QCM50-K1D40 IO-Link Data Reference Guide

IO-Link Data Map

This document refers to the following IODD file: Banner_Engineering-QCM50-K1D40-Q8-4-20190327-IODD1.1.xml. The IODD file and support files can be found on *www.bannerengineering.com* under the download section of the product family page.

Communication Parameters

Parameter	Value
IO-Link revision	V1.1
Process Data In length	16-bits
Process Data Out length	N/A

Parameter	Value
SIO mode	Yes
Bit Rate	38400 bps
Minimum cycle time	4 ms

IO-Link Process Data In (Device to Master)

Process Data Profile 0 : Switching Outputs

Subindex	Process Data Input			
	Name	Number of Bits	Data Values	bit offset
1	Signal Quality	8	0=no signal, 1=overflow, 2..100	8
2	Switching Quality	1	0/1	1
3	Q1	1	0/1	0

Octet 0								
bit offset	15	14	13	12	11	10	9	8
subindex	1							

Octet 1								
bit offset	7	6	5	4	3	2	1	0
subindex	/ / / / / /	/ / / / / /	/ / / / / /	/ / / / / /	/ / / / / /	/ / / / / /	2	3

IO-Link Process Data Out (Master to Device)

Not applicable.

Parameters Set Using IO-Link

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
0	1-16	Direct Parameter Page 1 (incl. Vendor ID & Device ID)				ro		
1	1-16	Direct Parameters Page 2			rw			

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Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
2		Standard Command		64 = Teach apply 65 = Single Value Teach 71 = Color scan start 72 = Color scan stop 79 = Teach-in cancel 128 = Device Reset 130 = Restore Factory Settings 160 = Emitter OFF 161 = Emitter ON 162 = Reset switching output 169 = Trigger input pin 170 = Trigger ON 171 = Trigger OFF 175 = Detect sensor		wo		y
3		unused/reserved				ro		
4-11		reserved by IO-Link Specification						
12		Device Access Locks						
	1	Parameter Write Access Lock		0 = off 1 = on	0	rw	y	
	2	Data Storage Lock		0 = off, 1 = on	0	rw	y	
	3	Local Parameterization Lock		0 = off, 1 = on	0	rw	y	
	4	Local User Interface Lock		0 = off, 1 = on	0	rw	y	
13-15		unused/reserved				ro		
16		Vendor Name string		Banner Engineering Corp		ro		
17		Vendor Text string		More Sensors. More Solutions.		ro		
18		Product Name string		QCM50-K1D40-Q8-4		ro		
19		Product ID string		806618		ro		
20		Product Text string		Optical color sensor		ro		y
21		Serial Number				ro		
22		unused/reserved				ro		
23		Firmware Version				ro		y
24		App Specific Tag (user defined)				rw	y	y
25-35		reserved						
82		Temperature						
	1	Operating Temperature	8-bit integer			ro		
	2	Max. operating temperature since restart	8-bit integer			ro		
	3	Min. operating temperature since restart	8-bit integer			ro		
	4	Max. lifetime temperature	8-bit integer			ro		
	5	Min. lifetime temperature	8-bit integer			ro		
88		Operating Data						
	1	Operating hours	32-bit Uinteger			ro		
	2	Counter switch cycle	32-bit Uinteger			ro		
95		Electronic data sheet						
	1	Measurement range	10-octet string UTF-8			ro		
	2	Type of light and laser class	41-octet string UTF-8			ro		
	3	No-load current	8-octet string UTF-8			ro		
	4	Switching frequency	8-octet string UTF-8			ro		
	5	Warm-up time	5-octet string UTF-8			ro		

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
	6	Ambient temperature	11-octet string UTF-8			ro		
96		Color C1 at output Q1						
	1	Tolerance	8-bit integer	0 = Finest tolerance level 1 = 2nd tolerance level 2 = 3rd tolerance level 3 = 4th tolerance level 4 = 5th tolerance level 5 = 6th tolerance level 6 = 7th tolerance level 7 = 8th tolerance level 8 = Roughest tolerance level	3	rw		
	2	NO/NC	8-bit integer	0 = NO, 1 = NC	0	rw		
	3	Function switching output	8-bit integer	0 = Disable, 1 = Output	0	rw		
	4	Energy evaluation	8-bit integer	0 = Off, 1 = On	1	rw		
	5	Counter	16-bit integer	0..65535 = 0...65535	0	rw		
	6	On-delay	16-bit integer	0..65535 = 0...65535	0	rw		
	7	Off-delay	16-bit integer	0..65535 = 0...65535	0	rw		
	8	Impulse (one shot)	16-bit integer	0..65535 = 0...65535	0	rw		
128		Color Tolerances C1						
	1	Ratio red	16-bit Uinteger	0..4095 = 0...100.00	1365	rw		
	2	Ratio green	16-bit Uinteger	0..4095 = 0...100.00	1365	rw		
	3	Energy	16-bit Uinteger	0..4095 = 0...100.00	4095	rw		
	4	Red tolerance	16-bit Uinteger	0..4095 = 0...100.00	65	rw		
	5	Green tolerance	16-bit Uinteger	0..4095 = 0...100.00	65	rw		
	6	Energy tolerance	16-bit Uinteger	0..4095 = 0...100.00	200	rw		
176		Function Q all						
	1	PNP/NPN	8-bit Uinteger	0 = NPN, 1 = PNP, 2 = Auto	1	rw		
	2	Switching frequency/averaging	8-bit Uinteger	0 = 3 Hz 1 = 30 Hz 2 = 100 Hz 3 = 300 Hz 4 = 500 Hz 5 = 1500 Hz 6 = 3000 Hz	1	rw		
196		Signal quality level	8-bit Uinteger	10..90 = 10…90	10	rw		
204		Teachin status						
	1	Teach status	4-bit Uinteger	0 = Idle 1 = Teach successful 2 = Teach successful 3 = Teach successful 4 = Wait for command 5 = Busy 7 = Error		ro		
	2	Teach flag SP1->TP1	Boolean	false = -, true = Teach successful		ro		
	3	Teach flag SP1->TP2	Boolean	false = -, true = Teach successful		ro		
	4	Teach flag SP2->TP1	Boolean	false = -, true = Teach successful		ro		
	5	Teach flag SP2->TP2	Boolean	false = -, true = Teach successful		ro		
207		Current signal quality	8-bit Uinteger	0..100 = 0…100		ro		
208		Input				ro		
	1	Input Configuration	8-bit Uinteger	0 = Disable Input 2 = Key Lock 3 = Trigger 4 = External Teach	0	rw		
224		Display						

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
	1	Screensaver	8-bit Uinteger	0 = Screensaver OFF, 1 = Screensaver ON	1	rw		
	2	Rotate display	8-bit Uinteger	0 = Display read from back, 1 = Display read from front	1	rw		
252		Test_252 - event generation	8-bit Uinteger	0 = A_Appear 1 = A_Disappear 2 = B_Appear 3 = B_Disappear		rw		
253		Test_253 - test parameter	8-bit Uinteger			rw		
254		Test_254 - test parameter	16-octet Octet String			rw		
16382		Test_16832 - Test	2-octet Octet Sting			rw		

IO-Link Events

Code	Type	Description
6384 (0x4000)	Error	Temperature fault (overload)
16912 (0x4210)	Warning	Device temperature over-run (clear source of heat)
16928 (0x4220)	Warning	Device temperature under-run (insulate device)
20480 (0x5000)	Error	Device hardware fault (Device Exchange)
20497 (0x5011)	Error	Non volatile memory loss (Check batteries)

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