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POSITAL Announces New Open Source Interfaces for Motor Feedback Kit Encoders

Hamilton, New Jersey, November 2017 – Rotary encoder specialist POSITAL has expanded its interface offerings for its kit encoder, launched with great success last year, with support for the non-proprietary open-source BiSS Line communication protocol. This enables the practical implementation of single-cable technology, which is becoming increasingly popular with motor and robot manufacturers. POSITAL's kit encoders, which feature 17-bit electronic resolution, bridge the gap between simple resolvers and more complex and expensive optical encoders for servomotors, robot joints and other applications where absolute rotary position feedback is required.

Single-cable technology involves the transmission of power and encoder signal in a single cable. The one-cable approach offers significant benefits for smaller motors where the placement of two connectors has always been awkward because of the lack of space. Moreover, reduced cabling reduces costs, while reducing the number of connectors reduces susceptibility to connector failures. A special feature of the BiSS Line interface is the implementation of the Forward Error Correction function (FEC), which improves availability of data communications, even with faulty cables and plug

connections. "All in all, BiSS Line is an ideal interface for servomotors - and not just for cost reasons, but also for optimized performance," says Christian Fell, POSITAL's VP of Technology. A 4-wire solution (with separate conductors for communication and power supply) or a 2-wire variant (with combined communication and instrument power supply on a wire pair), are also available, based on the same communications protocols.

From their original introduction, the new assembly kits were available with vendor-neutral digital communication interfaces such as BiSS-C or SSI for absolute measurements. "A number of optical feedback systems on the market make use of proprietary interfaces such as Hiperface or Endat, which has means an ongoing dependency on the encoder manufacturer. We deliberately took a different approach," emphasizes Fell. "We are whole-hearted advocates of open-source interfaces - and stick to them consistently." POSITAL's commitment to the open-source strategy is affirmed by the fact that the encoder manufacturer is a founding member of the BiSS Association e.V. This new user organization, founded at the end of September, is committed to promoting the distribution of the free-of-charge BiSS family of open-source communication protocols worldwide. (http://www.biss-interface.com)

About FRABA and POSITAL

POSITAL is a supplier of advanced industrial position sensors used in a wide variety of motion control and safety systems. The company is also an innovator in product design and manufacturing processes and a pioneer of Industry 4.0 (Industrial Internet of Things/IIoT), offering customers the benefits of built-to-order products combined with the price advantages of mass-production. POSITAL is a member of the international FRABA group, whose history dates back to 1918, when its predecessor, **Fr**anz **Ba**umgartner elektrische Apparate GmbH, was established in Cologne, Germany to manufacture relays. Since then, the company has played a trendsetting role in the development of rotary encoders, inclinometers and other sensor products. POSITAL has a global reach with subsidiaries in Europe, North America and Asia – and sales and distribution partners around the world.

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POSITAL Participates in Launch of BiSS Association e.V.

New Organization promotes No-Charge, Open Source Interface Technology for Industrial Control Systems

<Location<Date> POSITAL FRABA has announced that it is participating as a founding member of the BiSS Association e.V., a new organization dedicated to encouraging the use of the BiSS family of open-source industrial communications protocols. (http://biss-interface.com/)

BiSS communications protocols were developed by the German company iC-Haus GmbH as an efficient and feature-rich digital interface for communications between industrial sensors, actuators and control devices. iC-Haus is also the source of ASIC chips that support the implementation of this interface in industrial devices such as sensors, actuators and controllers.

The BiSS interface is hardware compatible with the well-established SSI (Serial Synchronous Interface) digital interface, but offers significant enhancements. BiSS supports continuous (real-time) communications between controllers and sensors. BiSS Safety offers functionality for critical systems where safety ratings up to SIL 3 are required. Applications of the BiSS interface include manufacturing robotics, motor feedback, servo drives & motion control, position encoders and CNC drives.

An important new development is BiSS Line – an implementation of BiSS protocols that can be deployed in a single cable configuration and features forward error correction (FEC). This makes BiSS Line an ideal interface for servomotors where the single cable feature offers a significant reduction in wiring system complexity.

BiSS is offered as an open source interface. There are no licensing fees for either manufacturers of BiSS-enabled devices or their customers. BiSS Association e.V. is autorized to grant free-of-charge BiSS licenses to device manufacturers and BiSS users. The agreement defines rights and duties to make use of associated patents and trademarks for BiSS held by iC-Haus.

The new BiSS Association organization aims to expand the use of BiSS technology throughout the world. It will also provide a communications platform for technical standards and cooperative marketing initiatives. POSITAL FRABA'S Jörg Paulus has been appointed Vice Chairman of the association, joining Dr. Heiner Flocke of iC-Haus (Chairman) and Alexander Ehnert of Hengstler GmbH (Treasurer). Membership in the BiSS Association is open to all companies and institutions. Members can participate in the development and promotion of this exciting new interface. Access to BiSS technologies and licensing arrangements are open to members and non-members alike.

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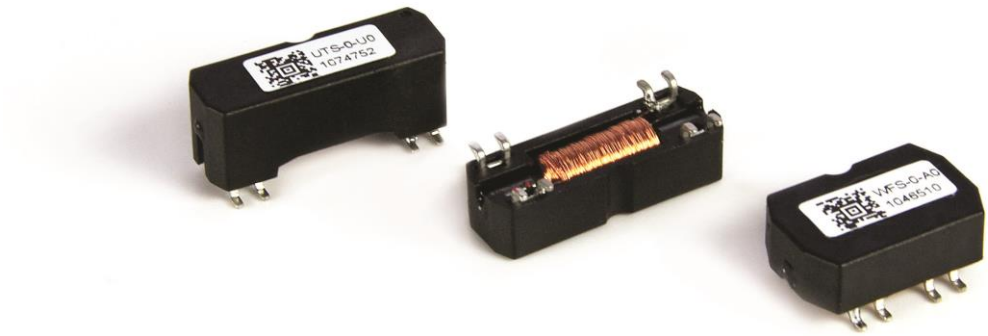

POSITAL Offers Wiegand Wire Energy Harvesting Components for Electromechanical Applications

Cologne, November 2017 – POSITAL's Wiegand assemblies offer a compact and efficient way of harvesting power for electronic circuits in electromechanical devices, eliminating the need for backup batteries.

The operating principle of POSITAL's Wiegand modules is simple. A "Wiegand wire" is a short length of specially prepared Vicalloy (vanadium-iron-cobalt) wire. When exposed to a changing external magnetic field (e.g. a nearby permanent magnet mounted on a rotating shaft) the Wiegand wire will initially retain its original magnetic polarity, and then abruptly 'flip' its polarity when the change to the external magnetic field reaches a certain threshold. This sudden change in the magnetic state of the core induces a current pulse in a copper coil wound around the Vicalloy core. This current pulse is very short-lived, but the energy harvested from the mechanical movement of the magnet can be captured and used to activate a low-power electronic circuit. An important feature of the Wiegand effect is that the amount of electric power generated with each reversal of the magnetic polarization is constant and completely independent of the rate of change of the external magnetic field, even if this happens very slowly. POSITAL Wiegand modules have been used to reliably power rotation counters in tens of millions of devices, including multi-turn rotary encoders, gas and water meters.

"The process for making Wiegand wire from raw Vicalloy wire was invented by John Wiegand in the 1970's" comments Christian Fell, Chief of Technology Development for POSITAL-FRABA. "It involves a complex set of steps, including cold-working the wire through a combination of stretching and twisting, then heat-treating the product to lock in the desired characteristics." POSITAL acquired the original wire-conditioning machinery and intellectual property from the Wigand estate in 2013. Fell continues: "This acquisition has meant that we have reliable supply of Wiegand wire. It also gave us an opportunity to refine the manufacturing process for improved

product quality. Thanks to our research, we can now produce wires that reliably generate 190 nanojoules of energy at 7 volts with each polarity flip".

Wiegand assemblies are a core component in POSITAL's IXARC multi-turn absolute rotary encoders, providing a maintenance-free method for powering the counter that records the number of complete rotations that the device experiences. POSITAL also offers Wigand assemblies to other manufacturers. These consist of a 15mm length of Wiegand wire surrounded by a copper coil, all contained in an SMD-mountable plastic structure. Wiegand wire production is carried out at locations in the U.S. and Europe, ensuring a stable, reliable supply chain. These assemblies can be used wherever low-cost, zero-maintenance, battery-free energy harvesting systems are needed to energize electronic counters and other low-power electronic devices.

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