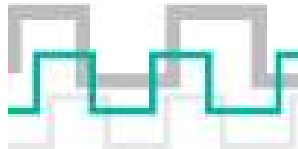


**IXARC ABSOLUTE MAGNETIC ROTARY ENCODER  
WITH IO-LINK + INCREMENTAL INTERFACE**



**+**

**Incremental**



**USER MANUAL**

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## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

### General Security Advice

#### Important Information

Read these instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

#### Warning

Electrical equipment should be serviced only by qualified personnel. No responsibility is assumed by POSITAL for any consequences arising out of the use of this material. This document is not intended as an instruction manual for untrained people.

### About this Manual

#### Background

This user manual describes how to install and configure an IXARC absolute rotary encoder with IO-Link interface.

#### Release Note

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#### User Annotation

The FRABA GmbH welcomes all readers to send us feedback and comments about this document. You can reach us by e-mail at [info@posital.eu](mailto:info@posital.eu)

## **IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE**

### **Introduction**

This manual explains how to install and configure the IXARC absolute rotary encoder with IO-Link interface. Magnetic rotary encoders determine positions using the Hall effect sensor technology developed for the automotive mass market. A permanent magnet fixed to the shaft generates a magnetic field that is sampled by the Hall sensor, which translates the measured value into a unique absolute position value. To register revolutions even when no voltage is applied, energy from the turning of the shaft must suffice for proper operation. An innovative, patented technology makes this feasible even at low rotational speeds and through long standstill periods – a Wiegand wire ensures that the magnetic field can only follow the turning of the shaft in discrete steps. A coil wound on the Wiegand wire receives only brief, strong voltage. This description is not intended to replace the documentation for the product concerned.

### **General Information**

Hazardous voltage and mechanisms, death, or serious injury due to electrical shock, burns and entanglement in moving parts, or property damage will result if safety instructions in the documentation are not followed. Do not service or touch until you have de-energized high voltage, grounded all terminals and turned off the control voltage. If the pertinent documentation is not in your hands, please ask for it by using the order key in the product catalog or contact your FRABA POSITAL contact person. Only proper trained staff aware of local safety regulations is allowed to commission and operate, or to work on and around this product after procedures contained in the documentation. Before touching electronic assemblies make sure static charges are eliminated by touching an earthed component.

#### **Typical Applications:**

- Factory Automation
- Process Automation
- Production Machinery
- Packaging Machinery

## **IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE**

### **Installation**

Instructions to mechanically install and electrically connect the angular encoder



Do not remove or mount the connector while the encoder is powered on!



Do not stand on the encoder!



Do not adapt the driving shaft additionally!



Avoid mechanical load!



Do not adapt the housing additionally!

## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

### Technical Data

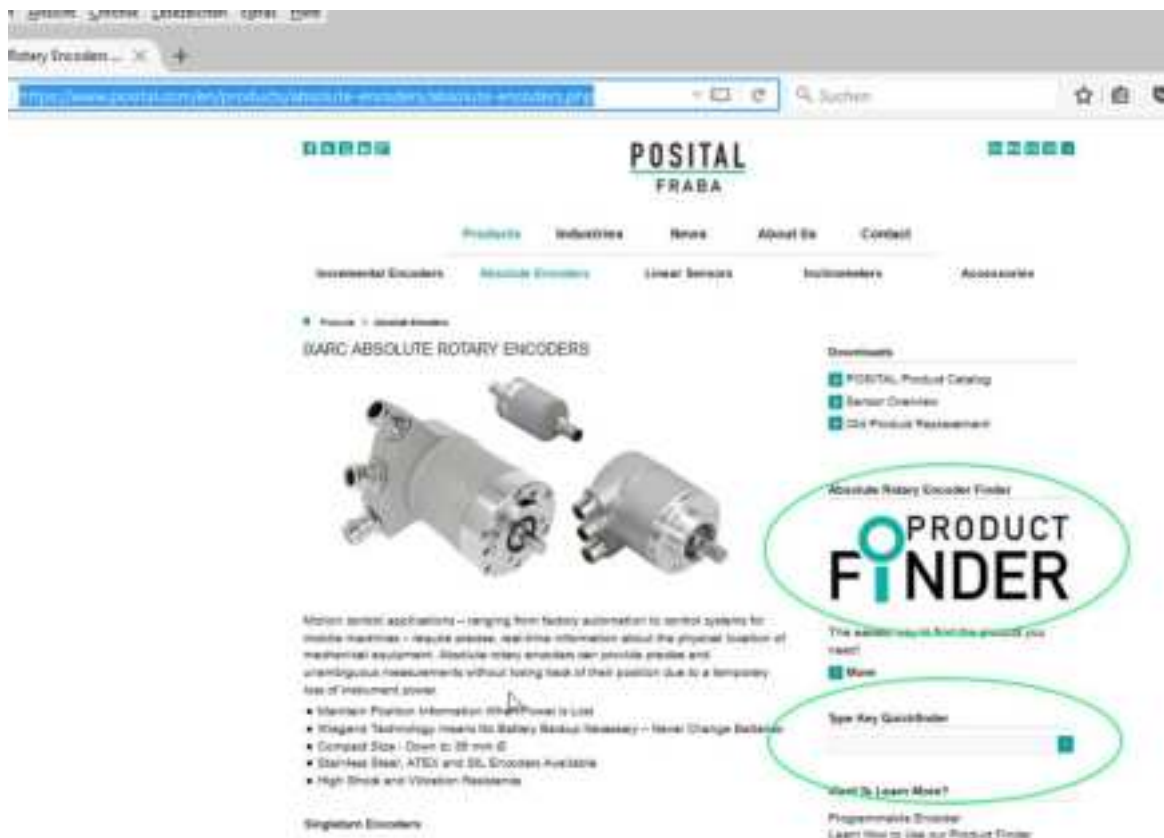
For technical data regarding

- Interface
- Electrical Data
- Sensor Data
- Environmental Condition
- Mechanical Data
- Connection Plan

please refer to the website [www.posital.com](http://www.posital.com).

Under 'Products' -> 'Absolute Encoders' you can either

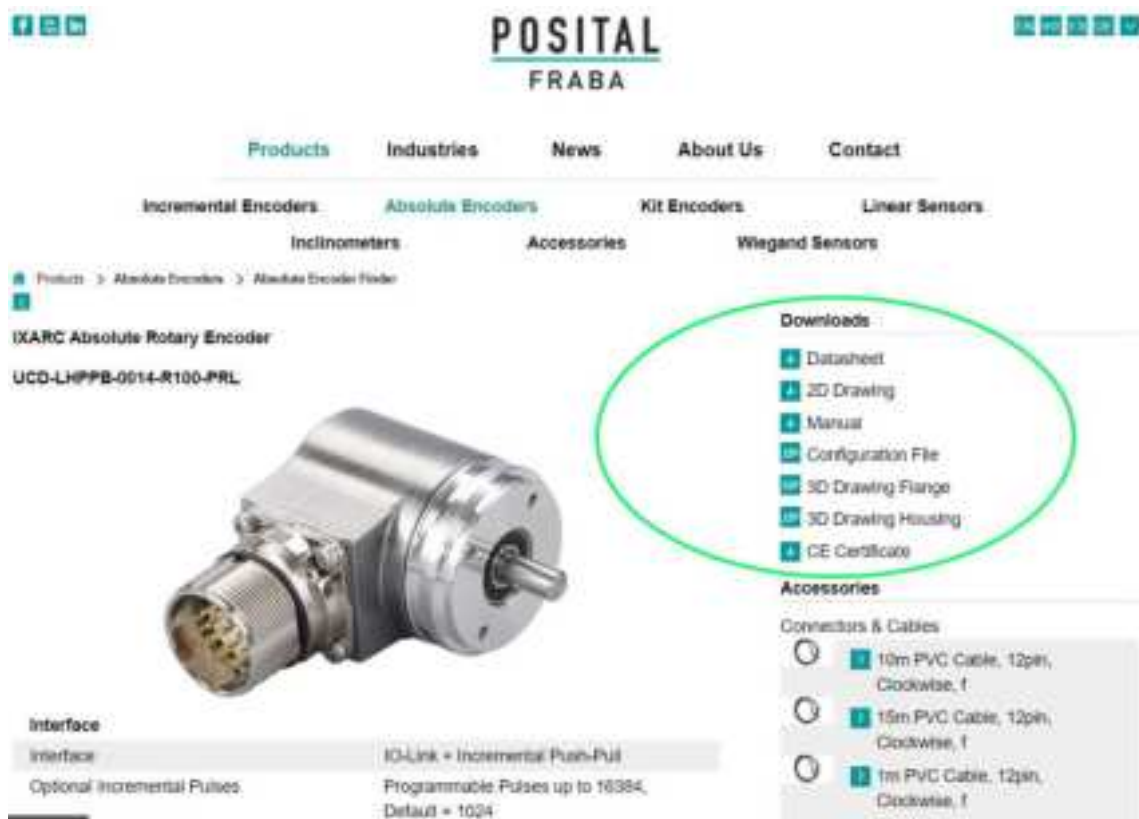
- Use Type Key Quickfinder to directly enter a complete type key of a specific product variant or
- Click on Product Finder to filter for product variants



## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

On the product variant detail page you can find additional relevant informations as direct download like:

- Mechanical Drawings
- Datasheet
- Manual (this document)
- Configuration File (IODD - IO-Link device description file)



By using website information you have the great advantage of actual information for the specific

product holding in your hands out of a portfolio of more than one million products.

## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

The encoder contains an IO-Link interface and an incremental interface. If connected to an IO-Link master the encoder will work as an absolute singleturn IO-Link encoder. Connecting the same encoder to any incremental PLC or similar device the encoder will function as an incremental encoder outputting incremental pulses. The incremental interface can be configured via IO-Link. To connect the encoder to an IO-Link master an adapter cable might be needed depending on the connection exit of the encoder. The adapter cable can be purchased separately from Posital.

### Pinout overview

| Connection Exit                         | Pin / Wire | IO-Link   | Incremental | Adapter cable pinout 4-pin male |
|-----------------------------------------|------------|-----------|-------------|---------------------------------|
| <b>M12, 5pin</b>                        | 1          | L+        | Ub          |                                 |
|                                         | 2          | nc        | A           |                                 |
|                                         | 3          | L-        | GND         | No adapter needed               |
|                                         | 4          | IO-Link   | Z           |                                 |
|                                         | 5          | nc        | B           |                                 |
|                                         | Screen     | Connector | Connector   |                                 |
| <b>M12, 8pin<br/>Article# 10056665</b>  | 1          | L-        | GND         | 3                               |
|                                         | 2          | L+        | Ub          | 1                               |
|                                         | 3          | nc        | A           |                                 |
|                                         | 4          | nc        | /A          |                                 |
|                                         | 5          | nc        | B           |                                 |
|                                         | 6          | nc        | /B          |                                 |
|                                         | 7          | IO-Link   | Z           | 4                               |
|                                         | 8          | nc        | /Z          |                                 |
|                                         | Screen     | Connector | Connector   |                                 |
| <b>M23 12-pin<br/>Article# 10056666</b> | 1          | nc        | /B          |                                 |
|                                         | 2          | nc        | nc          |                                 |
|                                         | 3          | IO-Link   | Z           | 4                               |
|                                         | 4          | nc        | /Z          |                                 |
|                                         | 5          | nc        | A           |                                 |
|                                         | 6          | nc        | /A          |                                 |
|                                         | 7          | nc        | nc          |                                 |
|                                         | 8          | nc        | B           |                                 |
|                                         | 9          | nc        | nc          |                                 |
|                                         | 10         | L-        | GND         | 3                               |
|                                         | 11         | nc        | nc          |                                 |
|                                         | 12         | L+        | Ub          | 1                               |

## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

| Connection Exit                                      | Pin / Wire | IO-Link | Incremental | Adapter cable<br>pinout 4-pin male |
|------------------------------------------------------|------------|---------|-------------|------------------------------------|
| <b>Cable 5-wire</b><br><b>Article# 10056669</b>      | Brown      | L+      | Ub          | 1                                  |
|                                                      | White      | L-      | GND         | 3                                  |
|                                                      | Grey       | nc      | B           |                                    |
|                                                      | Blue       | IO-Link | Z           | 4                                  |
|                                                      | Green      | nc      | A           |                                    |
|                                                      | Screen     | Housing | Housing     |                                    |
| <b>Cable 8-wire</b><br><b>Article# 10056669</b>      | Brown      | L+      | Ub          | 1                                  |
|                                                      | White      | L-      | GND         | 3                                  |
|                                                      | Grey       | nc      | B           |                                    |
|                                                      | Blue       | IO-Link | Z           | 4                                  |
|                                                      | Red        | nc      | /Z          |                                    |
|                                                      | Green      | nc      | A           |                                    |
|                                                      | Yellow     | nc      | /A          |                                    |
|                                                      | Pink       | nc      | /B          |                                    |
|                                                      | Screen     | Housing | Housing     |                                    |
| <b>MIL 7-pin (MS16)</b><br><b>Article# 10056668</b>  | A          | nc      | A           |                                    |
|                                                      | B          | nc      | B           |                                    |
|                                                      | C          | IO-Link | Z           | 4                                  |
|                                                      | D          | L+      | Ub          | 1                                  |
|                                                      | E          | nc      | nc          |                                    |
|                                                      | F          | L-      | GND         | 3                                  |
|                                                      | G          | nc      | nc          |                                    |
| <b>MIL 10-pin (MS18)</b><br><b>Article# 10056667</b> | A          | nc      | A           |                                    |
|                                                      | B          | nc      | B           |                                    |
|                                                      | C          | IO-Link | Z           | 4                                  |
|                                                      | D          | L+      | Ub          | 1                                  |
|                                                      | E          | nc      | nc          |                                    |
|                                                      | F          | L-      | GND         | 3                                  |
|                                                      | G          | nc      | nc          |                                    |
|                                                      | H          | nc      | /A          |                                    |
|                                                      | I          | nc      | /B          |                                    |
|                                                      | J          | nc      | /Z          |                                    |

## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

### IO-Link index overview

The following tables list all applicable IO-Link indices.

| Standard Parameter - Identification |       |     |           |
|-------------------------------------|-------|-----|-----------|
| Parameter                           | Index | Sub | Data Type |
| Vendor Name                         | 16    | 0   | String    |
| Vendor Text                         | 17    | 0   | String    |
| Product Name                        | 18    |     | String    |
| Product ID                          | 19    |     | String    |
| Product Text                        | 20    | 0   | String    |
| Serial Number                       | 21    |     | String    |
| HW Revision                         | 22    |     | String    |
| FW Revision                         | 23    |     | String    |
| Application Specific Tag            | 24    |     | String    |

| Configuration           |       |     |                                                                                               |                        |                                      |            |           |               |
|-------------------------|-------|-----|-----------------------------------------------------------------------------------------------|------------------------|--------------------------------------|------------|-----------|---------------|
| Parameter               | Index | Sub | Comments                                                                                      | Default                | Min                                  | Max        | Data Type | Length [Bits] |
| Resolution              | 96    | 0   | Position values / pulses per turn                                                             | 1024                   | 1                                    | 16384      | Integer   | 16            |
| Counting Direction      | 97    | 0   | Counting direction seen on shaft                                                              | 0: CW A before B       | 0: CW A before B<br>1: CW B before A |            | Integer   | 8             |
| Incremental Output Mode | 113   | 0   | Incremental output mode                                                                       | UCD-LT: 0<br>UCD-LH: 1 | 0: TTL<br>1: HTL                     |            | Integer   | 8             |
| Operating Hours         | 224   | 0   | Counter of the operating hours since delivery, minimum operation period counted is 15 minutes |                        | 0                                    | 4294967295 | Integer   | 32            |

## IXARC ABSOLUTE MAGNETIC ROTARY ENCODER WITH IO-LINK + INCREMENTAL INTERFACE

| Standard Parameter - System |       |     |                                                                                                                                          |         |     |     |           |               |
|-----------------------------|-------|-----|------------------------------------------------------------------------------------------------------------------------------------------|---------|-----|-----|-----------|---------------|
| Parameter                   | Index | Sub | Comments                                                                                                                                 | Default | Min | Max | Data Type | Length [Bits] |
| <b>System Command</b>       | 2     | 0   | (1) Upload start<br>(2) Upload end<br>(3) Download start<br>(4) Download end<br>(5) Store<br>(6) Break<br>(130) Restore factory settings |         |     |     | UInteger  | 8             |

| Events        |                                   |                                                            |            |
|---------------|-----------------------------------|------------------------------------------------------------|------------|
| Code          | Event Name                        | Comment                                                    | Event Type |
| <b>0x8011</b> | Index not available               | R/W access to not implemented parameter index              | Error      |
| <b>0x8012</b> | Subindex not available            | R/W access to not implemented parameter subindex           | Error      |
| <b>0x8020</b> | Service temporarily not available | Access to parameter not possible due to device state       | Error      |
| <b>0x8023</b> | Access denied                     | Write access to Read-only parameter                        | Error      |
| <b>0x8030</b> | Parameter value out of range      | Used for all R/W parameters, if value other than listed    | Error      |
| <b>0x8031</b> | Parameter value above limit       | Used for all R/W parameters, if value above value range    | Error      |
| <b>0x8032</b> | Parameter value below limit       | Used for all R/W parameters, if value below value range    | Error      |
| <b>0x8033</b> | Parameter length overrun          | Used for all R/W parameters, if parameter length exceeded  | Error      |
| <b>0x8034</b> | Parameter length underrun         | Used for all R/W parameters, if parameter length too small | Error      |
| <b>0x8035</b> | Function not available            | Access to command, which is not supported                  | Error      |