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Inclination Sensor with CAN/CANopen Interface
1-dimensional 360° - 2-dimensional ±90°

Characteristics:

■ Inclination sensor with measurement range: 360°/±90°

■ High sampling rate and bandwidth

■ High resolution (0.01°) and accuracy (±0.1° typ.)

■ Compensated cross sensitivity

■ Programmable vibration suppression (digital filter)

■ Comfortable CAN interface

  ■ Free adjustable IDs

■ Comfortable CANopen interface

  ■ Meets the CiA DS-301, device profile CiA DSP-410

  ■ Setting Node ID and baud rate via LSS Service

Figure similar

■ Functions:

  ■ Angle request, cyclical output, synchronized output, output on angle change

  ■ Configurable cut-off frequency (digital filter)

■ UV resistant, impact strength plastic housing

■ Temperature range: -40 °C to +80 °C
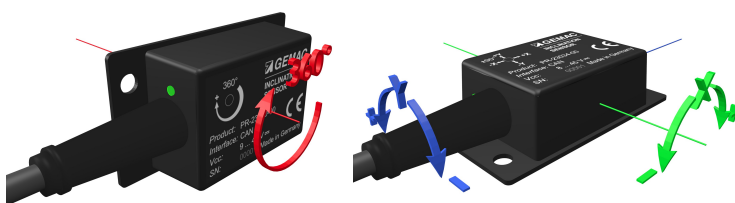
■ Degree of protection: IP65/67

The inclination sensors IS1SP360-C-BL-10 and IS1SP360-O-BL-10 are suitable to measure the inclination in the measurement range of 360°. The 2-dimensional inclination sensors IS2SP090-C-BL-10 and IS2SP090-O-BL-10 are suitable to measure the inclination in 2 dimensions (X/Y) in the measurement range of ±90°. To ensure a high accuracy, the sensors are calibrated at the factory.

The compact and robust design makes the sensor a suitable angle measurement device in rough surroundings for different applications in industry and automotive technology. A simple setting of all parameters which are stored in the internal permanent memory is possible via CAN or CANopen interface.

Applications:

■ Solar thermal and photo-voltaic systems

■ Agricultural and forestry machinery

■ Construction machinery

■ Crane and hoisting technology

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Technical Data:

General Parameters*	IS1SP360-C-BL-10 / IS1SP360-C-BL-10			IS2SP090-C-BL-10 / IS2SP090-O-BL-10		
Measurement range	360°			±90°		
Resolution	0.01°			0.01°		
Accuracy	Range	typical	maximum	Range	typical	maximum
	0 ... 360°	±0.15°	±0.25°	bis ±60°	±0.10°	±0.20°
				bis ±80°	±0.20°	±0.30°
Cross Sensitivity (compensated)	-			typ. ±0.09° (±0.10 %FS) max. ±0.45° (±0.50 %FS)		
Temperature coefficient (zero point)	typ. ±0.01 °/K					
Sampling rate	80 Hz					
Cut-off frequency	typ. 20 Hz, 2nd order (without digital filter) / 0.1 … 25Hz, 8th order (with digital filter)					
Interface						
CAN	CAN 2.0 A and B (11- and 29-Bit-ID) according to ISO 11898-2 Angle request, cyclical and synchronized outputs, parametrization, digital filter					
CANopen	CANopen according CiA DS-301, profile according to CiA DSP-410 TPDO dynamically mappable (RTR, cyclic, event-controlled, synchronized) SYNC Consumer, EMCY Producer, Heartbeat or Nodeguarding / Lifeguarding					
Electrical Parameters						
Supply voltage	8 ... 45 VDC					
Current consumption	< 16 mA @ 24 V					
Mechanical Parameters						
Connector CAN/CANopen	0.2 m PUR-shielded-cable 5x 0.34 mm² with 5-pole M12 sensor- actor- male-connector					
Degree of protection, Operating temp.	IP65/67, -40 °C ... +80 °C					
Dimensions / Weight	68 mm x 36.3 mm x 20.7 mm / approx. 40 g					
CE conformity to EC Directive 2006/42/EC						
EC Directives						
RL 2004/108/EC	EMC Directive					
RL 2006/95/EC	Low Voltage Directive (LVD)					
Harmonized standards						
DIN EN 50498:2010	EMC - Product family standard for aftermarket electronic equipment in vehicles					
EN 60950-1:2006/A1:2010	Information technology equipment. Safety. General requirements					
EN ISO 14982:2009	Agricultural and forestry machinery - EMC. Test methods and acceptance criteria					
DIN EN 13309:2010	Construction machinery - EMC of machines with internal power supply					

* All indicated angle accuracies are valid after a running time of 10 minutes at 25 °C, Cut-off frequency 0.3 Hz

Ordering Information:

Article Number	Product Type	Description/Distinction	
PR-23060-10	IS1SP360-C-BL-10	CAN	1-dimensional, 360°, 0.2 m cable with 5-pole M12-connector
PR-23064-10	IS2SP090-C-BL-10	CAN	2-dimensional, ±90°, 0.2 m cable with 5-pole M12-connector
PR-23160-10	IS1SP360-O-BL-10	CANopen	1-dimensional, 360°, 0.2 m cable with 5-pole M12-connector
PR-23164-10	IS2SP090-O-BL-10	CANopen	2-dimensional, ±90°, 0.2 m cable with 5-pole M12-connector
PR-23999-02	ISPA1	Starter kit including programming adapter, cables and PC software	