

## Dynamic Inclinometer

### Reliable tilt measurement in moving applications

#### Characteristics:

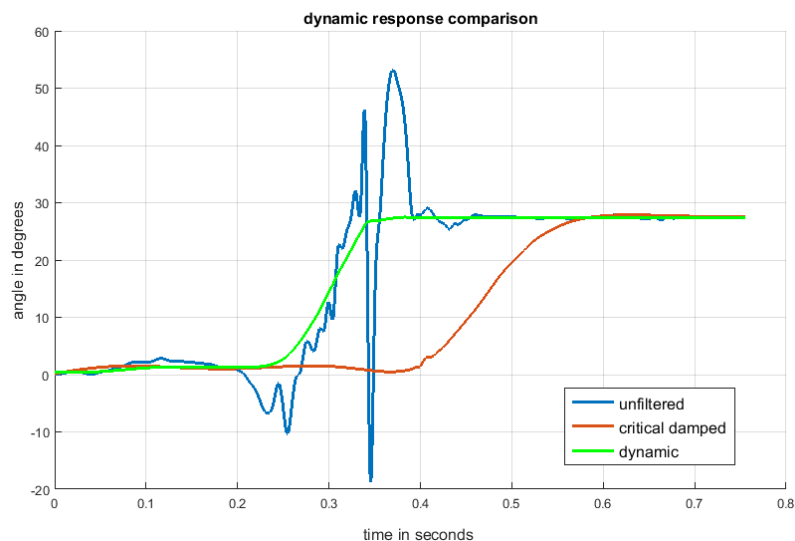
- Combination of acceleration sensor and gyroscope
- Intelligent sensor fusion filter, configurable to the target application
- Programmable vibration suppression (digital filter)
- Interfaces CAN, CANopen and SAE J1939
- High resolution of 0.01°
- Accuracy better than  $\pm 0.5^\circ$  over the full meas. range
- Internal cycle time 5 ms
- Measurement range 360° (1-dimensional) or  $\pm 90^\circ$  (2-dimensional)
- Zero point / offset configuration
- Supply voltage 8 to 36 V
- Temperature range -40 to +80 °C
- Shock resistance up to 100 g
- Comfortable and free configuration software



The GEMAC dynamic inclinometers provide reliable angle measurement in moving applications. Combining a classic acceleration sensor with an angular rate sensor enables accurate and fast measurement results even if the moving equipment is subject to strong accelerations. Existing MEMS based tilt sensors rely on monitoring the gravity effect involving measurement errors due to external forces (e.g. by rapid movement of the equipment). By adding the signals of the gyroscope, these effects are compensated leading to precise, robust and dynamic measurement results. The dynamic inclinometer can be mounted horizontally or vertically and can be used reliably on mobile equipment such as construction machinery, cranes or agriculture machinery.

#### Applications:

- Agricultural and forestry machinery
- Construction machinery
- Crane and hoisting technology



**Technical Data:**

General Parameters	IS1BP360-x-DL	IS2BP090-x-DL
Measurement range	360°	±90°
Resolution	0.01°	
Static accuracy	typical ±0.3°	
Dynamic accuracy	typical ±0.5°	
Temperature coefficient (zero point)	typical ±0.01 °/K	
Sample rate	200 Hz	
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, sensor fusion filter, 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	
SAE J1939	SAE J1939 configurable process data, cyclic output, configuration protocol, dynamic address claiming	
Electrical Parameters		
Supply voltage	8 ... 36 V DC	
Current consumption	15 mA @ 24 V	
Mechanical Parameters		
Connector	2 x sensor connector 5-pole M12 (loop through connector)	
Degree of protection	IP65/67	
Operating temperature	-40 °C ... +80 °C	
Dimensions / Weight	66 mm x 90 mm x 36 mm / approx. 200 g	

**Ordering Information:**

Article Number	Product Type	Description/Distinction
PR-26050-30	IS1BP360-C-DL	Dynamic inclinometer 1-dimensional, 360°, interface CAN
PR-26054-30	IS2BP090-C-DL	Dynamic inclinometer 2-dimensional, ±90°, interface CAN
PR-26150-30	IS1BP360-O-DL	Dynamic inclinometer 1-dimensional, 360°, interface CANopen
PR-26154-30	IS2BP090-O-DL	Dynamic inclinometer 2-dimensional, ±90°, interface CANopen
PR-26750-30	IS1BP360-J-DL	Dynamic inclinometer 1-dimensional, 360°, interface SAE J1939
PR-26754-30	IS2BP090-J-DL	Dynamic inclinometer 2-dimensional, ±90°, interface SAE J1939
PR-23999-02	ISPA1	Starter kit including programming adapter, cables and PC software