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.

Index	Subindex	Name	Value Range	Default	Access Rights	Data Storage?	Smart Sensor **Profile?**
0	1-15	Direct Parameter Page 1 (incl. Vendor ID & Device ID)			ro		

Index	Subindex	Name	Value Range	Default	Access Rights	Data Storage?	Smart Sensor **Profile?**
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
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	
12	2	Data Storage Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	y	
12	3	Local Parameterization Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	y	
12	4	Local User Interface Lock: 8-bit integer (0 = off, 1 = on)	0,1	0	rw	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
61	2	BDC1 Mode: 8-bit Uinteger (1=Transparent Mode, 129=Opaque Mode, 130=Film Mode)	1, 129, 130	1	rw	y	y
61	3	Hysteresis:16-bit Uinteger (unused must be written 0)	0	0	rw	y	y
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	
65	2	BDC1 Delay Time1: 32-bit integer (ms)	0-90000	0	rw	y	
65	3	BDC1 Delay Time2: 32-bit integer (ms)	0-90000	0	rw	y	

Index	Subindex	Name	Value Range	Default	Access Rights	Data Storage?	Smart Sensor **Profile?**
65	4	BDC1 Auto Compensation: 8-bit integer (0=Disabled, 1=Enabled)	0,1	0	rw	y	
65	5	BDC1 Threshold Offset: 8-bit integer (0=8%, 1=16%, 2=32%)	0-2	1	rw	y	
65	6	BDC1 Health Mode: 8-bit integer (0=Auto, 1=User)	0,1	0	rw	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	
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		
72		Normalized Signal Strength: 8-bit integer (The Received Signal normalized to the Switching Threshold)	0-250		ro		
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		
74		Health Thresholds					
74	1	Health Thresholds Lower Limit: 8-bit integer			ro		
74	2	Health Thresholds Upper Limit: 8-bit integer			ro		
75		Sensing Thresholds					
75	1	Sensing Threshold Lower Limit: 8-bit integer			ro		
75	2	Sensing Thresholds Upper Limit: 8-bit integer			ro		
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	
76	2	Pin 2 Configuration: 8-bit integer (0=deactivated, 1=emitter enable, 2=emitter disable, 3=remote input, 4=detection output, 5=complimentary output, 6=health output active, 7=health output inactive)	0-7	4	rw	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		

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.)