



## IO-Link data sheet

sks-15/CF/A

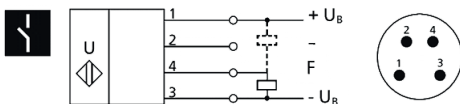
## IO-Link data sheet



### sks-15/CF/A

Ultrasonic proximity switch with a Push-Pull switching output and IO-Link interface

### Pin assignment



### IO-Link mode

The sensor sks-15/CF/A 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

The sensor sks-15/CF/A supports the Smart Sensor Profile. The following profiles and function classes are integrated:

- › 0x0001 - Device Profile: Smart Sensor
- › 0x000A - Device Profile: Digital measuring sensors
- › 0x8000 - Device Identification
- › 0x8001 - Binary Data Channel
- › 0x8003 - Device Diagnosis
- › 0x8004 - Teach-in Commands
- › 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	sks-15/CF/A
Product ID	13009
Device ID	65 (0x000041)
IO-Link Specification	1.1
Transmission Rate	COM 2 (38.400 Bd)
Process Data Length	32 Bit PDI
Minimum Cycle Time	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

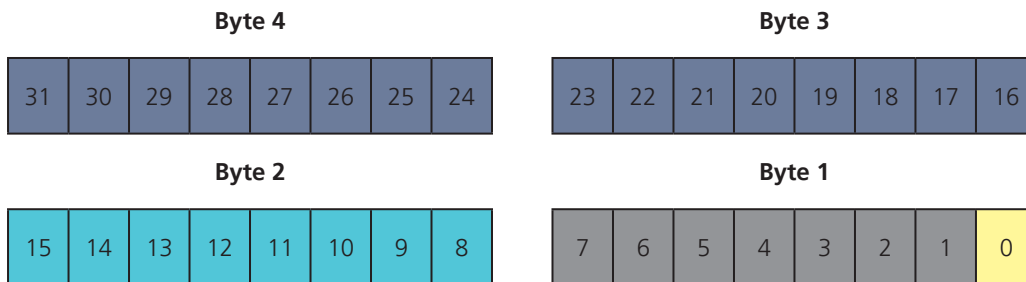
The IODD-library contains the IODD files of all IO-Link capable microsonic sensors. You will find the latest IODD files online at [www.microsonic.de/IODD](http://www.microsonic.de/IODD).

## Process data

The process data are cyclically transmitted data. The length of the process data of sks-15/CF/A 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		Standard Command	UInt8	WO		65: SP1 single value teach-in 66: SP2 single value teach-in 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	sks-15/CF/A		
19		Product ID	OctetString	RO	13009		
20		Product Text	OctetString	RO	Ultrasonic Sensor		
21		Serial Number	OctetString	RO			
23		Firmware Version	OctetString	RO			
24		Application Specific Tag	OctetString	R/W			
32		Error Count	UInt16	RO			
36		Device Status	UInt8	RO	0	0; 1; 2; 3; 4; 5..255: 0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure 5..255: Reserved	
37		Detailed Device Status	ARRAY	RO			
40		Process Data Input	OctetString	RO			
58		Teach-in channel	UInt8	R/W	0	0: 0: SSC1: pin 4 (push-pull)	
59	0	Teach-in status	UInt8	RO	0		
	1	Teach-in status	UInt8			0; 1; 2; 3; 4; 5; 7: 0: Idle 1: Setpoint 1 (SP1) successful 2: Setpoint 2 (SP2) successful 3: SP12 successful 4: Wait for command 5: Busy 7: Error	
	2	SP1 TP1	Boolean		0		
	3	SP2 TP1	Boolean		0		
60	0	SSC1 parameter	Record				
	1	SP1 (SetPoint 1)	UInt16	R/W	1500	200 - 2500: Setpoint 1 for switching output	0.1 mm
	2	SP2 (SetPoint 2)	UInt16	R/W	1700	200 - 2500: 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	UInt8	R/W	0	0; 1: 0: High active 1: Low active	
	2	Mode	UInt8	R/W	1	0; 1; 2; 3; 128; 129: 0: Deactivated 1: Single point (SP1) 2: Window (SP1, SP2) 3: Two point (SP1, SP2) 128: Single point (SP1) + 8% 129: Window (SP1) + 8%	
	3	Hysteresis	UInt16	R/W	20	10 - 2300: Hysteresis for SP1 and SP2	0.1 mm
256	0	Filter	Record				
	1	Type	UInt8	R/W	1	0; 1; 2; 3; 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.	
300	0	Temperature compensation	Record				
	1	Source of temperature	UInt8	R/W	1	Evaluate internal temperature sensor or use fixed reference temperature (20 °C).	
2000	0	Temperature compensation diagnosis	Record	RO			
	1	Sensor temperature	Int16				
16512	0	Measurement data channel description	Record	RO			
	1	Lower Limit	Int32	RO		Lower limit of the measurement range (blind zone)	
	2	Upper Limit	Int32	RO		Upper limit of the measurement range (maximum range)	
	3	Unit Code	Int16	RO		IO-Link unit code: 1013 = [mm]	
	4	Scale	Int8	RO		Process data value * (10 ^ scale) [Unit code] = measuring value in mm	

## Appendix IO-Link data

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### Events

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Code		Type	Name	Description
dezimal	hex			
16384	(0x4000)	Error	Temperature fault	Overload
16912	(0x4210)	Warning	Device temperature over-run	Clear source of heat
16928	(0x4220)	Warning	Device temperature under-run	Insulate device
36000	0x8ca0	Notification	Teach-in error	Teach-in process was not successful.
36001	0x8ca1	Notification	Teach-in success	Teach-in process was successful.
36002	0x8ca2	Notification	CycleTime error	CycleTime error is triggered if cycle time does not correspond to the permitted configuration.