

Precise Position Detection in Packaging Machines

Absolute Encoder
with IO-Link Interface

At a Glance

- Precise position detection
- Optimal IO-Link communication
- Wide range of parameterization options
- Intuitive implementation
- IO-Link process data and discrete outputs
- Suitable for condition monitoring
- Cost-effective solution
- Up to 12,000 RPM



The Application

Packaging machines usually work at high speed and very short cycle times. The packaging is continuously fed on rolls and dressed according to the specifications. The various machine movements must be precisely performed and finely coordinated. At the same time, flexibility is required to cope with the variance of the goods to be packaged and the packaging parameters. Only in this way can the specified packing quality be achieved in the required cycle time. A precise absolute positioning of the material rolls is necessary. The rotary encoders used must be able to cope with dust, high humidity and strong electromagnetic interference.

The Goal

The packaging of the product should be carried out in the shortest cycle time possible and with the highest precision. The machine must be able to adapt quickly to different goods and packaging parameters. Material jams must be avoided and downtimes minimized. The rotary encoders used in the machine must have a high measurement accuracy. At the same time, they must be able to transmit the process information quickly, in order to meet the short interval demand of the packaging process. In addition, simple commissioning is required.

The Solution

Absolute rotary encoders with IO-Link interface from Pepperl+Fuchs reliably and precisely measure the position (singleturn and multiturn) and the direction of rotation of the rollers. They operate with the fastest IO-Link transmission rate COM3. This is comparable with the speed of an industrial Ethernet. A new angular position can be set independently of the shaft position of the rotary encoder. After installation, the angular position is simply adapted to the current machine status via IO-Link configuration. The position is easily readjusted during operation via IO-Link. The configuration index allows easy interpretation of the supplied data, for example, during remote maintenance. The rotary encoder also provides an ambient temperature value and reports critical machine functions. The user receives status information via cyclical process data and can intervene directly in case of deviations. It is also possible to set defined limit values.

The Advantages

The rotary encoder can be operated at up to 12,000 revolutions per minute, which allows for very high process speeds. The precise and reliable detection of the position as well as the fast and comprehensive communication provide the solid data basis for a finely graded machine control. Optional presettings of the rotary encoders at the factory reduce the installation effort. The application-specific rotary encoder settings can be stored in the IO-Link master and automatically transferred to new devices. The additional temperature parameter is available for monitoring the machine, for status analysis and for control functions. With the IP67 degree of protection, the devices are also suitable for particularly difficult environments.

Technical Features

- Accuracy: 0.1°
- Resolution: 16 bit (singleturn), 15 bit (multiturn)
- Direction of rotation: Clockwise and counterclockwise
- Shaft type: Solid and recess hollow shafts
- Flange type: Clamping and servo flange
- Housing diameter: 36 mm, 58 mm
- Degree of protection: IP65, IP67

