



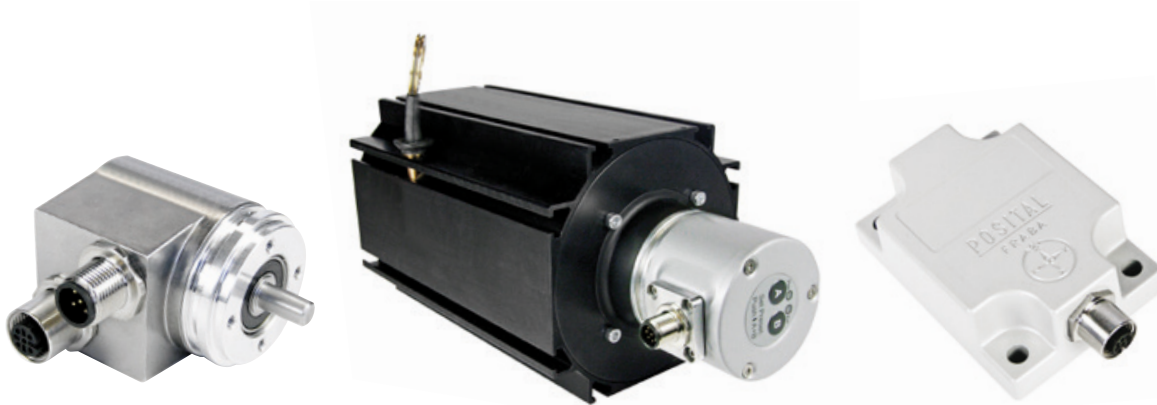
SENSORS FOR MOBILE MACHINERY



At Your  
Fingertips  
**1,000,000**  
Sensors

Over 50 Years Experience

## PRODUCTS



### High Precision IXARC Rotary Encoders

Motion control applications – ranging from factory automation to mobile machinery – require accurate, real-time information about the location of mechanical components. The IXARC line of absolute rotary encoders provide precise and reliable measurement of the angular positions of joints, drive shafts, pulleys, etc. A range of electronic connections, ranging from simple analog or incremental outputs to sophisticated Fieldbus and Industrial Ethernet interfaces, are available.

- Thousands of Absolute and Incremental Encoders with up to 16 Bit Resolution
- Large Variety of Electrical Interfaces

### Precise Industrial TILTIX Inclinometers

The accurate measurement of tilt or inclination is very important for motion control and safety systems. Relying on MEMS technology and gravity for their measurement, these sensors have no exposed moving parts, resulting in easy installation and a high level of environmental protection.

- High Accuracy of 0.1° and Resolution of 0.01°
- Measurement Range  $\pm 80^\circ$  (Dual Axis) or 360° (Single Axis)

### Dynamic TILTIX Inclinometers

For dynamic movements with rapid acceleration, POSITAL's Dynamic TILTIX inclinometers should be used. They are based on a 3D MEMS accelerometer and a 3D MEMS gyroscope. A smart algorithm combines the signal of the accelerometer and gyroscope to eliminate the effect of acceleration (e.g. due to rapid motion of the equipment), vibration and shock.

- Accuracy: Dynamic 0.5°, Static 0.3° and Resolution of 0.01°
- Measurement Range  $\pm 90^\circ$  (Dual Axis) or 360° (Single Axis)

### Versatile LINARIX Sensors

Many applications require linear motion to be monitored for system control or to ensure safety. With lengths ranging from 1 m to 15 m (3' to 45'), LINARIX draw wire sensors are available in many configurations to meet application requirements. Options include a wide variety of outputs (including analog, Fieldbus and Ethernet variants), heavy duty housings and compact designs.

- Absolute Position Measurement with Resolutions up to 2 $\mu$ m and Range up to 15m



## BENEFITS



### High Precision

IXARC Rotary Encoders provide a resolution of up to 16-bit for both magnetic and optical types. TILTIX Inclinometers offer a static accuracy level of 0.1° over a wide temperature range.

- Encoders with 16 Bit Resolution
- Inclinometers with 0.1° Accuracy and 0.01° Resolution

### Functional Safety

Safety encoders offer the advantages of increased personnel safety and minimize the risk of machines malfunctioning. IXARC safety encoders are certified to Safety Integrity Level 2 (SIL 2) and Performance Level d (PL d).

POSITAL also offers redundant encoders which can reach a safety level of PL d, Cat. 3. These encoders use a combined measurement design consisting of one optical and one magnetic system.

- Certified Safety Level (SIL 2, PL d)
- Redundant Encoder Designs
- Wide Range of Electrical Interfaces

### Tough Sensors For Tough Jobs

Both encoders and inclinometers are available in heavy duty designs with a protection class of up to IP69K. Stainless steel versions are also available. Encoders can withstand shaft loads of up to 300N and offer a shock resistance of up to 300g. Most products cover a temperature range from -40°C to +85°C

- High Protection up to IP69K
- Up to 300N Load and up to 300g Shock
- -40°C to +85°C Temperature Range

### Explosion Proof Encoders And Inclinometers

POSITAL explosion proof sensors are designed to operate safely in environments with potentially dangerous levels of explosive gases or dust. IXARC ATEX encoders have been certified in compliance with IECEx and ATEX directives and can be installed in zones 1 and 21.

- Certified in Compliance with IECEx and ATEX Directives for Different Applications and Zones
- Wide Range of Electrical Interfaces

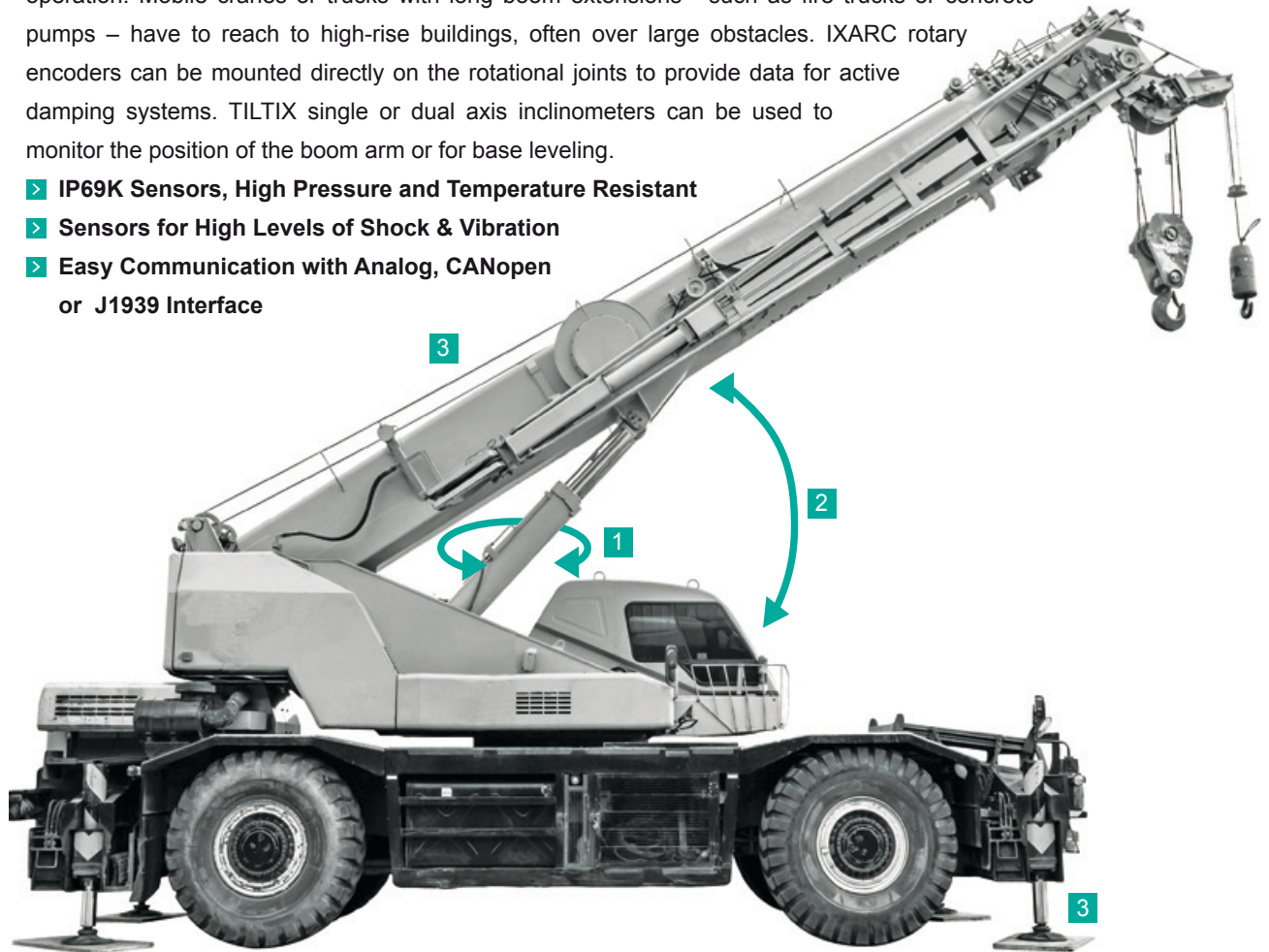


## APPLICATIONS

### Mobile Cranes

Position data is required in cranes and other construction machinery to ensure safe, efficient and reliable operation. Mobile cranes or trucks with long boom extensions - such as fire trucks or concrete pumps – have to reach to high-rise buildings, often over large obstacles. IXARC rotary encoders can be mounted directly on the rotational joints to provide data for active damping systems. TILTIX single or dual axis inclinometers can be used to monitor the position of the boom arm or for base leveling.

- **IP69K Sensors, High Pressure and Temperature Resistant**
- **Sensors for High Levels of Shock & Vibration**
- **Easy Communication with Analog, CANopen or J1939 Interface**



- 1 Rotary Encoders for Rotational Positioning**
- Shaft Load Up to 300 N
  - Salt Water Resistant
  - Stainless Steel Versions Available



- 2 Inclinometers for Tilt Measurement of the Boom**
- Single Axis (360°), Dual Axis ( $\pm 90^\circ$ )
  - High Resistance to Shock and Vibration (IP69K)



- 3 Linear Sensors for Measurement of Boom Length or Outrigger**
- Up to 15 m
  - IP64 / IP65 Rated
  - Rugged Construction



## APPLICATIONS

### Excavator

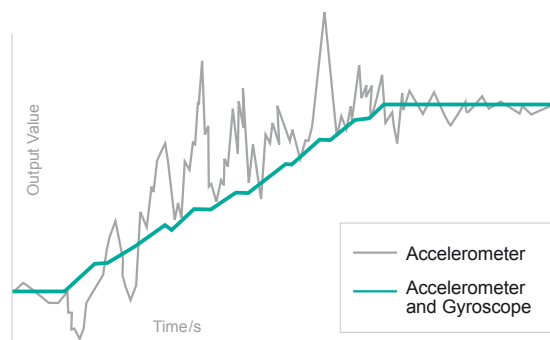
To improve productivity, precision and safety, inclinometers are mounted on the boom, dipper arm, rotating platform and bucket to monitor the position during the operation. They are well protected in a robust metal housing with IP69K protection class, can withstand high shock and vibration and can be operated over a very wide temperature range.

- **Dynamic and Precise Static Inclinometers**
- **CANopen, J1939 and Analog Interfaces**
- **Up to IP69K, -40 to +85 °C**



### Inclinometers

Conventional static inclinometers provide a higher accuracy level while dynamic inclinometers provide a stabilized output with slightly lower accuracy under very dynamic operational conditions. A combination of the two can be used to harness the advantages of both types.

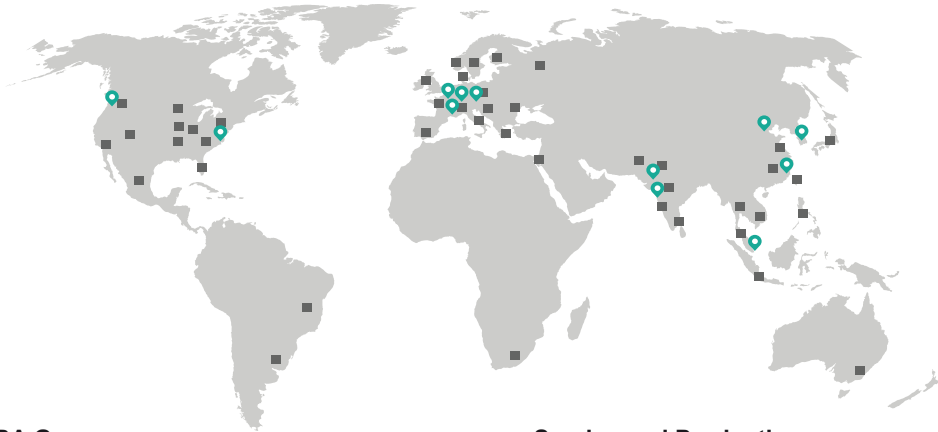


### Dynamic Vs Conventional Inclinometers

The diagram above compares the performance of a dynamic inclinometer, including integrated gyroscope, with the output from a conventional static inclinometer, when subjected to dynamic movements on an excavator.



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 tilt and linear motion sensors. Other FRABA Group subsidiaries include VITECTOR, which focuses on protection sensors to guard doors and production machine covers. FRABA group is 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. A 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 of specialist knowledge. Thousands of easy-to-browse specific datasheets are available in 11 languages. The traditional practice of customization has been replaced by this new approach. Even with one million unique configurations available, products are ready to ship within 5 working days.

Check our Website for the Full Range of Products



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