

IXARC Multiturn Kit Encoder With BISS C Interface

- > Kit Encoder for Integration to Motors, Robots and Machinery ¹
- > Mechanically Compatible to Common Broadcom and US Digital Kit Encoders²
- > 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 | BiSS C |
| 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 - 10 MHz |
| Reverse Polarity Protection | Yes |
| Short Circuit Protection | Yes |
| MTTF | 20 years |
| Max. Permissible Electrical Speed | 12.000 RPM |

¹ 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.

² 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 ³ |
| Accuracy (INL) | $\leq \pm 0.3$ Degrees ⁴ |
| 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 | ≤ 200 g (half sine 6 ms, EN 60068-2-27) |
| Permanent Shock Resistance | ≤ 20 g (half sine 16 ms, EN 60068-2-29) |
| Vibration Resistance | ≤ 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 | 4mm, 5mm, 6mm, ¼ inch |
| Mounting Shaft Length | 6.5mm ± 0.5 mm [0.256" ± 0.020 "] |

6. Electrical Connection

| | |
|------------------------|-----------|
| Connection Orientation | Radial |
| Connector | 8 pin M12 |

³ Please contact Posital for other multiturn resolutions.

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

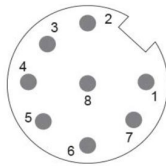
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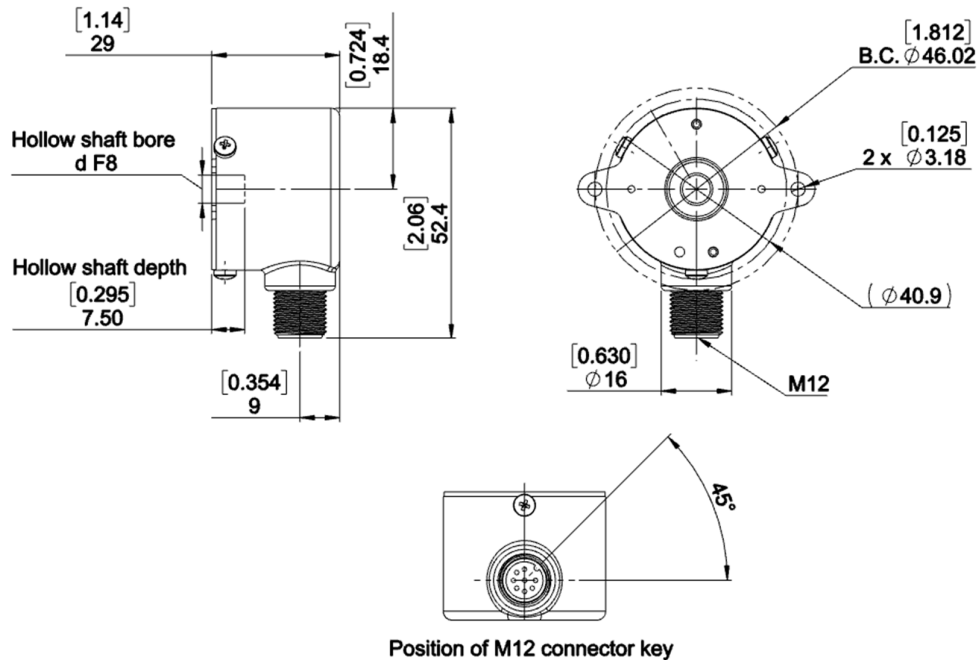
7. Connection Plan



| 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 Drawing⁵

d = Ø4mm, Ø5mm, Ø6mm or Ø1/4"



⁵All 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.

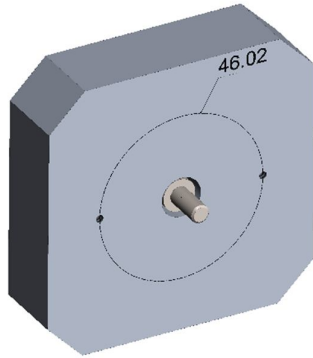
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9. Mounting Requirements

**Motor Flange:**

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

Shaft:

Ø 4mm h7 x 6.5mm (+/-0.5mm)
Ø 5mm h7 x 6.5mm (+/-0.5mm)
Ø 6mm h7 x 6.5mm (+/-0.5mm)
Ø ¼ inch h7 x 6.5mm (+/-0.5mm)

10. Version Space

| | |
|-------------------------|--------------------|
| KCD-BC01B-1617-E74U-PRQ | For 4 mm Ø shaft |
| KCD-BC01B-1617-E75U-PRQ | For 5 mm Ø shaft |
| KCD-BC01B-1617-E76U-PRQ | For 6 mm Ø shaft |
| KCD-BC01B-1617-E7RU-PRQ | For ¼ inch Ø shaft |

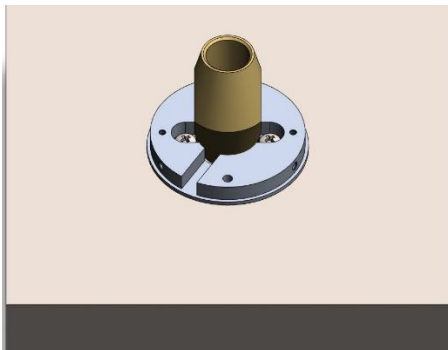
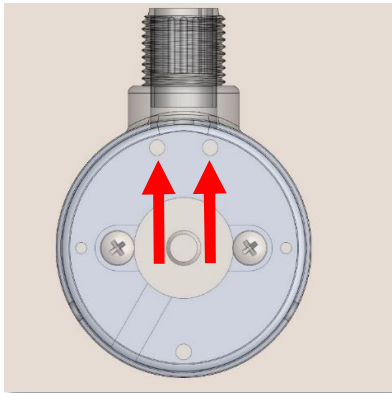
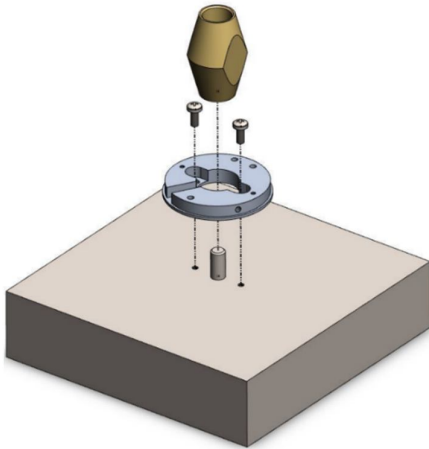
11. Interface

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.posital.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.

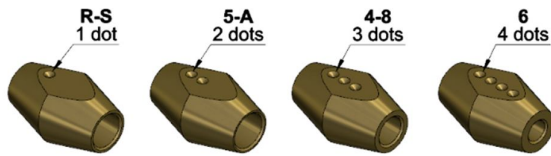
Tighten mounting screws while pushing down on the centering tool and remove centering tool. Tighten screw to a typical torque of 0.4 Nm (Actual torque value may change due to machine screw selected and base mounting material)

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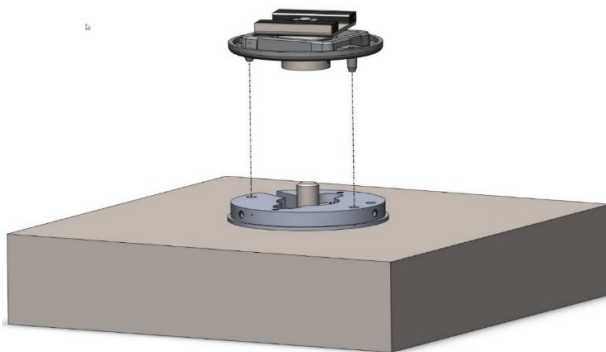
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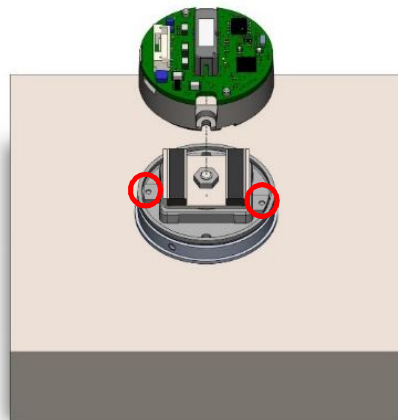
| Article No. | Article Name | D1 | D2 | Mark |
|-------------|------------------------|------|-------|--------|
| 10044699 | Kit-Centering-Tool-R-S | 1/4" | 3/8" | 1 dot |
| 10043221 | Kit-Centering-Tool-5-A | 5 mm | 10 mm | 2 dots |
| 10046250 | Kit-Centering-Tool-4-8 | 4 mm | 8 mm | 3 dots |
| 10046251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

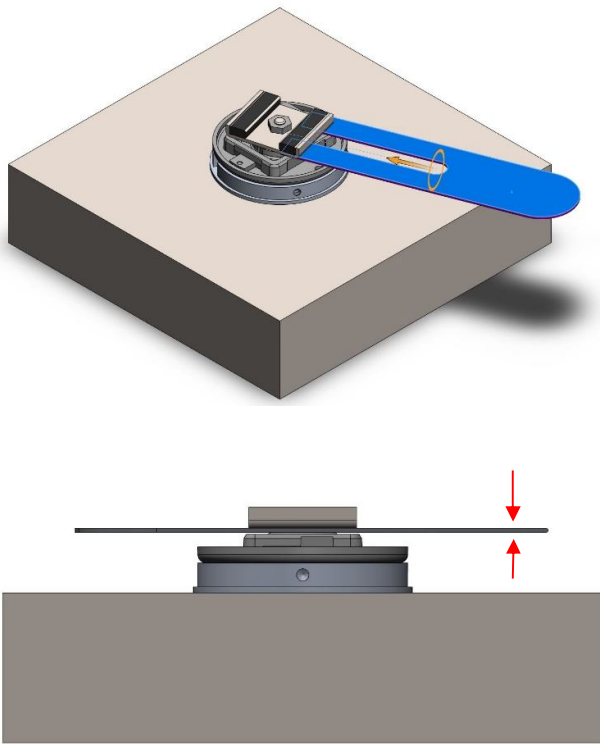
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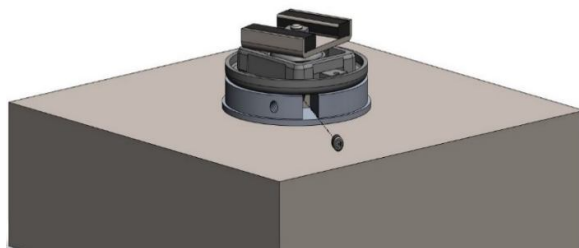
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Step 3



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.

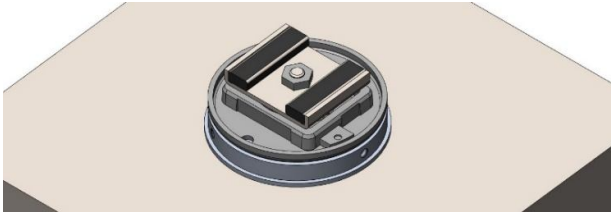
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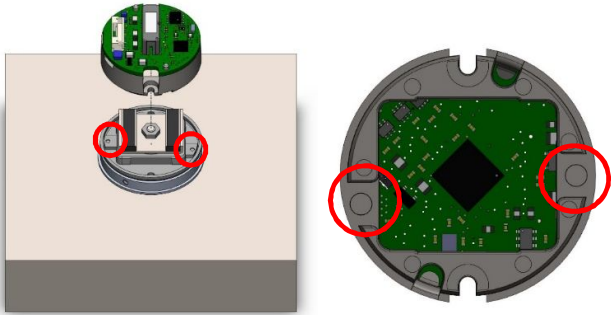
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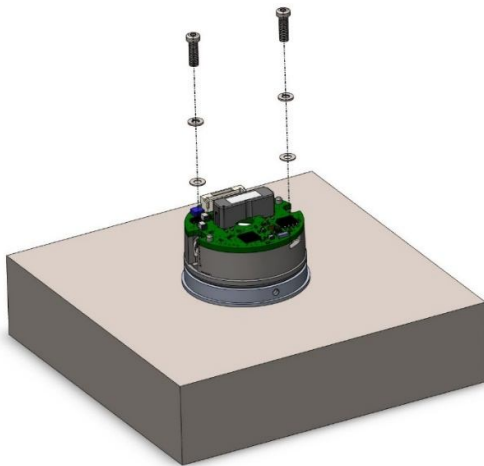
Step 5



Align magnet with plastic frame on the bottom shield.

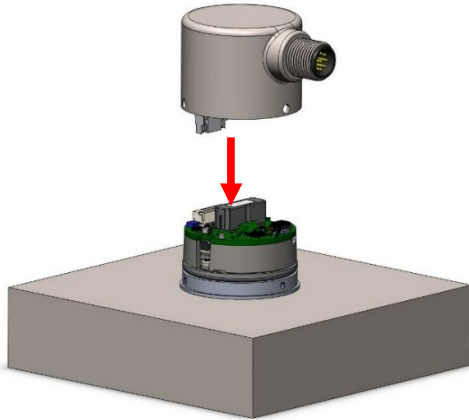


Align PCB with carrier to frame (two different keys) and push down until it locks into place.

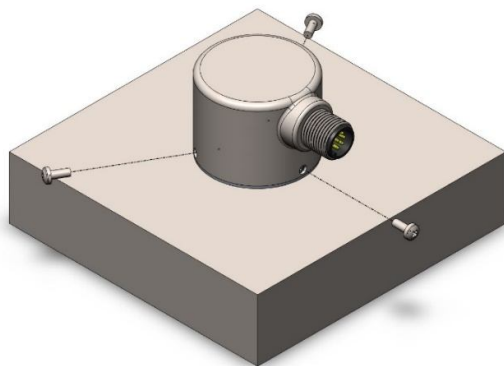


Insert two M2 screws with washers and lock washers and tighten using a Torx T6 key with a torque of 0.25 Nm.

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 20180410 Initial Release
- > v2 20181023

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