SIL2 / PLd Certified sensor

QG76N-SDXYh-090-CANS-C(F)M-2d

Safety inclination sensor
2 axis horizontal mounting
Programmable device
Interface: CANopen Safety

SIL CL 2 (acc. to IEC 62061)
PLd (acc. to EN ISO 13849)

Measuring range ± 90°

<table>
<thead>
<tr>
<th>General specifications v20190501</th>
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<tbody>
<tr>
<td>Stainless steel (AISI 316)</td>
</tr>
<tr>
<td>70x60x33 mm</td>
</tr>
<tr>
<td>Included: 4x M4x30 mm stainless steel (A4) Hexagon socket head screws</td>
</tr>
<tr>
<td>IP67 (IP68 with optional cable gland)</td>
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<tr>
<td>0 - 100%</td>
</tr>
<tr>
<td>approx. 700 gram</td>
</tr>
<tr>
<td>8 - 60 V dc SELV</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>≤ 25 mA</td>
</tr>
<tr>
<td>-40 .. +85 °C</td>
</tr>
<tr>
<td>± 90°</td>
</tr>
<tr>
<td>Yes (CANout 0 = 0°), range: ±5°</td>
</tr>
<tr>
<td>0 - 20 Hz</td>
</tr>
<tr>
<td>overall 0,15° typ.</td>
</tr>
<tr>
<td>&lt; ± 0,05° typ. (not ± 0,1° max.) after centering</td>
</tr>
<tr>
<td>&lt; ± 0,1° typ. (not ± 0,2° max.)</td>
</tr>
<tr>
<td>not applicable</td>
</tr>
<tr>
<td>0,05°</td>
</tr>
<tr>
<td>± 0,01°/K typ.</td>
</tr>
<tr>
<td>10.000 g</td>
</tr>
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</table>

According to ISO 11898-1 & ISO 11898-2 (also known as CAN 2.0 A/B)
CANopen Safety protocol: EN 50325-5, CANopen protocol: EN 50325-4 (CiA 301 v4.0 & and 4.2.0)
CANopen device profile for inclinometers: CiA 410 version 2.0.0

Baud rate
125 kbit/s (default, range 10/20/50/100/125/250/500/800/1000 kbit/s)

Node Id
01h (default, range 01h - 3Fh) (01h - 7Fh with adapted COB-ID's)
50 ms (default, range 10-500 ms)
off (default, range on/off)

Sync mode (TPDO’s), Heartbeat
01h (default, range 01h - 3Fh) (01h - 7Fh with adapted COB-ID's)

Output format
SRDO1 COB-ID1
SRDO1 COB-ID2

Safeguard cycle time (SCT)
80ms in CAN object dictionary, worst case 100ms

Safety related validation time (SRVT)
20ms

Filtering
Output filter disabled

Reaction on error
Emergency message 080h+Node-ID followed by NMT stop state (no CAN communication)

< 1 s

by CANopen object dictionary (CAN parameters, filtering)
**QG76N-SDXYh-090-CANS-C(F)M-2d**

**Transfer characteristic**

- **CANoutput = 100°α**
- **Clipping outside measuring range**

**Measurement orientation**

- **Default 0°: horizontal (label upwards), no acceleration applied.**
- **To eliminate mounting offsets the sensor can be centered within ±5° tilt (by the CAN object dictionary).**
- **Cross tilt sensitivity error:**
  - < (0,12 * cross tilt angle)^2 % typ.
  - → one axis <10° tilt for max. accuracy
  - → only one axis may exceed 45° tilt

**Connectivity**

- **Male only or Male & Female (internal T-junction) M12 connector (5 pins, A-coding)**
- **(CiA303 V1.8.0)** (stainless steel 1.4404 (316L), contacts copper alloy)
- **No bus termination inside. A CANbus always has to be terminated properly. For bus termination order separate M12 termination resistor (optional: T-connector).**

**Mechanical dimensions (indicative only)**

**CAN-manual, EDS-file, Safety Information, Ordering codes**

A CANopen-safety manual, EDS-files (CiA303 V1.8.0) and a Declaration of Conformity are available on www.dis-sensors.com/downloads.

**Safety information:**
- This datasheet + relevant manual must be read and understood before using this safety device.
- Certified level: SIL CL 2 (acc. to IEC 62061), PLe (acc. to EN ISO 13849)
- EC type examination by DEKRA EXAM GmbH Reg. no.: 2P/0010/16
- Hardware architecture: HFT=10 (acc. to IEC 62061, CAT 2) (according to EN ISO 13849)
- Standard (-40°C to +85°C); MTTFd: 447 year, DC: 93%, CCF: 70 pt, SFF: 98%, PFHd: 1.4E-09
- High Temp. (up to +85°C); MTTFd: 73 year, DC: 93%, CCF: 70 pt, SFF: 98%, PFHd: 9.1E-09
- Only a SELV power supply should be used
- Redundancy Compare Time (error if this time is expired): customer adjustable (default 2000ms)
- Redundancy Compare Angle (error if angle difference > this value): customer adjustable (default 3°)
- Redundancy error: Redundancy Compare Angle & Redundancy Compare Time exceeded
- Error: any detected error or a redundancy error
- Safety Related Fault Resons Time (SRFRT): 100ms + Redundancy Compare Time (default 2000ms)

As this device is accelerometer-based the sensor is inherently sensitive to accelerations/vibrations. Application specific testing must be carried out to check whether this sensor will fulfill your requirements.

**Ordering codes:**
- **M12 Male: QG76N-SDXYh-090-CANS-CM-2d**
- **M12 Male & Female: QG76N-SDXYh-090-CANS-CFM-2d**