IO-Link Data Map

This document refers to the following IODD file: Banner_Engineering-S4B-20260120-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	V 1.1	Port class	A[1]
Process Data In length	160 bits	SIO mode	Yes
Process Data Out length	32 bits	Smart Sensor Profile	No
Bit Rate	38400 bps	Block Parameterization	Yes
Minimum Cycle Time	12 ms	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 S4B IO-Link Process Data In is 160 bits in length and includes:

- OSSD Status
- Weak Beam Maintenance Flag
- Cascaded Units
- Configurable IO Pin State
- Fixed Blanking Enabled
- Vibration Tolerance Enabled
- Fault Lockout
- Reduced resolution status
- Curtain status
- Indicator State
- Diagnostic Error Code (see "Troubleshooting" on page 20)
- Measurement
- First Channel Blocked
- Number Channels Blocked
- Zone 1–12 Status

This information is sent to the IO-Link master every 12 ms.

Process Data In

Subindex	Name	Number of Bits	Data Values
1	OSSD Status	1	0 = Off, 1 = On
2	Weak Beam	1	False = Maintenance Flag Not Active, True = Maintenance Flag Active
3	Cascaded Units	2	0 = Standalone, 1 = 1 Cascaded, 2 = 2 Cascaded, 3 = 3 Cascaded
4	IO Pin State	1	0 = Off, 1 = On
5	Fixed Blanking Enabled	1	0 = Off, 1 = On
6	Vibration Tolerance Enabled	1	0 = Off, 1 = On
7	Fault Lockout	1	0 = Off, 1 = On
8	Host Reduced Resolution Status	1	0 = Off, 1 = On
9	Guest 1 Reduced Resolution Status	1	0 = Off, 1 = On
10	Guest 2 Reduced Resolution Status	1	0 = Off, 1 = On
11	Guest 3 Reduced Resolution Status	1	0 = Off, 1 = On
12	Host Curtain Status	2	0 = Clear, 1 = Weak Beam, 2 = Blocked

Continued on page 2

[1] The S4B does not follow the IO-Link standard pinout. Specific wiring is needed to connect the S4B IO-Link communication pin to pin 4 of an IO-Link master. For information on the S4B IO-Link communication pin, see p/n 230287 *S4B Safety Light Curtain Product Manual*, available at www.bannerengineering.com.

Original Instructions
02-Sep-26

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256017
p/n: 256017 Rev. A

ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Continued from page 1

Subindex	Name	Number of Bits	Data Values
13	Guest 1 Curtain Status	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
14	Guest 2 Curtain Status	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
15	Guest 3 Curtain Status	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
16	Host Indicator State	2	0 = Enabled, 1 = Override, 2 = Dipswitch Disabled
17	Guest 1 Indicator State	2	0 = Enabled, 1 = Override, 2 = Dipswitch Disabled
18	Guest 2 Indicator State	2	0 = Enabled, 1 = Override, 2 = Dipswitch Disabled
19	Guest 3 Indicator State	2	0 = Enabled, 1 = Override, 2 = Dipswitch Disabled
20	Diagnostic Error Code (see "Troubleshooting" on page 20)	8	0–255
21	Host Measurement (cm)	8	0–180
22	Host First Channel Blocked	8	0–180
23	Host Number Channels Blocked	8	0–180
24	Guest 1 Measurement (cm)	8	0–180
25	Guest 1 First Channel Blocked	8	0–180
26	Guest 1 Number Channels Blocked	8	0–180
27	Guest 2 Measurement (cm)	8	0–180
28	Guest 2 First Channel Blocked	8	0–180
29	Guest 2 Number Channels Blocked	8	0–180
30	Guest 3 Measurement (cm)	8	0–180
31	Guest 3 First Channel Blocked	8	0–180
32	Guest 3 Number Channels Blocked	8	0–180
33	Host Zone Status 1	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
34	Host Zone Status 2	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
35	Host Zone Status 3	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
36	Guest 1 Zone Status 1	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
37	Guest 1 Zone Status 2	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
38	Guest 1 Zone Status 3	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
39	Guest 2 Zone Status 1	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
40	Guest 2 Zone Status 2	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
41	Guest 2 Zone Status 3	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
42	Guest 3 Zone Status 1	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
43	Guest 3 Zone Status 2	2	0 = Clear, 1 = Weak Beam, 2 = Blocked
44	Guest 3 Zone Status 3	2	0 = Clear, 1 = Weak Beam, 2 = Blocked

Octet 0								
Bit Offset	159	158	157	156	155	154	153	152
Subindex	7	6	5	4	3		2	1
Element Bit					1	0		

Octet 1								
Bit Offset	151	150	149	148	147	146	145	144
Subindex	//////	//////	//////	//////	11	10	9	8
Element Bit					1	0	1	0

Octet 2								
Bit Offset	143	142	141	140	139	138	137	136
Subindex	15		14		13		12	
Element Bit	1	0	1	0	1	0	1	0

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Octet 3								
Bit Offset	135	134	133	132	131	130	129	128
Subindex	19		18		17		16	
Element Bit	1	0	1	0	1	0	1	0

Octet 4								
Bit Offset	127	126	125	124	123	122	121	120
Subindex	20							
Element Bit	0	0	0	0	0	0	0	0

Octet 5								
Bit Offset	119	118	117	116	115	114	113	112
Subindex	21							
Element Bit	0	0	0	0	0	0	0	0

Octet 6								
Bit Offset	111	110	109	108	107	106	105	104
Subindex	22							
Element Bit	0	0	0	0	0	0	0	0

Octet 7								
Bit Offset	103	102	101	100	99	98	97	96
Subindex	23							
Element Bit	0	0	0	0	0	0	0	0

Octet 8								
Bit Offset	95	94	93	92	91	90	89	88
Subindex	24							
Element Bit	0	0	0	0	0	0	0	0

Octet 9								
Bit Offset	87	86	85	84	83	82	81	80
Subindex	25							
Element Bit	0	0	0	0	0	0	0	0

Octet 10								
Bit Offset	79	78	77	76	75	74	73	72
Subindex	26							
Element Bit	0	0	0	0	0	0	0	0

Octet 11								
Bit Offset	71	70	69	68	67	66	65	64
Subindex	27							
Element Bit	0	0	0	0	0	0	0	0

Octet 12								
Bit Offset	63	62	61	60	59	58	57	56
Subindex	28							
Element Bit	0	0	0	0	0	0	0	0

Octet 13								
Bit Offset	55	54	53	52	51	50	49	48

Continued on page 4

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Continued from page 3

Octet 13								
Subindex	29							
Element Bit	0	0	0	0	0	0	0	0

Octet 14								
Bit Offset	47	46	45	44	43	42	41	40
Subindex	30							
Element Bit	0	0	0	0	0	0	0	0

Octet 15								
Bit Offset	39	38	37	36	35	34	33	32
Subindex	31							
Element Bit	0	0	0	0	0	0	0	0

Octet16								
Bit Offset	31	30	29	28	27	26	25	24
Subindex	32							
Element Bit	0	0	0	0	0	0	0	0

Octet 17								
Bit Offset	23	22	21	20	19	18	17	16
Subindex	36		35		34		33	
Element Bit	1	0	1	0	1	0	1	0

Octet 18								
Bit Offset	15	14	13	12	11	10	9	8
Subindex	40		39		38		37	
Element Bit	1	0	1	0	1	0	1	0

Octet 19								
Bit Offset	7	6	5	4	3	2	1	0
Subindex	44		43		42		41	
Element Bit	1	0	1	0	1	0	1	0

IO-Link Process Data Out (Master to Device)

Subindex	Name	Number of Bits	Data Values
1	Override Indicator State Host	8	0 = Standard Operation 1 = Override 1 2 = Override 2 3 = Override 3 4 = Override 4 5 = Override 5 6 = Override 6 7 = Override 7 8 = Override 8 9 = Override 9
2	Override Indicator State Guest 1	8	
3	Override Indicator State Guest 2	8	
4	Override Indicator State Guest 3	8	

Octet	0	1	2	3
Bit Offset	31–24	23–16	15–8	7–0
Subindex	4	3	2	1
Element Bit	7–0	7–0	7–0	7–0

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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 S4B. Also included is information about whether the variable in question is saved during Data Storage. 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?	AOI
0	1-16	Direct Parameter Page 1 (incl. Vendor ID & Device ID)				ro		
2		Standard Command		129 = Application Reset 130 = Restore Factory Settings 131 = Back-to-box		wo		
16		Vendor Name			Banner Engineering Corporation	ro		
17		Vendor Text			"More Sensors. More Solutions."	ro		
18		Product Name				ro		
19		Product ID				ro		
20		Product Text			"Safety Light Curtain"	ro		
21		Serial Number				ro		
22		Hardware Revision				ro		
23		Firmware Revision				ro		
24		App Specific Tag (user defined)			"More Sensors. More Solutions."	rw		
25		Function Tag			"More Sensors. More Solutions."	rw		
26		Location Tag			"More Sensors. More Solutions."	rw		
36		Device Status		0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure		ro		
37		Detailed Device Status				ro		
38		*Reserved*						
39		*Reserved*						
40		Process Data Input				ro		
41		Process Data Output				ro		
64		**Configurable IO Pin Settings**						
64	1	Pin Control	8-bit Uinteger	0 = Weak Beam 1 = Auxiliary Output 2 = Indicator Override Input 3 = Unused	0	rw		
64	2	Control Type	8-bit Uinteger	0 = PNP 1 = NPN	0	rw		
64	3	Indicator Override Host	8-bit Uinteger	0 = Enabled 1 = Disabled	0	rw		
64	4	Indicator Override Guest 1	8-bit Uinteger	0 = Enabled 1 = Disabled	0	rw		
64	5	Indicator Override Guest 2	8-bit Uinteger	0 = Enabled 1 = Disabled	0	rw		

Continued on page 6

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Continued from page 5

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
64	6	Indicator Override Guest 3	8-bit Uinteger	0 = Enabled 1 = Disabled	0	rw		
65		**Endcap Settings - All Curtains Clear Settings**						
65	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
65	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
65	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
65	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
65	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
65	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	0	rw		
66		**Endcap Settings - Any Curtain Weak Beam Settings**						
66	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
66	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		

Continued on page 7

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Continued from page 6

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
66	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
66	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
66	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
66	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	0	rw		
67		**Endcap Settings - This Curtain Weak Beam Settings**						
67	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	2	rw		
67	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
67	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
67	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
67	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		

Continued on page 8

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Continued from page 7

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
67	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	0	rw		
68		**Endcap Settings - Any Curtain Blocked Settings**						
68	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
68	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
68	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash = Alternate	0	rw		
68	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
68	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
68	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	0	rw		
69		**Endcap Settings - This Curtain Blocked Settings**						
69	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
69	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		

Continued on page 9

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Continued from page 8

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
69	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	1	rw		
69	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
69	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
69	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
70		**Endcap Settings - Indicator Override Input Settings**						
70	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
70	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
70	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
70	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
70	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		

Continued on page 10

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Continued from page 9

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
70	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
71		**Endcap Settings - Indicator Override IOL1 Settings**						
71	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
71	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
71	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
71	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
71	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
71	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
72		**Endcap Settings - Indicator Override IOL2 Settings**						
72	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	2	rw		
72	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		

Continued on page 11

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Continued from page 10

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
72	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
72	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	2	rw		
72	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
72	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
73		**Endcap Settings - Indicator Override IOL3 Settings**						
73	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
73	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
73	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	1	rw		
73	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
73	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		

Continued on page 12

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Continued from page 11

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
73	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
74		**Endcap Settings - Indicator Override IOL4 Settings**						
74	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
74	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
74	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
74	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
74	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
74	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
75		**Endcap Settings - Indicator Override IOL5 Settings**						
75	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	3	rw		
75	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		

Continued on page 13

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Continued from page 12

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
75	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
75	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	3	rw		
75	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
75	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
76		**Endcap Settings - Indicator Override IOL6 Settings**						
76	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	4	rw		
76	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
76	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	0	rw		
76	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	4	rw		
76	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		

Continued on page 14

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Continued from page 13

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
76	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
77		**Endcap Settings - Indicator Override IOL7 Settings**						
77	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	4	rw		
77	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
77	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	1	rw		
77	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
77	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
77	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
78		**Endcap Settings - Indicator Override IOL8 Settings**						
78	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	3	rw		
78	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		

Continued on page 15

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Continued from page 14

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
78	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	1	rw		
78	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
78	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		
78	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
79		**Endcap Settings - Indicator Override IOL9 Settings**						
79	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	2	rw		
79	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
79	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	1	rw		
79	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	0	rw		
79	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	3	rw		

Continued on page 16

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Continued from page 15

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
79	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
80		**Endcap Settings - Fault Lockout Settings**						
80	1	Endcap Color 1	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	1	rw		
80	2	Endcap Intensity 1	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
80	3	Endcap Animation Style	8-bit Uinteger	0 = Steady 1 = Flash 2 = Alternate	2	rw		
80	4	Endcap Color 2	8-bit Uinteger	0 = Green 1 = Red 2 = Yellow 3 = White 4 = Blue 5 = Magenta 6 = Cyan	2	rw		
80	5	Endcap Intensity 2	8-bit Uinteger	0 = High 1 = Medium 2 = Low 3 = Off	0	rw		
80	6	Endcap Animation Speed	8-bit Uinteger	0 = Fast 1 = Medium 2 = Slow	1	rw		
100		**Lockout 01**						
100	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
100	2	Sub Code	16-bit Uinteger	0..65535		ro		
100	3	Instance	16-bit Uinteger	0..65535		ro		
100	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
100	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
101		**Lockout 02**						

Continued on page 17

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Continued from page 16

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
101	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
101	2	Sub Code	16-bit Uinteger	0..65535		ro		
101	3	Instance	16-bit Uinteger	0..65535		ro		
101	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
101	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
102		**Lockout 03**						
102	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
102	2	Sub Code	16-bit Uinteger	0..65535		ro		
102	3	Instance	16-bit Uinteger	0..65535		ro		
102	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
102	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
103		**Lockout 04**						
103	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
103	2	Sub Code	16-bit Uinteger	0..65535		ro		
103	3	Instance	16-bit Uinteger	0..65535		ro		
103	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
103	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
104		**Lockout 05**						
104	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
104	2	Sub Code	16-bit Uinteger	0..65535		ro		
104	3	Instance	16-bit Uinteger	0..65535		ro		
104	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
104	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		

Continued on page 18

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Continued from page 17

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
105		**Lockout 06**						
105	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
105	2	Sub Code	16-bit Uinteger	0..65535		ro		
105	3	Instance	16-bit Uinteger	0..65535		ro		
105	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
105	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
106		**Lockout 07**						
106	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
106	2	Sub Code	16-bit Uinteger	0..65535		ro		
106	3	Instance	16-bit Uinteger	0..65535		ro		
106	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
106	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
107		**Lockout 08**						
107	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
107	2	Sub Code	16-bit Uinteger	0..65535		ro		
107	3	Instance	16-bit Uinteger	0..65535		ro		
107	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
107	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
108		**Lockout 09**						
108	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
108	2	Sub Code	16-bit Uinteger	0..65535		ro		
108	3	Instance	16-bit Uinteger	0..65535		ro		
108	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		

Continued on page 19

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Continued from page 18

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?	AOI
108	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
109		**Lockout 10**						
109	1	Lockout Condition	16-bit Uinteger	0..65535		ro		
109	2	Sub Code	16-bit Uinteger	0..65535		ro		
109	3	Instance	16-bit Uinteger	0..65535		ro		
109	4	Source Module	8-bit Uinteger	0 = Host 1 = Guest 1 2 = Guest 2 3 = Guest 3		ro		
109	5	Source Micro	8-bit Uinteger	0 = Micro A 1 = Micro B		ro		
110		Host Safety Firmware Version				ro		
111		Guest 1 Safety Firmware Version				ro		
112		Guest 2 Safety Firmware Version				ro		
113		Guest 3 Safety Firmware Version				ro		
114		**Number of Channels Per Stick**						
114	1	Number of Channels on Host	8-bit Uinteger	0..255	0	ro		
114	2	Number of Channels on Guest 1	8-bit Uinteger	0..255	0	ro		
114	3	Number of Channels on Guest 2	8-bit Uinteger	0..255	0	ro		
114	4	Number of Channels on Guest 3	8-bit Uinteger	0..255	0	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	Name	Description
128 (0x80)	Error	Index not available	Read or write access attempt to a non-existing index.
128 (0x80)	Error	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
128 (0x80)	Error	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
128 (0x80)	Error	Service temporarily unavailable - local control	Parameter not accessible. The device is currently in an ongoing, locally controlled operation.
128 (0x80)	Error	Service temporarily unavailable - device control	Parameter not accessible. The technology-specific application is currently in a remotely triggered operation.
128 (0x80)	Error	Access denied	Write access to a read-only parameter or read access to write-only parameter.
128 (0x80)	Error	Parameter value out of range	Written parameter value is outside of the permitted value range.
128 (0x80)	Error	Parameter value above limit	Written parameter value is above its specified value range.
128 (0x80)	Error	Parameter value below limit	Written parameter value is below its specified value range.
128 (0x80)	Error	Parameter length overrun	Written parameter is longer than specified.

Continued on page 20

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Continued from page 19

Code	Type	Name	Description
128 (0x80)	Error	Parameter length underrun	Written parameter is shorter than specified.
128 (0x80)	Error	Function unavailable	Written command is not supported by the technology-specific application.
128 (0x80)	Error	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
128 (0x80)	Error	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
128 (0x80)	Error	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.
128 (0x80)	Error	Application not ready	Read or write access denied. The technology-specific application is temporarily unavailable.
6200 (0x1838)	Error	Event 1	
6201 (0x1839)	Error	Event 2	
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.
36005 (0x8ca5)	Notification	Teach Coerced Event	Event indicating a taught condition resulting in a setpoint being coerced. Taught was updated.
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.

Troubleshooting

Recoverable Error Codes

A Lockout condition causes both S4B OSSD outputs to turn off or remain off, sending a stop signal to the guarded machine.

Each sensor provides diagnostic error codes to identify the cause (s) of lockouts.

All other errors are not recoverable and the S4B should be exchanged for a replacement.

Error Description	Diagnostic Error Code	Advanced Error Code	Description	Appropriate Action
Receiver	192	1216	Device internal temperature is too hot.	Check the environment or condition for over-specified temperatures.
Receiver	193	1217	Device internal temperature is too cold.	Check the environment or condition for under-specified temperatures.
Output	83	339	One or both outputs are being shorted to a power supply (high or low).	Disconnect the OSSD loads and reset the receiver. If the error clears, the problem is in the OSSD load(s) or in the load wiring. If the error continues with no load connected, replace the receiver. Verify that the EDM line (yellow wire, pin 4) has +24 V DC when the outputs are OFF.
Output	87	343	Shorting OSSD 1 to OSSD 2 An overload (greater than 0.5 A)	
Fixed Blanking	177	3249	Occurs when a blanked beam is clear (the obstruction that requires fixed blanking has been removed).	If the obstruction needs to be removed and remains removed, reprogram the units using the S4BA-RFB. If the obstruction was mistakenly removed and is returned to its original position, perform a power cycle to resolve the lockout. If the obstruction needs to be positioned differently, reprogram the units using the S4BA-RFB.
Fixed Blanking	180	3252	Reduced Resolution was selected after vibration tolerance was set.	Correct the dip switches for non-reduced resolution, use the S4BA-RFB to clear the vibration tolerance/fixed blanking, then set dip switches for reduced resolution.
Cascade	98	3426	Improper Cascade Wiring. Modules have been improperly moved.	Check wiring at end of cascade unit. Reteach the system with the S4BA-RFB.

Continued on page 21

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Continued from page 20

Error Description	Diagnostic Error Code	Advanced Error Code	Description	Appropriate Action
Cascade	99	3427	Occurs when the number of units in the cascade chain has been reduced (a unit was removed).	Determine where the unit was removed and restore it to the cascade system.
Cascade	100	3428	A device in the cascade lost communication.	Verify that no cables have been damaged. Clear the cascade system. If the error continues, replace the receiver. Re-teach the system to determine which device has lost communication.
Cascade	102	3430	Mixed devices in cascade system.	Remove/change wrong device and re-teach with the S4BA-RFB.
Cascade	103	3431	Error occurs when teach mode is active.	Disable teach mode.
Cascade	104	3432	Missing Termination.	Properly terminate the end unit in the cascade system.
Cascade	105	3433	Occurs when the number of units in the cascade chain has been reduced (a unit was removed).	Replace the removed unit or reteach the new cascade system with the S4BA-RFB.
Cascade	106	3434	Too many terminators in the cascade system.	Make sure the cascade system is properly terminated.
Cascade	107	3435	Too many S4BA-RFB devices in cascade system.	Only one S4BA-RFB is allowed in a cascade system.
Dip Switch	57	1849	Occurs when DIP Switch 1 and DIP Switch 4 are not set correctly for Reduced Resolution	Check the position of DIP switch 1 and DIP switch 4 to make sure they are both on (enabled) or both off (disabled).
EDM	91	2139	Occurs when the monitor contacts are not closed before the OSSDs can turn ON. Occurs when the monitor contacts do not close within 250 milliseconds of the OSSD outputs going from ON to OFF.	Check the monitor contacts for proper operation. Make sure the monitor contacts are connected between +24 V DC and EDM (pin 4).

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