CMOS Laser sensor

OMRON

Model E3AS-HL150□M□□/500□M□□ Series

INDEXLIST

Please download IO-Link setting file from company's official website (www.fa.omron.co.jp).

IO-Link

5603669-0A

1. Physical layer

Model	E3AS-HL500 □MD□	E3AS-HL500 □MT□
	E3AS-HL150 □MD□	E3AS-HL150 □MT□
Baud rate	COM2 (38.4kbps)	COM3 (230.4kbps)
Minimum cycle time	3.5ms	1.2ms
Process data length	4byte	
Vendor ID	612 (0x0264)	

2. Device ID

Model	Device ID
E3AS-HL500MD	65557 (0x010015)
E3AS-HL500MT	65558 (0x010016)
E3AS-HL500LMD	65560 (0x010018)
E3AS-HL500LMT	65561 (0x010019)
E3AS-HL150MD	65563 (0x01001B)
E3AS-HL150MT	65564 (0x01001C)
E3AS-HL150LMD	65566 (0x01001E)
E3AS-HL150LMT	65567 (0x01001F)

3. Process data

bit	7	6	5	4	3	2	1	0
PD0	Detection value output: Upper 8bit *1							
PD1	Detection value output: Lower 8bit *1							
PD2	Light intensity level: 8bit (0 ～ 255)							

PD3 bit	Assignment	Details
7	Control Output1	0: OFF 1: ON
6	Control Output2	0: OFF 1: ON
5	Instability Alarm (Low Light Intensity)	0: Stable 1: Unstable
4	(Reserved)	0
3	Error (Insufficient Light Intensity)	0: Normal 1: Error
2	(Reserved)	0
1	Warning	Diagnotic output when the sensor cannot continue operation due to a recoverable factor such as a load short-circuit or a service data error 0: Normal 1: Error
0	Error	Diagnotic output when the sensor has an internal error and replacement is needed 0: Normal 1: Error

*1. 0x7FFC when out of detection range.

4. Service data

Index	Sub-Index	Name	Backup target	Format	Access	Length	Default value	Range	Remark
0	0	Direct Parameter Page1	-	Record	R/W	16byte	-	-	
1	0	Direct Parameter Page2	-	-	-	16byte	-	-	Unused
2	0	System Command	-	Uinteger	W	1byte	-	0x82: Restore Factory Settings	
3	0	Data Storage	-	Record	R/W	-	-	-	*1
12	0	Device Access Locks	-	Uinteger	R/W	2byte	0x0000	0x0000: Unlocked 0x0001: Parameter Locked 0x0002: Data Storage Locked	
16	0	Vendor Name	-	String	R	64byte	-	OMRON Corporation	
17	0	Verdor Text	-	String	R	64byte	-	OMRON Corporation	
18	0	Product Name	-	String	R	64byte	-	-	Model
19	0	Product ID	-	String	R	64byte	-	-	Model
20	0	Product Text	-	String	R	64byte	-	CMOS Laser sensor	Sensor Type
21	0	Serial Number	-	String	R	8byte	-	-	
22	0	Hardware Version	-	String	R	4byte	-	-	
23	0	Firmware Version	-	String	R	4byte	-	-	
24	0	Application Specific Tag	○	String	R/W	32byte	All "****"	Optional	
36	0	Device Status	-	Uinteger	R	1byte	-	0x00: Operating properly 0x01: Error (Insufficient Light Intensity) 0x04: Breakdown	
37	1	Detailed Device Status	-	Record	R	3byte	-	Breakdown	
	2			Record	R	3byte	-	Parameter Error	
	3			Record	R	3byte	-	Control Output2 short-circuit	
40	0	Process Data Input	-	Record	R	4byte	-	-	
59	0	Teaching Status	-	Uinteger	R	1byte	0x00	0x00: IDLE 0x01: Output1 SUCCESS 0x02: Output2 SUCCESS 0x14: Output1 WAIT FOR COMMAND 0x44: Output2 WAIT FOR COMMAND 0x05: BUSY 0x07: ERROR	
60	1	Output1 Setpoint SP1	○	Integer	R/W	2byte	100.0 400	-160.0 ～ 160.0 (E3AS-HL150□) -600 ～ 600 (E3AS-HL500□)	
	2	Output1 Setpoint SP2	○	Integer	R/W	2byte	80.0 350	-160.0 ～ 160.0 (E3AS-HL150□) -600 ～ 600 (E3AS-HL500□)	Valid only when "Output1 Swichpoint Mode" in index 61 is [Window BGS] or [Window FGS]
61	1	Output1 Swichpoint Logic	○	Uinteger	R/W	1byte	0x00	0x00: N.O.(Normally Open) 0x01: N.C.(Normally Close)	
	2	Output1 Swichpoint Mode	○	Uinteger	R/W	1byte	0x01	0x01: Single Point 0x02: Window BGS 0x80: Window FGS 0x81: Distance and Intensity (Read Only)	
	3	Output1 Switchpoint Hysteresis Value	○	Uinteger	R/W	2byte	1.0 10	0 ～ 150.0 (E3AS-HL150□) 0 ～ 500 (E3AS-HL500□)	Valid only when "Hysteresis Mode" in index 166 is [User]
62	1	Output2 Setpoint SP1	○	Integer	R/W	2byte	100.0 400	-160.0 ～ 160.0 (E3AS-HL150□) -600 ～ 600 (E3AS-HL500□)	Valid only when "Output2 Swichpoint Mode" in index 63 is [Output2 Single Point]
63	1	Output2 Swichpoint Logic	○	Uinteger	R/W	1byte	0x00	0x00: N.O.(Normally Open) 0x01: N.C.(Normally Close)	
	2	Output2 Swichpoint Mode	○	Uinteger	R/W	1byte	0x80	0x01: Output2 Single Point 0x80: Output1 Invert 0x81: Error 0x82: Input	
	3	Output2 Switchpoint Hysteresis Value	○	Uinteger	R/W	2byte	1.0 10	0 ～ 150.0 (E3AS-HL150□) 0 ～ 500 (E3AS-HL500□)	Valid only when "Output2 Swichpoint Mode" in index 63 is [Output2 Single Point] and "Hysteresis Mode" in index 166 is [User]
64	0	Vendor Command	-	Uinteger	W	1byte	-	0x03: Output1 2-point teaching(1st Point) 0x04: Output1 2-point teaching(2nd Point) 0x05: Output2 2-point teaching(1st Point) 0x06: Output2 2-point teaching(2nd Point) 0x07: Output1 Background teaching 0x08: Output2 Background teaching 0x09: Output1 Background Reference teaching *2 0x0A: Output1 Object teaching 0x0B: Teach cancel 0xA1: Laser Off 0xA2: Laser On 0xA3: Zero Reset On 0xA4: Zero Reset Off 0xA5: LED Blink On 0xA6: LED Blink Off	
65	1	Output1 Timer (Mode)	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On Delay 0x02: Off Delay 0x03: One Shot	
	2	Output1 Timer (Time)	○	Uinteger	R/W	2byte	5	1 ～ 9999 (Unit: 1ms)	
66	1	Output2 Timer (Mode)	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On Delay 0x02: Off Delay 0x03: One Shot	Valid only when "Output2 Swichpoint Mode" in index 63 is [Output2 Single Point]
	2	Output2 Timer (Time)	○	Uinteger	R/W	2byte	5	1 ～ 9999 (Unit: 1ms)	
67	0	Display Sellection	○	Uinteger	R/W	1byte	0x00	0x00: Standard 0x01: Simple 0x02: Bar 0x03: ON/OFF	
68	0	Display Reverse	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On	
69	0	Display Brightness	○	Uinteger	R/W	1byte	0x00	0x00: Normal 0x01: Dark	
70	0	Advanced Settings	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On	
71	0	Key Lock	○	Uinteger	R/W	1byte	0x00	0x00: Unlock 0x01: Lock	
72	0	Response Time	○	Uinteger	R/W	1byte	0x02	0x00: 1.5ms 0x01: 10ms 0x02: 50ms	
73	0	Input Function	○	Uinteger	R/W	1byte	0x00	0x00: Laser Off 0x01: Teach 0x02: Zero Reset	Valid only when "Output2 Swichpoint Mode" in index 63 is [External Input]
74	0	Zero Reset Memory	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On	Valid only when "Zero Reset On" in index 64 is executed
75	0	Mutual Interference Prevention Function	○	Uinteger	R/W	1byte	0x00	Set a channel for the mutual interference prevention. 0x00：Channel 1 0x01：Channel 2 0x02：Channel 3 0x03：Channel 4	
76	0	Keep Function	○	Uinteger	R/W	1byte	0x00	0x00: Off 0x01: On	
80	0	Teaching Select	○	Uinteger	R/W	1byte	0x00	0x00: Background 0x01: Object	Teach select when teach button / external input push & hold for 3 second.
160	0	Operating Hours	-	Uinteger	R	4byte	-	0 ～ 131071(Unit: 1h)	
161	0	Background Reference Teaching Select	○	Uinteger	R/W	1byte	0x00	0x00: Normal 0x01: Sensitive	
162	0	Background Reference Teaching (Sensitive) Threshold	○	Uinteger	R/W	1byte	90	0 ～ 100	Valid only when "Output1 Background Reference teaching (Sensitive)" is executed
164	0	ABT Function	○	Uinteger	R/W	1byte	0x02	0x00: Off 0x01: 0.3sec 0x02: 1sec 0x03: 3min	
166	0	Hysteresis Mode	○	Uinteger	R/W	1byte	0x00	0x00: Auto 0x01: User	

*1. Use when backing up or restoring the settings to/from the IO-Link master unit. Details please refer to the specification : IO-Link interface and System Specification V1.1.2 (https://io-link.com)
*2. When "Background reference teaching (Sensitive)" is executed , select [Sensitivite] of "Background Reference Teaching Select" in index 161.

5. Event function

Event Code	Event Name	Type	Description	Action
0x1800	Breakdown	Error	The sensor might be broken internally.	Start up (turn ON) the sensor again, If the error occurs again, replace the sensor.
0x1803				
0x6320	Parameter error	Error	Inconsistency has occurred on the settings (service data) written in by the IO-Link communications.	Execute the system command to "Restore the factory settings" to initialize the settings. Refer to Index 2 of the service data.
0x7710	Control Output2 short-circuit	Error	Control output 2 is in the load short-circuit condition.	Check the wiring, and make sure that the load current is within ratings. If the error occurs again, replace the sensor.

Suitability for Use

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NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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