Data sheet

FT 55-RLAM-160-PNSUID...

096-00113 15.01.2024-1
www.sensopart.com

GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	3 ms
SIO mode	Supported
Length process data	PD_IN 32 Bit, PD_OUT 0 Bit
Vendor ID	347 (0x015B)
Device ID	14849 (0x3A01)
Data Storage	Supported
Specification IO-Link	1.1.2

PROCESS DATA - MEASUREMENT OUTPUT

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	D22	D21	D20	D19	D18	D17	D16	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Measurement value LSB	Signal quality MSB	D6	D5	D4	D3	D2	D1	Signal quality LSB
Measurement value - distance in µm, characteristic curve adjustable, average filter and hold functions applicable																															
Signal quality in %																															

PROCESS DATA - SMART SENSOR PROFILE

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	D22	D21	D20	D19	D18	D17	D16	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Measurement value LSB	X	X	X	X	X	Signal quality bit	SSC.2	SSC.1
Measurement value - distance in µm, characteristic curve not adjustable																															
Signal quality bit																															
SSC.2 physical																															
SSC.1 physical																															

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 55-RLAM-160-PNSUID...
19 / 0x13					Product ID	624-41000 624-41001
20 / 0x14					Product text	40...200mm, QA,Q1,Q2/IN, ...
21 / 0x15					Serial number	"Device specific"
23 / 0x17					Firmware revision	"Device specific"

PARAMETER

Index dec / hex	Access	Data type	Length	Sub-index	Default value	Range	Description	Comment
36 / 0x24							DeviceStatus	
	Read	UIntegerT	8 Bit		"Device specific"	0, 1, 2, 3, 4	Device status	0=Device is OK, 1=Maintenance required, 2=Out of specification, 3=Functional check, 4=Failure
37 / 0x25							DetailedDeviceStatus	
	Read	ArrT<uint24>[8]	248 Bit		"Device specific"		Detailed device status	
24 / 0x18							ApplicationSpecificTag	
	Read / write	StringT	32 Char		********		Application specific tag	Free text
25 / 0x19							CP Function Tag	
	Read / write	StringT	32 Char		********		Function tag	Free text

PARAMETER								
Index dec / hex	**Access**	**Data type**	**Length**	**Sub-index**	**Default value**	**Range**	**Description**	**Comment**
26 / 0x1A							CP Location Tag	
	Read / write	StringT	32 Char		**********		Location tag	Free text
58 / 0x3A							Teach select	
	Read / write	UIntegerT	8 Bit	1	0	0, 2	Teach select	0=SSC.1, 2=SSC.2
59 / 0x3B							Teach result	
	Read	UIntegerT	4 Bit	1	"Device specific"	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	"Device specific"	0, 1	Flag SP1 TP1	0=Initial or not ok, 1=OK
	Read	BooleanT	1 Bit	3	"Device specific"	0, 1	Flag SP1 TP2	0=Initial or not ok, 1=OK
	Read	BooleanT	1 Bit	4	"Device specific"	0, 1	Flag SP2 TP1	0=Initial or not ok, 1=OK
	Read	BooleanT	1 Bit	5	"Device specific"	0, 1	Flag SP2 TP2	0=Initial or not ok, 1=OK
60 / 0x3C							SSC.1 param	
	Read / write	UIntegerT	32 Bit	1	90000	40000...200000	SP1	Needed for single point, window and two point, µm
	Read / write	UIntegerT	32 Bit	2	100000	40000...200000	SP2	Needed for window and two point, µm
61 / 0x3D							SSC.1 config	
	Read / write	UIntegerT	8 Bit	1	0	0, 1	Logic	0=NO (High active), 1=NC (Low active)
	Read / write	UIntegerT	8 Bit	2	1	0, 1, 2, 3	Mode	0=Deactivated, 1=Single point, 2=Window, 3=Two point
	Read / write	IntegerT	32 Bit	3	0	0	Hysteresis	0=Not adjustable
62 / 0x3E							SSC.2 param	
	Read / write	UIntegerT	32 Bit	1	150000	40000...200000	SP1	Needed for single point, window and two point, µm
	Read / write	UIntegerT	32 Bit	2	160000	40000...200000	SP2	Needed for window and two point, µm
63 / 0x3F							SSC.2 config	
	Read / write	UIntegerT	8 Bit	1	0	0, 1	Logic	0=NO (High active), 1=NC (Low active)
	Read / write	UIntegerT	8 Bit	2	1	0, 1, 2, 3	Mode	0=Deactivated, 1=Single point, 2=Window, 3=Two point
	Read / write	IntegerT	32 Bit	3	0	0	Hysteresis	0=Not adjustable
88 / 0x58							Operating data	
	Read	UIntegerT	32 Bit	1	"Device specific"		Counter power on hours	No reset possible
	Read	UIntegerT	32 Bit	2	"Device specific"		Counter switch cycle	No reset possible
95 / 0x5F							Electronic data sheet	
	Read	StringT	11 Char	1	40...200 mm		Measurement range	
	Read	StringT	14 Char	2	< 10 um / 1 um		Resolution QA / IO-Link	
	Read	StringT	6 Char	3	0.2 mm		Linearity	
	Read	StringT	6 Char	4	0.3 mm		Hysteresis	
	Read	StringT	26 Char	5	Laser, class 1, red 655 nm		Type of light and laser class	
	Read	StringT	7 Char	6	< 50 mA		No-load current	
	Read	StringT	7 Char	7	800 Hz		Switching frequency	
	Read	StringT	6 Char	8	20 min		Warm-up time	
	Read	StringT	11 Char	9	-20...50°C		Ambient temperature	
	Read	StringT	40 Char	10	4...20 mA, 2...10 mA, 0...10 V, 2...10 V		Output signal	
	Read	StringT	7 Char	11	< 10 um		Repeatability	
196 / 0xC4							Threshold signal quality (main)	
	Read / write	UIntegerT	8 Bit	1	10	10...90	Threshold signal quality	In %, minimum = 10 %
207 / 0xCF							Current signal quality	
	Read	UIntegerT	8 Bit	1	"Device specific"	0...100	Current signal quality	Quality of the Measurement value / Reliability (%)
208 / 0xD0							SSC.1 smart functions	
	Read / write	UIntegerT	16 Bit	1	0	0...65535	Counter	
	Read / write	UIntegerT	16 Bit	2	0	0...65535	Switch-on delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	3	0	0...65535	Switch-off delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	4	0	0...65535	Impulse (one-shot)	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	5	0	0...500	Monitoring frequency	In 1/10 Hz, 10 Hz ≙ 100
209 / 0xD1							SSC.2 smart functions	
	Read / write	UIntegerT	16 Bit	1	0	0...65535	Counter	
	Read / write	UIntegerT	16 Bit	2	0	0...65535	Switch-on delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	3	0	0...65535	Switch-off delay	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	4	0	0...65535	Impulse (one-shot)	In ms, adjustable in 1 ms
	Read / write	UIntegerT	16 Bit	5	0	0...500	Monitoring frequency	In 1/10 Hz, 10 Hz ≙ 100

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PARAMETER								
Index dec / hex	**Access**	**Data type**	**Length**	**Sub-index**	**Default value**	**Range**	**Description**	**Comment**
213 / 0xD5							Function Pin 4	
	Read / write	UIntegerT	8 Bit	1	2	0, 1, 2, 3	PNP/NPN	0=NPN, 1=PNP, 2=Auto-detect, 3=Push-Pull ---------- IO-Link only specified for PNP
	Read / write	UIntegerT	8 Bit	2	0	0, 1	Behaviour Pin 4	0=Switching output, 1=Good target
214 / 0xD6							Function Pin 5	
	Read / write	UIntegerT	8 Bit	1	2	0, 1, 2, 3	PNP/NPN	0=NPN, 1=PNP, 2=Auto-detect, 3=Push-Pull ---------- IO-Link only specified for PNP
	Read / write	UIntegerT	8 Bit	2	0	0, 2, 3, 4, 5, 6, 7, 8, 9, 10	Behaviour Pin 5	0=Switching output, 2=Antivalent Q1, 3=Emitter on/off, 4=Input key lock, 5=Trigger & hold, 6=AutoCenter, 7=AutoZero, 8=Min. hold, 9=Max. hold, 10=Difference hold
189 / 0xBD							Intensity average filter	
	Read / write	UIntegerT	8 Bit	1	1	0, 1, 2, 3, 4	Intensity average filter	0=1 ms, 1=10 ms, 2=100 ms, 3=1000 ms, 4=0.2 ms
193 / 0xC1							Offset IO-Link	
	Read / write	IntegerT	32 Bit	1	0	-200000...200000	Offset IO-Link	In µm
195 / 0xC3							Invert characteristic curve	
	Read / write	UIntegerT	8 Bit	1	1	0, 1	Invert characteristic curve	0=Negative, 1=Positive ---------- Only active on measurement output
202 / 0xCA							Process data output	
	Read / write	UIntegerT	8 Bit	1	1	0, 1	Process data output	0=Measurement output, 1=Smart Sensor Profile
194 / 0xC2							Analog output QA	
	Read / write	UIntegerT	8 Bit	1	1	0, 1, 2, 3, 4	Analog output	0=Disable, 1=4...20 mA, 2=2...10 mA, 3=0...10 V, 4=2...10 V
	Read / write	UIntegerT	32 Bit	2	40000	40000...200000	Start measurement range	In µm
	Read / write	UIntegerT	32 Bit	3	200000	40000...200000	End measurement range	In µm
	Read / write	UIntegerT	8 Bit	4	0	0, 1	Value hold	0=Disable, 1=Enable
198 / 0xC6							Offset QA	
	Read / write	IntegerT	32 Bit	1	0	-80000...160000	Offset QA	In µm
224 / 0xE0							Display	
	Read / write	UIntegerT	8 Bit	1	0	0, 1	Screensaver	0=Screensaver off, 1=Screensaver on
	Read / write	UIntegerT	8 Bit	2	0	0, 1	Rotate display	0=Display read from back, 1=Display read from front
	Read / write	UIntegerT	8 Bit	3	1	0, 1	Value mode	0=Raw value, 1=Manipulated value

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	
					128 / 0x80	Device reset	The device performs a restart
					130 / 0x82	Factory settings	
					160 / 0xA0	Emitter off	
					161 / 0xA1	Emitter on	
					162 / 0xA2	Reset switching channel	
					169 / 0xA9	Trigger input pin	
					170 / 0xAA	Trigger Q2 high	
					171 / 0xAB	Trigger Q2 low	
					172 / 0xAC	Analog - start measurement range	
					173 / 0xAD	Analog - end measurement range	
					174 / 0xAE	Offset teach	
					175 / 0xAF	Detect sensor	

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	
20496 / 0x5010	TestEvent1			20496
30480 / 0x7710	TestEvent2			30480
65425 / 0xFF91	Data Storage upload request	0	Notification	Can not be blocked via 0x51

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