IO-Link Data Reference Guide: QS18 Clear Object Detector

IO-Link Data Map

This document refers to the following IODD file: Banner_Engineering-QS18EK6XLPCxx-20161206-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

The following communication parameters are used.

Parameter	Value
IO-Link revision	V1.1
Process Data In length	8 bits
Process Data Out length	N/A
Bit Rate	38400 bps
Minimum cycle time	4 ms

Parameter	Value
Port class	A
SIO mode	Yes
Smart sensor profile	Yes
Block parameterization	Yes
Data Storage	Yes

IO-Link Process Data In (Device to Master)

Process Data In is transmitted cyclically to the IO-Link master from the IO-Link device.

The QS18EK6XLPC IO-Link Process Data is 8 bits in size and includes the state of the output channel and the health state of the sensor. This information is sent to the IO-Link master every 2.3 ms.

Process Data Input			
Subindex	**Name**	**Number of Bits**	**Data Values**
1	Output State	1	1=C/Q Output Active, 0=Inactive
2	Health State	1	1=Sensor is Healthy, 0=Unhealthy

Example								
Subindex	/////	/////	/////	/////	/////	////	2	1
Bit offset	7	6	5	4	3	2	1	0
Value	N/A	N/A	N/A	N/A	N/A	N/A	0	1
Example	---	---	---	---	---	---	Unhealthy	Active

IO-Link Process Data Out (Master to Device)

Not applicable.

Parameters Set Using IO-Link

These parameters can be read from and/or written to an IO-Link model of the QS18EK6XLPC sensor. Also included is information about whether the variable in question is saved during Data Storage and whether the variable came from the IO-Link Smart Sensor Profile.

Unlike Process Data In, which is transmitted from the IO-Link device to the IO-Link master cyclically, these parameters are read or written acyclically as needed.

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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Index	Subindex	Name	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile?	AOI
0	1-15	Direct Parameter Page 1 (incl. Vendor ID & Device ID)			ro			
0	16	Standard Command			wo			
1	1-16	Direct Parameters Page 2			rw			
2		Standard Command: 8-bit Uinteger (65 = SP1 Single Value Teach, 130 = Restore Factory Settings, 162 = Start discovery, 163 = Stop discovery, 164 = Emitter Enabled, 165 = Emitter Disabled)			wo		y	y
3		Data Storage Index (device-specific list of parameters to be stored)			rw			
4-11		*reserved by IO-Link Specification*						
12		**Device Access Locks**						
12	1	Parameter Write Access Lock: 8-bit integer (0 = off 1 = on)	0,1	0	rw	y		y
12	2	Data Storage Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	y		y
12	3	Local Parameterization Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	y		y
12	4	Local User Interface Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	y		y
13		Profile Characteristic			ro		y	
14		PDInput Descriptor			ro		y	
15		*unused*						
16		Vendor Name string		Banner Engineering Corp	ro			
17		Vendor Text string			ro			
18		Product Name string			ro			
19		Product ID string			ro			
20		Product Text string			ro		y	
21		Serial Number			ro			
22		*Unused*						
23		Firmware Version			ro		y	
24		App Specific Tag (user defined)			rw	y	y	
25-36		*reserved*						
37		Detailed Device Status			ro		y	
38-39		*reserved*						
40		Process Data Input			ro			
41-60		*unused/reserved*						
61		**BDC1 Configuration**						
61	1	BDC1 Switchpoint Logic: 8-bit Uinteger (0 = LO, 1 = DO)	0,1	1	rw	y	y	y
61	2	BDC1 Mode: 8-bit Uinteger (1=Transparent Mode, 129=Opaque Mode, 130=Film Mode)	1, 129, 130	1	rw	y	y	y
61	3	Hysteresis:16-bit Uinteger (unused must be written 0)	0	0	rw	y	y	y

Index	Subindex	Name	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile?	AOI
62-64		*unused/reserved*						
65		**BDC1 Vendor Specific Configuration**						
65	1	BDC1 Delay Mode: 8-bit integer (0= Disabled, 1=On Off Delay, 2=On One-Shot, 3=Off One-Shot)	0-3	0	rw	y		y
65	2	BDC1 Delay Time1: 32-bit integer (ms)	0-90000	0	rw	y		y
65	3	BDC1 Delay Time2: 32-bit integer (ms)	0-90000	0	rw	y		y
65	4	BDC1 Auto Compensation: 8-bit integer (0=Disabled, 1=Enabled)	0,1	0	rw	y		y
65	5	BDC1 Threshold Offset: 8-bit integer (0=8%, 1=16%, 2=32%)	0-2	1	rw	y		y
65	6	BDC1 Health Mode: 8-bit integer (0=Auto, 1=User)	0,1	0	rw	y		y
65	7	BDC1 User Health Setting: 8-bit integer (user defined levels to trigger the health cyclic data bit)	0-90	50	rw	y		y
66-68		*unused/reserved*						
69		All-Time Run Time: 32-bit integer (hours)			ro			
70		Resettable Run Time: 32-bit integer (hours)			rw			
71		Quality of Health: 8-bit integer (The Threshold Reference normalized to the Taught Condition)	0-200		ro			y
72		Normalized Signal Strength: 8-bit integer (The Received Signal normalized to the Switching Threshold)	0-250		ro			y
73		Quality of Teach: 8-bit integer (The Taught signal level normalized to 1.5 times the Minimum Teach Level) A value of 100 or higher is a reliable teach condition. Less than 100 means that the sensor has less than a 50% signal strength reserve. The quality of teach value can be increased by readjusting the alignment or changing reflectors to increase signal strength.	0-200		ro			y
74		**Health Thresholds**						
74	1	Health Thresholds Lower Limit: 8-bit integer			ro			y
74	2	Health Thresholds Upper Limit: 8-bit integer			ro			y
75		**Sensing Thresholds**						
75	1	Sensing Threshold Lower Limit: 8-bit integer			ro			y
75	2	Sensing Thresholds Upper Limit: 8-bit integer			ro			y
76		**Vendor Specific Configuration**						
76	1	Polarity of Pins 2 and 4: 8-bit integer (0=push/pull, 1=PNP, 2=NPN)	0-2	0	rw	y		y
76	2	Pin 2 Configuration: 8-bit integer (0=deactivated, 1=emitter enable, 2=emitter disable, 3=remote input, 4=detection output, 5=complementary output, 6=health output active, 7=health output inactive)	0-7	4	rw	y		y
77		Sensor Operational Mode: 8-bit Uinteger (1=Transparent Mode, 129=Opaque Mode, 130=Film Mode) from last successful teach	1, 129, 130		ro			y

IO-Link Events

Events are acyclic transmissions from the IO-Link device to the IO-Link master. Events can be error messages and/or warning or maintenance data.

Code	Type	Description
25376 (0x6320)	Error	Parameter error (The last command would have resulted in an invalid set of device parameters. Check the parameter table and user manual for valid parameter values.)

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