



# IO-Link Parameter Datasheet

Roller drive control

**ICA-8IO-4M4-G20-IO-P14 (EXT)**

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## General Information

### Device Identification

Vendor ID	1 (0x0001)
Device ID	984067 (0x0F0403)
Additional Device IDs	984068 (0x0F0404)

### Features

Data Storage	Yes
Block Parameterization	Yes

### Communication Characteristics

IO-Link revision	V1.1 (specification V1.1.3)
IO-Link backward compatibility	n/a
Data transmission rate	COM3 (230.4 kbit/s)
Min. cycle time	2.0 ms
Process data input	8 byte
Process data output	18 byte
SIO mode support	No
Compatible master port type	Class A, Class B

### Profile

Firmware-Update	49 (0x0031)
Identification and Diagnosis	16384 (0x4000)
Function Class – Locator	33025 (0x8101)
Function Class – Product URI	33026 (0x8102)

## Supported Product Variants

Product ID	Product Name	Description	Connector
70149088	ICA-8IO-4M4-G20-IO-P14	Roller drive control, 4 motor control channels, 48 V supply, 8 digital input/outputs, M12 3-pin	Pigtail, M12, 3-pin

## Connection

Connection Diagram	Description
	<p><b>Pigtail, M12, 3-pin</b></p> <p>1: Brown - +24V          3: Blue - 0V          4: Black - C/Q</p>

## Process Data

Process Data Input							
Sub	Name	Data type	Length	Bit offset	Value	Unit	Description
.1	IN1 – Input 1 Status	Boolean	1 bit	0	false true		Indicates the current input status according to the logic configuration. Low High
.2	IN2 – Input 2 Status	Boolean	1 bit	1			See subindex 1
.3	IN3 – Input 3 Status	Boolean	1 bit	2			See subindex 1
.4	IN4 – Input 4 Status	Boolean	1 bit	3			See subindex 1
.5	IN5 – Input 5 Status	Boolean	1 bit	4			See subindex 1
.6	IN6 – Input 6 Status	Boolean	1 bit	5			See subindex 1
.7	IN7 – Input 7 Status	Boolean	1 bit	6			See subindex 1
.8	IN8 – Input 8 Status	Boolean	1 bit	7			See subindex 1
.9	M1-RUN – Motor Run Status	Boolean	1 bit	8	false true		Indicates the current motor run status. Active Inactive
.10	M2-RUN – Motor Run Status	Boolean	1 bit	9			See subindex 9
.11	M3-RUN – Motor Run Status	Boolean	1 bit	10			See subindex 9
.12	M4-RUN – Motor Run Status	Boolean	1 bit	11			See subindex 9
.13	M1-FUSE - Motor 1 Fuse Failure	Boolean	1 bit	16	false true		Indicates the current fuse failure status of the motor. Inactive Active
.14	M2-FUSE - Motor 2 Fuse Failure	Boolean	1 bit	17			See subindex 13
.15	M3-FUSE - Motor 3 Fuse Failure	Boolean	1 bit	18			See subindex 13
.16	M4-FUSE - Motor 4 Fuse Failure	Boolean	1 bit	19			See subindex 13
.17	M1-ERR – Motor 1 Error	Boolean	1 bit	20	false true		Indicates the current error status of the motor. Inactive Active
.18	M2-ERR – Motor 2 Error	Boolean	1 bit	21			See subindex 17
.19	M3-ERR – Motor 3 Error	Boolean	1 bit	22			See subindex 17
.20	M4-ERR – Motor 4 Error	Boolean	1 bit	23			See subindex 17
.21	CNTZC – Counter Zero-Cross	Boolean	1 bit	24	false true		Indicates that the counter has changed its sign since the last reset. Inactive Active
.22	CNTOF – Counter Overflow	Boolean	1 bit	25	false true		Indicates that the counter had an overflow since the last reset. Inactive Active
.23	CNTUF – Counter Underflow	Boolean	1 bit	26	false true		Indicates that the counter had an underflow since the last reset. Inactive Active
.24	CNTREV – Counter Direction Change	Boolean	1 bit	27	false true		Indicates that the counter has changed its direction since the last reset. Inactive Active
.28	MCRDY – Motor Control Ready	Boolean	1 bit	31	false true		Indicates that the motor control section is powered and ready. Inactive Active
<i>Condition: PD Image Config = 0 (32 bit counter)</i>							
.29	Counter Value	Integer	32 bit	32	-2 <sup>31</sup> .. 2 <sup>31</sup> -1		Shows the current value of counter.
<i>Condition: PD Image Config = 1 (16 bit counter and 16 bit interval)</i>							
.29	Counter Value	Integer	16 bit	32	-2 <sup>15</sup> .. 2 <sup>15</sup> -1		Shows the current value of counter.
.30	Counter Interval	UInteger	16 bit	48	0 .. 2 <sup>16</sup> -1	10 µs	Shows the time between rising edges at IO1. Is zero on overflow.

NOTE: The process data input content can be accessed for e.g. observation purposes over parameter 'Process Data Input' at index 40 (0x28)

NOTE: The process data image can be switched via parameter 'PD Image Config' at index 121.

Process Data Output							
Sub	Name	Data type	Length	Bit offset	Value	Unit	Description
.1	OUT1 – Output 1 Control	Boolean	1 bit	0	false true		Sets the output according to the logic configuration. <i>Inactive</i> <i>Active</i>
.2	OUT2 – Output 2 Control	Boolean	1 bit	1			See subindex 1
.3	OUT3 – Output 3 Control	Boolean	1 bit	2			See subindex 1
.4	OUT4 – Output 4 Control	Boolean	1 bit	3			See subindex 1
.5	OUT5 – Output 5 Control	Boolean	1 bit	4			See subindex 1
.6	OUT6 – Output 6 Control	Boolean	1 bit	5			See subindex 1
.7	OUT7 – Output 7 Control	Boolean	1 bit	6			See subindex 1
.8	OUT8 – Output 8 Control	Boolean	1 bit	7			See subindex 1
.9	CNTRES - Counter Reset	Boolean	1 bit	8	false true		Resets the counter on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.10	CNTEN – Counter Enable	Boolean	1 bit	9	false true		Releases the counter operation. <i>Disabled</i> <i>Enabled</i>
.11	CNTDIR – Counter Direction	Boolean	1 bit	10	false true		Sets the counter up/down operation. <i>Up</i> <i>Down</i>
.12	CNTRZC – Reset Counter Zero Cross	Boolean	1 bit	11	false true		Resets the counter zero crossing flag on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.13	CNTROF – Reset Counter Overflow	Boolean	1 bit	12	false true		Resets the counter overflow flag on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.14	CNTRUF – Reset Counter Underflow	Boolean	1 bit	13	false true		Resets the counter underflow flag on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.15	CNTRREV – Reset Counter Reverted	Boolean	1 bit	14	false true		Resets the counter reverted flag on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.16	CNTPRE – Preset Counter	Boolean	1 bit	15	false true		Presets the counter to the configured value on a 0-to-1 transition. <i>Idle</i> <i>Execute</i>
.21	M1-RUNC – Motor 1 Run Control	Boolean	1 bit	16	false true		Sets the motor on/off. <i>Off</i> <i>On</i>
.22	M1-DIRC – Motor 1 Direction Control	Boolean	1 bit	17	false true		Sets the motor direction left/right. <i>Left</i> <i>Right</i>
.23	M1-BRKC – Motor 1 Brake Control	Boolean	1 bit	18	false true		Sets the brake control on/off. <i>Off</i> <i>On</i>
.31	M1-SPDC – Motor 1 Speed Value	UInteger	8 bit	24	0 .. 100	%	Sets the motor speed to the transmitted value (in percent).
.32	M1-RMPDN – Motor 1 Ramp Down Value	UInteger	8 bit	32	0 .. 5100 (0 .. 255)	ms	Sets the control value for ramp down action (time in 20 ms steps). (Calculation: gradient 20.0, offset 0.00)
.33	M1-RMPDN – Motor 1 Ramp Down Value	UInteger	8 bit	40	0 .. 5100 (0 .. 255)	ms	Sets the control value for ramp up action (time in 20 ms steps). (Calculation: gradient 20.0, offset 0.00)
.41	M2-RUNC – Motor 2 Run Control	Boolean	1 bit	48			See subindex 21
.42	M2-DIRC – Motor 2 Direction Control	Boolean	1 bit	49			See subindex 22
.43	M2-BRKC – Motor 2 Brake Control	Boolean	1 bit	50			See subindex 23
.51	M2-SPDC – Motor 2 Speed Value	UInteger	8 bit	56			See subindex 31
.52	M2-RMPDN – Motor 2 Ramp Down Value	UInteger	8 bit	64			See subindex 32
.53	M2-RMPDN – Motor 2 Ramp Down Value	UInteger	8 bit	72			See subindex 33
.61	M3-RUNC – Motor 3 Run Control	Boolean	1 bit	80			See subindex 21
.62	M3-DIRC – Motor 3 Direction Control	Boolean	1 bit	81			See subindex 22
.63	M3-BRKC – Motor 3 Brake Control	Boolean	1 bit	82			See subindex 23

Process Data Output							
Sub	Name	Data type	Length	Bit offset	Value	Unit	Description
.71	M3-SPDC – Motor 3 Speed Value	UInteger	8 bit	88			See subindex 31
.72	M3-RMPDN – Motor 3 Ramp Down Value	UInteger	8 bit	96			See subindex 32
.73	M3-RMPDN – Motor 3 Ramp Down Value	UInteger	8 bit	104			See subindex 33
.81	M4-RUNC – Motor 4 Run Control	Boolean	1 bit	112			See subindex 21
.82	M4-DIRC – Motor 4 Direction Control	Boolean	1 bit	113			See subindex 22
.83	M4-BRKC – Motor 4 Brake Control	Boolean	1 bit	114			See subindex 23
.91	M4-SPDC – Motor 4 Speed Value	UInteger	8 bit	120			See subindex 31
.92	M4-RMPDN – Motor 4 Ramp Down Value	UInteger	8 bit	128			See subindex 32
.93	M4-RMPDN – Motor 4 Ramp Down Value	UInteger	8 bit	136			See subindex 33

NOTE: The process data output content can be accessed for e.g. observation purposes (read only) over parameter 'Process Data Output' at index 41 (0x29)

## Parameter Data

Identification								
Index	Parameter	Access	Data type	Length	Default	Description	DS	R
16 (0x10)	Vendor Name	ro	String	13 byte	Pepperl+Fuchs	The vendor name that is assigned to a Vendor ID.		
17 (0x11)	Vendor Text	ro	String	29 byte	www.pepperl-fuchs.com/io-link	Additional information about the vendor.		
18 (0x12)	Product Name	ro	String	max. 40 byte	See table <i>Supported Product Variants</i>	Complete product name.		
19 (0x13)	Product ID	ro	String	8 byte	See table <i>Supported Product Variants</i>	Vendor-specific product or type identification (e.g., item number or model number).		
20 (0x14)	Product Text	ro	String	max. 30 byte	Roller drive control	Additional product information for the device.		
21 (0x15)	Serial Number	ro	String	14 byte	<serial number>	Unique, vendor-specific identifier of the individual device.		
22 (0x16)	Hardware Revision	ro	String	7 byte	HW**.**	Unique, vendor-specific identifier of the hardware revision of the individual device.		
23 (0x17)	Firmware Revision	ro	String	7 byte	FW**.**	Unique, vendor-specific identifier of the firmware revision of the individual device.		
24 (0x18)	Application Specific Tag	rw	String	max. 32 byte	Your automation, our passion.	Possibility to mark a device with user- or application-specific information.	Y	F
25 (0x19)	Function Tag	rw	String	max. 32 byte	***	Possibility to mark a device with function-specific information.	Y	F
26 (0x1A)	Location Tag	rw	String	max. 32 byte	***	Possibility to mark a device with location-specific information.	Y	F
191 (0xBF)	Product URI	ro	String	max. 64 byte	https://pefu.de/<serial number>	Provides a unique instance identification compliant to DIN-SPEC 91406.		
192 (0xC0)	Installation Tag	rw	String	max. 32 byte	***	Can be used to note the initial commissioning data or date. This entry is not transferred to a new device on replacement.		F

Parameterization & Configuration												
Index .sub	Parameter	Access	Data type	Length	Bit offset	Default	Value	Unit	Description	DS	R	
72 (0x48)	M1 Config	rw	Record	5 byte					Defines the configuration parameter for the motor.	Y	FA	
	.1	Output Mode	rw	UInteger	8 bit	32	0		Defines the output mode as motor control or digital output. <i>Digital output</i> <i>Motor control</i>	Y	FA	
	.2	Direction Logic	rw	UInteger	8 bit	24	0		Defines the logic for the direction output. <i>High active</i> <i>Low active</i>	Y	FA	
	.3	Error Logic	rw	UInteger	8 bit	16	0		Defines the logic of the error signal input. <i>High active</i> <i>Low active</i>	Y	FA	
	.4	Speed Range Min	rw	UInteger	8 bit	8	20	0 .. 13.6 (0 .. 136)	V	Defines the voltage level for minimum speed in 0.1 V steps. (Calculation: gradient 0.1, offset 0.00)	Y	FA
	.5	Speed Range Max	rw	UInteger	8 bit	0	100	0 .. 13.6 (0 .. 136)	V	Defines the voltage level for maximum speed in 0.1 V steps. (Calculation: gradient 0.1, offset 0.00)	Y	FA
73 (0x49)	M2 Config	rw	Record	5 byte					See index 72	Y	FA	
74 (0x4A)	M3 Config	rw	Record	5 byte					See index 72	Y	FA	
75 (0x4B)	M4 Config	rw	Record	5 byte					See index 72	Y	FA	
80 (0x50)	Maintenance Config M1	rw	Record	12 byte					Provides settings for configuration of motor maintenance monitoring.	Y	FA	
	.1	Runtime Limit	rw	UInteger	32 bit	64	0	1 .. 1000000	h	Defines the limit for the motor runtime for a planned maintenance cycle in hours. The according maintenance warning will be set, if this limit is exceeded. <i>Disabled</i>	Y	FA
	.2	Run Cycle Limit	rw	UInteger	32 bit	32	0	1 .. 2 <sup>32</sup> -1		Defines the limit for the motor run cycles for a planned maintenance cycle in hours. The according maintenance warning will be set, if this limit is exceeded. <i>Disabled</i>	Y	FA
	.3	Error Count Limit	rw	UInteger	32 bit	0	0	1 .. 2 <sup>32</sup> -1		Defines the limit for the motor error count for a planned maintenance cycle in hours. The according maintenance warning will be set, if this limit is exceeded. <i>Disabled</i>	Y	FA
81 (0x51)	Maintenance Config M2	rw	Record	12 byte					See index 80	Y	FA	
82 (0x52)	Maintenance Config M3	rw	Record	12 byte					See index 80	Y	FA	
83 (0x53)	Maintenance Config M4	rw	Record	12 byte					See index 80	Y	FA	
88 (0x58)	IO1 Config	rw	Record	3 byte					I/O port configuration.	Y	FA	
	.1	I/O Mode	rw	UInteger	8 bit	16	0		Defines the I/O mode as digital input or digital output. <i>Digital input</i> <i>Digital output</i>	Y	FA	
	.2	I/O Logic	rw	UInteger	8 bit	8	0		Defines the logic for the digital input/output. <i>High active</i> <i>Low active</i>	Y	FA	
	.3	Input Filter	rw	UInteger	8 bit	0	0		Defines a filter time for signals from the digital input. <i>Disabled</i> <i>0.5 ms</i> <i>1.0 ms</i> <i>2.0 ms</i> <i>3.0 ms</i> <i>5.0 ms</i>	Y	FA	

Parameterization & Configuration											
Index .sub	Parameter	Access	Data type	Length	Bit offset	Default	Value	Unit	Description	DS	R
89 (0x59)	IO2 Config	rw	Record	3 byte					See index 88	Y	FA
90 (0x5A)	IO3 Config	rw	Record	3 byte					See index 88	Y	FA
91 (0x5B)	IO4 Config	rw	Record	3 byte					See index 88	Y	FA
92 (0x5C)	IO5 Config	rw	Record	3 byte					See index 88	Y	FA
93 (0x5D)	IO6 Config	rw	Record	3 byte					See index 88	Y	FA
94 (0x5E)	IO7 Config	rw	Record	3 byte					See index 88	Y	FA
95 (0x5F)	IO8 Config	rw	Record	3 byte					See index 88	Y	FA
96 (0x60)	Module Config	rw	Record	6 byte					Defines general configuration setting for module functions.	Y	FA
	.1 Encoder Input Mode	rw	UInteger	8 bit	40	0	0 1		Defines if IO1 and IO2 are used as encoder inputs. Encoder at IO1 Encoder at IO1, IO2	Y	FA
	.2 Compensation	rw	UInteger	8 bit	32	0	0 1		Defines if speed compensation is active for all motor ports. Off On	Y	FA
	.3 Counter Preset Value	rw	Integer	32 bit	0	0	-2 <sup>31</sup> .. 2 <sup>31</sup> -1		Defines the preset value for the counter.	Y	FA
120 (0x78)	Event Config	rw	Record <sup>50</sup>	2 byte					Enable or disable different event sources.	Y	FA
	.1 Warning – Motor maintenance diagnosis	rw	Boolean	1 bit	0	0	0 1		Enabled: an event is generated, if any of the configured motor maintenance limits is exceeded. Disabled Enabled	Y	FA
	.2 Warning – Motor power fail	rw	Boolean	1 bit	1	0	0 1		Enabled: an event is generated, if the power supply for the motor is insufficient. Disabled Enabled	Y	FA
	.4 Warning – I/O port overload	rw	Boolean	1 bit	3	0	0 1		Enabled: an event is generated, if any output of the I/O ports is overloaded. Disabled Enabled	Y	FA
121 (0x79)	PD Image Config	Rw	UInteger	8 bit		0	0 1		Defines the content for the current process data image. PDin: 32 bit counter PDin: 16 bit counter and 16 bit interval	Y	FA

NOTE: The parameter data provide the attributes DS (Data Storage) and R (Reset behavior). The following rules apply:

DS: Parameter marked with 'Y' (yes) are exchanged with the master via the data storage mechanism.

R: Parameter marked with 'F' are reset to the default value upon reception of the command 'Back-to-box'.

R: Parameter marked with 'A' are reset to the default value upon reception of the command 'Application Reset'.

Diagnosis								
Index .sub	Parameter	Access	Data type	Length	Bit offset	Value	Unit	Description
36 (0x24)	Device Status	ro	UInteger	8 bit		0 1 2 3 4		Indicator for the current device condition and diagnosis state. <i>Device is OK</i> <i>Maintenance required</i> <i>Out of specification</i> <i>Functional check</i> <i>Failure</i>
37 (0x25)	Detailed Device Status	ro	Array <sup>S0</sup>	12 byte				List of all currently pending events in the device.
.1	Element 1		Octetstr	3 byte	72			
.2	Element 2		Octetstr	3 byte	48			
.3	Element 3		Octetstr	3 byte	24			
.4	Element 4		Octetstr	3 byte	0			
176 (0xB0)	Device Characteristics	ro	Record <sup>S0</sup>	6 byte				Shows relevant key characteristics of the device for use in applications.
.1	Max. Digital I/O	ro	UInteger	16 bit	32			Shows the maximum number of supported digital inputs/outputs.
.2	Max. Output Load Current (Sum)	ro	UInteger	16 bit	16			Shows the maximum output load current.
.3	Supply Current Requirement	ro	UInteger	16 bit	0			Shows the maximum specified supply current for the device excluding load.
216 (0xD8)	Maintenance Monitor M1	ro	Record <sup>S0</sup>	12 byte				Provides information on the monitored values of the observed motor maintenance data and incidents.
.1	Runtime	ro	UInteger	32 bit	64	0 .. 2 <sup>32</sup> -1	h	Shows the motor runtime in hours since the last motor maintenance reset.
.2	Run Cycles	ro	UInteger	32 bit	32	0 .. 2 <sup>32</sup> -1		Shows the motor run cycles since the last motor maintenance reset.
.3	Error Count	ro	UInteger	32 bit	0	0 .. 2 <sup>32</sup> -1		Shows the motor errors since the last motor maintenance reset.
217 (0xD9)	Maintenance Monitor M2	ro	Record <sup>S0</sup>	12 byte				See index 216
218 (0xDA)	Maintenance Monitor M3	ro	Record <sup>S0</sup>	12 byte				See index 216
219 (0xDB)	Maintenance Monitor M4	ro	Record <sup>S0</sup>	12 byte				See index 216
224 (0xE0)	Operating Hours	ro	UInteger	32 bit		0 .. 2 <sup>32</sup> -1	h	Shows the overall hours of operation since initial commissioning.
225 (0xE1)	Temperature Indicator	ro	UInteger	8 bit		0 1 2 3 4		Indicates the operation at ambient temperatures close to or in excess of specification limits. <i>Operating condition OK</i> <i>Close to upper limit</i> <i>Upper limit exceeded</i> <i>Close to lower limit</i> <i>Lower limit exceeded</i>
226 (0xE2)	Temperature Monitor	ro	Record <sup>S0</sup>	10 byte				Contains parameters showing current and past conditions of temperature exposure since initial commissioning.
.1	Overtemperature Operating Hours	ro	UInteger	32 bit	48	0 .. 2 <sup>32</sup> -1	h	Shows the overall hours of powered operation above the specified temperature limit since initial commissioning.
.2	Overtemperature Exceeded Counter	ro	UInteger	16 bit	32	0 .. 2 <sup>16</sup> -1		Shows the number of transitions to operating temperatures above the specified limit in powered operation since initial commissioning.
.3	Maximum Operating Temperature	ro	Integer	8 bit	24	-40 .. 125	°C	Shows the maximum observed temperature in powered operation since initial commissioning.
.4	Minimum Operating Temperature	ro	Integer	8 bit	16	-40 .. 125	°C	Shows the minimum observed temperature in powered operation since initial commissioning.
.5	Operating Temperature - Control	ro	Integer	8 bit	8	-40 .. 125	°C	Shows the currently observed operating temperature of the device in the motor control section.
.6	Operating Temperature - Communication	ro	Integer	8 bit	0	-40 .. 125	°C	Shows the currently observed operating temperature of the device in the communication section.



Diagnosis								
Index	Parameter	Access	Data type	Length	Bit offset	Value	Unit	Description
.sub								
228 (0xE4)	Motor Maintenance Status Diag	ro	Record <sup>S0</sup>	4 byte				Shows the diagnosis status of the different motor maintenance evaluation channels.
.1	M1 Runtime Alarm	ro	Boolean	1 bit	0	false true		Indicates that the configured maintenance runtime interval has been exceeded for this motor. <i>Inactive</i> <i>Active</i>
.2	M1 Run Cycles Alarm	ro	Boolean	1 bit	1	false true		Indicates that the configured maintenance run cycle interval has been exceeded for this motor. <i>Inactive</i> <i>Active</i>
.3	M1 Error Count Alarm	ro	Boolean	1 bit	2	false true		Indicates that the configured maintenance error count interval has been exceeded for this motor. <i>Inactive</i> <i>Active</i>
.5	M2 Runtime Alarm	ro	Boolean	1 bit	4			See subindex 1
.6	M2 Run Cycles Alarm	ro	Boolean	1 bit	5			See subindex 2
.7	M2 Error Count Alarm	ro	Boolean	1 bit	6			See subindex 3
.9	M3 Runtime Alarm	ro	Boolean	1 bit	8			See subindex 1
.10	M3 Run Cycles Alarm	ro	Boolean	1 bit	9			See subindex 2
.11	M3 Error Count Alarm	ro	Boolean	1 bit	10			See subindex 3
.13	M4 Runtime Alarm	ro	Boolean	1 bit	12			See subindex 1
.14	M4 Run Cycles Alarm	ro	Boolean	1 bit	13			See subindex 2
.15	M4 Error Count Alarm	ro	Boolean	1 bit	14			See subindex 3
229 (0xE5)	Motor Port Diag	ro	Record <sup>S0</sup>	4 byte				Shows the alarm states of the motor ports.
.1	M1 Fuse Defect	ro	Boolean	1 bit	0	false true		Indicates that the fuse at this motor port is defect. The port cannot be used anymore. <i>Inactive</i> <i>Active</i>
.5	M2 Fuse Defect	ro	Boolean	1 bit	4			See subindex 1
.9	M3 Fuse Defect	ro	Boolean	1 bit	8			See subindex 1
.13	M4 Fuse Defect	ro	Boolean	1 bit	12			See subindex 1
230 (0xE6)	IO Port Diag	ro	Record <sup>S0</sup>	4 byte				Shows the alarm states of the I/O ports.
.1	IO1/2 Supply Overload Alarm	ro	Boolean	1 bit	0	false true		Indicates that the power supply for these ports is overloaded. <i>Inactive</i> <i>Active</i>
.2	OUT1 Overload Alarm	ro	Boolean	1 bit	1	false true		Indicates that the output at this I/O is overloaded. <i>Inactive</i> <i>Active</i>
.3	OUT2 Overload Alarm	ro	Boolean	1 bit	2	false true		Indicates that the output at this I/O is overloaded. <i>Inactive</i> <i>Active</i>
.5	IO3/4 Supply Overload Alarm	ro	Boolean	1 bit	4			See subindex 1
.6	OUT3 Overload Alarm	ro	Boolean	1 bit	5			See subindex 2
.7	OUT4 Overload Alarm	ro	Boolean	1 bit	6			See subindex 3
.9	IO5/6 Supply Overload Alarm	ro	Boolean	1 bit	8			See subindex 1
.10	OUT5 Overload Alarm	ro	Boolean	1 bit	9			See subindex 2
.11	OUT6 Overload Alarm	ro	Boolean	1 bit	10			See subindex 3
.13	IO7/8 Supply Overload Alarm	ro	Boolean	1 bit	12			See subindex 1
.14	OUT7 Overload Alarm	ro	Boolean	1 bit	13			See subindex 2
.15	OUT8 Overload Alarm	ro	Boolean	1 bit	14			See subindex 3
231 (0xE9)	Module Diag	ro	Record <sup>S0</sup>	1 byte				Shows the alarm states of module functions.
.1	Motor Power Fail Alarm	ro	UInteger	1 bit	0	false true		Indicates that the motor power supply PWR is below the specified voltage or disconnected. <i>Inactive</i> <i>Active</i>

Diagnosis									
Index .sub	Parameter	Access	Data type	Length	Bit offset	Value	Unit	Description	
235 (0xEB)	Module Supply Diag	ro	Record <sup>S0</sup>	4 byte					Shows the current supply voltages of the module.
.1	IO-Link Supply Voltage	ro	UInteger	16 bit	16	0 .. 31000	mV		Shows the current IO-Link supply voltage.
.2	Motor Power Supply Voltage	ro	UInteger	16 bit	0	0 .. 65535	mV		Shows the current motor power supply voltage.

Observation									
Index .sub	Parameter	Access	Data type	Length	Bit offset	Default	Value	Unit	Description
36 (0x24)	Device Status	ro	UInteger	8 bit		0			Indicator for the current device condition and diagnosis state. <i>See Diagnosis – Device Status</i>
40 (0x28)	PD Input	ro	Record <sup>S0</sup>	8 byte					Last valid process input data of the device. <i>See Process Data Input</i>
41 (0x29)	PD Output	ro	Record <sup>S0</sup>	18 byte					Last valid process output data written to the device. <i>See Process Data Output</i>

NOTE: Parameter with datatype Record or Array, which are marked with 'S0' can only be accessed over subindex 0 (whole parameter object). Subindex access to single items is not possible.

## Command Interface

Index	Parameter	Access	Data type	Length	Value	Description
2 (0x02)	System Command	wo	UInteger	8 bit	See command value	Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.

Command Value	Command	Description
126 (0x7E)	Locator Start	The localization indication is started and is active for 10 minutes. Use the 'Locator Stop' command to end this display mode or use the 'Locator Start' command again to extend the duration of the display by further 10 minutes.
127 (0x7F)	Locator Stop	The localization indication pattern is stopped. The optical indicators of the device will show again the device specific states of operation.
129 (0x81)	Application Reset	The parameter of the technology-specific application are set to default values. Identification parameter remain unchanged. An upload to the data storage of the master will be executed, if activated in the port configuration of the master.
131 (0x83)	Back-to-box	The parameter of the device are set to factory default values and communication will be inhibited until the next power cycle. Note: Directly detach the device from the master port!
176 (0xB0)	Maintenance Reset Motor 1	The maintenance status and monitor data are reset.
177 (0xB1)	Maintenance Reset Motor 2	The maintenance status and monitor data are reset.
178 (0xB2)	Maintenance Reset Motor 3	The maintenance status and monitor data are reset.
179 (0xB3)	Maintenance Reset Motor 4	The maintenance status and monitor data are reset.

## Error Codes

Code	Additional code	Name	Description
128 (0x80)	17 (0x11)	Index not available	Read or write access attempt to a non-existing index.
128 (0x80)	18 (0x12)	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
128 (0x80)	32 (0x20)	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
128 (0x80)	33 (0x21)	Service temporarily not available - local control	Parameter not accessible. The device is currently in an ongoing, locally controlled operation.
128 (0x80)	34 (0x22)	Service temporarily not available - device control	Parameter not accessible. The technology-specific application is currently in a remotely triggered operation.
128 (0x80)	35 (0x23)	Access denied	Write access to a read-only parameter or read access to write-only parameter.
128 (0x80)	48 (0x30)	Parameter value out of range	Written parameter value is outside of the permitted value range.
128 (0x80)	49 (0x31)	Parameter value above limit	Written parameter value is above its specified value range.
128 (0x80)	50 (0x32)	Parameter value below limit	Written parameter value is below its specified value range.
128 (0x80)	51 (0x33)	Parameter length overrun	Written parameter is longer than specified.
128 (0x80)	52 (0x34)	Parameter length underrun	Written parameter is shorter than specified.
128 (0x80)	53 (0x35)	Function not available	Written command is not supported by the technology-specific application.
128 (0x80)	54 (0x36)	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
128 (0x80)	64 (0x40)	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
128 (0x80)	65 (0x41)	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.

## Event Codes

Code	Type	Name	Description
36097 (0x8D01)	Warning	Motor maintenance diagnosis	The limit for a configured maintenance cycle has been reached. Check motor channel and execute required maintenance actions.
36163 (0x8D43)	Warning	Ambient temperature outside specified temperature range	Check load conditions of the device or heating sources in the device environment.
36176 (0x8D50)	Warning	Motor power fail	Motor power fail or under voltage. Check connection and power supply.
36178 (0x8D52)	Warning	I/O port overload	Overload on I/O port detected. Check I/O port diagnosis information for details and cables, connections and connected devices at corresponding port.