IO-Link Data Map

This document refers to the following IODD file: Banner_Engineering-B25_PD-20241017-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		Parameter	Value
IO-Link revision	V1.1		Port class	A
Process Data In length	16 bits		SIO mode	Yes
Process Data Out length	N/A		Smart sensor profile	Yes
Bit Rate	38400 bps		Block parameterization	Yes
Minimum cycle time	2.9 ms		Data Storage	Yes
Device ID	0x070100			

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 B25 IO-Link Process Data is 16 bits and can be configured using parameter data to include the output state, the alarm state, and the device signal. This information is sent to the IO-Link master every 2.9 ms.

Process Data Configuration

Subindex	Name	Number of Bits	Data Values
1	Output State	1	0 = inactive, 1 = active
2	Alarm State	1	0 = inactive, 1 = active
3	Signal Level	8	

Octet 0								
Subindex	3	3	3	3	3	3	3	3
Bit offset	15	14	13	12	11	10	9	8
Value	0	1	1	0	0	1	0	0

Octet 1								
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 based upon the Value above:

Output State = Active
Health Alarm State = Inactive
Signal = 100

IO-Link Process Data Out (Master to Device)

Not applicable.

Original Instructions
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Parameters Set Using IO-Link

These parameters can be read from and/or written to an IO-Link model of the B25 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	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		
2		Standard Command		65 = Single Value Teach 71 = Start Dynamic Teach 72 = Stop Dynamic Teach 79 = Cancel Teach 129 = Application Reset 162 = Start discovery 163 = Stop discovery 164 = Set to High Gain Mode		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		0 = off, 1 = on	0	rw	y	
12	2	Data Storage Lock		0 = off, 1 = on	0	rw	y	
12	3	Local Parameterization Lock		0 = off, 1 = on	0	rw	y	
12	4	Local User Interface Lock		0 = off, 1 = on	0	rw	y	
13		Profile Characteristic				ro		
14		PDInput Descriptor				ro		
15		PDOutput Descriptor				ro		
16		Vendor Name string	64-octet string	Banner Engineering Corporation		ro		
17		Vendor Text string	64-octet string	More Sensors. More Solutions		ro		
18		Product Name string	64-octet string	B25		ro		
19		Product ID string				ro		
20		Product Text string				ro		
21		Serial Number				ro		
22		Hardware Version				ro		
23		Firmware Version				ro		
24		App Specific Tag (user defined)				rw	y	
25		Function Tag				rw	y	
26		Location Tag				rw	y	
27–35		*reserved*						

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Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
36		Device Status	8-bit integer	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5..255 *Reserved*		ro		
37		Detailed Device Status	Array[6] of 3-octet			ro		
38–39		*reserved*						
40		Process Data Input		*see Process Data In*		ro		
41		Process Data Output		*see Process Data Out*		ro		
42–58		*unused/reserved*						
59		**Teach-In Status**						
59	1	Teach State	4-bit integer	0 = Idle 1 = SP1 Success 2 = SP2 Success 3 = SP1 SP2 Success 4 = Wait for Command 5 = Busy 7 = Error		ro		y
64		**Configuration**						
64	1	Sensor Button Lockout	8-bit integer	0 = Unlocked, 1 = locked	0	rw	y	y
64	2	Sensitivity	8-bit integer	0 = Low 1 = Standard 2 = High	1	rw	y	y
64	3	Pin2/Channel2 Function	8-bit integer	0 = Disabled 1 = Remote Teach 2 = Detection Output 3 = Complementary Output 4 = Health Output 5 = Alarm Output	3	rw	y	y
64	4	Pin2/Pin4 Polarity	8-bit integer	0 = NPN 1= PNP 2 = Pin 2 PNP, Pin 4 Push/Pull	2	rw	y	y
64	5	Output Logic	8-bit integer	0 = Light Operate, 1 = Dark Operate	1	rw	y	y
64	6	Output Delay mode	8-bit integer	0 = No Delay, 1 = On/Off Delay	0	rw	y	y
64	7	Output On Delay	8-bit integer		10 ms	rw	y	y
64	8	Output Off Delay	8-bit integer		10 ms	rw	y	y
64	9	Dynamic Teach Timeout Mode	8-bit integer	0 = Cancel Teach, 1 = Stop Teach	1	rw	y	y
64	10	Dynamic Teach Timeout Duration	8-bit integer		120 s	rw	y	y

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Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	Smart Sensor Profile
64	11	Alarm Threshold	8-bit Uinteger		25	rw	y	y
64	12	Display Disable	8-bit Uinteger	0 = Display Enabled, 1 = Display disabled	0	rw	y	y
64	13	Drift Filter	8-bit Uinteger	0 = Disabled, 1 = Enabled	1	rw	y	y
64	14	Signal Mode	8-bit Uinteger	0 = Signal, 1 = Switch Point Centric Signal	0	rw	y	y
67		**Status**						
67	1	Output state	8-bit Uinteger	0 = Inactive 1 = Active		ro		
67	2	Signal Level	8-bit Uinteger			ro		
67	3	Internal Temperature Measurement	32-bit integer			ro		
67	4	Internal Temperature Measurement the last time device was taught	32-bit integer			ro		
67	5	Quality of Teach	8-bit Uinteger	0 = Not Taught, 1 = Good, 2 = Bad, 3 = High Gain		ro		
67	6	Alarm State	8-bit Uinteger	0 = No Alarm, 1 = Alarm		ro		
67	7	Sensor Health	8-bit Uinteger			ro		
69		**All-Time Run Time**						
69	1	Run counter	32-bit integer			rw	y	
70		**Resettable Run Time**						
70	1	Run counter	32-bit integer			rw	y	
76		**All-Time Run Time Event Time**						
76	1	Event Time	32-bit integer	0–2147483647		rw	y	
77		**Resettable Run Time Event Time**						
77	1	Event Time	32-bit integer	0–2147483647		rw	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	Name	Description
25376 (0x6320)	Error	Parameter error	Check data sheet and values.
36000 (0x8ca0)	Warning	All-time Run Time Event	Event indicating the corresponding configured running time has elapsed.
36001 (0x8ca1)	Warning	Resettable Run Time Event	Event indicating the corresponding configured running time has elapsed.
36003 (0x8ca3)	Notification	Teach Completed Event	Event indicating a teach has been completed.
36004 (0x8ca4)	Notification	Factory Settings Restored Event	Event indicating that the factory settings have been restored.
36007 (0x8ca7)	Notification	Teach Failed Event	Event indicating an invalid target condition was attempted to be taught. Taught setpoint was not updated.
36097 (0x8d01)	Error	System Fault Event	Contact Banner Engineering to resolve.

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