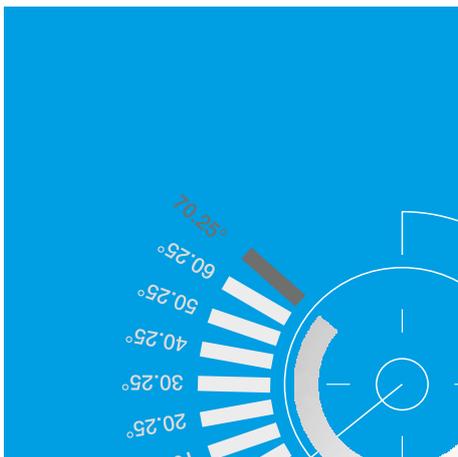
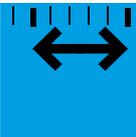


# BALLUFF

sensors worldwide

## BSI Inclination Sensors

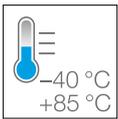
The position securely in your grasp



# Highly precise over 360° – so that nothing gets out of place

- Contactless and absolute measuring principle
- High repeat accuracy and precision
- Extremely low temperature drift

The precise position control and continuous positioning of rotational movements are of great importance in many applications. Balluff BSI inclination sensors measure the deviation from the horizontal on an axis of up to 360°. They can be used down to -40 °C, require little space and have a very robust metal housing.



## Wind energy systems



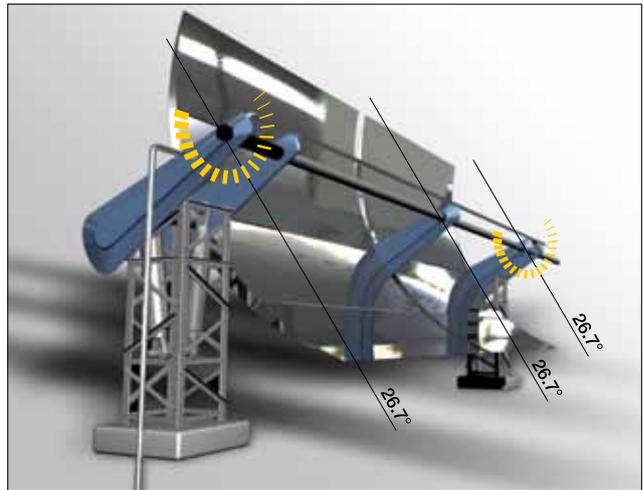
### Monitoring tower tilt

Constantly changing wind conditions cause abrupt load changes in wind turbines. Particularly during strong gusts of wind, storms or a wind energy system's start-up phase, towers can tilt so much that the overall system lifetime is affected. An inclination sensor can reduce this stress on the system. It reliably measures the absolute angle of inclination and ensures that limit values are not exceeded.

- Easy to install
- Temperature range of -40 to +85 °C
- Rugged metal housing



## Solar-thermal power plants



### Positioning parabolic troughs

Parabolic trough systems can provide power continuously for 24 hours a day. During the hot midday period, electricity is produced and a salt storage tank is heated, which sustains the water-steam circuit during the night. The highest possible temperatures have to be present in the solar field for this. These temperatures have to be achieved by optimally aligning the parabolic troughs to the position of the sun. BSI absolute inclination sensors ensure this precise positioning and thus increase the efficiency of the solar energy system.

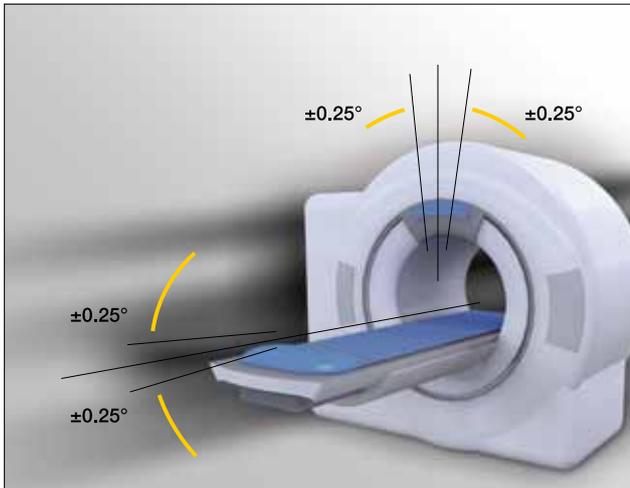
- Compact, robust metal housing eases installation
- Analog output signal for continuously detecting the position of parabolic troughs, even after power failure
- Precise measurement for accurate positioning; accuracy over a full 360°

## The benefits to you

- **Compact, robust metal housing in IP 67, which can be easily installed and integrated into a system**
- **High accuracy of 0.1° for precisely controlling processes**
- **Extended temperature range of -40 to +85 °C is suitable for outdoor applications**



### Medical technology



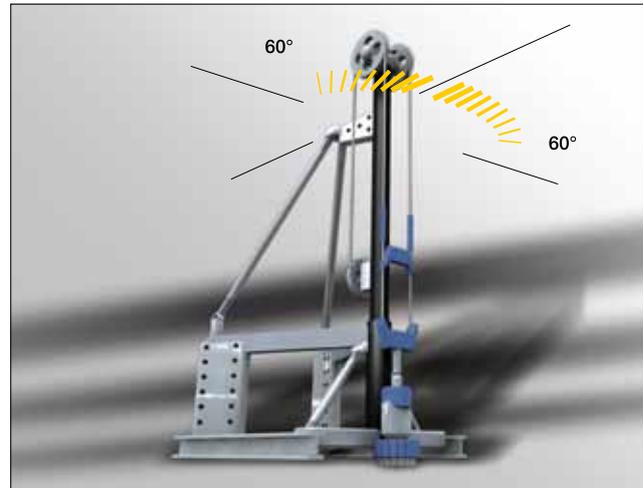
#### Positioning radiation treatment tables

Treatment tables have to be positioned precisely to make radiation therapy as safe as possible. Capacitive inclination sensors are exceptionally outstanding here. Because their impressive accuracy and their excellent resolution accomplishes this with no ifs, ands or buts. Capacitive inclination sensors thus create the best conditions for best positioning a patient.

- High precision
- Excellent resolution
- Compact, for easy installation even in places where space is limited.



### Oil and gas extraction



#### Setting up oil pumps over a borehole

Oil pumps have to be placed precisely over the borehole. This is easy to achieve with Balluff BSI inclination sensors, because they are made for rough outdoor environments. Thanks to their analog angle values, they position pumps so precisely that they minimize loads and wear.

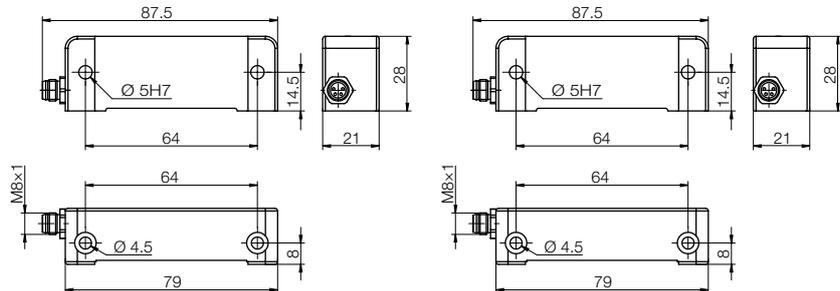
- High protection class IP 67 – suitable for use in rough conditions
- Precise, absolute angle measurement
- Compact housing

# BSI Inclination Sensors

## The position securely in your grasp



Size		<b>79×28×20 mm</b>	<b>79×28×20 mm</b>
Interface		<b>4...20 mA</b>	<b>Modbus RTU RS-485</b>
Measuring range	<b>Ordering code</b>	<b>BSI0004</b>	<b>BSI0003</b>
0...360°	Part number	BSI R11A0-XB-CXP360-S75G	BSI R11A0-XXR-CXP360-S75G
Measuring range	<b>Ordering code</b>	<b>BSI0002</b>	
±45°	Part number	BSI R11A0-XB-CXS045-S75G	
Supply voltage $U_B$		10...30 V DC	10...30 V DC
Current draw		< 31 mA	< 20 mA
Resolution max.		±0.01°	±0.01°
Characteristic deviation max.		±0.1% (min. 0.1°)	±0.1° at 10...40 °C, ±0.15° in any other temperature range
Temperature drift		±0.01%/10 K	
Sampling rate		< 150 ms	< 150 ms
Settling time		< 1 s	< 1 s
Polarity reversal/short-circuit protected		yes/yes	yes/yes
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature range $T_a$		-40...+85 °C	-40...+85 °C
Weight		Approx. 80 g	Approx. 80 g
Housing material		Aluminum	Aluminum
Calibration, measurement protocol		Optional	Optional
Connection		M8 connector, 4-pin	M8 connector, 4-pin



**Suitable connector:**  
(please order separately)

Size	Design	Cable	Length	Ordering code
M8, 4-pin	straight	PUR, black	5 m	<b>BCC02N3</b>
M8, 4-pin	angled	PUR, black	5 m	<b>BCC02NE</b>

**More electrical accessories:** You can find a large selection of plug connectors and connector cables in a wide variety of cable materials, colors and lengths in our catalog **Industrial Networking and Connectivity**.

Balluff GmbH  
Schurwaldstrasse 9  
73765 Neuhausen a.d.F.  
Germany  
Tel. +49 7158 173-0  
Fax +49 7158 5010  
balluff@balluff.de  
www.balluff.com