POSITAL Ixarc Absolute Magnetic Rotary Encoder User Manual

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USER MANUAL

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.

About this Manual

Background

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

Release Note

Version date: 2020-09-22
Version number: 1.0

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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.

Copyright

User Annotation

The FRABA GmbH welcomes all readers to send us feedback and commands about this document. You can reach us by e-mail at **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.

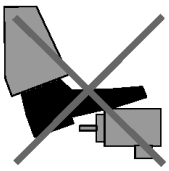
Typical Applications:

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

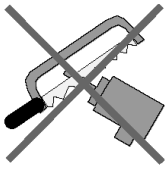
Installation

Instructions to mechanically install and electrically connect the angular encoder

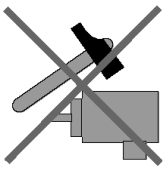
Do not remove or mount the connector while the encoder is powered on!



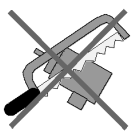
Do not stand on the encoder!



Do not adapt the driving shaft additionally!



Avoid mechanical load!



Do not adapt the housing additionally!

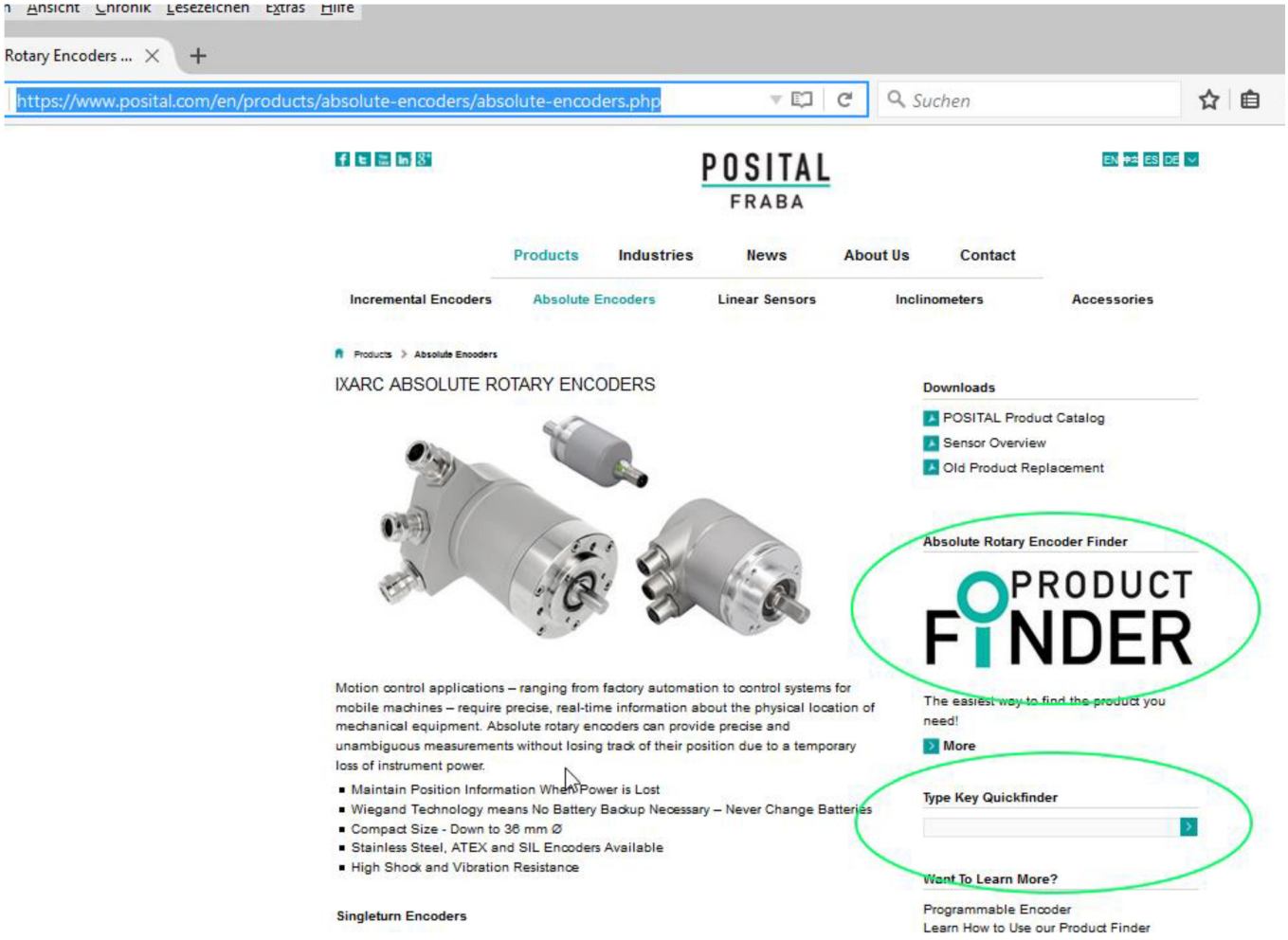
Technical Data

For technical data regarding

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

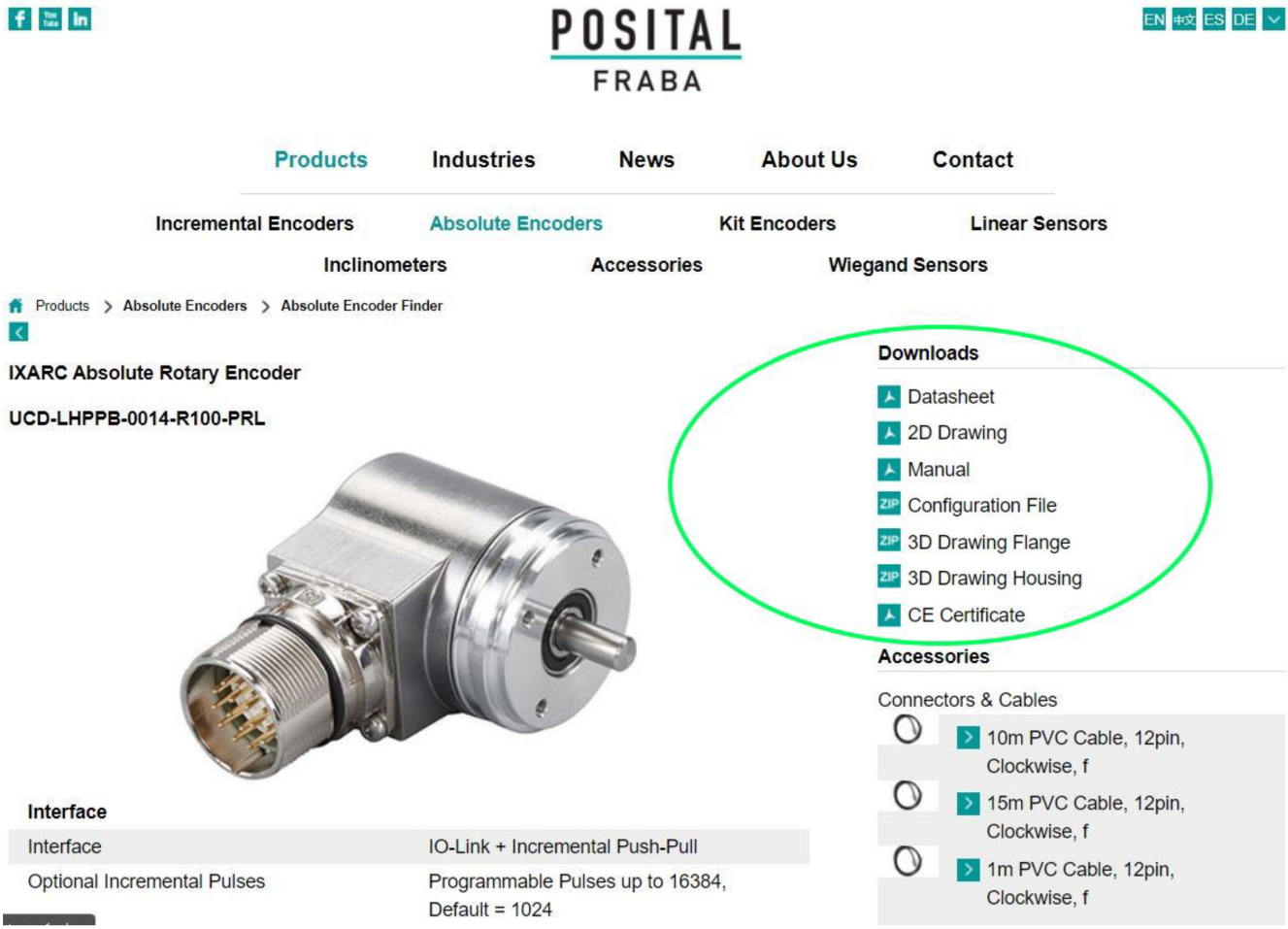
Please refer to the website www.posital.com. Under ‘Products’ -> ‘Absolute Encoders’ you can either

– 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



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)



The encoder contains an IO-Link interface and an incremental interface. If connected to an IO-Link master ther 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 is might 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
M12, 5pin	1	L+	Ub	
	2	nc	A	
	3	L-	GND	No adapter needed
	4	IO-Link	Z	
	5	nc	B	
	Screen	Connector	Connector	
M12, 8pin Article# 10056665	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	
M23 12-pin Article# 10056666	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

Connection Exit	Pin / Wire	IO-Link	Incremental	Adapter cable pinout 4-pin male
Cable 5-wire Article# 10056669	Brown	L+	Ub	1
	White	L-	GND	3
	Grey	nc	B	
	Blue	IO-Link	Z	4
	Green	nc	A	
	Screen	Housing	Housing	
Cable 8-wire Article# 10056669	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	
MIL 7-pin (MS16) Article# 10056668	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	
MIL 10-pin (MS18) Article# 10056667	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	

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 1: CW B before A		Integer	8
Incremental Output Mode	113	0	Incremental output mode	UCD-LT: 0 UCD-LH: 1	0: TTL 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]
System Command	2	0	(1) Upload start (2) Upload end (3) Download start (4) Download end (5) Store (6) Break (130) Restore factory settings				UInteger	8

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

Specifications

- Product Name: IXARC Absolute Magnetic Rotary Encoder with IO-Link + Incremental Interface
- Manufacturer: FRABA Inc.
- Interfaces: IO-Link, Incremental
- Version: 1.1

FAQ

What interfaces does the IXARC encoder support?

The IXARC encoder supports IO-Link and Incremental interfaces for versatile connectivity.

Can untrained individuals service the electrical equipment?

No, only qualified personnel should service the electrical equipment to ensure safety and proper functioning.

Documents / Resources

	POSITAL Ixarc Absolute Magnetic Rotary Encoder [pdf] User Manual Ixarc Absolute Magnetic Rotary Encoder, Absolute Magnetic Rotary Encoder, Magnetic Rotary Encoder, Rotary Encoder, Encoder

References

- User Manual