

PROCESS DATA - SMART SENSOR PROFILE (MANIPULATED DATA)																															
PD_IN																															
Byte 0								Byte 1								Byte 2								Byte 3							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Measurement Value MSB																Scale MSB								Signal Quality MSB							
Measurement Value LSB																Scale LSB								Signal Quality LSB							
Measurement Value																Signal Quality Bit															
Scale																SSC.2															
Signal Quality 0...10																SSC.1															
Signal Quality Bit																															
SSC.2 Virtual																															
SSC.1 Physical																															

PD_OUT							
Byte 0							
7	6	5	4	3	2	1	0
X	X	X	X	X	X	X	Emitter Off
0 = Emitter On 1 = Emitter Off							

PROCESS DATA - SMART SENSOR PROFILE (RAW DATA)																																
PD_IN																																
Byte 0								Byte 1								Byte 2								Byte 3								
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	
Measurement Value MSB																Measurement Value LSB																
	D14																Scale MSB															
		D13															D6															
			D12														D5															
				D11													D4															
					D10												D3															
						D9											D2															
							D8										D1															
Measurement Value																																
Scale																																
Signal Quality 0...10																																
Signal Quality Bit																																
SSC.2 Virtual																																
SSC.1 Physical																																

PD_OUT							
Byte 0							
7	6	5	4	3	2	1	0
X	X	X	X	X	X	X	Emitter Off
0 = Emitter On 1 = Emitter Off							

IDENTIFICATION DATA						
Index dec / hex	Access	Data type	Length	Subindex	Description	Comment
16 / 0x10	Read	StringT	Max. 64 Byte	0	Vendor name	SensoPart Industriesensorik GmbH
17 / 0x11					Vendor text	www.sensopart.com
18 / 0x12					Product name	FT 25-RLAP-1500-PNSUL-...
19 / 0x13					Product ID	604-41015 604-41017
20 / 0x14					Product text	100...1500 mm, Q1, QA, Auto/PNP/NPN, ...
21 / 0x15					Serial number	"Device specific"
23 / 0x17					Firmware revision	"Device specific"

PARAMETER									
Index dec / hex	Access	Data type	Length	Sub-index	Default value	Data Storage	Range	Description	Comment
36 / 0x24	Read	UIntegerT	8 Bit	1	"Device specific"	No	0, 1, 2, 3, 4	DeviceStatus	
								Device Status	0=Device is OK, 1=Maintenance required, 2=Out of specification, 3=Functional check, 4=Failure
37 / 0x25	Read	ArrT<uint24>[8]	248 Bit	0	"Device specific"	No		DetailedDeviceStatus	
								Detailed Device Status	
24 / 0x18	Read / write	StringT	32 Char	1	*****	Yes		ApplicationSpecificTag	
								Application Specific Tag	Free text
25 / 0x19	Read / write	StringT	32 Char	1	*****	Yes		CP Function Tag	
								Function Tag	Free text
26 / 0x1A	Read / write	StringT	32 Char	1	*****	Yes		CP Location Tag	
								Location Tag	Free text
58 / 0x3A	Read / write	UIntegerT	8 Bit	0	1	No	1, 2	Teach Select	
								Teach Select	1=SSC.1, 2=SSC.2

PARAMETER									
Index dec / hex	Access	Data type	Length	Sub- index	Default value	Data Storage	Range	Description	Comment
59 / 0x3B	Teach Result								
	Read	UIntegerT	4 Bit	1	0	No	0, 1, 2, 3, 4, 5, 7	State	0=Idle, 1=SP1 success, 2=SP2 success, 3=SP1, SP2 success, 4=Wait for command, 5=Busy, 7=Error
	Read	BooleanT	1 Bit	2	FALSCH	No	false, true	Flag SP1 TP1	false=Initial or not ok, true=OK
	Read	BooleanT	1 Bit	3	FALSCH	No	false, true	Flag SP1 TP2	false=Initial or not ok, true=OK
	Read	BooleanT	1 Bit	4	FALSCH	No	false, true	Flag SP2 TP1	false=Initial or not ok, true=OK
	Read	BooleanT	1 Bit	5	FALSCH	No	false, true	Flag SP2 TP2	false=Initial or not ok, true=OK
60 / 0x3C	SSC.1 Param								
	Read / write	IntegerT	32 Bit	1	15000	Yes	1000...15000	SP1	Needed for Single Point, Window, Two Point and Single Point (offset - like physical teach button), 1/10 mm
	Read / write	IntegerT	32 Bit	2	1000	Yes	1000...15000	SP2	Needed for Window and Two Point, 1/10 mm
61 / 0x3D	SSC.1 Config								
	Read / write	UIntegerT	8 Bit	1	0	Yes	0, 1	Logic	0=NO (High Active), 1=NC (Low Active)
	Read / write	UIntegerT	8 Bit	2	2	Yes	0, 1, 2, 3, 132	Mode	0=Deactivated, 1=Single Point, 2=Window, 3=Two Point, 132=Single Point (Offset - Like physical teach button)
	Read / write	IntegerT	32 Bit	3	0	Yes	0	Hysteresis	0=Default
62 / 0x3E	SSC.2 Param								
	Read / write	IntegerT	32 Bit	1	15000	Yes	1000...15000	SP1	Needed for Single Point, Window, Two Point and Single Point (offset - like physical teach button), 1/10 mm
	Read / write	IntegerT	32 Bit	2	1000	Yes	1000...15000	SP2	Needed for Window and Two Point, 1/10 mm
63 / 0x3F	SSC.2 Config								
	Read / write	UIntegerT	8 Bit	1	0	Yes	0, 1	Logic	0=NO (High Active), 1=NC (Low Active)
	Read / write	UIntegerT	8 Bit	2	0	Yes	0, 1, 2, 3, 132	Mode	0=Deactivated, 1=Single Point, 2=Window, 3=Two Point, 132=Single Point (Offset - Like physical teach button)
	Read / write	IntegerT	32 Bit	3	0	Yes	0	Hysteresis	0=Default
16512 / 0x4080	MDC Descriptor								
	Read	IntegerT	32 Bit	1	1000	No		Lower Value	
	Read	IntegerT	32 Bit	2	15000	No		Upper Value	
	Read	UIntegerT	16 Bit	3	1010	No		Unit	1010=m
	Read	IntegerT	8 Bit	4	-4	No		Scale	
88 / 0x58	Operating Data								
	Read	UIntegerT	32 Bit	1	"Device specific"	No		Counter operating hours	No reset possible
	Read	UIntegerT	32 Bit	2	"Device specific"	No		Counter switch cycle	No reset possible
95 / 0x5F	Electronic Data Sheet								
	Read	StringT	13 Char	1	100...1500 mm	No		Operating range	
	Read	StringT	7 Char	2	0.34 mm	No		Resolution	
	Read	StringT	8 Char	3	± 15 mm	No		Linearity	
	Read	StringT	15 Char	4	4...30 mm (90%)	No		Hysteresis	
	Read	StringT	26 Char	5	Laser, red 655 nm, class 1	No		Type of light and laser class	
	Read	StringT	8 Char	6	≤ 30 mA	No		No-load current	
	Read	StringT	10 Char	7	5...300 Hz	No		Switching frequency	
	Read	StringT	6 Char	8	20 min	No		Warm-up time	
	Read	StringT	12 Char	9	-30...+50°C	No		Ambient temperature	
	Read	StringT	8 Char	10	1...10 V	No		Output signal	
	Read	StringT	43 Char	11	2 ... 7 mm (90 % reflectivity, 50 Hz/10 ms)	No		Repeatability	
196 / 0xC4	Threshold Signal Quality (Main)								
	Read / write	UIntegerT	8 Bit	1	1	Yes	0...10	Threshold Signal Quality	
208 / 0xD0	SSC.1 Smart Functions								
	Read / write	UIntegerT	16 Bit	1	0	Yes	0...65535	Counter	
	Read / write	UIntegerT	16 Bit	2	0	Yes	0...65535	Switch-On Delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	3	0	Yes	0...65535	Switch-Off Delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	4	0	Yes	0...65535	Impulse (One-shot)	In ms, adjustable in 1 ms

PARAMETER									
Index dec / hex	Access	Data type	Length	Sub- index	Default value	Data Storage	Range	Description	Comment
SSC.2 Smart Functions									
209 / 0xD1	Read / write	UIntegerT	16 Bit	1	0	Yes	0...65535	Counter	
	Read / write	UIntegerT	16 Bit	2	0	Yes	0...65535	Switch-On Delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	3	0	Yes	0...65535	Switch-Off Delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	4	0	Yes	0...65535	Impulse (One-shot)	In ms, adjustable in 1 ms
Function Pin 4									
213 / 0xD5	Read / write	UIntegerT	8 Bit	1	2	Yes	0, 1, 2	PNP/NPN	0=NPN, 1=PNP, 2=Auto-Detect
	Read / write	UIntegerT	8 Bit	2	0	Yes	0, 1	Behaviour Pin 4	0=Switching Output, 1=Signal Quality Bit
Averaging Q/QA									
190 / 0xBE	Read / write	UIntegerT	8 Bit	1	3	Yes	0, 1, 2, 3, 4, 5	Averaging Q/QA	0=300 Hz/1 ms, 1=200 Hz/2 ms, 2=100 Hz/5 ms, 3=50 Hz/10 ms, 4=10 Hz/50 ms, 5=5 Hz/100 ms
Offset IO-Link									
193 / 0xC1	Read / write	IntegerT	16 Bit	1	0	Yes	-15000...15000	Offset IO-Link	In 1/10 mm
Invert Characteristic Curve									
195 / 0xC3	Read / write	UIntegerT	8 Bit	1	1	Yes	0, 1	Invert Characteristic Curve	0=Negative, 1=Positive
HoldFunctions									
199 / 0xC7	Read / write	UIntegerT	8 Bit	1	0	Yes	0, 1, 2, 3, 4	HoldFunctions	0=Deactivated, 1=Trigger & Hold, 2=Min. Hold, 3=Max. Hold, 4=Difference Hold
	Read / write	UIntegerT	8 Bit	2	0	Yes	0, 1	Value Hold	0=Deactivated, 1=Activated
Process Data Output									
202 / 0xCA	Read / write	UIntegerT	8 Bit	1	0	Yes	0, 1	Process Data Output	0=Manipulated Data, 1=Raw Data
Analog Output QA									
194 / 0xC2	Read / write	UIntegerT	8 Bit	1	0	Yes	0	Output Signal	0=Not adjustable
	Read / write	IntegerT	32 Bit	2	1000	Yes	1000...15000	Analog - Lower value	In 1/10 mm
	Read / write	IntegerT	32 Bit	3	15000	Yes	1000...15000	Analog - Upper value	In 1/10 mm
Offset QA									
198 / 0xC6	Read / write	IntegerT	16 Bit	1	0	Yes	-14000...14000	Offset QA	In 1/10 mm
AutoFunctions									
200 / 0xC8	Read / write	UIntegerT	8 Bit	1	0	Yes	0, 1, 2	AutoFunctions	0=Deactivated, 1=AutoCenter, 2=AutoZero

SYSTEM COMMANDS							
Index dec / hex	Access	Data type	Length	Subindex	Function dec / hex	Description	Comment
2 / 0x02	Write only	UIntegerT	8 Bit	1	1 / 0x01	ParamUploadStart	
					2 / 0x02	ParamUploadEnd	
					3 / 0x03	ParamDownloadStart	
					4 / 0x04	ParamDownloadEnd	
					5 / 0x05	ParamDownloadStore	
					6 / 0x06	ParamBreak	
					64 / 0x40	Teach Apply	Adopt teach values on sensor
					65 / 0x41	Teach SP1	The switching point is on the teach value
					66 / 0x42	Teach SP2	
					67 / 0x43	Teach SP1 TP1	The switching point is in the middle of both teach points
					68 / 0x44	Teach SP1 TP2	
					69 / 0x45	Teach SP2 TP1	
					70 / 0x46	Teach SP2 TP2	
					71 / 0x47	Teach SP1 Start	The switching point is in the middle of the min. / max. value Teach point 1 and teach point 2 are both necessary
					72 / 0x48	Teach SP1 Stop	
					73 / 0x49	Teach SP2 Start	
					74 / 0x4A	Teach SP2 Stop	
					79 / 0x4F	Teach Cancel	
					126 / 0x7E	Locator Start	
					127 / 0x7F	Locator Stop	
					128 / 0x80	Device Reset	The device performs a restart
					129 / 0x81	Application Reset	Reset the technology specific application
					130 / 0x82	Factory Settings	
					131 / 0x83	Back-To-Box	Restore parameters to the original delivery values without any interaction with upper level mechanisms such as Data Storage or PLC based parameterization
					167 / 0xA7	Teach AutoFunctions	
					168 / 0xA8	Trigger & Hold	
					170 / 0xAA	Trigger High	
					171 / 0xAB	Trigger Low	
					172 / 0xAC	Analog - Start Measurement Range	
					173 / 0xAD	Analog - End Measurement Range	
					174 / 0xAE	Teach Offset IO-Link	

EVENTS				
Event code	Definition and recommended maintenance action	Device status value	Type	Comment
16384 / 0x4000	Temperature fault - Overload	4	Error	Temperature absolute max. ratings
16912 / 0x4210	Device temperature overrun – Clear source of heat	2	Warning	
16928 / 0x4220	Device temperature underrun – Insulate Device	2	Warning	
20480 / 0x5000	Device hardware fault – Device exchange	4	Error	
20497 / 0x5011	Non volatile memory loss – Check batteries	4	Error	
65425 / 0xFF91	Data Storage upload request	0	Notification	