

# POSITAL

## FRABA

### DATASHEET

#### KCD-S101B-1617-F7XU-PRQ



#### IXARC Multiturn Kit Encoder With SSI Interface

- > Kit Encoder for Integration to Motors, Robots and Machinery <sup>1</sup>
- > Mechanically Compatible to Common Broadcom and US Digital Kit Encoders<sup>2</sup>
- > Electrical Resolution: Up To 17 bit
- > Multiturn Range: 16 Bit Resolution
- > 37 mm Diameter
- > Energy-Harvesting-System Based On Wiegand Effect
- > No Battery – No Maintenance
- > Easy Installation

## 1. Interface

Interface	SSI
Programming Functions	Electronic Calibration, Counter Test
Min Interface Cycle Time	50 µs

## 2. Electrical Data

Supply Voltage	4.75-15 VDC
Power Consumption	≤ 0.3 Watt
Start-up time	Max 1 s
Clock Input	RS 422
Clock Frequency	100 kHz - 1 MHz
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes
MTTF	20 years
Max. Permissible Electrical Speed	12.000 RPM

<sup>1</sup> The use of these kit encoders for the production of industrial rotary encoders is prohibited. Applications in rotary encoders are protected by several worldwide patents (such as WO 2004/046735 A1) and require licensing.

<sup>2</sup> See separate cross reference documents.

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#### 3. Sensor

Singleturn Technology	Magnetic
Electrical Resolution Singleturn	17 bit
Multiturn Technology	Self powered magnetic pulse counter (no battery, no gear)
Multiturn Range	16 bit <sup>3</sup>
Accuracy (INL)	$\leq \pm 0.3$ Degrees <sup>4</sup>
Increasing Counting Direction (Default)	Clockwise shaft rotation (front view on shaft)

#### 4. Environmental Specifications

Protection Class	IP40
Operating Temperature	-40 °C (-40 °F) – +105 °C (221 °F)
Shock Resistance	$\leq 200$ g (half sine 6 ms, EN 60068-2-27)
Permanent Shock Resistance	$\leq 20$ g (half sine 16 ms, EN 60068-2-29)
Vibration Resistance	$\leq 30$ g (10 Hz – 1000 Hz, EN 60068-2-6)

#### 5. Mechanical Data

Housing Material	Steel
Housing Coating	Cathodic corrosion protection
Base Plate Mounting Holes	2 Pls $\varnothing 3.18$ mm [0.125"] @ 46.00mm [1.812"] Bolt Circle
Hollow Shaft Bore	8mm, 10mm, 3/8 inch
Mounting Shaft Length	11mm $\pm 0.5$ mm [0.433" $\pm 0.020$ "]

#### 6. Electrical Connection

Connection Orientation	Radial
Connector	8 pin M12

<sup>3</sup> Please contact Posital for other multiturn resolutions.

<sup>4</sup> Magnetic Rotor Assembled TIR  $\leq \pm 0.15$ mm [0.006"]. INL error can further be reduced if required, contact Posital for more information.

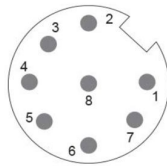
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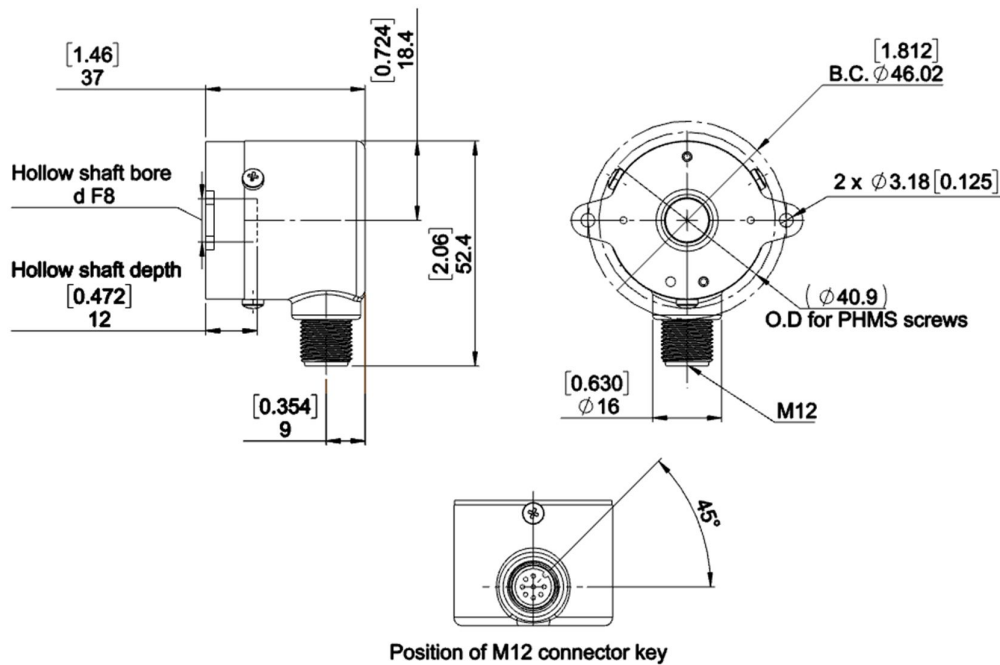
#### 7. Connection Plan



Pin	Signal
1	GND
2	Power (Vs)
3	CLK + (MA+)
4	CLK - (MA-)
5	Data + (SLO+)
6	Data - (SLO-)
7	Preset (Default 0 position value)
8	Config (Kit control box, serial communication)
Shield	Connector Housing

#### 8. Dimensional Drawing<sup>5</sup>

d = Ø8mm, Ø10mm, or Ø3/8"



<sup>5</sup>All dimension in mm [Inches]. This drawing and the information contained within is for general presentation purposes only. Please refer to the "Download" section for detailed technical drawing.

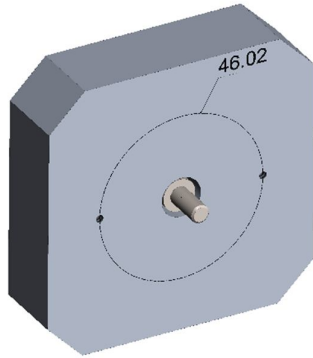
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#### 9. Mounting Requirements

**Motor Flange:**

2x #2-56 UNC, #4-40 UNC or M2.5

**Shaft:**

Ø 8mm h7 x 11.0mm (+/-0.5mm)  
Ø 10mm h7 x 11.0mm (+/-0.5mm)  
Ø 3/8 inch h7 x 11.0mm (+/-0.5mm)

#### 10. Version Space

KCD-S101B-1617-F78U-PRQ	For 8 mm Ø shaft
KCD-S101B-1617-F7AU-PRQ	For 10 mm Ø shaft
KCD-S101B-1617-F7SU-PRQ	For 3/8 mm Ø shaft

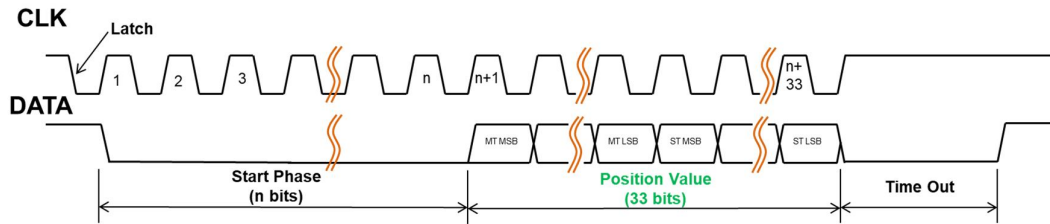
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#### 11. Interface



Interface	SSI
Software Programming Functions via Config Pin	Electronic Calibration, WIEGAND pulse test, Preset
Min Interface Cycle Time	50 $\mu$ s
SSI Time out	6 $\mu$ s
Ring Shift Mode	Not Available
SSI Data Format	Start Phase (8 start bit as "0") + Multi-Turn (16 bit) + Single-Turn (17 bit)
	For more details see manual.

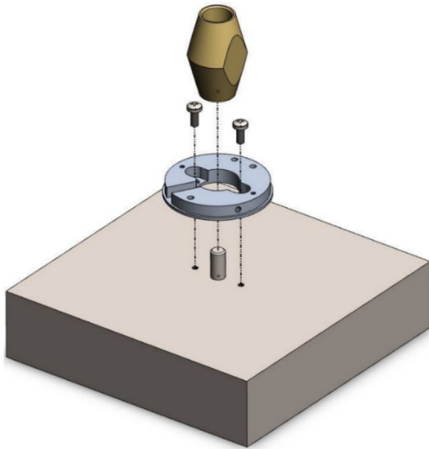
**Preset Pin:** The preset function can be used to adapt the encoder position to the mechanical alignment of the system. By performing a preset, the actual position value of the encoder (both, singleturn and multiturn) is set to the desired preset value. The preset can be triggered via hardware or software. See manual for more detailed information.

**Config Pin:** The config pin is used for serial data communication. Via this interface an optional re-calibration and WIEGAND pulse testing of the kit encoder can be conducted after motor installation. A preset value can be applied as a software command. The protocol for communication is described in the manual. As alternative a graphical user interface with a Kit Control Box can be used for easy configuration and hardware setup, see website for more details.

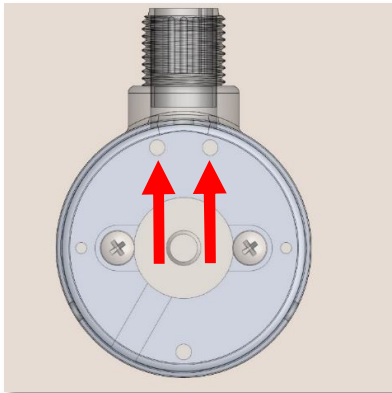
<https://www.posita.com/en/products/kit-encoders/kit-control-box.php>

## 12. Assembly Instructions

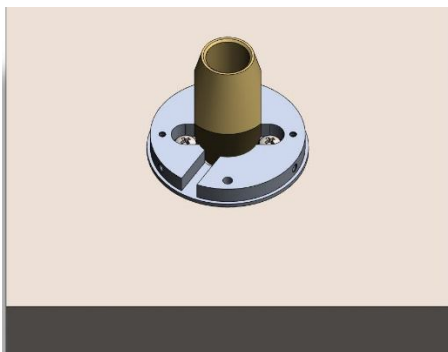
### Step 1



Slip adapter plate over shaft and use 2 screws (#2-56 UNC, #4-40 UNC or M2.5, depending on tapped holes in motor frame) to secure. Slip centering tool over shaft to center adapter plate to the shaft centerline.



For a correct flange orientation, notice the two holes shown in the image. The connector location should be always assembled relative to these two holes.



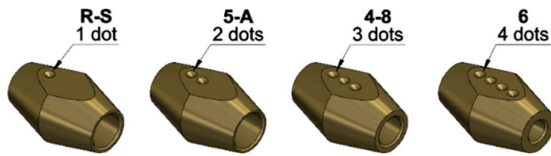
Tighten mounting screws while pushing down on the centering tool and remove centering tool. Tighten screw to a typical torque of 0.4 Nm (Actual torque value may change due to machine screw selected and base mounting material)

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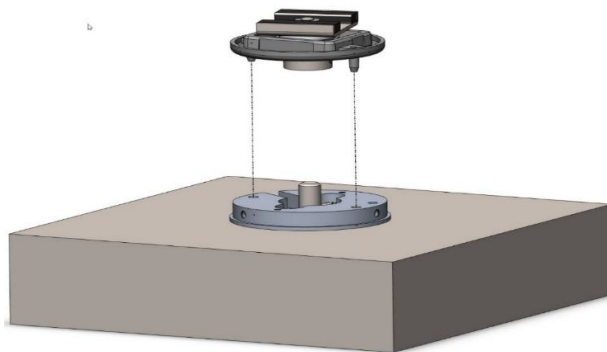
#### KCD-S101B-1617-F7XU-PRQ



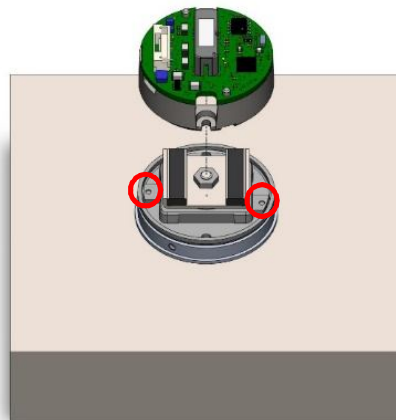
Article No.	Article Name	D1	D2	Mark
10044699	Kit-Centering-Tool-R-S	1/4"	3/8"	1 dot
10043221	Kit-Centering-Tool-5-A	5 mm	10 mm	2 dots
10046250	Kit-Centering-Tool-4-8	4 mm	8 mm	3 dots
10046251	Kit-Centering-Tool-6	6 mm	-	4 dots

Each Centering Tool is compatible with two shaft diameters and is identified by the number of dots machined into the side of the tool.

### Step 2



Slide bottom shield/magnet assembly over shaft and lock alignment pins into adapter plate. Push down bottom shield all the way so it lies flat on the adapter plate.



The alignment pin geometry is not symmetrical as shown by the red circles. Take care not to damage the pins during installation onto the adapter plate.

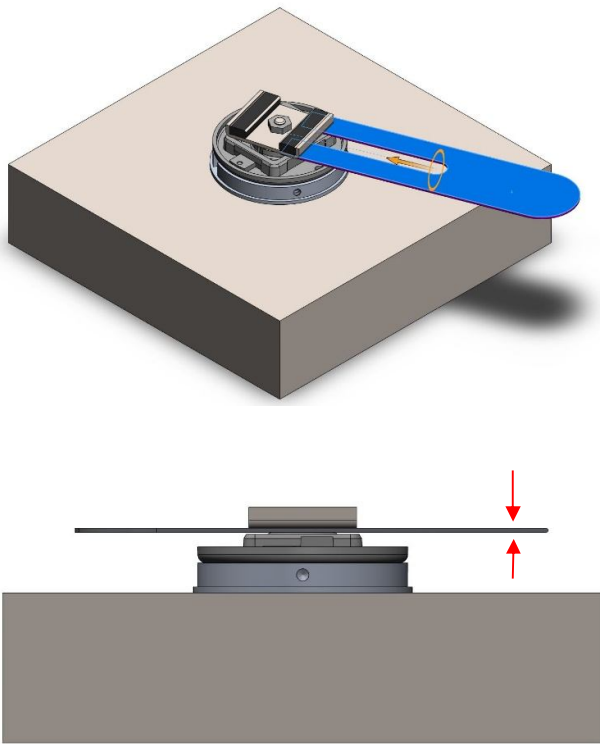
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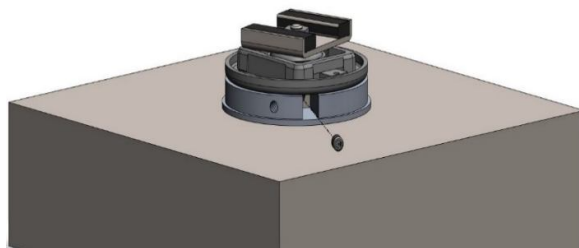
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#### Step 3



Slide gapping tool (Required thickness of 0.7mm [0.0275"]) between magnet and bottom shield. Push magnet down.

#### Step 4



Tighten both set screws with a 1.3mm [0.05"] hex key, using the channel hole in the adapter plate with a torque of 0.5 Nm.

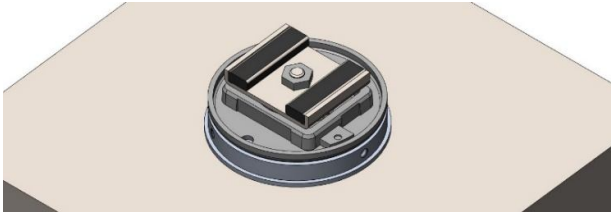
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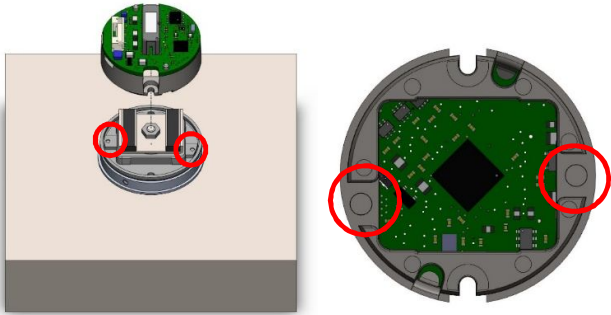
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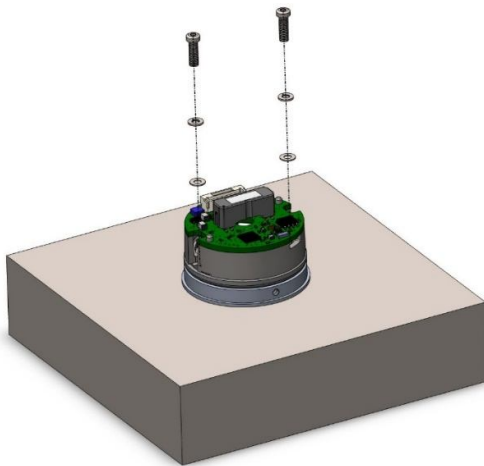
#### Step 5



Align magnet with plastic frame on the bottom shield.

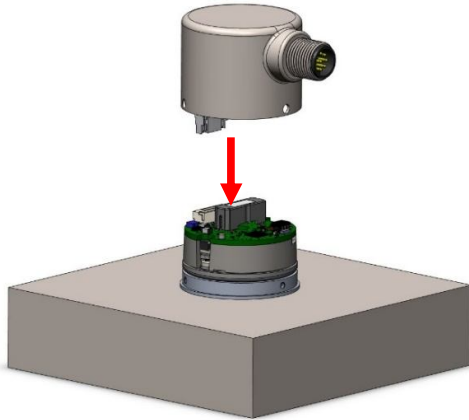


Align PCB with carrier to frame (two different keys) and push down until it locks into place.

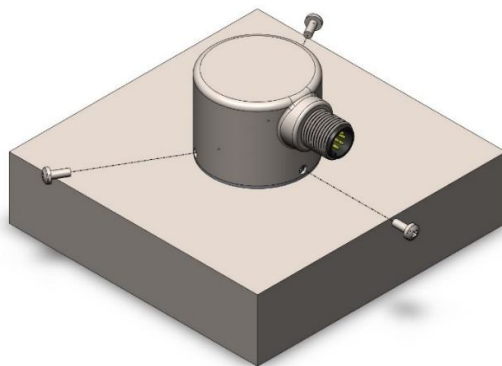


Insert two M2 screws with washers and lock washers and tighten using a Torx T6 key with a torque of 0.25 Nm.

#### Step 6



Connect housing cable assembly to the PCB by plugging the connector into the PCB.



Slide housing over adapter plate. Be careful to not pinch cable. Secure housing by tightening the three M2.5 screws using a Philips screw driver with a torque of 0.4 Nm.


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### Versions

 v1 20181220 Initial Release

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