



BOD 23K-LI01-S4

930449 A19 EN
Ersetzt Ausgabe/replaces edition F17
Remplace l'édition/Sustituye edición F17

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GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	3 ms
SIO mode	supported
Length process data	16 Bit
Vendor ID	888 (0x0378)
Device ID	200705 (0x03 0x10 0x01)
Data storage	supported
Specification IO-Link	1.1

PROCESS DATA															
SMART SENSOR FORMAT															
Byte 0								Byte 1							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0	Signal quality	Switching output 2	Switching output 1
Process value - distance in mm, characteristic curve not adjustable															
Signal quality - adjustable via index 0xC4															
Switching output 2 - only in IO-Link mode															
Switching output 1 - corresponds to switching output Q in SIO-Mode															

MEASUREMENT FORMAT															
Byte 0								Byte 1							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D2	D1
Process value - distance in mm, characteristic curve adjustable															

IDENTIFICATION DATA						
Index dec / hex	Access	Data type	Length		Description	Comment
16 / 0x10	Read	String	Max. 64 Byte		Vendor name	BALLUFF
17 / 0x11					Vendor text	www.balluff.com
18 / 0x12					Product name	BOD 23K-LI01-S4
19 / 0x32					Product ID	BOD0020
20 / 0x11					Product text	BOD - Optical Distance Sensor
23 / 0x17					Firmware revision	1.0

SMART SENSOR PROFILE PARAMETER									
Index in dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment	
12 / 0x0C	Read / write	Uint	16 Bit		0x00 0x00	D1, D2, D3	Lock functions	D1 - data storage lock D2 - local parametrization lock D3 - local user interface lock	
24 / 0x18	Read / write	StringT	32 characters		**** ... ****			Application text	Free text, e.g. item designation
58 / 0x3A	Read / write	Uint	8 Bit		0	0, 1, 2		Switching channel teach-in	0/1 = switching channel 1 2 = switching channel 2
59 / 0x3B	Read	Uint	8 Bit					Teach-in status	
Define switching channel 1									
60 / 0x3C	Read / write	Uint	16 Bit	1	3000	60 ... 5000	Switching point 1	Needed for single, window and two-point mode, indicated in mm	
				2	3100	60 ... 5000	Switching point 2	Needed for window and two-point mode, indicated in mm	
Set-up switching channel 1									
61 / 0x3D	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC	
				2	1	0, 1, 2, 3	Switching mode	0 - off, 1 - single-point mode 2 - window mode 3 - two-point mode	
			16 Bit	3	0	0	Hysteresis	Not adjustable	
Define switching channel 2									
62 / 0x3E	Read / write	Uint	16 Bit	1	3000	60 ... 5000	Switching point 1	Needed for single, window and two-point mode, indicated in mm	
				2	3100	60 ... 5000	Switching point 2	Needed for window and two-point mode, indicated in mm	
Set-up switching channel 2									
63 / 0x3F	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC	
				2	0	0, 1, 2, 3	Switching mode	0 - off 1 - single-point mode 2 - window mode 3 - two-point mode	
			16 Bit	3	0	0	Hysteresis	Not adjustable	

PARAMETER								
Index dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment
81 / 0x51	Read / write	Uint	8 Bit		All events allowed	0 ... 0x1F	Events on / off	See table events
82 / 0x52	Read	Int	8 Bit	1			Read temperature sensor	
				2			Operating temperature	Current temperature in device in °C
				3			Max. operating temperature since restart	Reset after interruption of voltage supply, in °C
				4			Min. operating temperature since restart	
				5			Max. lifetime temperature	No reset possible, in °C
			Min. lifetime temperature					
83 / 0x53	Read / write	Int	8 Bit	1	- 20	- 40 ... 100	Define limit temperature	Definition of temperature level for event 16928/4220, in °C
				2	80	- 40 ... 100	Temperature min.	Definition of temperature level for event 16912/4210, in °C
88 / 0x58	Read	Uint	32 Bit	1			Read operating data	
				2			Counter power-on hours	No reset possible
95 / 0x5F	Read	String		1	0.06 ... 5m		Counter switch cycle	No reset possible
				2	< 5 mm		Read sensor characteristics	
				3	± 30 mm		Measurement range	
				4	20 mm		Resolution	
				5	Laser, red 655 nm class 1		Linearity	
				6	≤ 60 mA		Hysteresis	
				7	≤ 250 Hz		Type of light	
				8	20 min.		No-load current	
				9	-40 ... +60 °C		Switching frequency	
189 / 0xBD	Read / write	Uint	8 Bit		0	0 ... 10	Intensity process data average filter	0 = off to 10 = max
193 / 0xC1	Read / write	Int	16 Bit		0	-5000 ... 5000	Offset	mm
185 / 0xC3	Read / write	Uint	8 Bit		1	0, 1	Invert characteristic curve	0 = negative, 1 = positive
202 / 0xCA	Read / write	Uint	8 Bit		1	0, 1	Process data output	0 = measurement output 1 = measurement format with switching channel
196 / 0xC4	Read / write	Uint	8 Bit		10	10 ... 90	Signal quality level	%
207 / 0xCF	Read	Uint	8 Bit			0 ... 100	Current signal quality	%
213 / 0xD5	Read / write	Uint	8 Bit		2 = auto-detect	0, 1, 2	Function switching output Q ₁	0 = NPN, 1 = PNP, 2 = auto-detect
221 / 0xDD	Read / write	Uint	8 Bit		1 = PIN 2 active	0, 1	Control input PIN 2	0 = PIN 2 inactive, 1 = PIN 2 active

SYSTEM COMMANDS								
Index dec / hex	Access	Data type	Length	Subindex	Function dec / hex	Range	Description	Comment
2 / 0x02	Read / write	Uint	8 Bit		64 / 0x40		Teach apply	Adopt teach values on sensor
					65 / 0x41		Single value teach - switching point 1	The switching point is on the teach value
					66 / 0x42		Single value teach - switching point 2	
					67 / 0x43		Two value teach - teachpoint 1 for switching point 1	The switching point is in the middle of both teachpoints
					68 / 0x44		Two value teach - teachpoint 2 for switching point 1	
					69 / 0x45		Two value teach - teachpoint 1 for switching point 2	
					70 / 0x46		Two value teach - teachpoint 2 for switching point 2	The switching point is between the min. / max. value
					71 / 0x47		Dynamic teach - switching point 1 - start	
					72 / 0x48		Dynamic teach - switching point 1 - stop	
					73 / 0x49		Dynamic teach - switching point 2 - start	
					74 / 0x4A		Dynamic teach - switching point 2 - stop	
					79 / 0x4F		Teach cancel	
					160 / 0xA0		Emitter OFF	
					161 / 0xA1		Emitter ON	
					162 / 0xA2		Reset switching channel	Reset of current switching channel
	224 / 0xE0		Offset teach					
	175 / 0xAF		Detect sensor	1x activated - sensor flashes 60 s 2x activated - permanent flashing 3x activated - stop permanent flashing				
	128 / 0x80		Reset sensor					
	130 / 0x82		Factory settings					

EVENTS				
Event	Events ON/OFF	Status value	Warning	
1024 / 0x4000	0	4	Error	Operation temperature fault
16912 / 0x4210	1	2	Warning	Limit temperature max. overrun
16928 / 0x4220	2	2	Warning	Limit temperature min. underrun
20480 / 0x5000	3	4	Error	Device hardware fault
20497 / 0x5011	4	4	Error	Non-volatile memory loss
65425 / 0xFF91		0	Notice	Data storage - upload request