

Sensors, Measuring Systems & Components

Technical paper

New Single- and Multiturn Encoders with Ethernet interfaces

Industrial Ethernet is becoming ever more widespread as a communications standard. Surveys confirm that in many sectors of industry half of the machines are already equipped with Ethernet. This share will continue to grow, with Ethernet TCP/IP as well as the real-time variants being used. Those who have integrated the latter in their machines will increasingly turn to the PROFINET profile. EtherCAT is also frequently employed, although experts think that PROFINET will continue to expand on its leading position.

Products from Kübler come equipped for both these interfaces. New Profinet singleturn and multiturn encoders in the robust Sendix design now complement the multi-faceted Absolute family from Kübler. The whole encoder profile according to "Profile Encoder Version 4.1", as well as the "Identification & Maintenance Functionality in Version 1.16" (IM 0, 1, 2, 3 and 4), has been implemented in these devices.

The encoders support the isochronous real-time mode, also called IRT mode, and are thus ideal for real-time applications. Through the decoupling of the real-time communication from the standard communication (TCP/IP), the IRT mode also offers a real-time solution for all high-performance applications such as synchronous applications.

The short cycle time of $\leq 1\text{ms}$ facilitates flexible and versatile use. Using the device is effortless, thanks to the simple Plug-and-Play start-up and the "Ezturn for Profinet" software, which comes with the encoder. This also allows the encoder software to be updated quickly and easily. The firmware update enables the features of the encoder to be enhanced without it needing to be dismantled. Scaling and preset values and many other additional parameters can be programmed via the Profinet bus. The Ezturn software engineering specifications also include the visual monitoring of the most important parameters. Position, speed, temperature and other status values of the encoder can be transmitted as output values.

All parameters can be programmed via the bus for quick, accurate start-up. The bus cover is equipped with 3 x M12 plugs for fast, straightforward and error-free connection. The standard Ethernet physical characteristics enable direct hook-up, for example from a laptop to the encoder. With singleturn devices, the resolution is up to 16-bit and with multiturn devices up to 28-bit overall resolution.

The "Safety-LockTM" bearing structure enables the Sendix Profinet singleturn and multiturn encoders to guarantee a high level of safety. The interlocked, larger-size bearings with their large bearing span ensure stability when subjected to vibration and give the device a ruggedness that means it can tolerate installation errors. Machine downtimes and repairs are thus avoided. Thanks to the highly

integrative OptoASIC technology from Kübler, the electronics and optical sensor technology are reduced to just a few components, with the resulting benefit of higher reliability. The sturdy die-cast housing with a protection class up to IP67 and the broad temperature range of -40°C to +80°C also facilitate use outdoors.

Visual warning and alarm signals indicate sensor errors, too low a voltage or too high a temperature. Troubleshooting thus becomes easier, the necessary measures for correction can be implemented without delay and lengthy downtimes avoided.

