IO-Link Data Reference Guide: EZ-ARRAY v1.1

IO-Link Data Map

This document refers to the following IODD files: Banner_Engineering-EA5Rxxx0XK2Q-COM2-20210402-IODD1.1.xml and Banner_Engineering-EA5Rxxx0XK3Q-COM3-20210820-IODD1.1.xml. The IODD files 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	240 bit
Process Data Out length	None
Bit Rate (COM2) [1]	38,400 bps
Bit Rate (COM3)	230,400 bps
Minimum cycle time (COM2) [1]	18 ms
Minimum cycle time (COM3)	6 ms
Device ID (COM2) [1]	65550
Device ID (COM3)	65551

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

IO-Link Process Data In (Device to Master)

Array Measurement

Table 1: Array Measurement

Subindex	bit offset	Name	Number of Bits	data type
1	224	Active Measurement 1	16	16-bit Uinteger
2	208	Active Measurement 2	16	16-bit Uinteger
3	192	No Measurement	16	16-bit Uinteger
4	176	No Measurement	16	16-bit Uinteger
5	160	No Measurement	16	16-bit Uinteger
6	144	No Measurement	16	16-bit Uinteger
7	128	No Measurement	16	16-bit Uinteger
8	112	No Measurement	16	16-bit Uinteger
9	96	No Measurement	16	16-bit Uinteger
10	80	No Measurement	16	16-bit Uinteger
11	64	No Measurement	16	16-bit Uinteger
12	48	No Measurement	16	16-bit Uinteger
13	32	No Measurement	16	16-bit Uinteger
14	16	No Measurement	16	16-bit Uinteger
15	0	No Measurement	16	16-bit Uinteger

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

[1] COM2 is the default communication speed.

octet	8	9	10	11	12	13	14	15
Subindex	5	5	6	6	7	7	8	8
Bit offset	175-168	167-160	159-152	151-144	143-136	135-128	127-120	119-112
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	16	17	18	19	20	21	22	23
Subindex	9	9	10	10	11	11	12	12
Bit offset	111-104	103-96	95-88	87-80	79-72	71-64	63-56	55-48
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	24	25	26	27	28	29		
Subindex	13	13	14	14	15	15		
Bit offset	47-40	39-32	31-24	23-16	15-8	7-0		
element bit	15-8	7-0	15-8	7-0	15-8	7-0		

Straight Scan Measurements

Table 2: Straight Scan Measurements

Subindex	bit offset	Name	Number of Bits	data type
1	224	First Beam Blocked	16	16-bit Uinteger
2	208	Last Beam Blocked	16	16-bit Uinteger
3	192	Total Beam Blocked	16	16-bit Uinteger
4	176	Transitions	16	16-bit Uinteger
5	160	Contiguous Beam Blocked	16	16-bit Uinteger
6	144	First Beam Made	16	16-bit Uinteger
7	128	Last Beam Made	16	16-bit Uinteger
8	112	Total Beam Made	16	16-bit Uinteger
9	96	Contiguous Beam Made	16	16-bit Uinteger
10	80	Middle Beam Blocked	16	16-bit Uinteger
11	64	Contiguous First Beam Blocked	16	16-bit Uinteger
12	48	Contiguous Last Beam Blocked	16	16-bit Uinteger
13	32	No Measurement	16	16-bit Uinteger
14	16	No Measurement	16	16-bit Uinteger
15	0	No Measurement	16	16-bit Uinteger

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	8	9	10	11	12	13	14	15
Subindex	5	5	6	6	7	7	8	8
Bit offset	175-168	167-160	159-152	151-144	143-136	135-128	127-120	119-112
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	16	17	18	19	20	21	22	23
Subindex	9	9	10	10	11	11	12	12
Bit offset	111-104	103-96	95-88	87-80	79-72	71-64	63-56	55-48
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	24	25	26	27	28	29		
Subindex	13	13	14	14	15	15		
Bit offset	47-40	39-32	31-24	23-16	15-8	7-0		
element bit	15-8	7-0	15-8	7-0	15-8	7-0		

Edge Scan Measurements

Table 3: Edge Scan Measurements

Subindex	bit offset	Name	Number of Bits	data type
1	224	First Beam Blocked	16	16-bit Uinteger
2	208	Last Beam Blocked	16	16-bit Uinteger
3	192	Total Beam Blocked	16	16-bit Uinteger
4	176	Contiguous Beam Blocked	16	16-bit Uinteger
5	160	Middle Beam Blocked	16	16-bit Uinteger
6	144	Outer Diameter	16	16-bit Uinteger
7	128	Inner Diameter	16	16-bit Uinteger
8	112	Contiguous First Beam Blocked	16	16-bit Uinteger
9	96	Contiguous Last Beam Blocked	16	16-bit Uinteger
10	80	Object 1 First Beam Blocked	16	16-bit Uinteger
11	64	Object 1 Last Beam Blocked	16	16-bit Uinteger
12	48	Object 2 First Beam Blocked	16	16-bit Uinteger
13	32	Object 2 Last Beam Blocked	16	16-bit Uinteger
14	16	Object 3 First Beam Blocked	16	16-bit Uinteger
15	0	Object 3 Last Beam Blocked	16	16-bit Uinteger

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	8	9	10	11	12	13	14	15
Subindex	5	5	6	6	7	7	8	8
Bit offset	175-168	167-160	159-152	151-144	143-136	135-128	127-120	119-112
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	16	17	18	19	20	21	22	23
Subindex	9	9	10	10	11	11	12	12
Bit offset	111-104	103-96	95-88	87-80	79-72	71-64	63-56	55-48
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	24	25	26	27	28	29		
Subindex	13	13	14	14	15	15		
Bit offset	47-40	39-32	31-24	23-16	15-8	7-0		
element bit	15-8	7-0	15-8	7-0	15-8	7-0		

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

Channel State using OR

For array lengths less than 1200 mm, the channel states show the individual blocked or clear channels. For array lengths greater than 1200 mm, there are logical OR pairs. For example, CH1 OR CH2, CH3 OR CH4, etc.

Table 4: Channel State using OR

Subindex	bit offset	Name	Number of Bits	data type
1	224	Beam State	16	16-bit Uinteger
2	208	Beam State	16	16-bit Uinteger
3	192	Beam State	16	16-bit Uinteger
4	176	Beam State	16	16-bit Uinteger
5	160	Beam State	16	16-bit Uinteger
6	144	Beam State	16	16-bit Uinteger
7	128	Beam State	16	16-bit Uinteger
8	112	Beam State	16	16-bit Uinteger
9	96	Beam State	16	16-bit Uinteger
10	80	Beam State	16	16-bit Uinteger
11	64	Beam State	16	16-bit Uinteger
12	48	Beam State	16	16-bit Uinteger
13	32	Beam State	16	16-bit Uinteger
14	16	Beam State	16	16-bit Uinteger
15	0	Beam State	16	16-bit Uinteger

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	8	9	10	11	12	13	14	15
Subindex	5	5	6	6	7	7	8	8
Bit offset	175-168	167-160	159-152	151-144	143-136	135-128	127-120	119-112
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	16	17	18	19	20	21	22	23
Subindex	9	9	10	10	11	11	12	12
Bit offset	111-104	103-96	95-88	87-80	79-72	71-64	63-56	55-48
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	24	25	26	27	28	29		
Subindex	13	13	14	14	15	15		
Bit offset	47-40	39-32	31-24	23-16	15-8	7-0		
element bit	15-8	7-0	15-8	7-0	15-8	7-0		

Channel State using AND

For array lengths less than 1200 mm, the channel states show the individual blocked or clear channels. For array lengths greater than 1200 mm, there are logical AND pairs. For example, CH1 AND CH2, CH3 AND CH4, etc.

Table 5: Channel State using AND

Subindex	bit offset	Name	Number of Bits	data type
1	224	Beam State	16	16-bit Uinteger
2	208	Beam State	16	16-bit Uinteger
3	192	Beam State	16	16-bit Uinteger
4	176	Beam State	16	16-bit Uinteger
5	160	Beam State	16	16-bit Uinteger

Subindex	bit offset	Name	Number of Bits	data type
6	144	Beam State	16	16-bit Uinteger
7	128	Beam State	16	16-bit Uinteger
8	112	Beam State	16	16-bit Uinteger
9	96	Beam State	16	16-bit Uinteger
10	80	Beam State	16	16-bit Uinteger
11	64	Beam State	16	16-bit Uinteger
12	48	Beam State	16	16-bit Uinteger
13	32	Beam State	16	16-bit Uinteger
14	16	Beam State	16	16-bit Uinteger
15	0	Beam State	16	16-bit Uinteger

octet	0	1	2	3	4	5	6	7
Subindex	1	1	2	2	3	3	4	4
Bit offset	239-232	231-224	223-216	215-208	207-200	199-192	191-184	183-176
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	8	9	10	11	12	13	14	15
Subindex	5	5	6	6	7	7	8	8
Bit offset	175-168	167-160	159-152	151-144	143-136	135-128	127-120	119-112
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	16	17	18	19	20	21	22	23
Subindex	9	9	10	10	11	11	12	12
Bit offset	111-104	103-96	95-88	87-80	79-72	71-64	63-56	55-48
element bit	15-8	7-0	15-8	7-0	15-8	7-0	15-8	7-0

octet	24	25	26	27	28	29		
Subindex	13	13	14	14	15	15		
Bit offset	47-40	39-32	31-24	23-16	15-8	7-0		
element bit	15-8	7-0	15-8	7-0	15-8	7-0		

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 A-GAGE EZ-ARRAY. 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.

Table 6: Parameters Set Using IO-Link

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
0	1-16	Direct Parameter Page 1 (Ind. Vendor ID & Device ID)				ro	
1		Direct Parameters 2					
2		Standard Command	8-bit Uinteger	130 = Restore Factory Settings		wo	
12		**Device Access Locks**					
12	1	Parameter Write Access Lock		0 = off 1 = on	Not used		
12	2	Data Storage Lock		0 = off, 1 = on	0	rw	y
12	3	Local Parameterization Lock		0 = off, 1 = on	Not used		

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
12	4	Local User Interface Lock		0 = off, 1 = on	Not used		
16		Vendor Name string		Banner Engineering Corporation		ro	
17		Vendor Text string		Move Sensors. Move Solutions.		ro	
18		Product Name string		A-Gage EZ-Array 5mm Optical Spacing Light Curtain with IO-Link		ro	
19		Product ID string		81xxxx		ro	
20		Product Text string		EASRxxx0XK2Q		ro	
21		Serial Number				ro	
23		Hardware Version		V1.0		ro	
23		Firmware Version		V3.0.x.y		ro	
24		App Specific Tag (user defined)		"""		rw	y
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	
40		Process Data Input		see Process Data In		ro	
64		**Active Measurement**					
64	1	Measurement 1	16-bit Uinteger			ro	
64	2	Measurement 2	16-bit Uinteger			ro	
65		**Channel States**					
65	1	Channel 16 to 1	16-bit Uinteger			ro	
65	2	Channel 32 to 17	16-bit Uinteger			ro	
65	3	Channel 48 to 33	16-bit Uinteger			ro	
65	4	Channel 64 to 49	16-bit Uinteger			ro	
65	5	Channel 80 to 65	16-bit Uinteger			ro	
65	6	Channel 96 to 81	16-bit Uinteger			ro	
65	7	Channel 112 to 97	16-bit Uinteger			ro	
65	8	Channel 128 to 113	16-bit Uinteger			ro	
65	9	Channel 114 to 129	16-bit Uinteger			ro	
65	10	Channel 160 to 145	16-bit Uinteger			ro	
65	11	Channel 176 to 161	16-bit Uinteger			ro	
65	12	Channel 192 to 177	16-bit Uinteger			ro	
65	13	Channel 208 to 193	16-bit Uinteger			ro	
65	14	Channel 224 to 209	16-bit Uinteger			ro	
65	15	Channel 240 to 225	16-bit Uinteger			ro	
65	16	Channel 256 to 241	16-bit Uinteger			ro	
65	17	Channel 272 to 257	16-bit Uinteger			ro	
65	18	Channel 288 to 273	16-bit Uinteger			ro	
65	19	Channel 304 to 289	16-bit Uinteger			ro	
65	20	Channel 320 to 305	16-bit Uinteger			ro	
65	21	Channel 336 to 321	16-bit Uinteger			ro	
65	22	Channel 352 to 337	16-bit Uinteger			ro	
65	23	Channel 368 to 353	16-bit Uinteger			ro	
65	24	Channel 384 to 369	16-bit Uinteger			ro	
65	25	Channel 400 to 385	16-bit Uinteger			ro	
65	26	Channel 416 to 401	16-bit Uinteger			ro	
65	27	Channel 432 to 417	16-bit Uinteger			ro	

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
65	28	Channel 448 to 433	16-bit Uinteger			ro	
65	29	Channel 464 to 449	16-bit Uinteger			ro	
65	30	Channel 480 to 465	16-bit Uinteger			ro	
66		**System Info Status**					
66	1	Number of Emitter Channels	16-bit Uinteger			ro	
66	2	Emitter First Bad Channel	16-bit Uinteger			ro	
66	3	Number of Receiver Channels	16-bit Uinteger			ro	
66	4	Reserved	16-bit Uinteger			ro	
66	5	DIP Switch 6	Boolean	False = On, True = Off		ro	
66	6	DIP Switch 5	Boolean	False = On, True = Off		ro	
66	7	DIP Switch 4	Boolean	False = On, True = Off		ro	
66	8	DIP Switch 3	Boolean	False = On, True = Off		ro	
66	9	DIP Switch 2	Boolean	False = On, True = Off		ro	
66	10	DIP Switch 1	Boolean	False = On, True = Off		ro	
66	11	Reserved	2-bit Uinteger			ro	
66	12	Error Code	8-bit Uinteger	0 = System OK 1 = Receiver EEPROM Hard Failure 2 = Receiver Alignment/Blanking Configuration Error 3 = Reserved for Factory 3 4 = Emitter or Wiring Problem 5 = Emitter Channel Error 6 = Reserved for Factory 6 7 = Reserved for Factory 7 8 = Reserved for Factory 8 9 = Reserved for Factory 9 10 = Incompatible Scan and Measurement Mode		ro	
66	13	Alignment Status	8-bit Uinteger	0 = Failed 1 = Success		ro	
66	14	Discrete Output 1	Boolean	false = Off, true = On		ro	
66	15	Discrete Output 2	Boolean	false = Off, true = On		ro	
66	16	Reserved	6-bit Uinteger			ro	
66	17	Analog Output 1 DAC Value	16-bit Uinteger	0–4095		ro	
66	18	Analog Output 2 DAC Value	16-bit Uinteger	0–4095		ro	
66	19	Reserved	16-bit Uinteger			ro	
67		**Measurements**					
67	1	First Beam Blocked	16-bit Uinteger			ro	
67	2	Last Beam Blocked	16-bit Uinteger			ro	
67	3	Total Beam Blocked	16-bit Uinteger			ro	
67	4	Transitions	16-bit Uinteger			ro	
67	5	Contiguous Beam Blocked	16-bit Uinteger			ro	
67	6	First Beam Made	16-bit Uinteger			ro	
67	7	Last Beam Made	16-bit Uinteger			ro	
67	8	Total Beam Made	16-bit Uinteger			ro	
67	9	Contiguous Beam Made	16-bit Uinteger			ro	
67	10	Middle Beam Blocked	16-bit Uinteger			ro	
67	11	Outer Diameter	16-bit Uinteger			ro	
67	12	Inner Diameter	16-bit Uinteger			ro	
67	13	Contiguous First Beam Blocked	16-bit Uinteger			ro	
67	14	Contiguous Last Beam Blocked	16-bit Uinteger			ro	
67	15	Object 1 First Beam Blocked	16-bit Uinteger			ro	

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
67	16	Object 1 Last Beam Blocked	16-bit Uinteger			ro	
67	17	Object 2 First Beam Blocked	16-bit Uinteger			ro	
67	18	Object 2 Last Beam Blocked	16-bit Uinteger			ro	
67	19	Object 3 First Beam Blocked	16-bit Uinteger			ro	
67	20	Object 3 Last Beam Blocked	16-bit Uinteger			ro	
67	21	Carpet Nap	16-bit Uinteger			ro	
67	22	Analog 1 Latched	16-bit Uinteger			ro	
67	23	Analog 2 Latched	16-bit Uinteger			ro	
67	24	Carpet Edge	16-bit Uinteger			ro	
67	25	Reserved	16-bit Uinteger			ro	
68		**Receiver-Emitter Info**					
68	1	Receiver Firmware Part Number	32-bit Uinteger		216398	ro	
68	2	Receiver Firmware Version	8-bit Uinteger			ro	
68	3	Reserved	8-bit Uinteger			ro	
68	4	Emitter Firmware Part Number	32-bit Uinteger		125798	ro	
68	5	Emitter Firmware Version	8-bit Uinteger			ro	
68	6	Reserved	8-bit Uinteger			ro	
69		**Communication Firmware**					
69	1	Part Number	32-bit Uinteger		216399	ro	
69	2	Version	8-bit Uinteger			ro	
69	3	Build	8-bit Uinteger			ro	
80		**Scan Configuration**					
80	1	Scan Type	8-bit Uinteger	1 = Straight 2 = Single Edge 3 = Double Edge - Step 1 4 = Double Edge - Step 2 5 = Double Edge - Step 4 6 = Double Edge - Step 8 7 = Double Edge - Step 16 8 = Double Edge - Step 32 10 = Carpet Nap	1	rw	
80	2	Remote Teach	8-bit Uinteger	0 = Disabled 1 = Remote Teach 2 = Only Alignment, Blanking, Sensitivity 3 = Gate - Active High 4 = Gate - Active Low 5 = Gate - Rising Edge 6 = Gate - Falling Edge	0	rw	
81		**Blanked Channels**					
81	1	Channel 16 to 1	16-bit Uinteger		0	rw	
81	2	Channel 32 to 17	16-bit Uinteger		0	rw	
81	3	Channel 48 to 33	16-bit Uinteger		0	rw	
81	4	Channel 64 to 49	16-bit Uinteger		0	rw	
81	5	Channel 80 to 65	16-bit Uinteger		0	rw	
81	6	Channel 96 to 81	16-bit Uinteger		0	rw	
81	7	Channel 112 to 97	16-bit Uinteger		0	rw	
81	8	Channel 128 to 113	16-bit Uinteger		0	rw	
81	9	Channel 144 to 129	16-bit Uinteger		0	rw	
81	10	Channel 160 to 145	16-bit Uinteger		0	rw	
81	11	Channel 176 to 161	16-bit Uinteger		0	rw	
81	12	Channel 192 to 177	16-bit Uinteger		0	rw	
81	13	Channel 208 to 193	16-bit Uinteger		0	rw	

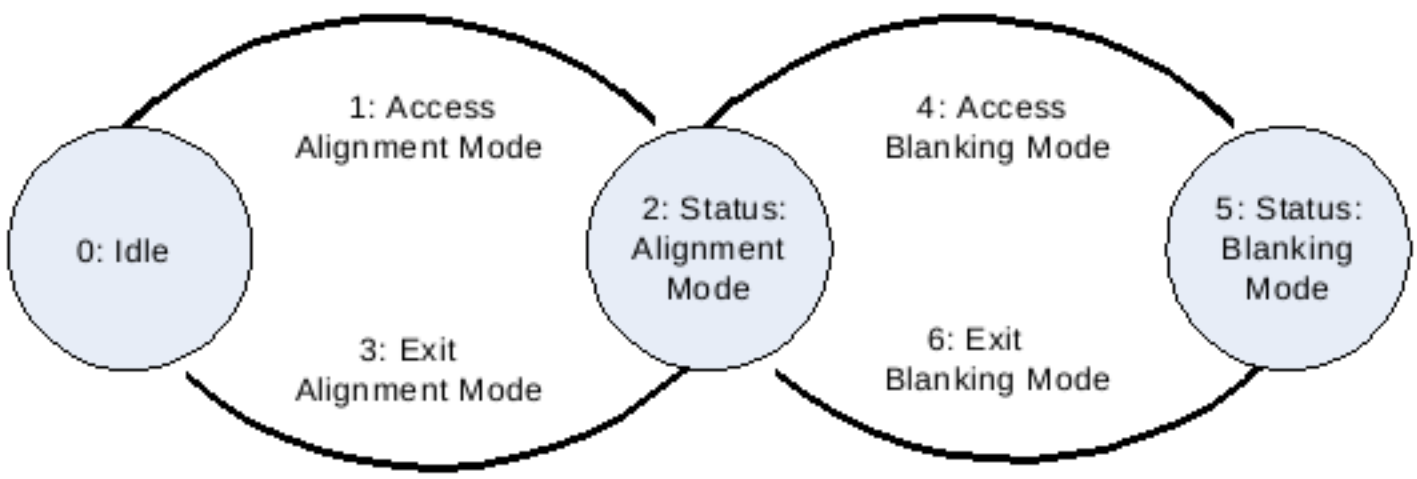
Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
81	14	Channel 224 to 209	16-bit Uinteger		0	rw	
81	15	Channel 240 to 225	16-bit Uinteger		0	rw	
81	16	Channel 256 to 241	16-bit Uinteger		0	rw	
81	17	Channel 272 to 257	16-bit Uinteger		0	rw	
81	18	Channel 288 to 273	16-bit Uinteger		0	rw	
81	19	Channel 304 to 289	16-bit Uinteger		0	rw	
81	20	Channel 320 to 305	16-bit Uinteger		0	rw	
81	21	Channel 336 to 321	16-bit Uinteger		0	rw	
81	22	Channel 352 to 337	16-bit Uinteger		0	rw	
81	23	Channel 368 to 353	16-bit Uinteger		0	rw	
81	24	Channel 384 to 369	16-bit Uinteger		0	rw	
81	25	Channel 400 to 385	16-bit Uinteger		0	rw	
81	26	Channel 416 to 401	16-bit Uinteger		0	rw	
81	27	Channel 432 to 417	16-bit Uinteger		0	rw	
81	28	Channel 448 to 433	16-bit Uinteger		0	rw	
81	29	Channel 464 to 449	16-bit Uinteger		0	rw	
81	30	Channel 480 to 465	16-bit Uinteger		0	rw	
82		**Analog Output 1**					
82	1	Slope	Boolean	false = Negative, true = Positive	true	rw	
82	2	Measurement	Boolean	false = Measurement 2, true = Measurement 1	true	rw	
82	3	Zero Value	2-bit Uinteger	0 = Hold, 1 = Minimum, 2 = Maximum	1	rw	
82	4	Peak Detect	Boolean	false = Disabled, true = Enabled	false	rw	
82	5	Peak Detection Direction	Boolean	false = Maximum, true = Minimum	false	rw	
82	6	Status	Boolean	false = Disabled, true = Enabled	true	rw	
82	7	Peak Detect Reset	Boolean	false = Auto, true = External Communication	false	rw	
82	8	Reserved	8-bit Uinteger		0	rw	
82	9	Filter Speed	8-bit Uinteger	0 = Fast 1 = Medium 3 = Slow	0	rw	
82	10	Reserved	8-bit Uinteger		1	rw	
83		**Analog Output 2**					
83	1	Slope	Boolean	false = Negative, true = Positive	true	rw	
83	2	Measurement	Boolean	false = Measurement 2, true = Measurement 1	false	rw	
83	3	Zero Value	2-bit Uinteger	0 = Hold 1 = Minimum 2 = Maximum	1	rw	
83	4	Peak Detect	Boolean	false = Disabled, true = Enabled	false	rw	
83	5	Peak Detection Direction	Boolean	false = Maximum, true = Minimum	false	rw	
83	6	Status	Boolean	false = Disabled, true = Enabled	true	rw	
83	7	Peak Detect Reset	Boolean	false = Auto, true = External Communication	false	rw	
83	8	Reserved	8-bit Uinteger		0	rw	
83	9	Filter Speed	8-bit Uinteger	0 = Fast 1 = Medium 3 = Slow	0	rw	
83	10	Reserved	8-bit Uinteger		1	rw	
84		**Discrete Output 1**					

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
84	1	Status	Boolean	false = Disabled, true = Enabled	true	rw	
84	2	Type	Boolean	false = Measurement, true = Alarm Or Health	false	rw	
84	3	Polarity	Boolean	false = PNP, true = NPN	false	rw	
84	4	Mode	Boolean	false = Normally Closed (Alarm), true = Normally Open (Health)	true	rw	
84	5	Measurement	4-bit Uinteger	0 = Measurement 2, 1 = Measurement 1	0	rw	
84	6	Reserved	8-bit Uinteger		0	rw	
84	7	Scan Response	16-bit Uinteger	1–250	1	rw	
84	8	Hysteresis LOW	16-bit Uinteger	0–480	0	rw	
84	9	Hysteresis HIGH	16-bit Uinteger	1–481		rw	
84	10	Threshold LOW	16-bit Uinteger	1–480	1	rw	
84	11	Threshold HIGH	16-bit Uinteger	1–480			
85		**Discrete Output 2**					
85	1	Status	Boolean	false = Disabled, true = Enabled	true	rw	
85	2	Type	Boolean	false = Measurement, true = Alarm Or Health	false	rw	
85	3	Polarity	Boolean	false = PNP, true = NPN	false	rw	
85	4	Mode	Boolean	false = Normally Closed (Alarm), true = Normally Open (Health)	false	rw	
85	5	Measurement	4-bit Uinteger	0 = Measurement 2, 1 = Measurement 1	0	rw	
85	6	Reserved	8-bit Uinteger		0	rw	
85	7	Scan Response	16-bit Uinteger	1–250	1	rw	
85	8	Hysteresis LOW	16-bit Uinteger	0–480	0	rw	
85	9	Hysteresis HIGH	16-bit Uinteger	1–481		rw	
85	10	Threshold LOW	16-bit Uinteger	1–480	1	rw	
85	11	Threshold HIGH	16-bit Uinteger	1–480			
86		**General Configuration**					
86	1	Reserved	8-bit Uinteger		11	rw	
86	2	Gain Method	8-bit Uinteger	1 = High-Excess, 2 = Low Contrast	1	rw	
86	3	Low-Contrast Sensitivity	8-bit Uinteger	0 = 10% below aligned signal 1 = 15% below aligned signal 2 = 20% below aligned signal 3 = 25% below aligned signal 4 = 30% below aligned signal 5 = 35% below aligned signal 6 = 40% below aligned signal 7 = 45% below aligned signal 8 = 50% below aligned signal	4	rw	
86	4	Display Orientation	Boolean	false = Normal Orientation, true = Inverted Orientation	false	rw	
86	5	Configuration Type	Boolean	true = IO-Link Control	true	rw	
86	6	Sensitivity Button	Boolean	true = Disabled	true	rw	
86	7	Align/Blank Button	Boolean	false = Enabled, true = Disabled	false	rw	
86	8	Reserved	4-bit Uinteger		0	rw	

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
86	9	Measurement 1	8-bit Uinteger	0 = Measurement Disabled 1 = FBB 2 = LBB 3 = TBB 4 = TRN 5 = CBB 6 = FBM 7 = LBM 8 = TBM 9 = CBM 10 = MBB 11 = OD 12 = ID 13 = CFBB 14 = CLBB 15 = O1 FBB 16 = O1 LBB 17 = O2 FBB 18 = O2 LBB 19 = O3 FBB 20 = O3 LBB 21 = CARPET NAP 24 = CARPET EDGE	3	rw	
86	10	Measurement 2	8-bit Uinteger	0 = Measurement Disabled 1 = FBB 2 = LBB 3 = TBB 4 = TRN 5 = CBB 6 = FBM 7 = LBM 8 = TBM 9 = CBM 10 = MBB 11 = OD 12 = ID 13 = CFBB 14 = CLBB 15 = O1 FBB 16 = O1 LBB 17 = O2 FBB 18 = O2 LBB 19 = O3 FBB 20 = O3 LBB 21 = CARPET NAP 24 = CARPET EDGE	1	rw	
86	11	Reserved	8-bit Uinteger		0		
86	12	Reserved	8-bit Uinteger		0	rw	
86	13	Number of Dirty Channels	8-bit Uinteger	1–480	1		
92		**System Mode**					
92	1	Alignment/Blanking	16-bit Uinteger	0 = Status: Idle Mode 1 = Enter Alignment State 2 = Status: Alignment Mode 3 = Exit Alignment State 4 = Enter Blanking State 5 = Status: Blanking Mode 6 = Exit Blanking Mode	0	rw	
94		**Time in Service**					
94	1	Time of Service(hrs)	32-bit Uinteger			rw	
95	**1**	**Emitter Power**	**16-bit Uinteger**	**1–11**		**rw**	
99		**User Process Data**					

Index	Subindex	Name	Length	Value Range	Default	Access Rights	Data Storage?
99	1	User Process Data	16-bit Uinteger	0 = Active Measurements Only 1 = Straight Scan Measurements 2 = Single/Double Edge Measurements 128 = Channel States/Reduced States using OR 129 = Channel States/Reduced States using AND	0	rw	
120[2] [3]	1	IO-Link COM Mode	8-bit Uinteger	2 = IO-Link COM2 3 = IO-Link COM3	2	rw	

Figure 1. Electronic alignment/blanking in the EZ-ARRAY (see Index 92)



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.

Table 7: Events

Code	Type	Name	Description
0 (0x0000)	Notification	No malfunction	
4096 (0x1000)	Error	General malfunction	Unknown error
20480 (0x5000)	Error	Device hardware fault	Exchange device
20497 (0x5011)	Error	Non-volatile memory loss	Check batteries
35841 (0x8C01)	Warning	Simulation active	Check operating mode
36112 (0x8D10)	Error	IO-Link EEPROM Failure	Replace receiver

Table 8: Error types

Code	Additional Code	Description
128 (0x80)	0 (0x00)	Service has been refused by the device application and not detailed information of the incident is available
128 (0x80)	17 (0x11)	Access occurs to a not existing index
128 (0x80)	18 (0x12)	Access occurs to a not existing subindex
128 (0x80)	32 (0x20)	Parameter is not accessible due to the state of the device application
128 (0x80)	33 (0x21)	Parameter is not accessible due to an ongoing local operation at the device
128 (0x80)	34 (0x22)	Parameter is not accessible due to a remote triggered state of the device application
128 (0x80)	35 (0x23)	Write access on a read-only parameter
128 (0x80)	48 (0x30)	Written parameter value is outside its permitted value range

[2] When switching between COM modes, the EZ-ARRAY needs a power cycle to recognize and reconnect at the new baud rate. Make sure both IODD files are loaded into the master.

[3] COM3 is only supported by certain IO-Link masters. If your master does not support COM3 and the EZ-ARRAY is changed to COM3, you will not be able to communicate with the device. Refer to your IO-Link master instruction manual before making changes to your EZ-ARRAY.

Code	Additional Code	Description
128 (0x80)	49 (0x31)	Written parameter value is above its specified value range
128 (0x80)	50 (0x32)	Written parameter value is below its specified value range
128 (0x80)	51 (0x33)	Written parameter length is above it predefined length
128 (0x80)	52 (0x34)	Written parameter length is below its predefined length
128 (0x80)	53 (0x35)	Written command is not supported by the device application
128 (0x80)	54 (0x36)	Written command is not available due to the current state of the device application
128 (0x80)	65 (0x41)	Parameter inconsistencies were found at the end of block parameter transfer, device plausibility check failed
128 (0x80)	130 (0x82)	Read or write service is refused due to a temporarily unavailable application