SI-RFA-DM1 and DM2 IO-Link Data Reference Guide

IO-Link Data Map

This document refers to the following IODD file: Banner_Engineering-SI-RFA-DM-20200630-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	32 bits
Process Data Out length	N/A
Bit Rate	38400 bps
Minimum cycle time	10 ms

Parameter	Value
Port class	A
SIO mode	No
Smart sensor profile	No
Block parameterization	No
Data Storage	No

IO-Link Process Data In (Device to Master)

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

Name	Number of Bits
PD_IN32	32-bit UInteger

Octet	0	1	2	3
bit offset	31-24	23-16	15-8	7-0
element bit	31-24	23-16	15-8	7-0

Note: Process Data tells the user that a change of state has occurred when the value is non-zero. Do an Acyclic Read of Index 64 Basic Parameters for information on the system. The process indicates all of the devices that have a change of state, and that only if you fill in the number of expected devices in Index 8442.

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 the SI-RFA-DM1. 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
0	1-15	Direct Parameter Page 1 (incl. Vendor ID & Device ID)				ro
0	16	Standard Command		128 = Device Reset 129 = Application Reset 130 = Restore Factory Settings 0–63 = Reserved 131–159 = Reserved		wo
1	1-16	Direct Parameters Page 2				rw

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Index	Subindex	Name	Length	Value Range	Default	Access Rights
2		Standard Command	8-bit uinteger	128 = Device Reset 129 = Application Reset 130 = Restore Factory Settings 0–63 = Reserved 131–159 = Reserved		wo
3		Data Storage Index (device-specific list of parameters to be stored)				
4-12		reserved by IO-Link Specification				
13-15		unused				ro
16		Vendor Name string		Banner Engineering Corporation		ro
17		Vendor Text string		More Sensors. More Solutions		ro
18		Product Name string		SI-RFA-DM1 or SI-RFA-DM2		ro
19		Product ID string		806412 or 806413		ro
20		Product Text string		ISD to IO-Link Module		ro
21		Serial Number				ro
22		Hardware Version				ro
23		Firmware Version				ro
24		App Specific Tag (user defined)				rw
25-63		unused/reserved				
64		Basic Information	Array[32] of 16-bit uinteger	See Index 64 Basic Information Integers on page 4 for additional information.		ro
256		Devices type ID for safety circuit	Array[32] of 8-bit uinteger			ro
272		Devices applied supply volat	Array[32] of Float32			ro
288		Devices distances to its targets for safety circuit	Array[32] of Float32			ro
304		Devices internal temperatures for safety circuit	Array[32] of Float32			ro
320		Devices supply voltage range violation counters for safety circuit	Array[32] of 8-bit uinteger			ro
336		Devices delay counter for shut down delay of outputs for safety circuit	Array[32] of 8-bit uinteger			ro
352		Devices counter for target range violation within interval for safety circuit	Array[32] of 8-bit uinteger			ro
368		Devices received company code for safety circuit	Array[32] of 8-bit uinteger			ro
384		Devices expected company code for safety circuit	Array[32] of 8-bit uinteger			ro
400		Devices expected RFID for safety circuit	Array[32] of 16-bit uinteger			ro
416		Devices received RFID safety circuit	Array[32] of 16-bit uinteger			ro
432		Devices product description	Array[32] of 8-bit uinteger			ro
448		Devices remaining teach cycles	Array[32] of 8-bit uinteger			ro
4096		Devices user given name and position for sensor 1	1024-bit record / (2) 64-octet strings			rw
4097		Devices user given name and position for sensor 2	1024-bit record / (2) 64-octet strings			rw
4098		Devices user given name and position for sensor 3	1024-bit record / (2) 64-octet strings			rw
4099		Devices user given name and position for sensor 4	1024-bit record / (2) 64-octet strings			rw
4100		Devices user given name and position for sensor 5	1024-bit record / (2) 64-octet strings			rw
4101		Devices user given name and position for sensor 6	1024-bit record / (2) 64-octet strings			rw
4102		Devices user given name and position for sensor 7	1024-bit record / (2) 64-octet strings			rw
4103		Devices user given name and position for sensor 8	1024-bit record / (2) 64-octet strings			rw
4104		Devices user given name and position for sensor 9	1024-bit record / (2) 64-octet strings			rw
4105		Devices user given name and position for sensor 10	1024-bit record / (2) 64-octet strings			rw
4106		Devices user given name and position for sensor 11	1024-bit record / (2) 64-octet strings			rw
4107		Devices user given name and position for sensor 12	1024-bit record / (2) 64-octet strings			rw
4108		Devices user given name and position for sensor 13	1024-bit record / (2) 64-octet strings			rw
4109		Devices user given name and position for sensor 14	1024-bit record / (2) 64-octet strings			rw
4110		Devices user given name and position for sensor 15	1024-bit record / (2) 64-octet strings			rw
4111		Devices user given name and position for sensor 16	1024-bit record / (2) 64-octet strings			rw

Index	Subindex	Name	Length	Value Range	Default	Access Rights
4112		Devices user given name and position for sensor 17	1024-bit record / (2) 64-octet strings			rw
4113		Devices user given name and position for sensor 18	1024-bit record / (2) 64-octet strings			rw
4114		Devices user given name and position for sensor 19	1024-bit record / (2) 64-octet strings			rw
4115		Devices user given name and position for sensor 20	1024-bit record / (2) 64-octet strings			rw
4116		Devices user given name and position for sensor 21	1024-bit record / (2) 64-octet strings			rw
4117		Devices user given name and position for sensor 22	1024-bit record / (2) 64-octet strings			rw
4118		Devices user given name and position for sensor 23	1024-bit record / (2) 64-octet strings			rw
4119		Devices user given name and position for sensor 24	1024-bit record / (2) 64-octet strings			rw
4120		Devices user given name and position for sensor 25	1024-bit record / (2) 64-octet strings			rw
4121		Devices user given name and position for sensor 26	1024-bit record / (2) 64-octet strings			rw
4122		Devices user given name and position for sensor 27	1024-bit record / (2) 64-octet strings			rw
4123		Devices user given name and position for sensor 28	1024-bit record / (2) 64-octet strings			rw
4124		Devices user given name and position for sensor 29	1024-bit record / (2) 64-octet strings			rw
4125		Devices user given name and position for sensor 30	1024-bit record / (2) 64-octet strings			rw
4126		Devices user given name and position for sensor 31	1024-bit record / (2) 64-octet strings			rw
4127		Devices user given name and position for sensor 32	1024-bit record / (2) 64-octet strings			rw
8192		Switch counter for second	Array[32] of 32-bit uinteger			ro
8208		Reset switch counter for given sensor	8-bit uinteger	0 = No reset command 1 = Delete counter value for sensor 1 2 = Delete counter value for sensor 2 3 = Delete counter value for sensor 3 4 = Delete counter value for sensor 4 5 = Delete counter value for sensor 5 6 = Delete counter value for sensor 6 7 = Delete counter value for sensor 7 8 = Delete counter value for sensor 8 9 = Delete counter value for sensor 9 10 = Delete counter value for sensor 10 11 = Delete counter value for sensor 11 12 = Delete counter value for sensor 12 13 = Delete counter value for sensor 13 14 = Delete counter value for sensor 14 15 = Delete counter value for sensor 15 16 = Delete counter value for sensor 16 17 = Delete counter value for sensor 17 18 = Delete counter value for sensor 18 19 = Delete counter value for sensor 19 20 = Delete counter value for sensor 20 21 = Delete counter value for sensor 21 22 = Delete counter value for sensor 22 23 = Delete counter value for sensor 23 24 = Delete counter value for sensor 24 25 = Delete counter value for sensor 25 26 = Delete counter value for sensor 26 27 = Delete counter value for sensor 27 28 = Delete counter value for sensor 28 29 = Delete counter value for sensor 29 30 = Delete counter value for sensor 30 31 = Delete counter value for sensor 31 32 = Delete counter value for sensor 32		wo
8224		Expected sensors - Read/Write number of expected sensors	8-bit uinteger	0–32		rw
8230		Received amount of sensors	8-bit uinteger	0–32		ro
8448		Timestamp - given timestamp of device	Array[6] of 8-bit uinteger			rw
14848		Given name of machine	128-octet string			rw
14850		Given position of machine	128-octet string			rw
14852		Name of safety circuit	128-octet string			rw
14853		Additional information for safety cicuit	128-octet string			rw

Index 64 Basic Information Integers

Upper Byte								Lower Byte							
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
QS	RB	BB	FB	CE	BE	SV	EF	MF	Q1	Q2	UF	LS	UW	E1	E2

Byte	Abbreviation	SI-RF	SSA-EB1 or SSA-ISD
15	QS	Output Error	Output Error
14	RB	Actuator Detected	Always 0
13	BB	Detection Zone Limit - Contact 1	Status Contact 1
12	FB	Wrong Actuator - Contact 2	Status Contact 2
11	CE	Reserved	Reserved
10	BE	Actuator Code Taught	Reserved
9	SV	Reserved	Reserved
8	EF	Failsafe Inputs	Failsafe Inputs
7	MF	Error Reset Required	Error Reset Required
6	Q1	Safety Output 1	Safety Output 1
5	Q2	Safety Output 2	Safety Output 2
4	UF	Operating Voltage Error	Operating Voltage Error
3	UW	Operating Voltage Warning	Operating Voltage Warning
2	LS	Local Reset Expected	Local Reset Expected
1	E1	Input 1	Input 1
0	E2	Input 2	Input 2

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
16384 (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
36000 (0x8ca0)	Warning	Sensor number mismatch event	Indicates difference between expected and received number of sensors

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