

Ultrasonic position sensor directly monitors workpiece clamping

A MILESTONE IN THE FIELD OF METALWORKING

With the BFD ultrasonic position sensor with media contact, we are expanding our portfolio to add an innovative way to directly monitor hydraulic short-stroke cylinders. A reliable and economical solution for workpiece clamping.

Direct response to increasing production requirements

Existing solutions for monitoring workpiece clamping are either cost-intensive, inflexible or less reliable. As a result, they cannot always meet the increasing demands on machine safety.

Our new ultrasonic position sensor provides a remedy: By emitting ultrasound into the hydraulic fluid, the BFD monitors the clamping process of the workpiece directly, continuously and quickly. This generates reliable information on the clamping status and lets you detect critical deviations early on, like problems with the oil supply, casting errors,

contour deviations, insertion errors and deformed workpieces. By monitoring the entire clamping process, you can also spot pressure fluctuations in the hydraulic unit, defects in the swivel mechanism and defective seals in ample time to take action.

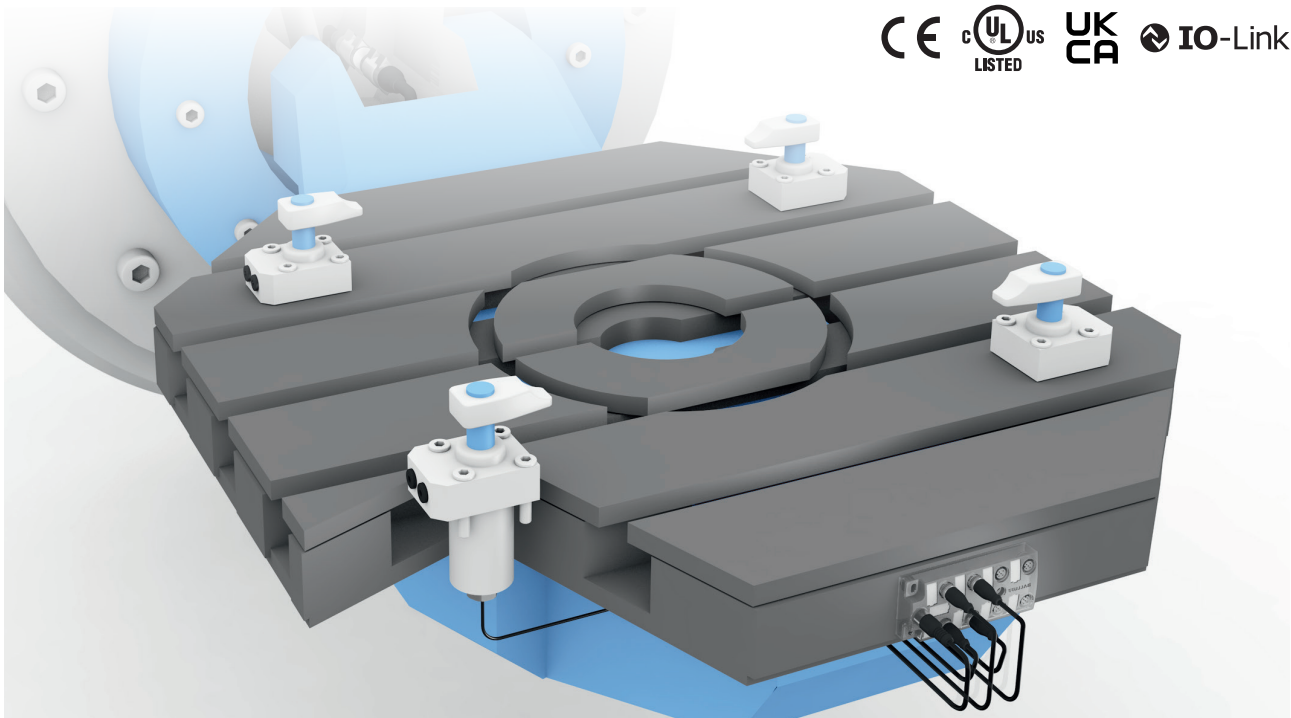
Easy integration and scalable use

Thanks to its small form factor, standardized interface that can be configured as required, and continuous compensation, the sensor is easy and flexible to integrate and can be used plug and play in different media. Together with standard system components from Balluff, this makes for an exceptionally economical, complete solution.

Relevant additional information is provided through IO-Link. This allows you to detect critical changes in the medium, e.g. due to air or particles in the hydraulic system.

Features

- High-performance measurement over the entire measuring range of 0...80 mm: high repeatability of $\pm 50 \mu\text{m}$, linearity deviation of $\pm 250 \mu\text{m}$
- Continuous compensation to adapt the measurement to the type, composition and quality of the hydraulic fluid
- Flexible integration via IO-Link, as analog transmitter or as two-stage switch
- Firmware functions to provide additional data for condition monitoring



Monitoring of workpiece clamping in a machining center

BFD ULTRASONIC POSITION SENSORS



	BFD0002	BFD0001	BFD0003
Measuring range	0...80 mm		
Non-linearity	±250 µm		
Repeat accuracy	±50 µm		
Pressure rating	350 bar		
Interface	IO-Link 1.1, COM3 (230.4 kBaud)		
Analog output	Analog, voltage 0...10 V/Analog, current 4...20 mA (selectable)		
Dimension	Ø 30 × 30.9 mm		
IP rating	IP67		
Secondary features	<ul style="list-style-type: none"> ■ Identification ■ Device discovery ■ Switching profiles ■ Signal quality ■ Signal delay ■ Switching counter ■ Basic statistics ■ Logic blocks ■ Operating hours counter ■ Boot cycle counter ■ Voltage and current monitoring ■ Variant configuration ■ Pin assignment ■ Internal temperature monitoring 		
Connection	0.3 m TPU cable with M12 connector, male, 4-pin	0.3 m TPU cable with M8 connector, male, 4-pin	2 m TPU cable

CONNECTIVITY



	BCC039J	BCC039K	BCC03JT	BCC02H9
Connection 1	M12 female, straight, 5-pin, A-coded	M12 female, straight, 5-pin, A-coded	M8 female, straight, 4-pin, A-coded	M12 male, straight, 4-pin, A-coded
Connection 2	M12 male, straight, 4-pin, A-coded	M12 male, straight, 4-pin, A-coded	M12 male, straight, 4-pin, A-coded	
Cable	0.6 m PUR, black, drag chain compatible	1 m PUR, black, drag chain compatible	1 m PUR, black, drag chain compatible	
Contacts				Field attachables, IDC, 4 × 0.14...0.34 mm ²