

SICK

8028189 0123

CSS/CSX

8389262

195659380

9316627 0123 (1.1.0)

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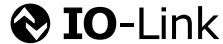
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Please note the validity of the additional operating instructions for automation functions

ENGLISH

1. Physical layer

Note: The IO-Link Device's max. current consumption (inclusive load current) shall not exceed the master port's max. output power current.

SIO Modus	yes
Min Cycle Time	1.8 ms
Baudrate ²	COM3
Process Data Length (IN)	12 Byte
IODD version	V1.0
Valid for IO-Link version	1.1.0

2. Process data

Record³: 12 Byte

Condition: ISDU: Process data select, Index: 120, Subindex: 0, Value: 0

Bitoffset																																																																
Byte 0	CMV/QL4	95	94	93	92	91	90	89	88																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 1	CMV/QL4	87	86	85	84	83	82	81	80																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 2	CMV/QL3	79	78	77	76	75	74	73	72																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 3	CMV/QL3	71	70	69	68	67	66	65	64																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 4	CMV/QL2	63	62	61	60	59	58	57	56																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 5	CMV/QL2	55	54	53	52	51	50	49	48																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 6	CMV/QL1	47	46	45	44	43	42	41	40																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 7	CMV/QL1	39	38	37	36	35	34	33	32																																																							
Type/Subindex	Unsigned Integer 16																																																															
Bitoffset																																																																
Byte 8	Qint. 24	31	30	29	28	27	26	25	24	Qint. 23	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																														
Type/Subindex	Boolean	31	Boolean	30	Boolean	29	Boolean	28	Boolean	27	Boolean	26	Boolean	25	Boolean	24	Boolean	23	Boolean	22	Boolean	21	Boolean	20	Boolean	19	Boolean	18	Boolean	17	Boolean	16	Boolean	15	Boolean	14	Boolean	13	Boolean	12	Boolean	11	Boolean	10	Boolean	9	Boolean	8	Boolean	7	Boolean	6	Boolean	5	Boolean	4	Boolean	3	Boolean	2	Boolean	1	Boolean	0
Bitoffset																																																																
Byte 9	Qint. 16	23	22	21	20	19	18	17	16	Qint. 15	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0																																						
Type/Subindex	Boolean	23	Boolean	22	Boolean	21	Boolean	20	Boolean	19	Boolean	18	Boolean	17	Boolean	16	Boolean	15	Boolean	14	Boolean	13	Boolean	12	Boolean	11	Boolean	10	Boolean	9	Boolean	8	Boolean	7	Boolean	6	Boolean	5	Boolean	4	Boolean	3	Boolean	2	Boolean	1	Boolean	0																
Bitoffset																																																																
Byte 10	Qint. 8	15	14	13	12	11	10	9	8	Qint. 7	7	6	5	4	3	2	1	0																																														
Type/Subindex	Boolean	15	Boolean	14	Boolean	13	Boolean	12	Boolean	11	Boolean	10	Boolean	9	Boolean	8	Boolean	7	Boolean	6	Boolean	5	Boolean	4	Boolean	3	Boolean	2	Boolean	1	Boolean	0																																
Bitoffset																																																																
Byte 11	Reserved	7	6	5	4	3	2	1	0	Pd invalid	6	CoR alarm	5	QL4	4	QL3	3	QL2	2	QL1	1																																											
Type/Subindex	Unsigned Integer 2	7	Boolean	6	Boolean	5	Boolean	4	Boolean	3	Boolean	2	Boolean	1	Boolean	0																																																

Record³: 12 Byte

Condition: ISDU: Process data select, Index: 120, Subindex: 0, Value: 1

Bitoffset												
Byte 0	LAB color space: L-value / RGB color space: R-value	95	94	93	92	91	90	89	88			
Type/Subindex	Integer 16											
Bitoffset												
Byte 1	LAB color space: L-value / RGB color space: R-value	87	86	85	84	83	82	81	80			
Type/Subindex	Integer 16											

¹ro = read only, wo = write only, rw = read/write

²COM values specify the bitrate (see IO-Link specification): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)

³Subindex access not supported



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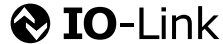
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Bitoffset																																																																
Byte 2	LAB color space: A-value / RGB color space: G-value				78				77				76				75				74				73				72																																			
Type/Subindex	Integer 16																																																															
Bitoffset																																																																
Byte 3	LAB color space: A-value / RGB color space: G-value				70				69				68				67				66				65				64																																			
Type/Subindex	Integer 16																																																															
Bitoffset																																																																
Byte 4	LAB color space: B-value / RGB color space: B-value				62				61				60				59				58				57				56																																			
Type/Subindex	Integer 16																																																															
Bitoffset																																																																
Byte 5	LAB color space: B-value / RGB color space: B-value				54				53				52				51				50				49				48																																			
Type/Subindex	Integer 16																																																															
Bitoffset																																																																
Byte 6	CMV/QL1				47				46				45				44				43				42				41				40																															
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Byte 7	CMV/QL1				39				38				37				36				35				34				33				32																															
Type/Subindex	Unsigned Integer 16																																																															
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Byte 8	Qint. 24		31		30		29		28		27		26		25		24		Qint. 23		30		Qint. 22		29		Qint. 21		28		Qint. 20		27		Qint. 19		26		Qint. 18		25		Qint. 17		24																			
Type/Subindex	Boolean		31		Boolean		30		Boolean		29		Boolean		28		Boolean		27		Boolean		26		Boolean		25		Boolean		24		Boolean		23		Boolean		22		Boolean		21		Boolean		20		Boolean		19		Boolean		18		Boolean		17		Boolean		16	
Bitoffset																																																																
Byte 9	Qint. 16		23		Qint. 15		22		Qint. 14		21		Qint. 13		20		Qint. 12		19		Qint. 11		18		Qint. 10		17		Qint. 9		16		Qint. 8		15		Qint. 7		14		Qint. 6		13		Qint. 5		12		Qint. 4		11		Qint. 3		10		Qint. 2		9		Qint. 1		8	
Type/Subindex	Boolean		23		Boolean		22		Boolean		21		Boolean		20		Boolean		19		Boolean		18		Boolean		17		Boolean		16		Boolean		15		Boolean		14		Boolean		13		Boolean		12		Boolean		11		Boolean		10		Boolean		9		Boolean		8	
Bitoffset																																																																
Byte 10	Qint. 8		15		Qint. 7		14		Qint. 6		13		Qint. 5		12		Qint. 4		11		Qint. 3		10		Qint. 2		9		Qint. 1		8		Qint. 0		7		Qint. 0		6		Qint. 0		5		Qint. 0		4		Qint. 0		3		Qint. 0		2		Qint. 0		1		Qint. 0		0	
Type/Subindex	Boolean		15		Boolean		14		Boolean		13		Boolean		12		Boolean		11		Boolean		10		Boolean		9		Boolean		8		Boolean		7		Boolean		6		Boolean		5		Boolean		4		Boolean		3		Boolean		2		Boolean		1		Boolean		0	
Bitoffset																																																																
Byte 11	Reserved		7		Pd invalid		6		CoR alarm		5		QL4		4		QL3		3		QL2		2		QL1		1		QL0		0		QL0		0		QL0		0		QL0		0		QL0		0		QL0		0													
Type/Subindex	Unsigned Integer 2		7		Boolean		6		Boolean		5		Boolean		4		Boolean		3		Boolean		2		Boolean		1		Boolean		0		Boolean		0		Boolean		0		Boolean		0		Boolean		0		Boolean		0													

3. Service data

The following ISDUs will not be saved via Data-Storage: Device specific tag, Sender configuration, Find me, Names Qint. 1 to 16 and Names Qint. 17 to 24

IO-Link specific									
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]		
12 (0x0C)	Device Access Locks	Record ³	2 Byte	rw					
	2 (0x02)	Data Storage Lock	Bit (1)	rw					
	4 (0x04)	Local User Interface Lock	Bit (3)	rw					
17 (0x11)	Vendor Text	String	32 Byte	ro	www.sick.com				
19 (0x13)	Product ID	String	13 Byte	ro	see Index 219				
20 (0x14)	Product Text	String	64 Byte	ro	Color Sensor				
21 (0x15)	Serial Number	String	8 Byte	ro					
22 (0x16)	Hardware Version	String	4 Byte	ro					
23 (0x17)	Firmware Version	String	12 Byte	ro					
24 (0x18)	Application Specific Tag	String	32 Byte	rw	*****				
36 (0x24)	Device Status	UInt	8 Bit	ro	0	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5...255 = Reserved			
37 (0x25)	Detailed Device Status	Array ³	15 Byte	ro	Octet String [5]				
40 (0x28)	Process Data Input	PD In	12 Byte	ro					
SICK device specific									
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]		
13 (0x0D)	Profile Characteristic	Array	14 Byte	ro	Unsigned Integer16 [7]		This parameter contains the list of ProfileIdentifiers (PID's) corresponding to the device profile implemented in the device.		
14 (0x0E)	PD Input Descriptor	Array	15 Byte	ro	Octet String [5]		This parameter contains the description of the data structure of the process input data of the device.		

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SICK device specific							
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]
58 (0x3A)	Teach-in channel	UInt	8 Bit	rw	0	0 = Qint1 1 = Qint2 2 = Qint3 3 = Qint4 4 = Qint5 5 = Qint6 6 = Qint7 7 = Qint8 8 = Qint9 9 = Qint10 10 = Qint11 11 = Qint12 12 = Qint13 13 = Qint14 14 = Qint15 15 = Qint16 16 = Qint17 17 = Qint18 18 = Qint19 19 = Qint20 20 = Qint21 21 = Qint22 22 = Qint23 23 = Qint24	Qint. to be taught via system commands.
59 (0x3B)	Teach-in status	UInt	8 Bit	ro	0 = Idle 3 = SP12 success 4 = Wait for command 5 = Busy 7 = Error	See IO-Link Smart Sensor Profile Version 1.0 chapter 12.4 (link below).	
60 (0x3C)	Qint_1 teach data	Record	44 Byte	rw		Teach data content for a Qint.	
1 (0x01)	Nucleus L	Bit (320)	4 Byte	rw		Describes the center of the teach object as an LAB tripple.	
2 (0x02)	Nucleus A	Bit (288)	4 Byte	rw			
3 (0x03)	Nucleus B	Bit (256)	4 Byte	rw			
4 (0x04)	Rotation L	Bit (224)	4 Byte	rw		Describes the rotation of the extent of the teach object around the nucleus as an LAB-vector.	
5 (0x05)	Rotation A	Bit (192)	4 Byte	rw			
6 (0x06)	Rotation B	Bit (160)	4 Byte	rw			
7 (0x07)	Extent L	Bit (128)	4 Byte	rw		Describes the extent of the rotated teach object as a 3D vector.	
8 (0x08)	Extent A	Bit (96)	4 Byte	rw			
9 (0x09)	Extent B	Bit (64)	4 Byte	rw			
10 (0x0A)	Application hysteresis R	Bit (48)	16 Bit	rw		Describes the additional noise, measured during teach-in.	
11 (0x0B)	Application hysteresis G	Bit (32)	16 Bit	rw			
12 (0x0C)	Application hysteresis B	Bit (16)	16 Bit	rw			
13 (0x0D)	Signal damping	Bit (0)	16 Bit	rw		Signal damping selected for teach object.	
61 (0x3D)	Qint_1 configuration	Record	3 Byte	rw		Configuration of a Qint.	
1 (0x01)	Referenced teach object	Bit (16)	8 Bit	rw	0	0...23	Link to the teach object for which the Qint is configured. Qint1 = 0, Qint24 = 23.
2 (0x02)	Sensitivity	Bit (0)	16 Bit	rw	900	0...999 = 0: Switching output active on any color; 999: Switching output active on perfect match only	If CMV value above sensitivity, Qint switches on. If CMV value below sensitivity, Qint switches off.
62 (0x3E)	Qint_2 teach data	Record	44 Byte	rw		Teach data content for a Qint.	
63 (0x3F)	Qint_2 configuration	Record	3 Byte	rw		Configuration of a Qint.	
64 (0x40)	Device specific tag	String	32 Byte	rw	*****		For customized entry. Will not be stored in data storage.
83 (0x53)	Currently selected operating mode	UInt	8 Bit	ro	0 = Mark / Object positioning 1 = Fast sorting 2 = Object separation 3 = Color verification 255 = Manual setting		Get the current selected operating mode which is set in the ISDU 110.
89 (0x59)	Measurement averaging	UInt	8 Bit	rw	0	0 = No averaging 1 = Low averaging 2 = Medium averaging 3 = High averaging 4 = Highest averaging	Implemented values dependent on the device variant.
97 (0x61)	Sender configuration	UInt	8 Bit	rw	0	0 = Sender active 1 = Sender not active	Switches off the sendig LEDs. No measurement with inactive sender possible.
110 (0x6E)	Operating Mode	UInt	8 Bit	wo	0 = Mark / Object positioning 1 = Fast sorting 2 = Object separation 3 = Color verification		Select the operating mode which the sensor shall use for evaluation. The mode has influence on the type of evaluation (best-fit), sensitivity and response time.
114 (0x72)	Quality of teach	UInt	8 Bit	ro	0	0...100 = Quality level in percent.	On multi-value-teach the level decreases by a rising variety of colors detected during teach-in. [%]
120 (0x78)	Process data select	UInt	8 Bit	rw	0	0 = Evaluation mode (CMV1 to CMV4) 1 = Measurement mode (CMV1 and LAB / RGB measurement values, see ISDU 296)	Selection of the PDin frame content.

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³ Subindex access not supported

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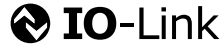
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Please note the validity of the additional operating instructions for automation functions

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SICK device specific							
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]
121 (0x79)	Pin 2/1 configuration	UInt	8 Bit	rw	39	0 = Deactivated 1 = External input (Smart Task) 20 = Blanking 34 = Switching output QL2 39 = Switching output QL1 80 = Single value teach QL1 81 = Single value teach QL2 90 = Activate job bank (LSB)	Pin 2 configuration for 5 pin device. Pin 1 configuration for 8 pin device.
122 (0x7A)	Pin 5 configuration	UInt	8 Bit	rw	80	0 = Deactivated 1 = External input (Smart Task) 20 = Blanking 80 = Single value teach QL1 81 = Single value teach QL2 90 = Activate job bank (MSB)	
153 (0x99)	Temperature	Record	5 Byte	ro			
1 (0x01)	Current temperature	Bit (32)	8 Bit	ro		Internal device temperature in °C. [°C]	
2 (0x02)	Max. temperature all time	Bit (24)	8 Bit	ro		Maximum internal device temperature since production of sensor in °C. [°C]	
3 (0x03)	Min. temperature all time	Bit (16)	8 Bit	ro		Minimum internal device temperature since production of sensor in °C. [°C]	
4 (0x04)	Max. temperature since last reset	Bit (8)	8 Bit	ro		Maximum internal device temperature since last reset via system command in °C. [°C]	
5 (0x05)	Min. temperature since last reset	Bit (0)	8 Bit	ro		Minimum internal device temperature since last reset via system command in °C. [°C]	
160 (0xA0)	Key lock type	UInt	8 Bit	rw	0	0 = Interface fully locked 1 = Teach-in available 2 = Reserved	Defines the configuration options available on user interface when key lock is active.
165 (0xA5)	Color match values	Array	48 Byte	ro	Unsigned Integer16 [24]	Color match values of single teach objects.	
175 (0xAF)	Quality of run	UInt	8 Bit	ro	100	0...100 = Quality level in percent.	Displays the minimum process quality (color similarity) of the active color banks.
176 (0xB0)	Quality of run alarm threshold	UInt	8 Bit	rw	50	0...90 = Threshold position in percent.	Alarm threshold for process quality. PDin status bit is set if Quality of run drops below the given value. [%]
179 (0xB3)	Alarm thresholds for diagnostic parameters	Record	6 Byte	rw		The lower and upper temperature thresholds of the corresponding alarm (events) can be configured here.	
1 (0x01)	Upper temperature threshold	Bit (40)	8 Bit	rw	80	The temperature alarm (event) is set when the base value exceeds this threshold in °C.	
2 (0x02)	Lower temperature threshold	Bit (32)	8 Bit	rw	-30	The temperature alarm (event) is set when the base value falls below this threshold in °C.	
3 (0x03)	Operating hours threshold	Bit (0)	32 Bit	rw	40000	If this number of "operating hours since last reset" (index 190) is reached, the the corresponding operating hours alarm event is fired.	
190 (0xBE)	Operating hours	Record	8 Byte	ro			
1 (0x01)	Total operating hours	Bit (32)	32 Bit	ro		Operating hours since production of sensor in h. [h]	
2 (0x02)	Operating hours since last reset	Bit (0)	32 Bit	ro		Operating hours since last reset via system command in h. [h]	
204 (0xCC)	Find me	UInt	8 Bit	rw	0	0 = Deactivated 1 = Yellow LED blinks with 1 Hz	Only for identification purposes. Not saved via data storage
219 (0xDB)	Product ID (order number)	Record	7 Byte	ro			
1 (0x01)	Product ID IO-Link device	Bit (0)	7 Byte	ro		SICK order number	
225 (0xE1)	Activate job bank	UInt	8 Bit	wo		0 = Activate job bank 1 1 = Activate job bank 2 2 = Activate job bank 3 3 = Activate job bank 4	Activate a new job bank. The current settings are stored to the last selected job bank (see ISDU 226). The settings of the newly selected job bank are loaded to the sensor.
226 (0xE2)	Active job bank	UInt	8 Bit	ro		0 = Job bank 1 1 = Job bank 2 2 = Job bank 3 3 = Job bank 4	Get the current active job bank which may be set in the ISDU 225.
227 (0xE3)	Notification handling	UInt	8 Bit	rw		0 = All enabled 1 = All disabled 2 = Events enabled, PD invalid disabled 3 = Events disabled, PD invalid enabled	Enable / disable generation of IO-Link events.
229 (0xE5)	Distance to object	Record	3 Byte	ro		Distance from sensor to target. Is only output by CSS High Resolution device variants.	
1 (0x01)	Distance	Bit (8)	16 Bit	ro		0...5000	Distance in unit 1/10 mm. Zero if distance qualifier is unequal to 0.
2 (0x02)	Distance qualifier	Bit (0)	8 Bit	ro		0 = Distance in range / valid 3 = No distance information / distance invalid	
234 (0xEA)	Display settings	Record	2 Byte	rw			
1 (0x01)	Energy saving mode	Bit (8)	8 Bit	rw	1	0 = Off 1 = On	By enabling the energy saving mode, display is deactivated 5 minutes after last key was pushed.
2 (0x02)	Turn display	Bit (0)	8 Bit	rw	0	0 = Not turned 1 = Turned	Turn the display reading direction.
239 (0xEF)	Modbus RTU slave address	UInt	8 Bit	rw	10	1...247	Slave address of the sensor on the Modbus RTU bus. The new value becomes active after the next power cycle.
240 (0xF0)	Modbus RTU baud rate	UInt	8 Bit	rw	4	3 = 9600 bps 4 = 19200 bps 5 = 38400 bps 6 = 57600 bps 7 = 115200 bps	Baud rate used for the Modbus RTU bus. The new value becomes active after the next power cycle.
241 (0xF1)	Modbus RTU parity setting	UInt	8 Bit	rw	1	0 = None 1 = Even 2 = Odd	Parity setting of the Modbus RTU bus. The new value becomes active after the next power cycle.

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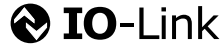
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SICK device specific							
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]
293 (0x125)	Output mode	UInt	8 Bit	rw	0	0 = Standard 1 = Best fit mode 2 = Coded mode	Standard: All teach colors are evaluated individually. Best fit mode: Only the teach color closest to the current measurement color may be active. Coded mode: Like best fit mode. The index of the active teach color is displayed as binary code on QLS.
294 (0x126)	Distance regulation	UInt	8 Bit	rw	1	0 = Deactivated 1 = Activated	Activates the distance regulation functionality. May not be available on all device variants.
295 (0x127)	Color mode	UInt	8 Bit	rw	0	0 = C + I mode 1 = C mode	C+I mode: All color components are evaluated; C mode: Only the color tone and saturation is evaluated, the lightness is ignored. This mode may be useful for applications with strong gloss effects.
296 (0x128)	Measurement color space	UInt	8 Bit	rw	0	0 = RGB 1 = LAB	Color space for PDin content in measurement mode. (Relevant only if ISDU 120 is set to measurement mode)
297 (0x129)	Quality levels	Array	24 Byte	ro	Unsigned Integer8 [24]	Displays the process quality of the single color banks.	
440 (0x1B8)	Hardware variant	UInt	8 Bit	ro	0	0 = Standard IO (5-pin with 3 IOs) 1 = Advanced IO (8-pin with 6 IOs) 2 = RS-485 (8-pin with RS-485 Modbus RTU and 4 IOs)	Used to identify the hardware variant of the connected device.
1093 (0x445)	Inverter Ext.input	Record ³	1 Byte	rw	Inverts the logical signal of the connected input pins.		
1 (0x01)	Inverter Ext.input 1 (Pin 2 / Pin 1)	Bit (1)	1 Bit	rw	0	true = Invertd false = Not inverted	
2 (0x02)	Inverter Ext.input 2 (Pin 5)	Bit (0)	1 Bit	rw	0	true = Invertd false = Not inverted	
1208 (0x4B8)	SLT Version	String	8 Byte	ro	1.1.0	Smart Task version number	
1209 (0x4B9)	Input selector 1	Record ³	4 Byte	rw	Sets the connected Qints / Teach colors and external inputs of the switching output.		
1 (0x01)	Qint.1	Bit (0)	1 Bit	rw	1	true = Qint.1 selected false = Qint.1 not selected	
2 (0x02)	Qint.2	Bit (1)	1 Bit	rw	0	true = Qint.2 selected false = Qint.2 not selected	
3 (0x03)	Qint.3	Bit (2)	1 Bit	rw	0	true = Qint.3 selected false = Qint.3 not selected	
4 (0x04)	Qint.4	Bit (3)	1 Bit	rw	0	true = Qint.4 selected false = Qint.4 not selected	
5 (0x05)	Qint.5	Bit (4)	1 Bit	rw	0	true = Qint.5 selected false = Qint.5 not selected	
6 (0x06)	Qint.6	Bit (5)	1 Bit	rw	0	true = Qint.6 selected false = Qint.6 not selected	
7 (0x07)	Qint.7	Bit (6)	1 Bit	rw	0	true = Qint.7 selected false = Qint.7 not selected	
8 (0x08)	Qint.8	Bit (7)	1 Bit	rw	0	true = Qint.8 selected false = Qint.8 not selected	
9 (0x09)	Qint.9	Bit (8)	1 Bit	rw	0	true = Qint.9 selected false = Qint.9 not selected	
10 (0x0A)	Qint.10	Bit (9)	1 Bit	rw	0	true = Qint.10 selected false = Qint.10 not selected	
11 (0x0B)	Qint.11	Bit (10)	1 Bit	rw	0	true = Qint.11 selected false = Qint.11 not selected	
12 (0x0C)	Qint.12	Bit (11)	1 Bit	rw	0	true = Qint.12 selected false = Qint.12 not selected	
13 (0x0D)	Qint.13	Bit (12)	1 Bit	rw	0	true = Qint.13 selected false = Qint.13 not selected	
14 (0x0E)	Qint.14	Bit (13)	1 Bit	rw	0	true = Qint.14 selected false = Qint.14 not selected	
15 (0x0F)	Qint.15	Bit (14)	1 Bit	rw	0	true = Qint.15 selected false = Qint.15 not selected	
16 (0x10)	Qint.16	Bit (15)	1 Bit	rw	0	true = Qint.16 selected false = Qint.16 not selected	
17 (0x11)	Qint.17	Bit (16)	1 Bit	rw	0	true = Qint.17 selected false = Qint.17 not selected	
18 (0x12)	Qint.18	Bit (17)	1 Bit	rw	0	true = Qint.18 selected false = Qint.18 not selected	
19 (0x13)	Qint.19	Bit (18)	1 Bit	rw	0	true = Qint.19 selected false = Qint.19 not selected	
20 (0x14)	Qint.20	Bit (19)	1 Bit	rw	0	true = Qint.20 selected false = Qint.20 not selected	
21 (0x15)	Qint.21	Bit (20)	1 Bit	rw	0	true = Qint.21 selected false = Qint.21 not selected	
22 (0x16)	Qint.22	Bit (21)	1 Bit	rw	0	true = Qint.22 selected false = Qint.22 not selected	
23 (0x17)	Qint.23	Bit (22)	1 Bit	rw	0	true = Qint.23 selected false = Qint.23 not selected	
24 (0x18)	Qint.24	Bit (23)	1 Bit	rw	0	true = Qint.24 selected false = Qint.24 not selected	
25 (0x19)	Ext.input 1	Bit (24)	1 Bit	rw	0	true = Ext.input 1 selected false = Ext.input 1 not selected	
26 (0x1A)	Ext.input 2	Bit (25)	1 Bit	rw	0	true = Ext.input 2 selected false = Ext.input 2 not selected	
1210 (0x4BA)	Logic 1	UInt	8 Bit	rw	2	1 = And 2 = Or	Describes the logic used for evaluating the different inputs for the switching output.

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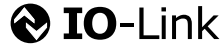
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1211 (0x4BB)	Timer 1 mode	UInt	8 Bit	rw	0	0 = Deactivated 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = Impulse	Sets the delay timer functionality of the switching output.
1212 (0x4BC)	Time 1 setup	UInt	16 Bit	rw	1	1...30000 = Time value in ms	Time value in ms for the delay timer functionality.
1213 (0x4BD)	Inverter 1	UInt	8 Bit	rw	0	0 = Not inverted 1 = Inverted	Sets the inversion of the switching output.
1214 (0x4BE)	Input selector 2	Record ³	4 Byte	rw	Sets the connected Qints / Teach colors and external inputs of the switching output.		
1215 (0x4BF)	Logic 2	UInt	8 Bit	rw	2	1 = And 2 = Or	Describes the logic used for evaluating the different inputs for the switching output.
1216 (0x4C0)	Timer 2 mode	UInt	8 Bit	rw	0	0 = Deactivated 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = Impulse	Sets the delay timer functionality of the switching output.
1217 (0x4C1)	Time 2 setup	UInt	16 Bit	rw	1	1...30000 = Time value in ms	Time value in ms for the delay timer functionality.
1218 (0x4C2)	Inverter 2	UInt	8 Bit	rw	0	0 = Not inverted 1 = Inverted	Sets the inversion of the switching output.
1219 (0x4C3)	Input selector 3	Record ³	4 Byte	rw	Sets the connected Qints / Teach colors and external inputs of the switching output.		
1220 (0x4C4)	Logic 3	UInt	8 Bit	rw	2	1 = And 2 = Or	Describes the logic used for evaluating the different inputs for the switching output.
1221 (0x4C5)	Timer 3 mode	UInt	8 Bit	rw	0	0 = Deactivated 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = Impulse	Sets the delay timer functionality of the switching output.
1222 (0x4C6)	Time 3 setup	UInt	16 Bit	rw	1	1...30000 = Time value in ms	Time value in ms for the delay timer functionality.
1223 (0x4C7)	Inverter 3	UInt	8 Bit	rw	0	0 = Not inverted 1 = Inverted	Sets the inversion of the switching output.
1224 (0x4C8)	Input selector 4	Record ³	4 Byte	rw	Sets the connected Qints / Teach colors and external inputs of the switching output.		
1225 (0x4C9)	Logic 4	UInt	8 Bit	rw	2	1 = And 2 = Or	Describes the logic used for evaluating the different inputs for the switching output.
1226 (0x4CA)	Timer 4 mode	UInt	8 Bit	rw	0	0 = Deactivated 1 = T-on delay 2 = T-off delay 3 = T-on/T-off delay 4 = Impulse	Sets the delay timer functionality of the switching output.
1227 (0x4CB)	Time 4 setup	UInt	16 Bit	rw	1	1...30000 = Time value in ms	Time value in ms for the delay timer functionality.
1228 (0x4CC)	Inverter 4	UInt	8 Bit	rw	0	0 = Not inverted 1 = Inverted	Sets the inversion of the switching output.
4081 (0xFF1)	Names Quint. 1 to 16	Record	192 Byte	rw	Used defined names of the colors.		
1 (0x01)	Name Quint. 1	Bit (1440)	12 Byte	rw	Color 1		
2 (0x02)	Name Quint. 2	Bit (1344)	12 Byte	rw	Color 2		
3 (0x03)	Name Quint. 3	Bit (1248)	12 Byte	rw	Color 3		
4 (0x04)	Name Quint. 4	Bit (1152)	12 Byte	rw	Color 4		
5 (0x05)	Name Quint. 5	Bit (1056)	12 Byte	rw	Color 5		
6 (0x06)	Name Quint. 6	Bit (960)	12 Byte	rw	Color 6		
7 (0x07)	Name Quint. 7	Bit (864)	12 Byte	rw	Color 7		
8 (0x08)	Name Quint. 8	Bit (768)	12 Byte	rw	Color 8		
9 (0x09)	Name Quint. 9	Bit (672)	12 Byte	rw	Color 9		
10 (0x0A)	Name Quint. 10	Bit (576)	12 Byte	rw	Color 10		
11 (0x0B)	Name Quint. 11	Bit (480)	12 Byte	rw	Color 11		
12 (0x0C)	Name Quint. 12	Bit (384)	12 Byte	rw	Color 12		
13 (0x0D)	Name Quint. 13	Bit (288)	12 Byte	rw	Color 13		
14 (0x0E)	Name Quint. 14	Bit (192)	12 Byte	rw	Color 14		
15 (0x0F)	Name Quint. 15	Bit (96)	12 Byte	rw	Color 15		
16 (0x10)	Name Quint. 16	Bit (0)	12 Byte	rw	Color 16		
4082 (0xFF2)	Names Quint. 17 to 24	Record	96 Byte	rw	Used defined names of the colors.		
1 (0x01)	Name Quint. 17	Bit (672)	12 Byte	rw	Color 17		
2 (0x02)	Name Quint. 18	Bit (576)	12 Byte	rw	Color 18		
3 (0x03)	Name Quint. 19	Bit (480)	12 Byte	rw	Color 19		
4 (0x04)	Name Quint. 20	Bit (384)	12 Byte	rw	Color 20		

¹ro = read only, wo = write only, rw = read/write

²COM values specify the bitrate (see IO-Link specification): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)

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Please note the validity of the additional operating instructions for automation functions

ENGLISH

SICK device specific									
Index dec (hex)	Name	Format (Offset)	Length	Access ¹	Default Value	Value / Range	Remark [Unit]		
5 (0x05)	Name Qint. 21	Bit (288)	12 Byte	rw	Color 21				
6 (0x06)	Name Qint. 22	Bit (192)	12 Byte	rw	Color 22				
7 (0x07)	Name Qint. 23	Bit (96)	12 Byte	rw	Color 23				
8 (0x08)	Name Qint. 24	Bit (0)	12 Byte	rw	Color 24				
16000 (0x3E80)	Device ID setup	Ulnt	32 Bit	rw	8389262		Chooses the IO-Link Device ID which is initialized during startup.		
16384 (0x4000)	Qint. 3 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
1 (0x01)	Nucleus L	Bit (320)	4 Byte	rw			Describes the center of the teach object as an LAB tripple.		
2 (0x02)	Nucleus A	Bit (288)	4 Byte	rw					
3 (0x03)	Nucleus B	Bit (256)	4 Byte	rw					
4 (0x04)	Rotation L	Bit (224)	4 Byte	rw			Describes the rotation of the extent of the teach object around the nucleus as an LAB-vector.		
5 (0x05)	Rotation A	Bit (192)	4 Byte	rw					
6 (0x06)	Rotation B	Bit (160)	4 Byte	rw					
7 (0x07)	Extent L	Bit (128)	4 Byte	rw			Describes the extent of the rotated teach object as a 3D vector.		
8 (0x08)	Extent A	Bit (96)	4 Byte	rw					
9 (0x09)	Extent B	Bit (64)	4 Byte	rw					
10 (0x0A)	Application hysteresis R	Bit (48)	16 Bit	rw			Describes the additional noise, measured during teach-in.		
11 (0x0B)	Application hysteresis G	Bit (32)	16 Bit	rw					
12 (0x0C)	Application hysteresis B	Bit (16)	16 Bit	rw					
13 (0x0D)	Signal damping	Bit (0)	16 Bit	rw			Signal damping selected for teach object.		
16385 (0x4001)	Qint. 3 configuration	Record	3 Byte	rw			Configuration of a Qint.		
1 (0x01)	Referenced teach object	Bit (16)	8 Bit	rw	2	0...23	Link to the teach object for which the Qint is configured. Qint1 = 0, Qint24= 23.		
2 (0x02)	Sensitivity	Bit (0)	16 Bit	rw	900	0...999 = 0: Switching output active on any color; 999: Switching output active on perfect match only	If CMV value above sensitivity, Qint switches on. If CMV value below sensitivity, Qint switches off.		
16386 (0x4002)	Qint. 4 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16387 (0x4003)	Qint. 4 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16388 (0x4004)	Qint. 5 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16389 (0x4005)	Qint. 5 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16390 (0x4006)	Qint. 6 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16391 (0x4007)	Qint. 6 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16392 (0x4008)	Qint. 7 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16393 (0x4009)	Qint. 7 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16394 (0x400A)	Qint. 8 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16395 (0x400B)	Qint. 8 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16396 (0x400C)	Qint. 9 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16397 (0x400D)	Qint. 9 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16398 (0x400E)	Qint. 10 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16399 (0x400F)	Qint. 10 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16400 (0x4010)	Qint. 11 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16401 (0x4011)	Qint. 11 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16402 (0x4012)	Qint. 12 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16403 (0x4013)	Qint. 12 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16404 (0x4014)	Qint. 13 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16405 (0x4015)	Qint. 13 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16406 (0x4016)	Qint. 14 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16407 (0x4017)	Qint. 14 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16408 (0x4018)	Qint. 15 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16409 (0x4019)	Qint. 15 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16410 (0x401A)	Qint. 16 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16411 (0x401B)	Qint. 16 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16412 (0x401C)	Qint. 17 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16413 (0x401D)	Qint. 17 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16414 (0x401E)	Qint. 18 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16415 (0x401F)	Qint. 18 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16416 (0x4020)	Qint. 19 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16417 (0x4021)	Qint. 19 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16418 (0x4022)	Qint. 20 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16419 (0x4023)	Qint. 20 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16420 (0x4024)	Qint. 21 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16421 (0x4025)	Qint. 21 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16422 (0x4026)	Qint. 22 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16423 (0x4027)	Qint. 22 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16424 (0x4028)	Qint. 23 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16425 (0x4029)	Qint. 23 configuration	Record	3 Byte	rw			Configuration of a Qint.		
16426 (0x402A)	Qint. 24 teach data	Record	44 Byte	rw			Teach data content for a Qint.		
16427 (0x402B)	Qint. 24 configuration	Record	3 Byte	rw			Configuration of a Qint.		

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²COM values specify the bitrate (see IO-Link specification): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)

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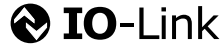
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Please note the validity of the additional operating instructions for automation functions

ENGLISH					
Standard command					
Index dec (hex)	Standard Command	Access ¹	Value	Name	Remark [Unit]
2 (0x02)	Standard Command	wo	65	Single value teach	
			71	Start multi value teach	
			72	Stop multi value teach	
			79	Abort teach-in sequence	
			128	Device Reset	
			129	Application Reset	
			130	Restore Factory Settings	
			220	Remove teach object	
			228	Resets the minimum and the maximum temperature since the last reset (ISDU 153/4, 153/5), as well as the operating hours since the last reset (ISDU 190/2).	

Events			
Code dec (hex)	Name	Type	Remark [Unit]
20480 (0x5000)	Device hardware fault	Error	Device Exchange
36000 (0x8CA0)	Short circuit on output pin	Warning	There is a short circuit at least on one output pin.
36001 (0x8CA1)	New parameters	Notification	Parameters have been changed not via IO-Link interface.
36004 (0x8CA4)	Quality of run alarm	Warning	Low device performance, check detecting conditions. E.g. correct alignment or clean lenses.
36008 (0x8CA8)	Alarm upper temperature threshold	Warning	User upper temperature threshold (ISDU 179) has been hit.
36011 (0x8CAB)	Alarm operating hours	Warning	User threshold for operating hours (since last reset) has been hit.
36015 (0x8CAF)	Alarm lower temperature threshold	Notification	User lower temperature threshold (ISDU 179) has been hit.

4. Job Assurance

Job assurance allows to set, save and manage parameters for specific formats or recipes via IO-Link. The following overview shows the necessary ISDUs.

1. Job content

Teach-in channel (58), Quint. 1 teach data (60), Quint. 1 configuration (61), Quint. 2 teach data (62), Quint. 2 configuration (63), Measurement averaging (89), Quality of run alarm threshold (176), Output mode (293), Distance regulation (294), Color mode (295), Measurement color space (296), Names Quint. 1 to 16 (4081), Names Quint. 17 to 24 (4082), Quint. 3 teach data (16384), Quint. 3 configuration (16385), Quint. 4 teach data (16386), Quint. 4 configuration (16387), Quint. 5 teach data (16388), Quint. 5 configuration (16389), Quint. 6 teach data (16390), Quint. 6 configuration (16391), Quint. 7 teach data (16392), Quint. 7 configuration (16393), Quint. 8 teach data (16394), Quint. 8 configuration (16395), Quint. 9 teach data (16396), Quint. 9 configuration (16397), Quint. 10 teach data (16398), Quint. 10 configuration (16399), Quint. 11 teach data (16400), Quint. 11 configuration (16401), Quint. 12 teach data (16402), Quint. 12 configuration (16403), Quint. 13 teach data (16404), Quint. 13 configuration (16405), Quint. 14 teach data (16406), Quint. 14 configuration (16407), Quint. 15 teach data (16408), Quint. 15 configuration (16409), Quint. 16 teach data (16410), Quint. 16 configuration (16411), Quint. 17 teach data (16412), Quint. 17 configuration (16413), Quint. 18 teach data (16414), Quint. 18 configuration (16415), Quint. 19 teach data (16416), Quint. 19 configuration (16417), Quint. 20 teach data (16418), Quint. 20 configuration (16419), Quint. 21 teach data (16420), Quint. 21 configuration (16421), Quint. 22 teach data (16422), Quint. 22 configuration (16423), Quint. 23 teach data (16424), Quint. 23 configuration (16425), Quint. 24 teach data (16426), Quint. 24 configuration (16427)

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