

**FR 55-RLAP-70-PNSIL-L5**

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 www.sensopart.com

GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	3 ms
SIO mode	Supported
Length process data	32 Bit
Vendor ID	347 (0x01 0x5B)
Device ID	11265 (0x2C 0x01)
Data storage	Supported
Specification IO-Link	1.1

**PROCESS DATA**

SMART SENSOR PROFILE																															
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
MSB D7	D6	D5	D4	D3	D2	D1	LSB D0	MSB D20	D19	D18	D17	D16	D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	LSB D0	Signal quality	Switching output Q <sub>2</sub>	Switching output Q <sub>1</sub>
Signal quality 0 ... 100 %								Process value - distance in mm, characteristic curve not adjustable, out of range = 1FFFFF																							
Signal quality bit - adjustable via index 0xC4																															
Switching output 2 - virtual switching output																															
Switching output 1 - corresponds to switching output Q in SIO-mode																															

**MEASUREMENT OUTPUT**

MEASUREMENT OUTPUT																															
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
MSB D7	D6	D5	D4	D3	D2	D1	LSB D0	MSB D23	D22	D21	D20	D19	D18	D17	D16	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, averaging rate applicable, out of range = 7FFFFFFF																							

**IDENTIFICATION DATA**

Index dec / hex	Access	Data type	Length	Subindex	Description	Comment
16 / 0x10	Read	String	Max. 64 Byte	1	Vendor name	SensoPart Industriesensorik GmbH
17 / 0x11					Vendor text	www.sensopart.com
18 / 0x12					Product name	FR 55-RLAP-70-PNSIL-L5
19 / 0x13					Product ID	621-11028
20 / 0x14					Product text	300 ... 70,000 mm, QA, IN, Q, 4 ... 20 mA / 0 ... 10 V, Auto / PNP / NPN, M12 5-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	1	0x00 0x00	D1, D2, D3	Lock functions	D1 = Data Storage Lock D2 = Device Parameter Lock (not in IO-Link) 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 = Q <sub>1</sub> 2 = Q <sub>2</sub>
59 / 0x3B	Read	Uint	8 Bit				Teach status	
Define switching output Q <sub>1</sub>								
60 / 0x3C	Read / write	Uint	32 Bit	1	2000	300 ... 70,000	Switchpoint 1	Needed for single, window and two-point mode, indicated in mm
				2	6000	300 ... 70,000	Switchpoint 2	Needed for window and two-point mode, indicated in mm
Set-up switching output Q <sub>1</sub>								
61 / 0x3D	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC
				2	2	0 ... 3	Switching mode	0 = OFF 1 = Single Point Mode 2 = Window Mode <sup>1)</sup> 3 = Two Point Mode <sup>1)</sup>
				3	0	0	Hysteresis	Not adjustable
Define switching output Q <sub>2</sub> – only virtual via IO-Link								
62 / 0x3E	Read / write	Uint	32 Bit	1	2000	300 ... 70,000	Switchpoint 1	Needed for single, window and two-point mode, indicated in mm
				2	6000	300 ... 70,000	Switchpoint 2	Needed for window and two-point mode, indicated in mm
Set-up switching output Q <sub>2</sub> – only virtual via IO-Link								
63 / 0x3F	Read / write	Uint	8 Bit	1	0	0, 1	NO / NC	0 = NO, 1 = NC
				2	2	0 ... 3	Switching mode	0 = OFF 1 = Single Point Mode 2 = Window Mode <sup>1)</sup> 3 = Two Point Mode <sup>1)</sup>
				3	0	0	Hysteresis	Not adjustable

<sup>1)</sup> Min. difference between both switchpoints 60 mm.

PARAMETER									
Index dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment	
Operating data									
88 / 0x58	Read	Uint	32 Bit	1			Counter operating hours	No reset possible	
				2			Counter switch cycle	No reset possible	
Electronic data sheet									
95 / 0x5F	Read	String		1	0.3 ... 70 m		Measurement range		
				2	8 µA		Resolution		
				3	± 0.5%		Linearity		
				4	60 mm		Hysteresis		
				5	Laser red 655 nm, laser class 1		Type of light and laser class		
				6	≤ 60 mA		No-load current		
				7	≤ 50 Hz		Switching frequency		
				8	20 min		Warm-up time		
				9	-30 ... +60°C		Ambient temperature		
				10	4 ... 20 mA / 0 ... 10 V		Output signal		
				11	1.5 mm		Repeatability		
189 / 0xBD	Read / write	Uint	8 Bit	1	0	0 ... 10	Intensity average filter	0 = 1x response time Q <sub>A</sub> 1 = 10 x response time Q <sub>A</sub> ... 10 = 100x response time Q <sub>A</sub>	
193 / 0xC1	Read / write	Int	32 Bit		0	-70,000 ... 70,000	Offset	mm, not Q <sub>A</sub>	
195 / 0xC3	Read / write	Uint	8 Bit		1	1	0, 1	Invert characteristic curve	0 = negative 1 = positive only effective at "measurement output", to invert Q <sub>A</sub> via IO-Link use parameter 194 / 0xC2 or value field via IO-Link
196 / 0xC4	Read / write	Uint	8 Bit		10	10	10 ... 90	Signal quality level	% Threshold for „signal quality bit“ in SmartSensor-Profile
202 / 0xCA	Read / write	Uint	8 Bit		1	1	0, 1	Process data output	0 = Measurement Output 1 = Smart Sensor Profile
207 / 0xCF	Read	Uint	8 Bit		-	-	0 ... 100	Current signal quality	% Quality of the measurement value (not in IO-Link)
Analog output									
194 / 0xC2	Read / write	Uint	8 Bit	1	1	0, 1	Output signal	0 = 0 ... 10 V 1 = 4 ... 20 mA	
				2	2000	300...70,000	Start measurement range	In mm	
				3	6000	300...70,000	End measurement range		
SmartFunctions Q <sub>1</sub>									
208 / 0xD0	Read / write	Uint	16 Bit	1	0	0 ... 65535	Counter		
				2	0	0 ... 65535	On-delay	In ms, adjustable in 1ms	
				3	0	0 ... 65535	Off-delay	In ms, adjustable in 1ms	
				4	0	0 ... 65535	Impulse	In ms, adjustable in 1ms	
				5	0	0 ... 500	Monitoring frequency	1 step = 0.1 Hz <sup>2)</sup>	
SmartFunctions Q <sub>2</sub> - on virtual switching output Q <sub>2</sub>									
209 / 0xD1	Read / write	Uint	16 Bit	1	0	0 ... 65535	Counter		
				2	0	0 ... 65535	On-delay	In ms, adjustable in 1ms	
				3	0	0 ... 65535	Off-delay	In ms, adjustable in 1ms	
				4	0	0 ... 65535	Impulse	In ms, adjustable in 1ms	
				5	0	0 ... 500	Monitoring frequency	1 step = 0.1 Hz <sup>2)</sup>	
Function switching output Q <sub>1</sub>									
213 / 0xD5	Read / write	Uint	8 Bit	1	2	0 ... 2	PNP / NPN	0 = NPN 1 = PNP 2 = Autodetect	
Control input									
221 / 0xDD	Read / write	Uint	8 Bit	1	1	0, 1	Control input enable	0 = Control input disable 1 = Control input enable	

<sup>2)</sup> Differs to real frequency ±10 %

**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 - switchpoint 1	The switchpoint is on the teach value
					66 / 0x42		Single value teach - switchpoint 2	
					67 / 0x43		Two value teach - teachpoint 1 for switchpoint 1	
					68 / 0x44		Two value teach - teachpoint 2 for switchpoint 1	The switchpoint is in the middle of both teachpoints Teachpoint 1 and teachpoint 2 are both necessary
					69 / 0x45		Two value teach - teachpoint 1 for switchpoint 2	
					70 / 0x46		Two value teach - teachpoint 2 for switchpoint 2	
					71 / 0x47		Dynamic teach - switchpoint 1 - start	
					72 / 0x48		Dynamic teach - switchpoint 1 - stop	The switchpoint is between the min. / max. value
					73 / 0x49		Dynamic teach - switchpoint 2 - start	
					74 / 0x4A		Dynamic teach - switchpoint 2 - stop	
					79 / 0x4F		Teach cancel	
					160 / 0xA0		Emitter OFF	
					161 / 0xA1		Emitter ON	
					162 / 0xA2		Reset switching channel	Reset of current switching channel
					0xAC		Analog - start measurement range	
					0xAD		Analog - end measurement range	
					174 / 0xAE		Offset teach	
					175 / 0xAF		Detect sensor	1x activated - sensor flashes 60 s 2x activated - permanent flashing 3x activated - stop permanent flashing
					128 / 0x80		Device Reset	
130 / 0x82		Restore Factory Settings						

**EVENTS**

Event	Status value	Warning		
20480 / 0x5000	4	Error	Device hardware fault	
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