

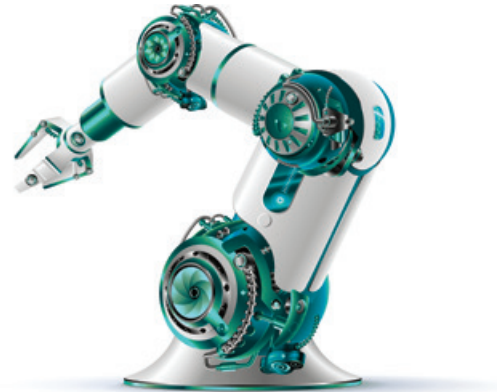
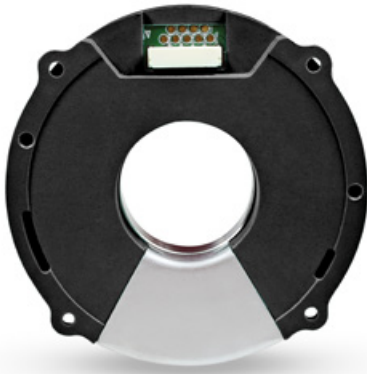


## MULTITURN KIT ENCODERS



**No Battery – Robust – Easy to Install**

## MULTITURN THROUGH HOLLOW SHAFT KIT ENCODERS



### Key Features

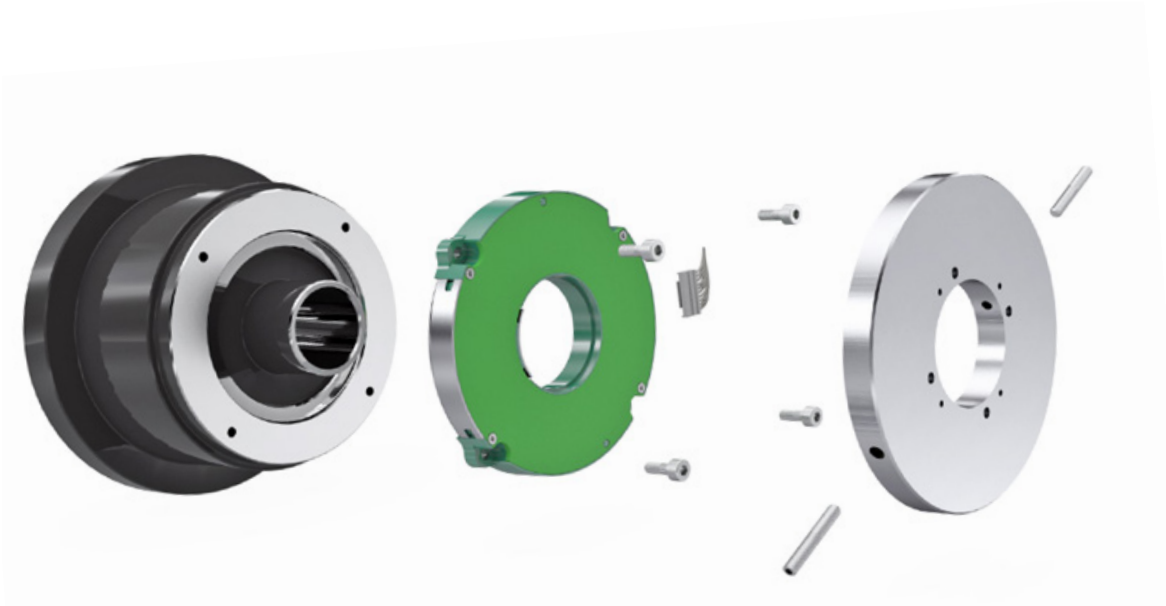
POSITAL's Through Hollow Shaft Kit encoders offer a wide Multiturn range without the need for a battery or gear system. They have a slim design of just 18 mm thickness. Introductory models cater to 30 mm and 50 mm shaft diameters and are equipped with BiSS-C and SSI interfaces. They offer a resolution of up to 19 bit and are designed for integration into hollow shaft motors and robots. In robotic systems, the hollow shaft design enables cables and compressed air to be routed inside of the robotic arm. The Singleturn system is based on capacitive technology and is combined with POSITAL's proven Wiegand Multiturn Technology.

- **Through Hollow Shaft (30 and 50 mm)**
- **Multiturn Without Battery or Gear**
- **BiSS-C and SSI Interfaces**

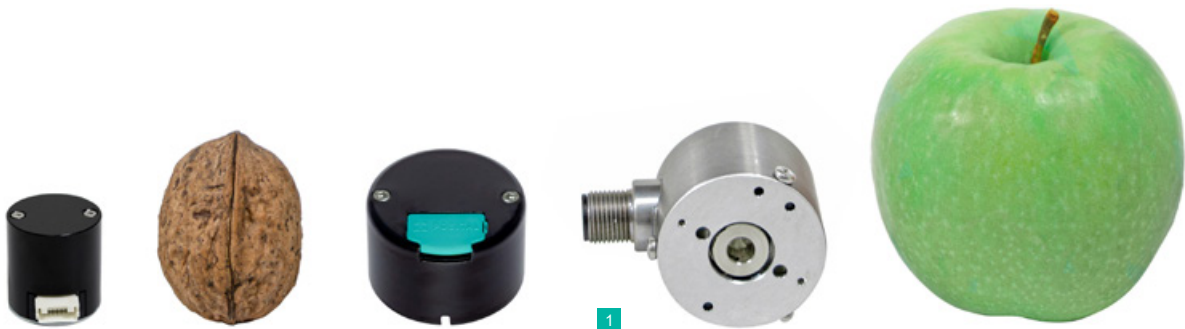
### Easy To Install

There are four different mounting options for the assembly of these kit encoders to motors. None of them requires special tools or costly equipment. Compared to optical encoders, these kit encoders are quite insensitive to dust and moisture. 360° holistic scanning compensates for eccentricity errors and offers better noise cancellation than optical sensing systems. This simplifies installation because tolerances can be widened and calibration procedures, common for other high-accuracy kit technologies, become obsolete.

- **Slim Design (18 mm thickness)**
- **No Calibration Required after Assembly**
- **Insensitive to Dust and Moisture**
- **Up to 19 bit Resolution**



## MULTITURN KIT ENCODERS



### Innovative Technology

POSITAL's multiturn kit encoders offer a unique combination of accuracy, reliability and cost efficiency. Absolute measurement versions provide up to 18 bit electrical resolution and multiturn position measurements with a range of more than one million revolutions. They are available with open source electrical interfaces like BiSS-C or BiSS Line (RS485) and SSI. One Cable Technology is support based on BiSS Line 2 wire and 4 wire (RS485) interfaces. Kit encoder components include an electronics package mounted on a compact 22 mm or 36 mm diameter PCB and a small permanent magnet, designed to be mounted on the end of the motor's shaft.

### Energy Harvesting – No Battery

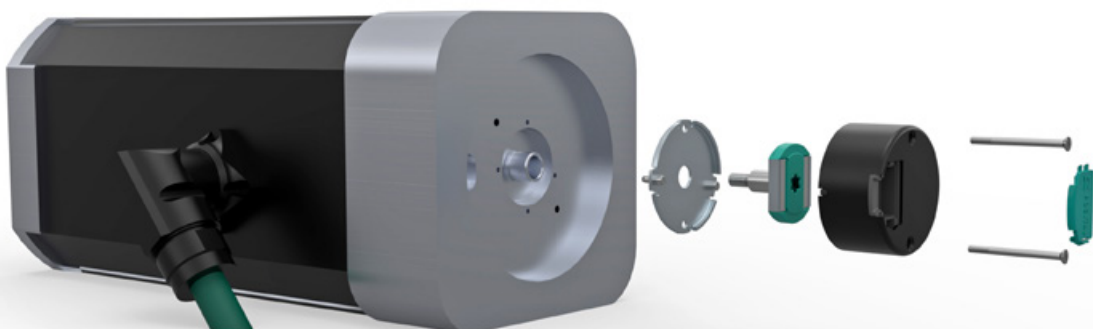
The revolution counter is powered by POSITAL's Wiegand energy harvesting system. It eliminates the need for backup batteries or complex gear systems. At any rotational speed, even the slowest, the Wiegand system generates short, powerful voltage pulses with each complete revolution. These

pulses supply enough power to activate the rotation counter and related electronics so that the encoder will keep count of complete rotations at all times, even if these occur when the external power supply is unavailable. This principle, which has proven itself since 2005, ensures reliable, maintenance-free multiturn absolute position measurements.

### Advantages

POSITAL's contact free measurement technology has no moving parts and is highly resistant to shock and vibration. POSITAL's kit encoders are available with several non-proprietary electrical interfaces including BiSS-C or BiSS Line. Additional protocols based on the RS485 interface can be implemented.

- > **Absolute Multiturn Without Battery or Gear, up to 18 bit Resolution**
- > **On-axis Version with TMR Technology**
- > **22 mm or 36 mm Diameter**
- > **Multiple Interfaces:**  
BiSS-C, BiSS Line, RS485, SSI
- > **One Cable Technology**
- > **Insensitive to Dust and Moisture**
- > **Temperate Range: -40° to +105°C**



## INCREMENTAL AND MULTITURN SPI KIT ENCODERS



### Incremental Kit Encoders

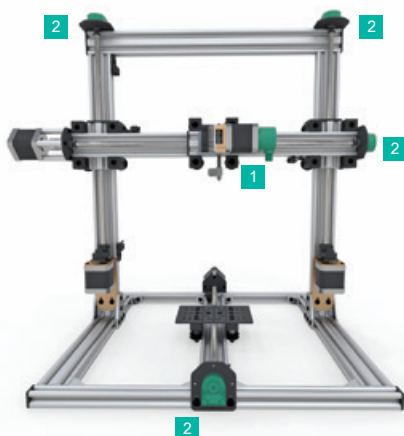
Simple, robust and easy to install, Compact Incremental Kit Encoders are optimized for the speed control of small drives, low power motors and stepper motors. POSITAL offer the optical incremental version as a module or as a complete Kit including optical disc. The internal components of the Kit consist of a mylar disk mounted to a precision machined aluminum hub and an encoder module. The module contains a highly collimated solid-state light source and a monolithic phased array sensor, which together provide a system extremely tolerant to mechanical misalignments.

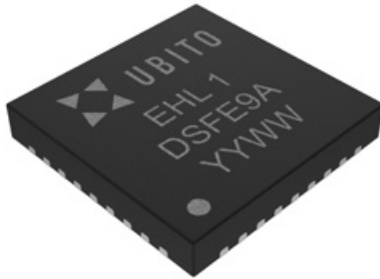
- > Quick, Simple Assembly and Disassembly
- > 2 Channel Quadrature TTL Squarewave Outputs, Optional Index (3rd Channel)
- > Various Range of Resolutions and Hub Diameters Available
- > Mounting Compatibility with Common Incremental Kit Encoders

### Multitrans SPI Kit for Electrical Motors

Motor manufacturers who already have, or are developing, their own high-resolution, singleturn encoder technology can use POSITAL's multitrans SPI Kit to upgrade their motors to a multitrans version without the need of a battery or gear system. It is designed to count up to 40 bit revolutions and provides multitrans and low-resolution singleturn data via a cost-efficient SPI slave interface (Singleturn data is needed for synchronization with the high-resolution external singleturn). Extensive diagnostic coverage and related data ensure reliable operation.

- > Well Proven Smart Multitrans System with More Than 10 Years Experience in the Field
- > No Battery – No Gear
- > 40 Bit Multitrans Range
- > SPI Protocol for Cost Efficient Integration with Singleturn Technology
- > Substantial Diagnostic Coverage



**TECHNOLOGY**

**Energy Harvesting Components**

Wiegand sensors are used as pulse generators in a range of applications; for example as a power source in energy self-sufficient revolution counters, in a flow meter or as a contactless switch. The sensor needs no external power source and has no moving parts. Instead, it exploits the unique properties of a small diameter wire invented by John Wiegand. When the magnetic state of the Wiegand wire within the sensor changes, a substantial output pulse is produced. POSITAL's Wiegand sensors reflect the knowledge of a full decade of experience in absolute rotary encoders and other applications. A new ASIC, designed in-house, supports battery-free rotation counting in multiturn variants.

- ▶ **High Pulse Energy with Typical 170nJ Average Pulse Energy**
- ▶ **Generates Energy from a Changing Magnetic Field at any Speed Level Proven Production Process with Roots in John Wiegand's work since 1974**

**Plug and Play Encoder System**

An integrated auto-calibration function eliminates the need for complex production equipment. BiSS commands can be used to program the encoder for important performance parameters and also initiate calibration and internal test procedures while the encoder is rotating. The embedded software on the kit encoder will also monitor the health of the electronics package and provide diagnostics signals over its lifetime. POSITAL's magnetic encoders are significantly less sensitive to dust and moisture than alternative systems and can be installed in normal factory settings.

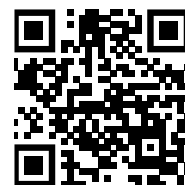
- ▶ **Auto Calibration – No Complex Equipment**
- ▶ **Extensive Diagnostic Coverage**
- ▶ **Various Programmable Parameters**
- ▶ **Different Mechanical Options for Assembly to Motor**
- ▶ **Drop-in Replacement for Common Incremental Kit Encoders – Easy Transition from Incremental to Absolute Position Sensing**

How is  
Wiegand Technology Different?



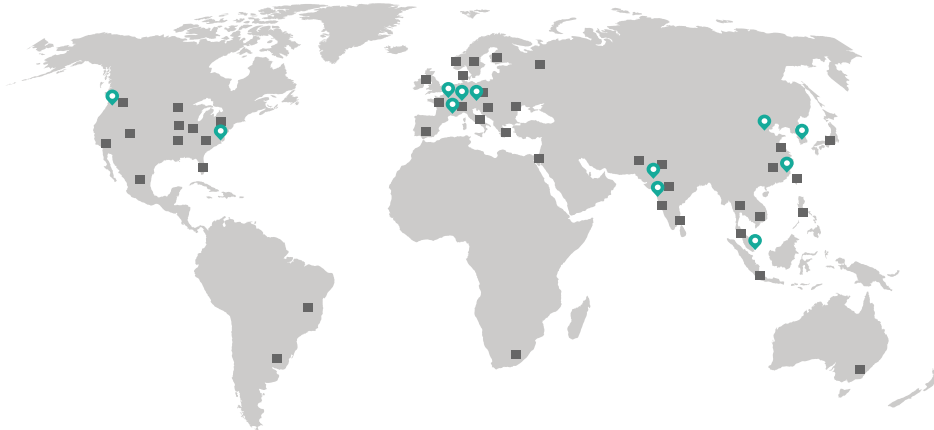
**WATCH NOW**

The Wonderful Wiegand Wire:  
Energy Harvesting, Motion Sensing and More





OVER 50 YEARS EXPERIENCE WITH POSITION SENSORS



### FRABA Group

FRABA is a group of enterprises focused on providing advanced products for the motion control and industrial automation markets. POSITAL has been a leading manufacturer of industrial rotary encoders for over 50 years and has expanded its business to include tilt and linear motion sensors. FRABA group is also an innovator in product design and manufacturing processes and a pioneer of Industry 4.0.

### History

FRABA Group dates back to 1918, when its predecessor, Franz Baumgartner elektrische Apparate GmbH, was established in Cologne/Germany to manufacture relays. In 1973, FRABA introduced one of the first non-contact, absolute Multiturn encoders. Since then, the company has played a trend-setting role in the development of rotary encoders and other sensor products.

### Service and Production

POSITAL has a global reach with subsidiaries in Europe, North America and Asia – and sales and distribution partners around the world. Products are manufactured in advanced production facilities. The computer-guided, semi-automated production system tracks each device from order, through assembly and testing, to final delivery.

### Stand Alone Encoder Business

POSITAL's unique online product finder provides access to a huge variety of solutions without the need for specialized knowledge. Thousands of easy-to-browse datasheets are available in 11 languages. The traditional practice of customization has been replaced by this new approach. Even with one million unique configurations, standard products are ready to ship within 5 working days.

Join Our Network!



[www.posital.com](http://www.posital.com)

Cologne (EMEA) – Hamilton (Americas) – Singapore (APAC) – Shanghai (China)