QG series

QG76N-SAXYZ-8,0-CANS-C(F)M-UL-2d

SIL2 / PLd Certified sensor

Safety acceleration sensor
3 axis horizontal/vertical mounting (RMS or Signed Peak value)
Programmable device
Interface: CANopen Safety

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

Measuring range
± 8 g

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### General specifications v20200408

**Stainless steel (AISI 316)**
70x60x33 mm

**Included:** 4x M4x30 mm stainless steel (A4) Hexagon socket head screws

**IP67 (IP68 with optional cable gland)**
0 - 95% (non condensing, housing fully potted)

**approx. 700 gram**

**Supply voltage**
8 - 32 V dc SELV

**Polarity protection**
Yes

**Current consumption**
≤ 25 mA

**Operating temperature**
-40 .. +80 °C

**Storage temperature**
-40 .. +85 °C

**Measuring range**
± 8 g

**Yes, 2 horizontal axes only, (CANout 0 = 0 g), range: ±5°**

0 - 1600 Hz

±1.5/4/8 g: overall 0.04/0.07/0.1 g typ.

< ± 20 mg after zeroing

< ± 1% full scale

< ± 2%

16 mg

> ± 0.3 mg/K typ.

10.000 g

**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)

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

**Node ID**
01h (default, range: 01h - 7Fh)

**TPDO1 event time**
50 ms (default, range 10-500 ms)

**Sync mode (TPDO’s)**
off (default, range on/off)

**Heartbeat**
off (default, range on/off)

**Output format**

<table>
<thead>
<tr>
<th>Integer:</th>
<th>-8000 to +8000 (SRDO:X=byte 2,1; Y=byte 4,3; Z=byte 6,5) (byte 7,8: integer 0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>101h (default, range: FFh + 2x node ID -&gt; 101h-17Fh)</td>
<td></td>
</tr>
<tr>
<td>102h (default, range: 100h + 2x node ID -&gt; 102h-180h)</td>
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<td>80ms(default, worst case 100ms)</td>
<td></td>
</tr>
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</table>

**Output filter disabled. Default output mode: Signed Peak**

**Emergency message:** 080h+Node-ID followed by NMT stop state (no CAN communication)

**< 1 s**

by CANopen object dictionary (CAN parameters, filtering)

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**Housing**
Stainless steel (AISI 316)

**Mounting**
Included: 4x M4x30 mm stainless steel (A4) Hexagon socket head screws

**Ingress Protection (IEC 60529)**
IP67 (IP68 with optional cable gland)

**Relative humidity**
0 - 95% (non condensing, housing fully potted)

**Weight**
approx. 700 gram

**Supply voltage**
8 - 32 V dc SELV

**Polarity protection**
Yes

**Current consumption**
≤ 25 mA

**Operating temperature**
-40 .. +80 °C

**Storage temperature**
-40 .. +85 °C

**Measuring range**
± 8 g

**Centering function**
Yes, 2 horizontal axes only, (CANout 0 = 0 g), range: ±5°

**Frequency response (-3dB)**
0 - 1600 Hz

**Typ. Accuracy @20°C (2o)**
±1.5/4/8 g: overall 0.04/0.07/0.1 g typ.

< ± 20 mg after zeroing

< ± 1% full scale

< ± 2%

16 mg

> ± 0.3 mg/K typ.

10.000 g

---

**CAN interface (physical layer)**
According to ISO 11898-1 & ISO 11898-2 (also known as CAN 2.0 A/B)

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**Emergency message:** 080h+Node-ID followed by NMT stop state (no CAN communication)

**< 1 s**

by CANopen object dictionary (CAN parameters, filtering)

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**Boot time**
< 1 s

**Programming options**
by CANopen object dictionary (CAN parameters, filtering)
QG76N-SAXYZ-8,0-CANS-C(F)M-UL-2d

Transfer characteristic

CANoutput = 1000*g
No clipping outside measuring range

Measurement orientation

The default 0 g position is when the sensor is mounted horizontal or vertical and no acceleration is applied. The axis parallel to earth gravity will indicate 1 g, the two horizontal axes will indicate 0 g. The two horizontal axes can be zero-ed within ±5° tilt (by the CAN object dictionary) to eliminate mounting offsets. The axis parallel to earth gravity cannot be zero-ed. Optional the axis parallel to earth gravity can be compensated for 1 g gravity by the CAN object dictionary.

Output value: Signed Peak (default) or RMS (selectable by CAN object dictionary)

Connectivity (length ±10%)

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)

Wire / pin coding

<table>
<thead>
<tr>
<th>Pin 1:</th>
<th>Shield</th>
</tr>
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<tbody>
<tr>
<td>Pin 2:</td>
<td>Vcc</td>
</tr>
<tr>
<td>Pin 3:</td>
<td>Gnd &amp; CAN_GND</td>
</tr>
<tr>
<td>Pin 4:</td>
<td>CAN_H</td>
</tr>
<tr>
<td>Pin 5:</td>
<td>CAN_L</td>
</tr>
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Mechanical dimensions (indicative only)
A CANopen-safety manual, EDS-files (CiA306 V1.3.0) 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), PLd (acc. to EN ISO 13849)
- EC type examination by DEKRA EXAM GmbH Reg. no.: ZP/C015/16
- hardware architecture: HFT=0 (according IEC 62061, CAT.2 (according to EN ISO 13849)
- only a SELV power supply should be used
- Redundancy Compare Time (error if this time is expired): customer adjustable (default 2000ms)
- Redundancy Compare Acceleration (error if acceleration-difference > this value): customer adjustable (default 580mg)
- Redundancy error: Redundancy Compare Angle & Redundancy Compare Time exceeded
- Error: any detected error or a redundancy error
- Safety Related Fault Respons Time (SRFRT): 100ms + Redundancy Compare Time (default 2000ms)

QG series sensors are intended to measure inclination/acceleration/tilt. Flawless function (acc. spec.) is ensured only when used within specifications. Modifications or non-approved use will result in loss of warranty and void any claims against the manufacturer.

UL & c-UL listed product (File number E312057, UL508 standards UL60947-5-2 & CSA-C22.2 No. 14)
Product Identity / Category Code Number (CCN): Industrial Control Equipment / NRKH & NRKH7
Enclosure rating: type 1, Ambient temperature: max 80 °C (see also datasheet, lowest value applies)
Electrical ratings: Intended to be used with a Class 2 power source in accordance with UL1310, max. input Voltage 32V dc (see also datasheet, lowest value applies), max. current 200mA
Accessory Cable Assembly: Any UL-listed (CYJV/7) mating connector with mechanical locking, wire thickness of at least 30 AWG (0,05 mm²), recommended ≤23 AWG (≥0,25 mm²)

This sensor is inherent sensitive for accelerations/vibrations.
Application specific testing must be carried out to check whether this sensor will fulfill your requirements.

Ordering codes:
M12 Male: QG76N-SAXYZ-8.0-CANS-CM-UL-2d
M12 Male & Female: QG76N-SAXYZ-8.0-CANS-CFM-UL-2d