1D Gyro Sensor + Inclination Sensor with Current Interface

IS1A45G015P58

Characteristics:

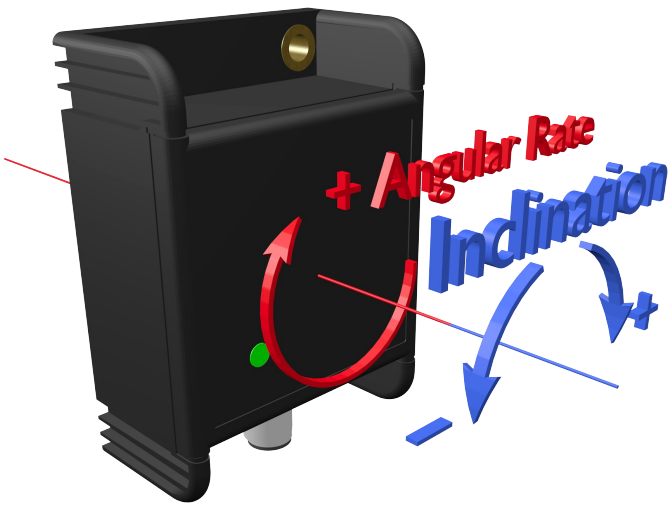
- **1-dimensional inclination sensor with measurement range ±45°**
- **1-dimensional gyro sensor with measurement range ±15 °/s**
- **LED zero point signalization and setting on request**
- **4 mA … 20 mA current interface**
- **5-pole M12 sensor connector**
- **Robust, UV and impact-resistant plastic housing**
- **Suitable for industrial and mobile use:**
  - **Temperature range: -40 °C ... +80 °C**
  - **Degree of protection: IP65/67**

The combined gyro-inclination sensor is suitable to measure the rotational speed and inclination of one axis. The full-scale readings are calibrated factory made at 25 °C.

The extremely robust plastic housing makes the sensor a suitable angle measurement device in rough surroundings for different applications.

Fields of Application:

- Agricultural and forestry machines
- Marine applications
- Utility vehicles
- Cranes and hoisting technology
- Industrial automation



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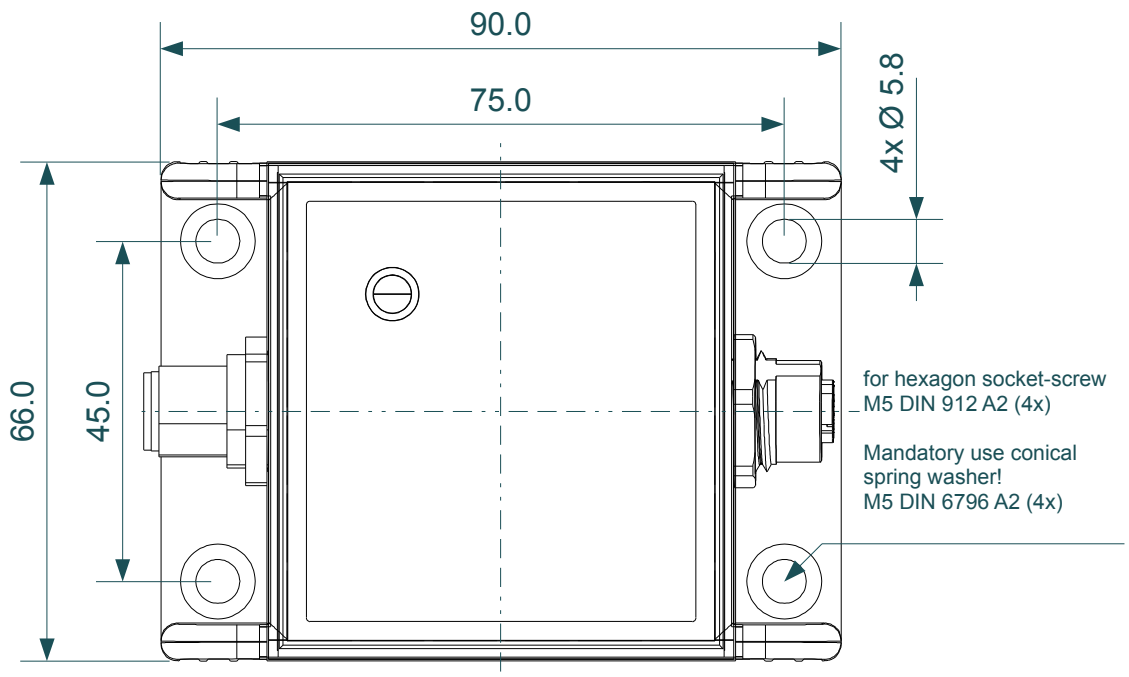
Technical Data:

General Parameters: Ta = 25 °C		
Measurement axes	1 axis	
Measurement range gyro / inclination	±15 °/s	±45°
Resolution (at zero point) gyro / inclination	0.015 °/s	0.05°
Accuracy gyro / inclination (sine)	max. ±0.035 °/s	±0.3°
Temperature coefficient (zero point) gyro / inclination	max. 0.005 °/s/K	0.025 °/K
Cross sensitivity	max. 5 %	
Cut-off frequency gyro / inclination	Typ. 7 Hz / 7 Hz (other values on request)	
Operating temperature	- 40 °C ... 80 °C	
Characteristics		
Interface	Current loop 4 mA … 20 mA; max. burden-resistor at U = 11 V: 250 Ohm	
Calculation formula Gyro value [°/s] / Angle value [°]	$\left(\frac{I_{meas}-12\,mA}{8\,mA}\right)*\text{range value}$	$\arcsin\left[\left(\frac{I_{meas}-12\,mA}{8\,mA}\right)*\sin\text{range value}\right]$
Electrical Parameters		
Supply voltage	11 V DC ... 30 V DC	
Current consumption	max. 120 mA	
Mechanical Parameters		
Connector	5-pole M12 sensor connector, IEC 61076-2-101, IEC 60947-2	
Mounting	4 x hexagon socket screws M5 DIN 912; strongly recommended: use 4 x spring washers DIN 6796 when mounting this sensor!	
Degree of protection	IP65/67 min locking torque of the sensor connector: 0.9 Nm	
Shock survival	max. 3 500 g	
Dimensions	66 mm x 90 mm x 36 mm	
Weight	about 200 g	
Standards	**EMC / Environment / Climate**	
ISO13766 (earthmoving machines EMC)	Test pulse 5 min Level 1	
ISO 10605:2001	Severity level IV: direct discharge ±8 kV; air discharge ±15 kV	
VDE 0879-2:1999, CISPR25 radio interference suppression	Measured with absorber room method Narrow band peak value: @ 0.15 MHz...1 GHz max. 19 dB (µV/m) Broad band peak value: @ 0.15 MHz...1 GHz max. 35 dB (µV/m)	
ISO 7637-2: 2004 (24 V System) 27 V	Impulses 1 - 4: severity level 3; Impulse 5: severity level 1	
ISO 11452-5: 2005 strip line	AM 80 % 1 kHz 60 V/m	
IEC 60068-2-6 vibration sinusoidal, 3 axes	5 ... 2 000 Hz; ±1.5 mm (p-p) / 30 ms-2; transit frequency 57 Hz cycle rate 1 Okt./min; test duration 2 hrs each in 3 axes (X, Y, Z)	
IEC 60068-2-27 Ea shock transport, 3 axes	50 g, 11 ms, 1/s, 3/axis	
DIN-IEC 60068-2-14 Na TW (-40 °C … +80 °C)	Transition period 1 min; retention period 1 h; 5 cycles; specimen passive	
DIN EN 60068-2-14 Test Nb (-40 °C ... +80 °C)	Temperature gradient 3 K/min; retention period 1 h; 5 cycles; specimen active	
DIN-IEC 60068-2-2Bb (B dry heat)	+85 °C	
DIN-IEC 60068-2-2 Ab (test group A low temperature)	-40 °C	
DIN-IEC 60068-2-32	1 x free fall per axis from 1 m height	

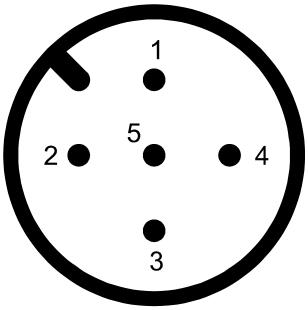
Dimensioned Drawing:

Dimensions in mm



Plug Connector Allocation:

Pin	Allocation
1	Supply voltage (V+)
2	Sensor signal gyro (Gyro-OUT)
3	GND supply (V- / GND)
4	Sensor signal inclination (INCL-OUT)
5	Reference potential for sensor signal (GND-SENS)



(View from the outside)

Ordering Information:

Product Type	Description / Distinction	Article Number
IS1A45G015P58	1-dimensional, inclination ±45°, gyro ±15 °/s, 4 mA ... 20 mA	PR-24950-00

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