

GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	2.7 ms
SIO mode	supported
Length process data	24 Bit
Vendor ID	347 (0x01 0x5B)
Device ID	6401
Data storage	supported
Specification IO-Link	1.1

PROCESS DATA																										
SMART-SENSOR PROFILE																										
Byte 0								Byte 1								Byte 2										
7	6	5	4	3	2	1	0	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	MSB D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	LSB D0	Signal quality	Switching output Q2	Switching output Q1			
Signal quality 0 ... 100 %								Process value - distance in mm, characteristic curve not adjustable																		
Signal quality score - adjustable via index 0xC4																										
Switching output 2 - virtual switching output																										
Switching output 1 - corresponds to switching output Q in SIO-mode																										

MEASUREMENT OUTPUT																													
Byte 0								Byte 1								Byte 2													
7	6	5	4	3	2	1	0	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	MSB D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	LSB D0						
Signal quality 0 ... 100 %								Process value - distance in mm, characteristic curve adjustable, average filter applicable																					

IDENTIFICATION DATA						
Index dec / hex	Access	Data type	Length		Description	Comment
16 / 0x10	Read	String	Max. 64 Byte		Vendor name	SensoPart Industriesensork GmbH
17 / 0x11				Vendor text	www.sensopart.com	
18 / 0x12				Product name	FT 25-RA-60-PNSUL-M4M	
19 / 0x13				Product ID	604-41008	
20 / 0x11				Product text	20 ... 80 mm, Q _{A1} , Q, Auto / PNP / NPN, metal plug, M8, 4-pin	
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, D3	Lock functions	D1 - data storage lock D3 - local user interface lock
24 / 0x18	Read / write	StringT	32 characters		*** ... ***	0 ... 32 char.	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-in status	
Define switching output Q ₁ (physical pin)								
60 / 0x3C	Read / write	Uint	16 Bit	1	20	20 ... 80	Switching point 1	Needed for single, window and two-point mode, indicated in mm
				2	80	20 ... 80	Switching point 2	Needed for window and two-point mode, indicated in mm
Set-Up switching output Q ₁ (physical pin)								
61 / 0x3D	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC
				2	2	0, 1, 2, 3	Switching mode	0 - disable 1 - single-point mode 2 - window mode ¹⁾ 3 - two-point mode ¹⁾
Define switching output Q ₂ (only virtual via IO-Link)								
62 / 0x3E	Read / write	Uint	16 Bit	1	20	20 ... 80	Switching point 1	Needed for single, window and two-point mode, indicated in mm
				2	80	20 ... 80	Switching point 2	Needed for window and two-point mode, indicated in mm
Set-Up switching output Q ₂ (only virtual via IO-Link)								
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 - disable 1 - single-point mode 2 - window mode ¹⁾ 3 - two-point mode ¹⁾

¹⁾ Min. difference between both switchpoints 1 mm

PARAMETER								
Index dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment
81 / 0x51	Read	Uint	8 Bit		1x10	0 ... 1F	Event On / Off	0 = Disable 1 = Enable
88 / 0x58	Read	Uint	32 Bit	1			Read operating data	
				2			Counter operating hours	No reset possible
95 / 0x5F	Read	String		1	20 ... 80 mm		Type label	
				2	0.12 mm		Measurement range	
				3	± 0.4 mm		Resolution Q _A	
				5	LED		Linearity Q _A	
				6	≤ 30 mA		Type of light	
				7	≤ 1000 Hz		No-load current	
				8	10 min.		Switching frequency	
				9	-20 ... +60 °C		Warm-up time	
				10	1 ... 10 V		Ambient temperature	
				11	< 0.4 mm		Output signal	
189 / 0xBD	Read / write	Uint	8 Bit		0	0 ... 10	Intensity average filter	0 = No averaging response time 3.4 ms 1 = 10x response time 2 = 20x response time ... 10 = max.
193 / 0xC1	Read / write	Int	32 Bit		0	-80 ... 80	Offset	In mm
185 / 0xC3	Read / write	Uint	8 Bit		1	0, 1	Invert characteristic curve	Rise: 0 = negative 1 = positive
202 / 0xCA	Read / write	Uint	8 Bit		1	0, 1	Process data output	0 = measurement output 1 = smart sensor profile
196 / 0xC4	Read / write	Uint	8 Bit		10	10 ... 90	Signal quality level	%
194 / 0xC2	Read / write	Uint	16 Bit		200	200 ... 800	Analogue - low level	In ¹ / ₁₀ mm (e.g. 20 mm = 200 ¹ / ₁₀ mm)
					800	200 ... 800	Analogue - high level	In ¹ / ₁₀ mm (e.g. 20 mm = 200 ¹ / ₁₀ mm)
208 / 0xD0	Read / write	Uint	16 Bit	1	0	0 ... 65535	Smart functions Q ₁ (physical pin)	
				2	0	0 ... 65535	Counter	
				3	0	0 ... 65535	On delay	In ms, adjustable in 1 ms
				4	0	0 ... 65535	Off delay	In ms, adjustable in 1 ms
				5	0	0 ... 50	Impulse	In ms, adjustable in 1 ms
209 / 0xD1	Read / write	Uint	16 Bit		0	0 ... 65535	Smart functions Q ₂ on virtual switching output Q ₂ ²⁾	
				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 ... 50	Monitoring frequency	In Hz, adjustable in 0.1 Hz steps ²⁾
213 / 0xD5	Read / write	Uint	8 Bit	1	2	0, 1, 2	Function switching output Q ₁	
							PNP / NPN	0 = NPN 1 = PNP 2 = auto-detect

²⁾ Differs to real frequency ± 10 %

SYSTEM COMMANDS

Index dec / hex	Access	Data type	Length	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	
				71 / 0x47		Dynamic teach - switching point 1 - start	The switching point is in the middle of the min. / max. value
				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
				172 / 0xAC		Start measurement range	
				173 / 0xAD		End measurement range	
				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 setting					

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	Temperature range exceeded; default: deactivated ³⁾

³⁾ For activation use function 0x51