SENSOPART

Data sheet

IO-Link

FT 55-CM-...-PNSD-L8M

068-14776 08.06.2017-00
www.sensopart.com

GENERAL INFORMATION	
Communication mode IO-Link	COM 2
Min. cycle time	4 ms
SIO mode	supported
Length process data	48 Bit
Vendor ID	347 (0x01 0x5B)
Device ID	110
Data storage	supported
Specification IO-Link	1.1

PROCESS DATA PROFILE 0: SWITCHING OUTPUTS

Byte 0								Byte 1								Byte 2								Byte 3								Byte 4								Byte 5							
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	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
																Quality MSB D7	D6	D5	D4	D3	D2	D1	Quality LSB D0								Q quality					Switching output Q12	Switching output Q11	Switching output Q10	Switching output Q9	Switching output Q8	Switching output Q7	Switching output Q6	Switching output Q5	Switching output Q4	Switching output Q3	Switching output Q2	Switching output Q1
Signal quality level [%]																																														
Q quality, threshold adjustable [0/1]																																														
Switching outputs [0/1]																																														

PROCESS DATA PROFILE 1: COLOR VALUES

Byte 0								Byte 1								Byte 2								Byte 3								Byte 4								Byte 5							
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	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
Energy MSB D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Energy LSB D0	Blue MSB D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Blue LSB D0	Green MSB D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Green LSB D0	Red MSB D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	Red LSB D0
Energy value [%]																																														
Color value blue [%]																																														
Color value green [%]																																														
Color value red [%]																																														

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 55-CM-…-PNSD-L8M
19 / 0x13					Product ID	
20 / 0x14					Product text	Optical color sensor
23 / 0x17					Firmware revision	1.0

PARAMETER

Index dec / hex	Access	Data type	Length	Subindex	Default value	Range	Description	Comment
12 / 0x0C	Read / write	Uint	16 Bit		0x00 0x00	D1, D2, D3	Lock functions	D1 - data storage lock D2 - local parametrization lock D3 - local user interface lock
24 / 0x18	Read / write	StringT	32 characters		"*** ... ***"	16 ... 32 characters	Application text	Free text, e.g. item designation
203 / 0xCB	Read / write	Uint	8 Bit		1	0 ... 12	Choose teach-channel	Number of switching output (default value 0 = channel 1)
204 / 0xCC	Read	Uint	8 Bit				Teach status	
81 / 0x51	Read / write	Uint	8 Bit		All events allowed	0 … 0x1F	Events on / off	See table events
88 / 0x58							Read operating data	
	Read	Uint	32 Bit	1			Counter operating hours	No reset possible
				2			Counter switch cycle	No reset possible
95 / 0x5F							Read sensor characteristics	
	Read	String		1			Measurement range	C1 = 12 ... 32 mm C3 = 18 ... 32 mm C4 = 20 ... 150 mm
				2	LED		Type of light	
				3	≤ 60 mA		No-load current	
				4	≤ 3kHz		Switching frequency	
				5	300 s		Warm-up time	
				6	-20 … +55 °C		Ambient temperature	

PARAMETER								
Index dec / hex	**Access**	**Data type**	**Length**	**Subindex**	**Default value**	**Range**	**Description**	**Comment**
196 / 0xC4	Read / write	Uint	8 Bit		10	10 … 90	Signal quality level	%
207 / 0xCF	Read	Uint	8 Bit			0 … 100	Current signal quality	%
202 / 0xCA	Read / write	Uint	8 Bit		0	0 … 1	Process data profile	0 = switchig channels 1 = color values
							Display	
224 / 0xE0	Read / write	Uint	8 Bit	1	On	0 … 1	Screensaver	
	Read / write	Uint	8 Bit	2		0 … 1	Rotate display	
							Function Q All	
176 / 0xB0	Read / write	Uint	8 Bit	1	1	0 ... 2	PNP / NPN	0 = NPN 1 = PNP 2 = Auto Detect on Q1
				2	1 = 30 Hz	0 ... 6	Switching frequency	0 = 3 Hz 1 = 30 Hz 2 = 100 Hz 3 = 300 Hz 4 = 500 Hz 5 = 1500 Hz 6 = 3000 Hz
				3	Off	0 ... 1	Binary output	On / off. Enables logical combination of switching outputs
177 / 0xB1	Read / write	Uint	8 Bit		Color mode	0 ... 2	Detection mode	0 = color mode 1 = best fit energy evaluation off 2 = best fit energy evaluation on
							Q_1 (physical) *	
96 / 0x60	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
				5	0	0 … 65535	Counter	Switches only every nth cycle
				6	0.	0 … 65535	On delay	In ms, adjustable in 1 ms
				7	0	0 … 65535	Off delay	In ms, adjustable in 1 ms
				8	0	0 … 65535	Impulse	In ms, adjustable in 1 ms
				9	0	0 ... 2	Not connected	0 = not connected 1 = combine with color C6 2 = exclude color C6
							Q_2 (physical) *	
97 / 0x61	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 3	Function switching output	0 = disable 1 = output 3 = input (trigger)
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
				5	0	0 … 65535	Counter	Switches only every nth cycle
				6	0	0 … 65535	On delay	In ms, adjustable in 1 ms
				7	0	0 … 65535	Off delay	In ms, adjustable in 1 ms
				8	0	0 … 65535	Impulse	In ms, adjustable in 1 ms
				9	0	0 ... 2	Not connected	0 = not connected 1 = combine with color C7 2 = exclude color C7
							Q_3 (physical) *	
98 / 0x62	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
				5	0	0 … 65535	Counter	Switches only every nth cycle
				6	0	0 … 65535	On delay	In ms, adjustable in 1 ms
				7	0	0 … 65535	Off delay	In ms, adjustable in 1 ms
				8	0	0 … 65535	Impulse	In ms, adjustable in 1 ms
				9	0	0 ... 2	Not connected	0 = not connected 1 = combine with color C8 2 = exclude color C8

PARAMETER								
Index dec / hex	**Access**	**Data type**	**Length**	**Subindex**	**Default value**	**Range**	**Description**	**Comment**
							Q_4 (physical) *	
99 / 0x63	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 2	Function switching output	0 = disable 1 = output 2 = input (key lock)
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
				5	0	0 … 65535	Counter	Switches only every nth cycle
				6	0	0 … 65535	On delay	In ms, adjustable in 1 ms
				7	0	0 … 65535	Off delay	In ms, adjustable in 1 ms
				8	0	0 … 65535	Impulse	In ms, adjustable in 1 ms
				9	0	0 ... 2	Not connected	0 = not connected 1 = combine with color C9 2 = exclude color C9
							Q_5 (physical) *	
100 / 0x64	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
				5	0	0 … 65535	Counter	Switches only every nth cycle
				6	0	0 … 65535	On delay	In ms, adjustable in 1 ms
				7	0	0 … 65535	Off delay	In ms, adjustable in 1 ms
				8	0	0 … 65535	Impulse	In ms, adjustable in 1 ms
				9	0	0 ... 2	Not connected	0 = not connected 1 = combine with color C10 2 = exclude color C10
							Q_6 (virtual)	
101 / 0x65	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
							Q_7 (virtual)	
102 / 0x66	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
							Q_8 (virtual)	
103 / 0x67	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
							Q_9 (virtual)	
104 / 0x68	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on

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PARAMETER								
Index dec / hex	**Access**	**Data type**	**Length**	**Subindex**	**Default value**	**Range**	**Description**	**Comment**
105 / 0x69							Q_{10} (virtual)	
	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
106 / 0x6A							Q_{11} (virtual)	
	Read / write	Uint	8 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
				4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
107 / 0x6B							Q_{12} (virtual)	
	Read / write	Uint	16 Bit	1	3	0 ... 8	Tolerance	0 = finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level … 8 = roughest tolerance level
				2	N.O.	0 ... 1	N.O. / N.C.	0 = N.O., 1 = N.C.
				3	Output	0 ... 1	Function switching output	0 = disable 1 = output
			8 Bit	4	On	0 ... 1	Energy evaluation off / on	0 = off, 1 = on
* Smart functions (counter, delays, impulse) only work in the color mode (CM) while having no effect in best-fit mode (BF)								

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	Teaches the color seen at this moment
					71 / 0x47		Color scan - start	Detects all colors taught during the scan
					72 / 0x48		Color scan - stop	
					79 / 0x4F		Teach cancel	
					160 / 0xA0		Emitter off	
					161 / 0xA1		Emitter on	
					162 / 0xA2		Reset switching channel	Reset of current switching channel
					169 / 0xA9		Trigger Q2 Input	To test function set Q_2 as trigger input
					170 / 0xAA		Trigger Q_2 high	
					171 / 0xAB		Trigger Q_2 low	
					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	**Events ON/OFF**	**Status value**	**Warning**			
20480 / 0x5000	3	4	Error		Device hardware fault	
20497 / 0x5011	4	4	Error		Non-volatile memory loss	
65425 / 0xFF91		0	Notice		Data storage - upload request	
16384 / 0x4000	0	4	Error		Temperature fault	