

# Functional safe sensors

**In Shanghai, Brosa exhibited its recently introduced force measuring pin. As several other sensors by the company, it features optional CANopen safety connectivity.**

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MOP force measuring pin with CANopen safety (Photo: Brosa)

Force measuring pins are typically designed for a load limit of 150 % and a breaking load of 300 % of the measuring range. However, there are applications in which a relatively small measuring range and thus a low load limit precludes a large load. Brosa's force measuring pins with a mechanical stop, in short MOP (mechanical overload protection), permit a load limit of up to 500 % of the measuring range to a breaking load of 700 %. A smaller measuring range can be detected and output with higher resolution using the MOP force measuring pin. At the same time, the MOP force measuring pin allows high dynamic forces. Applications include material handling applications or other dynamically loaded measuring points.

The MOP force measuring pin comes as most of Brosa's sensors optionally with CAN and CANopen connectivity. CANopen safety is available on request compliant to PL d/e equivalent with SIL-2/3. The IP69-rated sensor is specified for a temperature range from -40 °C to +80 °C. Typical applications includes material handling systems.

The patented design is as simple as the conventional force measurement pins in the handling for the user or installer. As a proven means to detect forces in eye-bolt connections, the force measuring pin can open up additional application fields and solve measurement tasks that were previously only mastered with more complex concepts. The additional features are also used in the company's tubular load cells (patented sensor design).

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Angle sensor compensates vibrations (Photo: Brosa)

## More sensors

The sensor manufacturer offers a broad range of products with functional safety. One example is the angle sensor based on MEMS technology. It can withstand shocks of up to 3500 g. Other features include high measurement accuracy and vibration resistance as required in crane applications. The CANopen device is suitable for rotating tower, mobile harbor, crawler, and offshore cranes. It supports optionally CANopen safety (SIL-2/3).

Other sensors with CANopen safety connectivity include pressure sensors, which are shock and vibration resistant. They are suitable for mobile hydraulics. The products' accuracy is consistent over the temperature from -40 °C to +80 °C. The German company also produces shear force sensors, which can be used in lifting platforms, for example. They are based on the shear beam principle. Due to their small dimensions, they can be retrofitted in existing applications. Of course, there are also normal force sensors available featuring CANopen safety.

Additionally, Brosa offers jack load cells for mobile cranes, mobile concrete pumps, lifting platforms, and fire trucks. They are insensitive to forces in deviation of the measurement direction and transverse forces. The company's compression load cells are designed for high-stress applications and comply as the other force sensor to SIL-2/3. There is also a force sensor washer designed for spreader twist locks and straddle carriers, for example.

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