



# IO-Link Parameter Datasheet

Encoder

Absolute rotary encoder

ENA58IL-R\*7-00\* series

## General Information

| Device Identification |                    |
|-----------------------|--------------------|
| Vendor ID             | 1 (0x0001)         |
| Device ID             | 5244422 (0x500606) |

| Features               |     |
|------------------------|-----|
| Data storage           | Yes |
| Block parameterization | Yes |

| Communication Characteristics  |                             |
|--------------------------------|-----------------------------|
| IO-Link revision               | V1.1 (specification V1.1.2) |
| IO-Link backward compatibility | n/a                         |
| Data transmission rate         | COM3 (230.4 kbit/s)         |
| Min. cycle time                | 1.5 ms                      |
| Process data input             | 12 byte                     |
| Process data output            | n/a                         |
| SIO mode support               | no                          |
| Compatible master port type    | Class A, Class B (see NOTE) |

| Device Profile                   |                |
|----------------------------------|----------------|
| Identification & Diagnosis – I&D | 16384 (0x4000) |
|                                  |                |
|                                  |                |
|                                  |                |
|                                  |                |
|                                  |                |
|                                  |                |
|                                  |                |

NOTE: For use at IO-Link master port Class B, use 3-pole adapter or 3-wire cable.

## Supported Product Variants

| Product ID      | Product Name                 | Description  | Connector         |
|-----------------|------------------------------|--|-------------------|
| 70119037-100148 | ENA58IL-R06DA7-0016-IO-ABD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 6 mm, flange double torque rest, IP67, single-turn resolution 65.536, axial connection, M12 5-pole   | Plug, M12, 5-pole |
| 70119037-100149 | ENA58IL-R10DA7-0016-IO-ABD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 10 mm, flange double torque rest, IP67, single-turn resolution 65.536, axial connection, M12 5-pole  | Plug, M12, 5-pole |
| 70119037-100150 | ENA58IL-R12DA7-0016-IO-ABD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 12 mm, flange double torque rest, IP67, single-turn resolution 65.536, axial connection, M12 5-pole  | Plug, M12, 5-pole |
| 70119037-100151 | ENA58IL-R14DA7-0016-IO-ABD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 14 mm, flange double torque rest, IP67, single-turn resolution 65.536, axial connection, M12 5-pole  | Plug, M12, 5-pole |
| 70119037-100152 | ENA58IL-R15DA7-0016-IO-ABD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 15 mm, flange double torque rest, IP67, single-turn resolution 65.536, axial connection, M12 5-pole  | Plug, M12, 5-pole |
| 70119037-100158 | ENA58IL-R06DA7-0016-IO-RBD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 6 mm, flange double torque rest, IP67, single-turn resolution 65.536, radial connection, M12 5-pole  | Plug, M12, 5-pole |
| 70119037-100159 | ENA58IL-R10DA7-0016-IO-RBD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 10 mm, flange double torque rest, IP67, single-turn resolution 65.536, radial connection, M12 5-pole | Plug, M12, 5-pole |
| 70119037-100160 | ENA58IL-R12DA7-0016-IO-RBD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 12 mm, flange double torque rest, IP67, single-turn resolution 65.536, radial connection, M12 5-pole | Plug, M12, 5-pole |
| 70119037-100161 | ENA58IL-R14DA7-0016-IO-RBD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 14 mm, flange double torque rest, IP67, single-turn resolution 65.536, radial connection, M12 5-pole | Plug, M12, 5-pole |
| 70119037-100162 | ENA58IL-R15DA7-0016-IO-RBD01 | Absolute rotary encoder with shaft velocity measurement, housing size 58, recessed diameter 15 mm, flange double torque rest, IP67, single-turn resolution 65.536, radial connection, M12 5-pole | Plug, M12, 5-pole |

## Connection

| Connection Diagram | Description  |
|--------------------|--|
|                    | <p><b>Plug, M12, 5-pole</b></p> <p>1: Brown - +24V<br/>                 2: White – DI/DO<br/>                 3: Blue - 0V<br/>                 4: Black - C/Q<br/>                 5: Grey - n.c.</p> |

## Process Data

### Process Data Input

| Sub | Name                                      | Data type | Length | Bitoffs. | Value            | Unit | Description   |
|-----|---|-----------|--------|----------|------------------|------|---|
| .1  | SSC1.1 - Switching Signal Position        | String    | 1 bit  | 0        | 0<br>1           |      | Indicates the current status of the switching signal 1.1.<br><br>Low<br>High  |
| .2  | SSC1.2 - Switching Signal Position        | Bool      | 1 bit  | 1        | 0<br>1           |      | Indicates the current status of the switching signal 1.2.<br><br>Low<br>High  |
| .3  | Status - Count Direction                  | Bool      | 1 bit  | 2        | 0<br>1           |      | Indicates the current status of the direction of position count.<br><br>Increase<br>Decrease  |
| .4  | SSC.2 - Switching Signal Velocity (Shaft) | Bool      | 1 bit  | 3        | 0<br>1           |      | Indicates the current status of the switching signal 2.<br><br>Low<br>High  |
| .5  | Status - Auxiliary Measurement MDC2       | UInteger  | 4 bit  | 4        | 0<br>1<br>2<br>3 |      | Indicates the currently selected source for the auxiliary measurement channel MDC2.<br><br>Deactivated<br>Temperature<br>Velocity (Shaft) RPM<br>Velocity (Shaft) CPS |
| .9  | DSC1.1 - Temperature Warning              | Bool      | 1 bit  | 8        | 0<br>1           |      | Indicates that the configured temperature threshold has been exceeded.<br><br>Low<br>High   |
| .10 | DSC1.2 - Temperature Warning              | Bool      | 1 bit  | 9        | 0<br>1           |      | Indicates that the configured temperature threshold has been undershot.<br><br>Low<br>High  |
| .17 | MDC1 – ST Resolution                      | UInteger  | 16 bit | 16       | STR value        |      | Indicates the current resolution of the position value.   |
| .18 | MDC1 - Position                           | Integer   | 32 bit | 32       | POS value        |      | Indicates the current position value.   |
| .19 | MDC2 - Auxiliary Measurement              | Integer   | 32 bit | 64       | AUX value        |      | Indicates the measurement value of the selected auxiliary measurement channel MDC2.   |

NOTE: The process data input content can be accessed in addition over parameter 'Process Data Input' at index 40 (0x28)

## 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. 30 byte | ENA36IL-R*5-00* series<br><i>See table Supported Product Variants</i> | Complete product name.  |    |   |
| 19 (0x13)      | Product ID               | ro     | String    | 13 byte      | 70119037-*<br><i>See table 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 | Absolute rotary encoder   | Additional product information for the device.  |    |   |
| 21 (0x15)      | Serial Number            | ro     | String    | 14 byte      |   | 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 |

| Diagnosis     |                                     |        |                      |         |          |         |                            |      |  |    |    |
|---------------|-------------------------------------|--------|----------------------|---------|----------|---------|----------------------------|------|--|----|----|
| Index<br>.sub | Parameter                           | Access | Data type            | Length  | Bitoffs. | Default | Value                      | Unit | Description  | DS | R  |
| 36 (0x24)     | Device Status                       | ro     | UInteger             | 8 bit   |          | 0       | 0<br>1<br>2<br>3<br>4      |      | Indicator for the current device condition and diagnosis state.<br><i>Device is OK</i><br><i>Maintenance required</i><br><i>Out of Specification</i><br><i>Functional check</i><br><i>Failure</i>  |    | FA |
| 37 (0x25)     | Detailed Device Status              | ro     | Array <sup>50</sup>  | 15 byte |          |         |                            |      | List of all currently pending events in the device.  |    | FA |
|               | .1 Element 1                        |        | Octetstr             | 3 byte  | 48       | 0       |                            |      |  |    |    |
|               | .2 Element 2                        |        | Octetstr             | 3 byte  | 36       | 0       |                            |      |  |    |    |
|               | .3 Element 3                        |        | Octetstr             | 3 byte  | 24       | 0       |                            |      |  |    |    |
|               | .4 Element 4                        |        | Octetstr             | 3 byte  | 12       | 0       |                            |      |  |    |    |
|               | .5 Element 5                        |        | Octetstr             | 3 byte  | 0        | 0       |                            |      |  |    |    |
| 127 (0x7F)    | Indication Control                  | rw     | Record <sup>50</sup> | 8 bit   |          |         |                            |      | Provides control functions for diagnosis purposes for indicators or display.   |    | FA |
|               | .1 Locator Indication               | rw     | Boolean              | 1 bit   | 0        | 0       | 0<br>1                     |      | Enables a defined flashing pattern of the indicator LEDs for better spotting of a device in field applications.<br><i>Disabled</i><br><i>Enabled</i>   |    | FA |
| 224 (0xE0)    | Operating Hours                     | ro     | UInteger             | 32 bit  |          |         | 0 ..<br>2 <sup>32</sup> -1 |      | Shows the overall hours of operation since initial commissioning.  |    |    |
| 225 (0xE1)    | Temperature Indicator               | ro     | UInteger             | 8 bit   |          |         | 0<br>1<br>2<br>3<br>4      |      | Indicates the operation at critical ambient temperatures or excess of specification limits.<br><i>Operating condition OK</i><br><i>Close to upper limit</i><br><i>Upper limit exceeded</i><br><i>Close to lower limit</i><br><i>Lower limit exceeded</i> |    |    |
| 226 (0xE2)    | Temperature Monitor                 | ro     | Record <sup>50</sup> | 9 byte  |          |         |                            |      | Contains parameters showing current and past conditions of temperature exposure since initial commissioning.   |    |    |
|               | .1 Overtemperature Operating Hours  | ro     | UInteger             | 32 bit  | 40       |         | 0 ..<br>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  | 24       |         | 0 ..<br>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   | 16       |         | -50 ..<br>125              | °C   | Shows the maximum observed temperature in powered operation since initial commissioning.   |    |    |
|               | .4 Minimum Operating Temperature    | ro     | Integer              | 8 bit   | 8        |         | -50 ..<br>125              | °C   | Shows the minimum observed temperature in powered operation since initial commissioning.   |    |    |
|               | .5 Device Operating Temperature     | ro     | Integer              | 8 bit   | 0        |         | -50 ..<br>125              | °C   | Shows the currently observed operating temperature of the device.  |    |    |
| 227 (0xE3)    | Power Monitor                       | ro     | Record <sup>50</sup> | 16 byte |          |         |                            |      | Contains parameters showing current and past conditions of powered operation since initial commissioning.  |    |    |
|               | .1 Power Cycles                     | ro     | UInteger             | 32 bit  | 96       |         | 0 ..<br>2 <sup>32</sup> -1 |      | Shows the number of power cycles since initial commissioning.  |    |    |
|               | .2 Maximum Uptime                   | ro     | UInteger             | 32 bit  | 64       |         | 0 ..<br>2 <sup>32</sup> -1 | s    | Shows the maximum observed powered operating time between power cycles in seconds since initial commissioning.   |    |    |
|               | .3 Average Uptime                   | ro     | UInteger             | 32 bit  | 32       |         | 0 ..<br>2 <sup>32</sup> -1 | s    | Shows the average observed powered operating time between power cycles in seconds since initial commissioning.   |    |    |

| Diagnosis                   |                            |               |                      |               |                 |                |                            |             |   |           |          |
|-----------------------------|----------------------------|---------------|----------------------|---------------|-----------------|----------------|----------------------------|-------------|---|-----------|----------|
| <i>Index</i><br><i>.sub</i> | <i>Parameter</i>           | <i>Access</i> | <i>Data type</i>     | <i>Length</i> | <i>Bitoffs.</i> | <i>Default</i> | <i>Value</i>               | <i>Unit</i> | <i>Description</i>  | <i>DS</i> | <i>R</i> |
| .4                          | Uptime                     | ro            | UInteger             | 32 bit        | 0               |                | 0 ..<br>2 <sup>32</sup> -1 | s           | Shows the current operating time since the last power cycle in seconds.                     |           |          |
| 232<br>(0xE8)               | Device Characteristic      | ro            | Record <sup>50</sup> | 6 byte        |                 |                |                            |             | Shows relevant key characteristics of the device for use in applications.                   |           |          |
| .1                          | ST Resolution (bit)        | ro            | UInteger             | 16 bit        | 32              |                |                            |             | Shows the maximum configurable resolution for a single turn in counts: 2 <sup>STR</sup> -1. |           |          |
| .2                          | MT Resolution (bit)        | ro            | UInteger             | 16 bit        | 16              |                |                            |             | Shows the maximum number of detectable revolutions: 2 <sup>MTR</sup> -1.                    |           |          |
| .3                          | Supply Current Requirement | ro            | UInteger             | 16 bit        | 0               |                |                            | mA          | Shows the maximum specified supply current excluding load.                                  |           |          |

| Parameterization & Configuration |                                    |        |           |        |          |         |                            |         |   |    |    |
|----------------------------------|------------------------------------|--------|-----------|--------|----------|---------|----------------------------|---------|---|----|----|
| Index<br>.sub                    | Parameter                          | Access | Data type | Length | Bitoffs. | Default | Value                      | Unit    | Description   | DS | R  |
| 64 (0x40)                        | SSC1.1 Param - Position            | rw     | Record    | 8 byte |          |         |                            |         | Defines the setpoint values for switching signal channel 1.1.   | Y  | FA |
|                                  | .1 SP1                             | rw     | Integer   | 32 bit | 32       | 0       | 0 ..<br>2 <sup>31</sup> -1 |         | Defines the setpoint 1 value for the switching signal channel.  | Y  | FA |
|                                  | .2 SP2                             | rw     | Integer   | 32 bit | 0        | 0       | 0 ..<br>2 <sup>31</sup> -1 |         | Defines the setpoint 2 value for the switching signal channel.  | Y  | FA |
| 65 (0x41)                        | SSC1.1 Config - Position           | rw     | Record    | 4 byte |          |         |                            |         | Defines the configuration parameter for switching signal channel 1.1.   | Y  | FA |
|                                  | .1 Logic                           | rw     | UInteger  | 8 bit  | 24       | 0       | 0<br>1                     |         | Defines the logical behavior of the switching signal.<br><i>High active</i><br><i>Low active</i>  | Y  | FA |
|                                  | .2 Mode                            | rw     | UInteger  | 8 bit  | 16       | 0       | 0<br>1<br>2<br>3           |         | Defines the evaluation mode for the switching signal.<br><i>Deactivated</i><br><i>Single point</i><br><i>Window</i><br><i>Two point</i> | Y  | FA |
|                                  | .3 Hyst                            | rw     | Integer   | 16 bit | 0        | 0       | 0 ..<br>2 <sup>15</sup> -1 |         | Defines the hysteresis at the switchpoint. A higher hysteresis may help to improve the stability in critical applications.              | Y  | FA |
| 66 (0x42)                        | SSC1.2 Param - Position            | rw     | Record    | 8 byte |          |         |                            |         | Defines the setpoint values for switching signal channel 1.2.   | Y  | FA |
|                                  | .1 SP1                             | rw     | Integer   | 32 bit | 32       | 0       | 0 ..<br>2 <sup>31</sup> -1 |         | Defines the setpoint 1 value for the switching signal channel.  | Y  | FA |
|                                  | .2 SP2                             | rw     | Integer   | 32 bit | 0        | 0       | 0 ..<br>2 <sup>31</sup> -1 |         | Defines the setpoint 2 value for the switching signal channel.  | Y  | FA |
| 67 (0x43)                        | SSC1.2 Config - Position           | rw     | Record    | 4 byte |          |         |                            |         | Defines the configuration parameter for switching signal channel 1.2.   | Y  | FA |
|                                  | .1 Logic                           | rw     | UInteger  | 8 bit  | 24       | 0       | 0<br>1                     |         | Defines the logical behavior of the switching signal.<br><i>High active</i><br><i>Low active</i>  | Y  | FA |
|                                  | .2 Mode                            | rw     | UInteger  | 8 bit  | 16       | 0       | 0<br>1<br>2<br>3           |         | Defines the evaluation mode for the switching signal.<br><i>Deactivated</i><br><i>Single point</i><br><i>Window</i><br><i>Two point</i> | Y  | FA |
|                                  | .3 Hyst                            | rw     | Integer   | 16 bit | 0        | 0       | 0 ..<br>2 <sup>15</sup> -1 |         | Defines the hysteresis at the switchpoint. A higher hysteresis may help to improve the stability in critical applications.              | Y  | FA |
| 68 (0x44)                        | SSC.2 Param – Velocity (Shaft) RPM | rw     | Record    | 8 byte |          |         |                            |         | Defines the setpoint values for switching signal channel 2. The evaluation is based on rotational speed RPM.                            | Y  | FA |
|                                  | .1 SP1                             | rw     | Integer   | 32 bit | 32       | 0       | 0 ..<br>2 <sup>31</sup> -1 | 0.1 rpm | Defines the setpoint 1 value for the switching signal channel.  | Y  | FA |
|                                  | .2 SP2                             | rw     | Integer   | 32 bit | 0        | 0       | 0 ..<br>2 <sup>31</sup> -1 | 0.1 rpm | Defines the setpoint 2 value for the switching signal channel.  | Y  | FA |
| 69 (0x45)                        | SSC.2 Param – Velocity (Shaft) CPS | rw     | Record    | 8 byte |          |         |                            |         | Defines the setpoint values for switching signal channel 2. The evaluation is based on rotational speed CPS.                            | Y  | FA |
|                                  | .1 SP1                             | rw     | Integer   | 32 bit | 32       | 0       | 0 ..<br>2 <sup>31</sup> -1 | 1/s     | Defines the setpoint 1 value for the switching signal channel.  | Y  | FA |
|                                  | .2 SP2                             | rw     | Integer   | 32 bit | 0        | 0       | 0 ..<br>2 <sup>31</sup> -1 | 1/s     | Defines the setpoint 2 value for the switching signal channel.  | Y  | FA |

| Parameterization & Configuration |                                     |        |           |        |          |            |                  |      |  |    |    |
|----------------------------------|-------------------------------------|--------|-----------|--------|----------|------------|------------------|------|--|----|----|
| Index<br>.sub                    | Parameter                           | Access | Data type | Length | Bitoffs. | Default    | Value            | Unit | Description  | DS | R  |
| 70 (0x46)                        | SSC.2 Config – Velocity (Shaft)     | rw     | Record    | 4 byte |          |            |                  |      | Defines the configuration parameter for switching signal channel 2.  | Y  | FA |
|                                  | Logic                               | rw     | UInteger  | 8 bit  | 8        | 0          | 0<br>1           |      | Defines the logical behavior of the switching signal.<br><i>High active</i><br><i>Low active</i>   | Y  | FA |
|                                  | Mode                                | rw     | UInteger  | 8 bit  | 0        | 0          | 0<br>1<br>2<br>3 |      | Defines the evaluation mode for the switching signal.<br><i>Deactivated</i><br><i>Single point</i><br><i>Window</i><br><i>Two point</i>  | Y  | FA |
| 80 (0x50)                        | DSC1 Param - Temperature            | rw     | Record    | 4 byte |          |            |                  |      | Defines the thresholds for temperature warnings in the diagnosis signal channel 1.   | Y  | FA |
|                                  | High Limit                          | rw     | Integer   | 16 bit | 16       | 70         | -45 .. 90        | °C   | Defines the upper temperature threshold. At ambient temperatures above this limit, the diagnosis flag 'DSC1.1 - Temperature Warning' in the process data is activated. An event is triggered, if enabled.            | Y  | FA |
|                                  | Low Limit                           | rw     | Integer   | 16 bit | 0        | -30        | -45 .. 90        | °C   | Defines the lower temperature threshold. At ambient temperatures below this limit, the diagnosis flag 'DSC1.2 - Temperature Warning' in the process data is activated. An event is triggered, if enabled.            | Y  | FA |
| 81 (0x51)                        | DSC1 Config - Temperature           | rw     | Record    | 4 byte |          |            |                  |      | Defines the configuration parameter for diagnosis signal channel 1.  | Y  | FA |
|                                  | Logic                               | rw     | UInteger  | 8 bit  | 24       | 0          | 0<br>1           |      | Defines the logical behavior of the switching signal.<br><i>High active</i><br><i>Low active</i>   | Y  | FA |
|                                  | Mode                                | rw     | UInteger  | 8 bit  | 16       | 0          | 0<br>1<br>2      |      | Defines the evaluation behavior of the diagnosis signal channel 1.<br><i>Deactivated</i><br><i>High limit active</i><br><i>High and low limit active</i>   | Y  | FA |
|                                  | Hyst                                | rw     | Integer   | 16 bit | 0        | 0          | 0 .. 20          | °C   | Defines the hysteresis at the temperature thresholds.  | Y  | FA |
| 96 (0x60)                        | Config - ST Resolution              | rw     | UInteger  | 16 bit |          | $2^{16}-1$ | 0 .. $2^{16}-1$  |      | Defines the single-turn resolution in counts per revolution.   | Y  | FA |
| 97 (0x61)                        | Config - Rotation Direction         | rw     | UInteger  | 8 bit  |          | 0          | 0<br>1           |      | Defines the counting direction for the position - clockwise: position increases on clockwise rotation / counter clockwise: position decreases on clockwise rotation.<br><i>Clockwise</i><br><i>Counter clockwise</i> | Y  | FA |
| 99 (0x63)                        | Config - Position Preset            | rw     | Integer   | 32 bit |          | 0          | 0 .. $2^{31}-1$  |      | Defines the preset value, which is set for the current position on trigger of the command 'Position Preset'. Resolution is in counts.  | Y  | FA |
| 101 (0x65)                       | Config MDC2 - Auxiliary Measurement | rw     | UInteger  | 8 bit  |          | 0          | 0<br>1<br>2      |      | Defines the source for the auxiliary measurement channel MDC2.<br><i>Deactivated</i><br><i>Temperature</i><br><i>Velocity (Shaft)</i>  | Y  | FA |

| Parameterization & Configuration |  |        |                      |        |          |         |                                      |      |   |    |    |
|----------------------------------|--|--------|----------------------|--------|----------|---------|--------------------------------------|------|---|----|----|
| Index<br>.sub                    | Parameter                                    | Access | Data type            | Length | Bitoffs. | Default | Value                                | Unit | Description   | DS | R  |
| 102<br>(0x66)                    | Config - Velocity (Shaft)<br>Evaluation Unit | rw     | UInteger             | 8 bit  |          | 0       | 0<br>1                               |      | Defines the base unit for velocity evaluation. Based on this setting, the parameter sets for setpoints used for evaluation of the switching signal SSC2 and the evaluation unit for the auxiliary measurement channel MDC2 ("Velocity (Shaft)") are selected.<br><br><i>RPM</i><br><i>CPS</i>   | Y  | FA |
| 104<br>(0x68)                    | Config - Velocity (Shaft)<br>Filter          | rw     | UInteger             | 8 bit  |          | 0       | 0<br>1<br>2                          |      | Defines the number of measurement cycles for averaging velocity measurement values.<br><br><i>10 cycles</i><br><i>100 cycles</i><br><i>1000 cycles</i>  | Y  | FA |
| 112<br>(0x70)                    | PD Output Config                             | rw     | Record <sup>SO</sup> | 1 byte |          |         |                                      |      | Allows enabling or disabling specific functions controlled over PD Output.  | Y  | FA |
|                                  | .1 Position Preset                           | rw     | Boolean              | 1 bit  | 0        | 0       | 0<br>1                               |      | Enabled: Trigger of the position preset function over process data output is possible. On a 0->1 transition the position preset value is applied to the current position value.<br><br><i>Disabled</i><br><i>Enabled</i>  | Y  | FA |
| 113<br>(0x71)                    | I/O Config - I/Q Type                        | rw     | UInteger             | 8 bit  |          | 0       | 0<br>1                               |      | Defines the output or input type at I/Q, pin 2.<br>If the type input is selected, a position preset can be triggered with a 50 ms pulse.<br><br><i>Binary output / push-pull</i><br><i>Input high-active (function Preset)</i>  | Y  | FA |
| 117<br>(0x75)                    | I/O Config - Output<br>Function              | rw     | UInteger             | 8 bit  |          | 0       | 0<br>1<br>2<br>3<br>4<br>5<br>6<br>7 |      | Defines the output function at I/Q, pin 2.<br><br><i>Inactive (constant)</i><br><i>SSC1.1 - Switch. Signal Position</i><br><i>SSC1.2 - Switch. Signal Position</i><br><i>SSC2 - Sw. Sig. Velocity (Shaft)</i><br><i>reserved</i><br><i>DSC1.1 or DSC1.2 - Temp. Warn.</i><br><i>DSC1.1 - Temperature Warning</i><br><i>DSC1.2 - Temperature Warning</i> | Y  | FA |
| 120<br>(0x78)                    | Event Config                                 | rw     | Record <sup>SO</sup> | 2 byte |          |         |                                      |      | Defines which event sources can trigger events.   | Y  | FA |
|                                  | .1 Position Channel 1<br>Diagnosis           | rw     | Boolean              | 1 bit  | 0        | 0       | 0<br>1                               |      | Enabled: an event is generated, if the position value is outside the configured application specific position limits for channel 1.<br><br><i>Disabled</i><br><i>Enabled</i>  | Y  | FA |
|                                  | .2 Position Channel 2<br>Diagnosis           | rw     | Boolean              | 1 bit  | 1        | 0       | 0<br>1                               |      | Enabled: an event is generated, if the position value is outside the configured application specific position limits for channel 2.<br><br><i>Disabled</i><br><i>Enabled</i>  | Y  | FA |
|                                  | .3 Temperature Diagnosis                     | rw     | Boolean              | 1 bit  | 2        | 0       | 0<br>1                               |      | Enabled: an event is generated, if the detected temperature is outside the configured application specific temperature limits.<br><br><i>Disabled</i><br><i>Enabled</i>   | Y  | FA |
|                                  | .4 Velocity (Shaft) diagnosis                | rw     | Boolean              | 1 bit  | 3        | 0       | 0<br>1                               |      | Enabled: an event is generated, if the detected velocity (shaft) is outside the configured application specific velocity (shaft) limits.<br><br><i>Disabled</i><br><i>Enabled</i>   | Y  | FA |



| Observation   |   |        |                      |         |          |         |                       |                      |   |    |    |
|---------------|---|--------|----------------------|---------|----------|---------|-----------------------|----------------------|---|----|----|
| Index<br>.sub | Parameter                                       | Access | Data type            | Length  | Bitoffs. | Default | Value                 | Unit                 | Description   | DS | R  |
| 36 (0x24)     | Device Status                                   | ro     | UInteger             | 8 bit   |          | 0       | 0<br>1<br>2<br>3<br>4 |                      | Indicator for the current device condition and diagnosis state.<br><i>Device is OK</i><br><i>Maintenance required</i><br><i>Out of Specification</i><br><i>Functional check</i><br><i>Failure</i> |    | FA |
| 236 (0xEC)    | Observation Data                                | ro     | Record <sup>S0</sup> | 21 byte |          |         |                       |                      | Provides a set of relevant data suitable for observation purposes.  |    |    |
| .1            | MDC1 – Position                                 | ro     | Integer              | 32 bit  | 136      | 0       | POS<br>value          |                      | Indicates the current position value.   |    |    |
| .2            | MDC1 – ST Resolution                            | ro     | Integer              | 16 bit  | 120      | 0       | STR<br>value          |                      | Indicates the current resolution of the position value.   |    |    |
| .3            | MDC2 – Temperature                              | ro     | Integer              | 32 bit  | 88       | 0       | TEMP<br>value         | °C                   | Indicates the current approximated ambient temperature value.   |    |    |
| .4            | MDC2 – Velocity (Shaft)                         | ro     | Integer              | 32 bit  | 56       | 0       | VEL<br>value          | 0.1<br>rpm<br>or 1/s | Indicates the current velocity (shaft) value.   |    |    |
| .17           | reserved  |        |                      |         | 48       |         |                       |                      |   |    |    |
| .16           | SSC.2 –<br>Switching Signal Velocity<br>(Shaft) | ro     | UInteger             | 8 bit   | 40       | 0       | 0<br>1                |                      | Indicates the current status of the switching signal 2.<br><br><i>Low</i><br><i>High</i>  |    |    |
| .15           | DSC1.2 –<br>Temperature Warning                 | ro     | UInteger             | 8 bit   | 32       | 0       | 0<br>1                |                      | Indicates that the configured temperature threshold has been undershot.<br><br><i>Low</i><br><i>High</i>  |    |    |
| .14           | DSC1.1 –<br>Temperature Warning                 | ro     | UInteger             | 8 bit   | 24       | 0       | 0<br>1                |                      | Indicates that the configured temperature threshold has been exceeded.<br><br><i>Low</i><br><i>High</i>   |    |    |
| .13           | Status –<br>Count Direction                     | ro     | UInteger             | 8 bit   | 16       | 0       | 0<br>1                |                      | Indicates the current status of the direction of position count.<br><br><i>Increase</i><br><i>Decrease</i>  |    |    |
| .12           | SSC1.2 –<br>Switching Signal Position           | ro     | UInteger             | 8 bit   | 8        | 0       | 0<br>1                |                      | Indicates the current status of the switching signal 1.2.<br><br><i>Low</i><br><i>High</i>  |    |    |
| .11           | SSC1.1 –<br>Switching Signal Position           | ro     | UInteger             | 8 bit   | 0        | 0       | 0<br>1                |                      | Indicates the current status of the switching signal 1.1.<br><br><i>Low</i><br><i>High</i>  |    |    |

NOTE 1: 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 'Restore Factory Settings'.

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

NOTE 2: 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

| <i>Index/sub</i> | <i>Parameter</i> | <i>Access</i> | <i>Data type</i> | <i>Length</i> | <i>Value</i>      | <i>Description</i>  |
|------------------|------------------|---------------|------------------|---------------|-------------------|---|
| 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. |

| <i>Command Value</i> | <i>Command</i>           | <i>Description</i>  |
|----------------------|--------------------------|---|
| 129 (0x81)           | Application Reset        | The parameters 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. |
| 130 (0x82)           | Restore Factory Settings | The parameters of the device are reset to factory settings. Note: A download of the data storage may be executed on the next power cycle and overwrite the factory default settings!  |
| 170 (0xA0)           | Position Preset          | The position value at the current position is set to the position preset value.   |

## Error Codes

| <i>Code</i> | <i>Additional code</i> | <i>Name</i>  | <i>Description</i>  |
|-------------|------------------------|--|---|
| 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

| <i>Code</i>    | <i>Type</i> | <i>Name</i>   | <i>Description</i>   |
|----------------|-------------|---|--|
| 36163 (0x8d43) | Warning     | Ambient temperature outside specified temperature range | Check device environment.  |
| 36176 (0x8d50) | Warning     | Position channel 1 diagnosis                            | Position value outside configured application specific position limits for channel 1. Check adjustment or application. |
| 36177 (0x8d51) | Warning     | Position channel 2 diagnosis                            | Position value outside configured application specific position limits for channel 2. Check adjustment or application. |
| 36178 (0x8d52) | Warning     | Temperature diagnosis                                   | Temperature exceeds configured application specific temperature limits. Check environment or application.              |
| 36179 (0x8d53) | Warning     | Velocity (shaft) diagnosis                              | Velocity exceeds configured application specific velocity limit. Check adjustment or application.                      |