex address 9 10: Multiplex address 10	
	3	Multiplex number of participants	UInt8	R/W	10	2-10: 2: 2 participants 3: 3 participants 4: 4 participants 5: 5 participants 6: 6 participants 7: 7 participants 8: 8 participants 9: 9 participants 10: 10 participants	
370	1	Button	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
371	1	Display	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
1000	1	Echo diagnosis	UInt16	RO	0		

Events

Code		Type	Name	Description
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16384	0x4000	Error	Temperature fault	Overload
30480	0x7710	Error	Short circuit	Check installation
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.



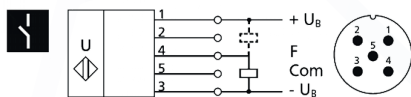
IO-Link data sheet



mic+130/F/TC

Ultrasonic proximity switch with one push-pull switching output and IO-Link interface

Pin assignment



IO-Link mode

The sensor mic+130/F/TC is IO-Link capable in accordance with IO-Link specification 1.1. The sensor has an IO-Link communication interface on pin 4.

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- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach Channel
- › 0x800A - Measurement Data Channel (standard resolution)

SSC1 configuration

The sensor has five modes:

- › Single point (SP1: switching point)
- › Window (SP1, SP2: window mode)
- › Two point (SP1, SP2: hysteresis mode)
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- › Window ± set point offset (SP1 two-way reflective barrier)

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- › Picture of the device
- › Logo of the manufacturer

Physical layer

Vendor Name	microsonic GmbH
Vendor ID	419 (0x01a3)
Product Name	mic+130/F/TC
Product ID	22380
Device ID	52 (0x000034)
IO-Link Spezifikation	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	23.2 ms
IO-Link Port Type	A (<200mA)
SIO Mode Supported	Yes
Smart Sensor Profile	Yes, Digital Measuring Sensor
Block Parameter	Yes
Data Storage	Yes

The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at www.microsonic.de/IODD.

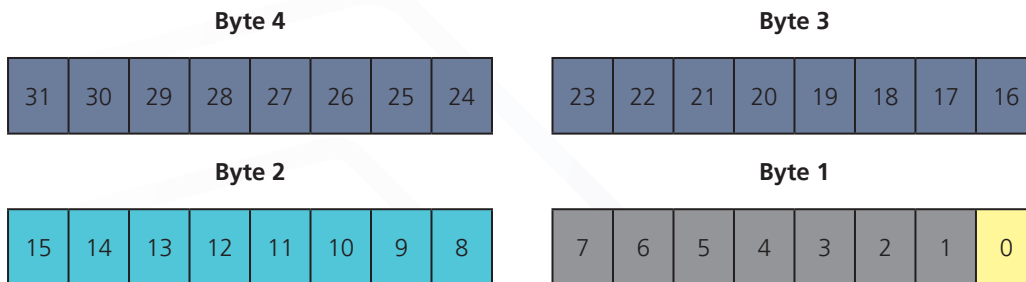






Process data

The process data are cyclically transmitted data. The length of the process data of mic+130/F/TC is 4 byte.

Note

microsonic sensors with an operating range of up to 1000 mm indicate distance values with a resolution of 0.1 mm. Operating ranges greater than 1000 mm have distance values with a resolution of 1 mm.



	Description	Value range
	Switched Signal Channel 1 (SSC1) state	0; 1
	Vacant	
	Process Data Scale	-1; 0; Default: -1
	Process Data Measuring Value	0-32.000; -32.760-32.760; 32.764

Switched Signal Channel 1 state:

- › 0: inactive
- › 1: active

Process Data Measuring Value

- › 0-32,000: Process data measuring value
- › 32,764: No measuring value
- › -32,760: Outside the detection range (-)
- › 32,760: Outside the detection range (+)

Measurement data channel description

Index	Subindex	Term	Format	Access
16512	1	Lower Limit	UInt32	RO
	2	Upper Limit	UInt32	RO
	3	Unit Code	UInt16	RO
	4	Scale	Int8	RO

Lower Limit:

The value of the Lower Limit corresponds to the foreground suppression currently set.

Upper limit:

The value of the Upper Limit corresponds to the maximum range currently set.

Unit Code:

The Unit Code is based on the official IO-Link Unit Code:

- › 1013: [mm]

Scale:

The sensor outputs the scale of the current process data. The sensor uses the scale in accordance with the following scheme to calculate the measured values:

$$\text{Process data value} * 10^{(\text{scale})} * [\text{Unit Code}] = \text{measured value in mm}$$



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
2		System Command	UInt8	WO		130: Restore factory settings	
12		Device Access Locks	Record	R/W			
16		Vendor Name	OctetString	RO	microsonic GmbH		
17		Vendor Text	OctetString	RO	Unser Herz schallt ultra.		
18		Product Name	OctetString	RO	mic+130/F/TC		
19		Product ID	OctetString	RO	22380		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
22		Hardware Revision	OctetString	RO			
23		Firmware Revision	OctetString	RO			
24		Application Specific Tag	OctetString [32]	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0-4: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure	
37		Detailed Device Status	ARRAY[10]	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in Channel	UInt8	R/W	0	0; 1: 0: SSC1: pin 4 (push-pull) 1: SSC1: pin 4 (push-pull)	
59		Teach-in Status	UInt8	RO	0	0-3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: SP12 successful 4: Waiting for command 5: Busy 7: Error	
60	0	SSC1 Parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	1300	200 - 1998: Setpoint 1 for switching output	1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	1500	200 - 1998: Setpoint 2 for switching output	1 mm



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
61	0	SSC1 Configuration	Record				
	1	Logic	UInt16	R/W	0	0; 1: 0: High active mode 1: Low active mode	
	2	Mode	UInt8	R/W	1	0-3; 128-129: 0: Deactivated 1: Single point (SP1: switching point) 2: Window (SP1, SP2: window mode) 3: Two point (SP1, SP2: hysteresis mode) 128: Single point + set point offset (SP1: switching point + offset) 129: Window ± set point offset (SP1: two way reflective barrier)	
	3	Hysteresis	UInt8	R/W	20	1 - 1798: Hysteresis for SP1 and SP2	1 mm
100	0	SSC1 Advanced Configuration	Record				
	1	Switch-on delay	UInt8	R/W	0	0-20	1 s
	2	Switch-off delay	UInt8	R/W	0	0-20	1 s
	3	Set point offset	UInt8	R/W	8	1-20	1%
200	0	Measurement configuration	Record				
	1	Foreground suppression	Int16	R/W	176	176-600	1 mm
	2	Maximum range	Int16	R/W	2000	2000-9999	1 mm
220	0	Detection zone sensitivity	Record				
	1	Type	UInt8	R/W	2	0-3	1 mm
	2	Lowest sensitivity until	UInt16	R/W	182	182-2000	1 mm
	3	Highest sensitivity above	UInt16	R/W	2545	253-30032	1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0-4: 0 = F00: no filter 1 = F01: standard filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	
	2	Strength	UInt8	R/W	0	0-9: 0 = P00 ... 9 = P09 For each measured value filter a filter strength between 0, weak filtering up to 9, strong filtering, can be selected.	
257	1	Interfering noise suppression	UInt8	R/W	0	0; 1: 0: Inactive 1: Active	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	0-1: 0: Reference temperature 1: Internal Temperature	
	2	Reference temperature	UInt16	R/W	20	-25-70	1° C



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
350	0	Synchronisation and multiplex operation	Record				
	1	Mode	UInt8	R/W	1	0; 1: 0: inactive 1: Active	
	2	Sensor operation	UInt8	R/W	0	0-10: 0: Synchronisation active 1: Multiplex address 1 2: Multiplex address 2 3: Multiplex address 3 4: Multiplex address 4 5: Multiplex address 5 6: Multiplex address 6 7: Multiplex address 7 8: Multiplex address 8 9: Multiplex address 9 10: Multiplex address 10	
	3	Multiplex number of participants	UInt8	R/W	10	2-10: 2: 2 participants 3: 3 participants 4: 4 participants 5: 5 participants 6: 6 participants 7: 7 participants 8: 8 participants 9: 9 participants 10: 10 participants	
370	1	Button	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
371	1	Display	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
1000	1	Echo diagnosis	UInt16	RO	0		

Events

Code		Type	Name	Description
dezimal	hex			
16384	0x4000	Error	Temperature fault	Overload
30480	0x7710	Error	Short circuit	Check installation
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.



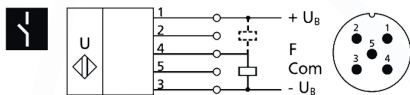
IO-Link data sheet



mic+340/F/TC

Ultrasonic proximity switch with one push-pull switching output and IO-Link interface

Pin assignment



IO-Link mode

The sensor mic+340/F/TC is IO-Link capable in accordance with IO-Link specification 1.1. The sensor has an IO-Link communication interface on pin 4.

Direct access to process and diagnosis data is possible via the IO-Link interface. The parameterization of the sensor is possible during operation.

Smart Sensor Profile

mic+ sensors support the Smart Sensor Profile. The following profiles and function classes are integrated:

- › 0x000A - Device Profile: Digital measuring sensors
- › 0x8000 - Device Identification
- › 0x8001 - Multichannel: Binary Data Channel
- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach Channel
- › 0x800A - Measurement Data Channel (standard resolution)

SSC1 configuration

The sensor has five modes:

- › Single point (SP1: switching point)
- › Window (SP1, SP2: window mode)
- › Two point (SP1, SP2: hysteresis mode)
- › Single point + set point offset (SP1 switching point + offset)
- › Window ± set point offset (SP1 two-way reflective barrier)

IODD description file

Each device has its own electronic device description, the IODD file (IO Device Description). The IODD contains comprehensive data for the purpose of better system integration:

- › Communication features
- › Device parameter with allowed values and default value
- › Identification-, processing and diagnosis data
- › Device data
- › Text description
- › Picture of the device
- › Logo of the manufacturer

Physical layer

Vendor Name	microsonic GmbH
Vendor ID	419 (0x01a3)
Product Name	mic+340/F/TC
Product ID	22480
Device ID	53 (0x000035)
IO-Link Spezifikation	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	43.2 ms
IO-Link Port Type	A (<200mA)
SIO Mode Supported	Yes
Smart Sensor Profile	Yes, Digital Measuring Sensor
Block Parameter	Yes
Data Storage	Yes

The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at www.microsonic.de/IODD.

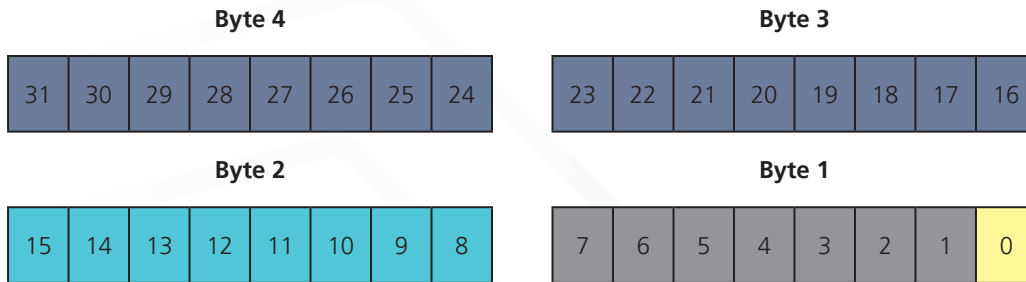






Process data

The process data are cyclically transmitted data. The length of the process data of mic+340/F/TC is 4 byte.

Note

microsonic sensors with an operating range of up to 1000 mm indicate distance values with a resolution of 0.1 mm. Operating ranges greater than 1000 mm have distance values with a resolution of 1 mm.



	Description	Value range
	Switched Signal Channel 1 (SSC1) state	0; 1
	Vacant	
	Process Data Scale	-1; 0; Default: -1
	Process Data Measuring Value	0-32.000; -32.760-32.760; 32.764

Switched Signal Channel 1 state:

- › 0: inactive
- › 1: active

Process Data Measuring Value

- › 0-32,000: Process data measuring value
- › 32,764: No measuring value
- › -32,760: Outside the detection range (-)
- › 32,760: Outside the detection range (+)

Measurement data channel description

Index	Subindex	Term	Format	Access
16512	1	Lower Limit	UInt32	RO
	2	Upper Limit	UInt32	RO
	3	Unit Code	UInt16	RO
	4	Scale	Int8	RO

Lower Limit:

The value of the Lower Limit corresponds to the foreground suppression currently set.

Upper limit:

The value of the Upper Limit corresponds to the maximum range currently set.

Unit Code:

The Unit Code is based on the official IO-Link Unit Code:

- › 1013: [mm]

Scale:

The sensor outputs the scale of the current process data. The sensor uses the scale in accordance with the following scheme to calculate the measured values:

$$\text{Process data value} * 10^{(\text{scale})} * [\text{Unit Code}] = \text{measured value in mm}$$



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
2		System Command	UInt8	WO		130: Restore factory settings	
12		Device Access Locks	Record	R/W			
16		Vendor Name	OctetString	RO	microsonic GmbH		
17		Vendor Text	OctetString	RO	Unser Herz schallt ultra.		
18		Product Name	OctetString	RO	mic+340/F/TC		
19		Product ID	OctetString	RO	22480		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
22		Hardware Revision	OctetString	RO			
23		Firmware Revision	OctetString	RO			
24		Application Specific Tag	OctetString [32]	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0-4: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure	
37		Detailed Device Status	ARRAY[10]	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in Channel	UInt8	R/W	0	0; 1: 0: SSC1: pin 4 (push-pull) 1: SSC1: pin 4 (push-pull)	
59		Teach-in Status	UInt8	RO	0	0-3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: SP12 successful 4: Waiting for command 5: Busy 7: Error	
60	0	SSC1 Parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	3400	350 - 4998: Setpoint 1 for switching output	1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	3900	350 - 4998: Setpoint 2 for switching output	1 mm

Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
61	0	SSC1 Configuration	Record				
	1	Logic	UInt16	R/W	0	0; 1: 0: High active mode 1: Low active mode	
	2	Mode	UInt8	R/W	1	0-3; 128-129: 0: Deactivated 1: Single point (SP1: switching point) 2: Window (SP1, SP2: window mode) 3: Two point (SP1, SP2: hysteresis mode) 128: Single point + set point offset (SP1: switching point + offset) 129: Window ± set point offset (SP1: two way reflective barrier)	
	3	Hysteresis	UInt8	R/W	50	1 - 4648: Hysteresis for SP1 and SP2	1 mm
100	0	SSC1 Advanced Configuration	Record				
	1	Switch-on delay	UInt8	R/W	0	0-20	1 s
	2	Switch-off delay	UInt8	R/W	0	0-20	1 s
	3	Set point offset	UInt8	R/W	8	1-20	1%
200	0	Measurement configuration	Record				
	1	Foreground suppression	Int16	R/W	319	319-1050	1 mm
	2	Maximum range	Int16	R/W	5000	5000-9999	1 mm
220	0	Detection zone sensitivity	Record				
	1	Type	UInt8	R/W	2	0-3	1 mm
	2	Lowest sensitivity until	UInt16	R/W	325	325-5000	1 mm
	3	Highest sensitivity above	UInt16	R/W	7360	396-33032	1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0-4: 0 = F00: no filter 1 = F01: standard filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	
	2	Strength	UInt8	R/W	0	0-9: 0 = P00 ... 9 = P09 For each measured value filter a filter strength between 0, weak filtering up to 9, strong filtering, can be selected.	
257		Interfering noise suppression	UInt8	R/W	0	0; 1: 0: Inactive 1: Active	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	0-1: 0: Reference temperature 1: Internal Temperature	
	2	Reference temperature	UInt16	R/W	20	-25-70	1° C



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
350	0	Synchronisation and multiplex operation	Record				
	1	Mode	UInt8	R/W	1	0; 1: 0: inactive 1: Active	
	2	Sensor operation	UInt8	R/W	0	0-10: 0: Synchronisation active 1: Multiplex address 1 2: Multiplex address 2 3: Multiplex address 3 4: Multiplex address 4 5: Multiplex address 5 6: Multiplex address 6 7: Multiplex address 7 8: Multiplex address 8 9: Multiplex address 9 10: Multiplex address 10	
	3	Multiplex number of participants	UInt8	R/W	10	2-10: 2: 2 participants 3: 3 participants 4: 4 participants 5: 5 participants 6: 6 participants 7: 7 participants 8: 8 participants 9: 9 participants 10: 10 participants	
370	1	Button	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
371	1	Display	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
1000	1	Echo diagnosis	UInt16	RO	0		

Events

Code		Type	Name	Description
dezimal	hex			
16384	0x4000	Error	Temperature fault	Overload
30480	0x7710	Error	Short circuit	Check installation
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.



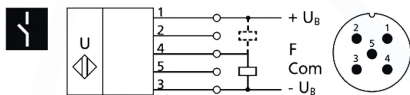
IO-Link data sheet



mic+600/F/TC

Ultrasonic proximity switch with one push-pull switching output and IO-Link interface

Pin assignment



IO-Link-Mode

The sensor mic+600/F/TC is IO-Link capable in accordance with IO-Link specification 1.1. The sensor has an IO-Link communication interface on pin 4.

Direct access to process and diagnosis data is possible via the IO-Link interface. The parameterization of the sensor is possible during operation.

Smart Sensor Profile

mic+ sensors support the Smart Sensor Profile. The following profiles and function classes are integrated:

- › 0x000A - Device Profile: Digital measuring sensors
- › 0x8000 - Device Identification
- › 0x8001 - Multichannel: Binary Data Channel
- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach Channel
- › 0x800A - Measurement Data Channel (standard resolution)

SSC1 configuration

The sensor has five modes:

- › Single point (SP1: switching point)
- › Window (SP1, SP2: window mode)
- › Two point (SP1, SP2: hysteresis mode)
- › Single point + set point offset (SP1 switching point + offset)
- › Window ± set point offset (SP1 two-way reflective barrier)

IODD description file

Each device has its own electronic device description, the IODD file (IO Device Description). The IODD contains comprehensive data for the purpose of better system integration:

- › Communication features
- › Device parameter with allowed values and default value
- › Identification-, processing and diagnosis data
- › Device data
- › Text description
- › Picture of the device
- › Logo of the manufacturer

Physical layer

Vendor Name	microsonic GmbH
Vendor ID	419 (0x01a3)
Product Name	mic+600/F/TC
Product ID	22580
Device ID	54 (0x000036)
IO-Link Spezifikation	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	60.8 ms
IO-Link Port Type	A (<200mA)
SIO Mode Supported	Yes
Smart Sensor Profile	Yes, Digital Measuring Sensor
Block Parameter	Yes
Data Storage	Yes

The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at www.microsonic.de/IODD.

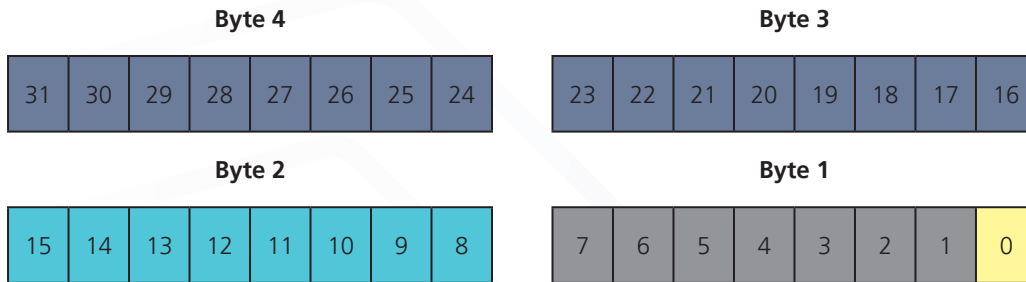






Process data

The process data are cyclically transmitted data. The length of the process data of mic+600/F/TC is 4 byte.

Note

microsonic sensors with an operating range of up to 1000 mm indicate distance values with a resolution of 0.1 mm. Operating ranges greater than 1000 mm have distance values with a resolution of 1 mm.



	Description	Value range
	Switched Signal Channel 1 (SSC1) state	0; 1
	Vacant	
	Process Data Scale	-1; 0; Default: -1
	Process Data Measuring Value	0-32.000; -32.760-32.760; 32.764

Switched Signal Channel 1 state:

- › 0: inactive
- › 1: active

Process Data Measuring Value

- › 0-32,000: Process data measuring value
- › 32,764: No measuring value
- › -32,760: Outside the detection range (-)
- › 32,760: Outside the detection range (+)

Measurement data channel description

Index	Subindex	Term	Format	Access
16512	1	Lower Limit	UInt32	RO
	2	Upper Limit	UInt32	RO
	3	Unit Code	UInt16	RO
	4	Scale	Int8	RO

Lower Limit:

The value of the Lower Limit corresponds to the foreground suppression currently set.

Upper limit:

The value of the Upper Limit corresponds to the maximum range currently set.

Unit Code:

The Unit Code is based on the official IO-Link Unit Code:

- › 1013: [mm]

Scale:

The sensor outputs the scale of the current process data. The sensor uses the scale in accordance with the following scheme to calculate the measured values:

$$\text{Process data value} * 10^{(\text{scale})} * [\text{Unit Code}] = \text{measured value in mm}$$



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
2		System Command	UInt8	WO		130: Restore factory settings	
12		Device Access Locks	Record	R/W			
16		Vendor Name	OctetString	RO	microsonic GmbH		
17		Vendor Text	OctetString	RO	Unser Herz schallt ultra.		
18		Product Name	OctetString	RO	mic+600/F/TC		
19		Product ID	OctetString	RO	22580		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
22		Hardware Revision	OctetString	RO			
23		Firmware Revision	OctetString	RO			
24		Application Specific Tag	OctetString [32]	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0-4: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure	
37		Detailed Device Status	ARRAY[10]	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in Channel	UInt8	R/W	0	0; 1: 0: SSC1: pin 4 (push-pull) 1: SSC1: pin 4 (push-pull)	
59		Teach-in Status	UInt8	RO	0	0-3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: Setpoint 1 and Setpoint 2 (SP12) successful 4: Waiting for command 5: Busy 7: Error	
60	0	SSC1 Parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	6000	600 - 7998: Setpoint 1 for switching output	1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	7000	600 - 7998: Setpoint 2 for switching output	1 mm

Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
61	0	SSC1 Configuration	Record				
	1	Logic	UInt16	R/W	0	0; 1: 0: High active 1: Low active	
	2	Mode	UInt8	R/W	1	0-3; 128-129: 0: Deactivated 1: Single point (SP1: switching point) 2: Window (SP1, SP2: window mode) 3: Two point (SP1, SP2: hysteresis mode) 128: Single point + set point offset (SP1: switching point + offset) 129: Window ± set point offset (SP1: two-way reflective barrier)	
	3	Hysteresis	UInt8	R/W	100	1 - 7398: Hysteresis for SP1 and SP2	1 mm
100	0	SSC1 Advanced Configuration	Record				
	1	Switch-on delay	UInt8	R/W	0	0-20	1 s
	2	Switch-off delay	UInt8	R/W	0	0-20	1 s
	3	Set point offset	UInt8	R/W	8	1-20	1%
200	0	Measurement configuration	Record				
	1	Foreground suppression	Int16	R/W	547	547-1800	1 mm
	2	Maximum range	Int16	R/W	8000	8000-9999	1 mm
220	0	Detection zone sensitivity	Record				
	1	Type	UInt8	R/W	2	0-3	1 mm
	2	Lowest sensitivity until	UInt16	R/W	553	553-8000	1 mm
	3	Highest sensitivity above	UInt16	R/W	7588	624-36032	1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0-4: 0 = F00: no filter 1 = F01: standard filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	
	2	Strength	UInt8	R/W	0	0-9: 0 = P00 ... 9 = P09 For each measured value filter a filter strength between 0, weak filtering up to 9, strong filtering, can be selected.	
257		Interfering noise suppression	UInt8	R/W	0	0; 1: 0: Inactive 1: Active	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	0-1: 0: Reference temperature 1: Internal Temperature	
	2	Reference temperature	UInt16	R/W	20	-25-70	1° C



Appendix IO-Link data

Index	Sub-index	Term	Data type	Access	Default value	Value range	Resolution
350	0	Synchronisation and multiplex operation	Record				
	1	Mode	UInt8	R/W	1	0; 1: 0: inactive 1: Active	
	2	Sensor operation	UInt8	R/W	0	0-10: 0: Synchronisation active 1: Multiplex address 1 2: Multiplex address 2 3: Multiplex address 3 4: Multiplex address 4 5: Multiplex address 5 6: Multiplex address 6 7: Multiplex address 7 8: Multiplex address 8 9: Multiplex address 9 10: Multiplex address 10	
	3	Multiplex number of participants	UInt8	R/W	10	2-10: 2: 2 participants 3: 3 participants 4: 4 participants 5: 5 participants 6: 6 participants 7: 7 participants 8: 8 participants 9: 9 participants 10: 10 participants	
370	1	Button	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
371	1	Display	UInt8	R/W	1	0; 1: 0: Inactive 1: Active	
1000	1	Echo diagnosis	UInt16	RO	0		

Events

Code		Type	Name	Description
dezimal	hex			
16384	0x4000	Error	Temperature fault	Overload
30480	0x7710	Error	Short circuit	Check installation
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.