



FT 10-BHD-2PNSL-...

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www.sensopart.com

GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	2.3 ms
SIO mode	supported
Length process data	16 Bit
Vendor ID	347 (0x01 0x5B)
Device ID	44289
Data storage	supported
Specification IO-Link	1.1

PROCESS DATA																
SMART-SENSOR PROFILE																
Byte 0								Byte 1								
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	
MSB D7	D6	D5	D4	D3	D2	D1	LSB D0	X	X	X	X	X	Signal quality	Switching output Q ₂	Switching output Q ₁	
Signal quality 0 ... 100 %																
Signal quality bit - adjustable via index 0xC4																
Switching output Q ₂																
Switching output Q ₁																

IDENTIFICATION DATA						
Index dec / hex	Access	Data type	Length		Description	Comment
16 / 0x10	Read	String	Max. 64 Byte		Vendor name	SensoPart Industriesensorik GmbH
17 / 0x11					Vendor text	www.sensopart.com
18 / 0x12					Product name	FT 10-BHD-2PNSL-...
19 / 0x13					Product ID	600-11064 600-11065
20 / 0x14					Product text	Device specific
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	D0, D1, D3	Lock functions	D0 - parameter write access D1 - data storage 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	Teach channel	0 / 1 = switching channel 1 2 = switching channel 2
59 / 0x3B	Read	Uint	8 Bit				Teach status	
Define switching output Q ₁ (physical pin)								
60 / 0x3C	Read / write	Uint	16 Bit	1	1500	100 ... 1500	Switching point 1	In 1/8 mm (e.g. 10 mm = 100 1/8 mm)
				2	1500	100 ... 1500	Switching point 2	In 1/8 mm (e.g. 10 mm = 100 1/8 mm)
Set-Up switching output Q ₂ (physical pin)								
61 / 0x3D	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC
				2	1	0, 1, 2, 3, 128	Switching mode	0 - disable 1 - single-point mode 2 - window mode ¹⁾ 3 - two-point mode ¹⁾ 128 - detect all mode
				3	0	0	Hysteresis	Not adjustable
Define switching output Q ₂ (physical pin)								
62 / 0x3E	Read / write	Uint	16 Bit	1	1500	100 ... 1500	Switching point 1	Needed for single, window, two-point mode and detect all mode, in 1/8 mm (e.g. 10 mm = 100 1/8 mm)
				2	1500	100 ... 1500	Switching point 2	Needed for single, window, two-point mode and detect all mode, in 1/8 mm (e.g. 10 mm = 100 1/8 mm)
Set-Up switching output Q ₂ (physical pin)								
63 / 0x3F	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC
				2	1	0, 1, 2, 3, 128	Switching mode	0 - disable 1 - single-point mode 2 - window mode ¹⁾ 3 - two-point mode ¹⁾ 128 - detect all mode
				3	0	0	Hvsteresis	Not adjustable

¹⁾ Min. difference between both switchpoints 1 mm

PARAMETER								
Index dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment
88 / 0x58	Read	Uint	32 Bit	1			Read operating data	
				2			Counter operating hours	No reset possible
				Counter switch cycle			No reset possible	
95 / 0x5F	Read	String		1	10 ... 150 mm		Read sensor characteristics	
				5	LED		Operating range	
				6	≤ 20 mA		Type of light	
				7	≤ 700 Hz		No-load current	
				9	-20 ... +60 °C		Switching frequency	
							Ambient temperature	
Signal quality level								
196 / 0xC4	Read / write	Uint	8 Bit		10	10 ... 90	Signal quality level	If below 10 % no stable detection
208 / 0xD0	Read / write	Uint	16 Bit	Smart functions Q ₁ (physical pin)				
				1	0	0 ... 65535	Counter	
				2	0	0 ... 65535	On delay	In ms, adjustable in 1 ms
				3	0	0 ... 65535	Off delay	In ms, adjustable in 1 ms
				4	0	0 ... 65535	Impulse	In ms, adjustable in 1 ms
				5	0	0 ... 500	Monitoring frequency	In 1/° Hz, adjustable in 0.1 Hz steps ²⁾
209 / 0xD1	Read / write	Uint	16 Bit	Smart functions Q ₂ (physical pin)				
				1	0	0 ... 65535	Counter	
				2	0	0 ... 65535	On delay	In ms, adjustable in 1 ms
				3	0	0 ... 65535	Off delay	In ms, adjustable in 1 ms
				4	0	0 ... 65535	Impulse	In ms, adjustable in 1 ms
				5	0	0 ... 500	Monitoring frequency	In 1/° Hz, adjustable in 0.1 Hz steps ²⁾
Function switching output Q ₁								
213 / 0xD5	Read / write	Uint	8 Bit	1	2	0, 1, 2	PNP / NPN	0 = NPN 1 = PNP 2 = auto-detect
Function switching output Q ₂								
214 / 0xD6	Read / write	Uint	8 Bit	1	2	0, 1, 2	PNP / NPN	0 = NPN 1 = PNP 2 = auto-detect IO-Link only specified for PNP
				2	0	0, 2	Switching behaviour Q ₂	0 = switching output 2 = antivalent
Dual mode								
218 / 0xDA	Read / write	Uint	8 Bit	1	0	0, 1	Distance + Intensity Q ₁	0 = distance 1 = distance + intensity
				2	0	0, 1	Distance + Intensity Q ₂	0 = distance 1 = distance + intensity
Tolerance detect all mode								
219 / 0xDB	Read / write	Uint	8 Bit	1	1	0 ... 10	Tolerance detect all mode	0 = 0x hysteresis 1 = 1x hysteresis 10 = 10x hysteresis only at detect all mode

SYSTEM COMMANDS								
Index dec / hex	Access	Data type	Length	Subindex	Function dec / hex	Range	Description	Comment
2 / 0x02	Read / write	Uint	8 Bit	1	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	
					68 / 0x44		Two value teach - teachpoint 2 for switching point 1	The switching point is in the middle of both teachpoints
					71 / 0x47		Dynamic teach - switching point 1 - start	
					72 / 0x48		Dynamic teach - switching point 1 - stop	The switching point is in the middle of the min. / max. value
					79 / 0x4F		Teach cancel	
					160 / 0xA0		Emitter off	
					161 / 0xA1		Emitter on	
					162 / 0xA2		Reset switching channel	Reset of current switching channel
					175 / 0xAF		Detect sensor	1x activated - sensor flashes 60 s 2x activated - permanent flashing 3x activated - stop permanent flashing
					177 / 0xB1		Detect All- Start dynamic teach	
					179 / 0xB3		Detect All- Stop dynamic teach	
					128 / 0x80		Reset sensor	
					130 / 0x82		Factory setting	

²⁾ Differs to real frequency ± 10 %

EVENTS				
Event	Status value	Warning		
20480 / 0x5000	4	Error	Device hardware fault	Default: deactivated ³⁾
20497 / 0x5011	4	Error	Non-volatile memory loss	
65425 / 0xFF91	0	Notice	Data storage - upload request	
16384 / 0x4000	4	Error	Temperature fault	Not blockable via 0x51 ³⁾

³⁾ For activation use function 0x51

Below are a few examples for the teach process with the FT 10-BHD

TEACH PROCESS				
Single Point mode: Teach on object				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose „Teach channel“	1 = Q ₁ 2 = Q ₂
2.	61 / 0x3D	2	Choose „Switching mode“ for Q ₁	1 = Single point mode
3.	2 / 0x02	1	Single value teach - switchpoint 1	65 / 0x41
4.	2 / 0x02	1	Teach apply	64 / 0x40
Single Point mode: Object background teach				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose "Teach channel"	1= Q ₁ 2= Q ₂
2.	61 / 0x3D	2	Choose "Switching mode" for Q ₁	1 = Single point mode
3.	2 / 0x02	1	Two value teach - teachpoint 1 for switchpoint 1	67 / 0x43
4.	2 / 0x02	1	Two value teach - teachpoint 2 for switchpoint 1	68 / 0x44
5.	2 / 0x02	1	Teach apply	64 / 0x40
Single Point mode: Dynamic teach				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose "Teach channel"	1 = Q ₁ 2 = Q ₂
2.	61 / 0x3D	2	Choose "Switching mode" for Q ₁	1 = Single point mode
3.	2 / 0x02	1	Dynamic teach - switchpoint 1 - start	71 / 0x47
4.	2 / 0x02	1	Dynamic teach - switchpoint 1 - stop	72 / 0x48
5.	2 / 0x02	1	Teach apply	64 / 0x40
Window mode				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose "Teach channel"	1 = Q ₁ 2 = Q ₂
2.	61 / 0x3D	2	Choose "Switching mode" for Q ₁	2 = Window mode
3.	2 / 0x02	1	Single value teach - switchpoint 1	65 / 0x41
4.	2 / 0x02	1	Single value teach - switchpoint 2	66 / 0x42
5.	2 / 0x02	1	Teach apply	64 / 0x40
Two point mode (hysteresis mode)				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose "Teach channel"	1 = Q ₁ 2 = Q ₂
2.	61 / 0x3D	2	Choose "Switching mode" for Q ₁	3 = Two point mode
3.	2 / 0x02	1	Single value teach - switchpoint 1	65 / 0x41
4.	2 / 0x02	1	Single value teach - switchpoint 2	66 / 0x42
5.	2 / 0x02	1	Teach apply	64 / 0x40

TEACH PROCESS				
Detect All mode				
Step	Index dec / hex	Subindex	Description	Range
1.	58 / 0x3A	1	Choose "Teach channel"	1 = Q ₁ 2 = Q ₂
2.	61 / 0x3D	2	Choose "Switching mode" for Q ₁	128 / 0x80 = Detect All mode
3.	2 / 0x02	1	Detect All - start dynamic teach	177 / 0xB1
4.	2 / 0x02	1	Detect All - stop dynamic teach	179 / 0xB3
5.	2 / 0x02	1	Teach apply	64 / 0x40