

Note

- Working range and gradient of the analogue output curve depend on the ultrasonic transducers and cannot be adjusted. The working range always is ≥ 40 mm.
- For sound-impermeable materials the sensor can be adjusted to the environmental conditions by the 1-point adjustment procedure.
- For slightly sound-permeable materials the sensor has to be set up to the material and the environmental conditions by using the 2-point adjustment. Carry out a practical test to find out whether a material is slightly sound-permeable.
- For optimum measurement results the material to be detected should be kept in a range of ± 5 mm around the centre between the upper and lower fork leg.
- The sensor can be reset to its factory settings (see »Sensor adjustment with Teach-in procedure, further settings«).
- Using the LinkControl-Adapter LCA-2 (optional accessory) and the LinkControl-Software V7.6 all Teach-in- and additional sensor parameter settings may be made.
- Depending on the function the ultrasonic transducers in the upper and lower fork leg are mounted with a slope of 2° .

IO-Link Mode

The bks+6/FIU sensors are IO-Link-compatible in accordance with IO-Link specification V1.1 and compatible to specification V1.0.

Note

- In IO-Link mode Teach-in and Link-Control are not available.

Process data

The bks+ cyclically transmits the value corresponding to the measured coverage degree with a resolution of 0.01 mm.

Service data

The following sensor parameters may be set via IO-Link.

Teach-in via push-button

The push-button can be activated/deactivated for sensor settings with Teach-in.

Temperature compensation

The temperature compensation is used for measurement value correction for varying ambient temperatures and can be disabled.

Analogue output mode

For the analogue output either the function output voltage or current

output can be selected.

Rising / falling analogue characteristic

The analogue characteristic can be set on rising (0 V / 4 mA at full coverage) or falling characteristic.

Set NOC/NCC

The NCC or NOC output function can be present for the switched output.

Switching off the LEDs

When activated, the LEDs are switched off 30 seconds after a key press. After a new key press they will run for 30 seconds. This automatic

shutdown can be deactivated.

Measurement filter

bks+ ultrasonic sensors provide for a choice of 3 filter settings:

- F00 (no filter)
 - Each ultrasonic measurement acts on the output in an unfiltered manner.
- F01 (average value filter)
 - Forms approximately the arithmetic mean of several measurements. According to the mean value the output is set. The number of measurements, from which the mean is formed is dependent on the chosen filter strength.
- F02 (median filter)
 - Finds the median of several measurements. According to the median the output is set. The number of measurements, for which the median is determined is dependent on the selected filter strength.

System commands

With 5 system commands the following settings may be carried out:

- restore IO-Link parameters to their factory settings
- sensor adjustment: fork cleared.
- sensor adjustment: fork 50 % covered
- sensor adjustment: fork 100 % covered
- reset all sensor parameters including the IO-Link parameters to their factory settings.

Events

The bks+ sensor sends the following events:

- parameter was changed
- sensor adjustment successful
- sensor adjustment failed

IODD file

The latest IODD file you will find on the internet under www.microsonic.de/en/IODD.

For further informations on IO-Link see www.io-link.com.

Filter strength

For both measurement value filters, a filter strength between P00 (weak filter effect) and P09 (strong filter effect) can be selected.

Switching window

If the web edge is within the switching window the switching output is set. The switching window is defined by the adjusted center and the width.

Note

The switching window has to be within the operating range.

IO-Link Data

		bks+6/FIU	
physical layer		V1.1	
IO-Link revision		V1.0	
compatibility		yes	
block parameter		yes	
data storage		yes	
SIO mode support		yes	
min cycle time		4 ms	
baud rate		COM 2	
format of process data		16 Bit, R, UNI16	
content of process data		Bit 0-15: degree of coverage with 0.01 mm resolution	
service data IO-Link specific			
index	access	value	
vendor name	0x10 :R	microsonic GmbH	
vendor text	0x11 :R	www.microsonic.de	
product name	0x12 :R	bks+	
product ID	0x13 :R	bks+6/FIU	
product text	0x14 :R	Ultraschall-Sensor	
service data sensor specific			
index	format	access	range
Teach-in via push-button	0x40 UINT8	R/W	0: activated; 1: deactivated
linearisation of the output characteristic	0x41 UINT8	R/W	0: parameter without function
temperature compensation	0x42 UINT8	R/W	0: deactivated; 1: activated
analogue output mode	0x44 UINT8	R/W	2: current output, 3: voltage output
rising/falling output characteristic curve	0x45 UINT8	R/W	0: rising characteristic curve; 1: falling characteristic curve
NCC/NOC	0x46 UINT8	R/W	0: NOC; 1: NCC
automatic turning-off LEDs	0x48 UINT8	R/W	0: deactivated; 1: activated
measurement filter	0x4D UINT8	R/W	0-2: F00-F02
filter strength	0x4E UINT8	R/W	0-9: P00-P09
centre of switching window	0x4F UINT16	R/W	0-4,095 ¹⁾
width of switching window	0x50 UINT16	R/W	0-4,095 ¹⁾
system commands			
index	access	value	
restore IO-Link parameter	0x02 :W	130	
sensor adjustment: fork cleared	0x02 :W	161	
sensor adjustment: fork 50 % covered	0x02 :W	162	
sensor adjustment: fork 100 % covered	0x02 :W	163	
reset to factory setting	0x02 :W	164	
events			
code	typ	name	
0x8ca0	Notification	parameter was changed	
0x8ca1	Notification	sensor adjustment successful	
0x8ca2	Notification	sensor adjustment failed	
observe measurement value			
index	format	access	range
0x54	UINT16	R	0-4,095 ¹⁾

¹⁾ The value range 0-4,095 corresponds with the working range of the sensor.



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