

QG series

QG76D Analog High accuracy series

QG76D-SDXYh-030H-AI-CM-UL

Dynamic Inclination sensor

2 axis horizontal mounting

Factory programmable device

Output: 4 - 20 mA

Measuring range programmable between $\pm 1^\circ$ and $\pm 30^\circ$

Measuring range
Factory defaults: $\pm 30^\circ$



General specifications 14347, v20241112

Stainless steel (AISI 316)

70x60x33 mm

Not Included: 4x M4 Hexagon socket head screws

IP67, IP69K (with IP69K mating connector), (IP68 with optional cable gland)

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

approx. 700 gram

10 - 32 V dc

Yes

≤ 25 mA (excluding output signal)

-40 .. +80 °C

-40 .. +85 °C

Factory defaults: $\pm 30^\circ$

Yes (12 mA = 0°), range: $\pm 5^\circ$

0 - 50 Hz, Max angle rate 500°/s

0,08° typ. (static), 0,5° typ. (dynamic)

$\pm 0,05^\circ$ typ. ($\pm 0,1^\circ 2\sigma$) after zero adjustment

$\pm 0,06^\circ$ typ., $\pm 0,1^\circ 2\sigma$, $\pm 0,15^\circ$ max., Dynamic: $\pm 0,5^\circ$ typ. (*) (**)

not applicable. Repeatability 0,05°

0,01°

$\pm 0,3^\circ$ typ., $\pm 0,5^\circ (2\sigma)$ over full Temperature range

10,000g (max 0,2ms, non-repetitive)

4 - 20 mA

$0 \leq R_{load} \leq (V_{cc}-3) / 20\text{mA} (\Omega)$, $32 \geq V_{cc} \geq 3+(R_{load} * 20) (V)$

Yes

10 ms

Factory programmable (measuring range, filtering)

Housing

Dimensions (indicative)

Mounting

Ingress Protection (IEC 60529)

Relative humidity

Weight

Supply voltage

Polarity protection

Current consumption

Operating temperature

Storage temperature

Measuring range

Centering function

Frequency response (-3dB)

Accuracy (overall @20°C)

Offset error

Non linearity

Sensitivity error

Resolution

Temperature coefficient

Max mechanical shock

Output

Output load

Short circuit protection

Output refresh rate

Programming options

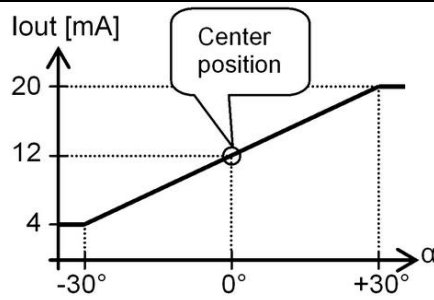
QG76D-SDXYh-030H-AI-CM-UL

$$I_{out} = 12 + 8 \cdot (\alpha/30) \text{ [mA]}$$

Clipping outside measuring range

Zero adjustment: eliminate mech. offsets
 Connect zero adjustment input to ground (>0,5sec) within 1 min. after power up. Normally this input should be left unconnected or permanent connected to Gnd

Transfer characteristic

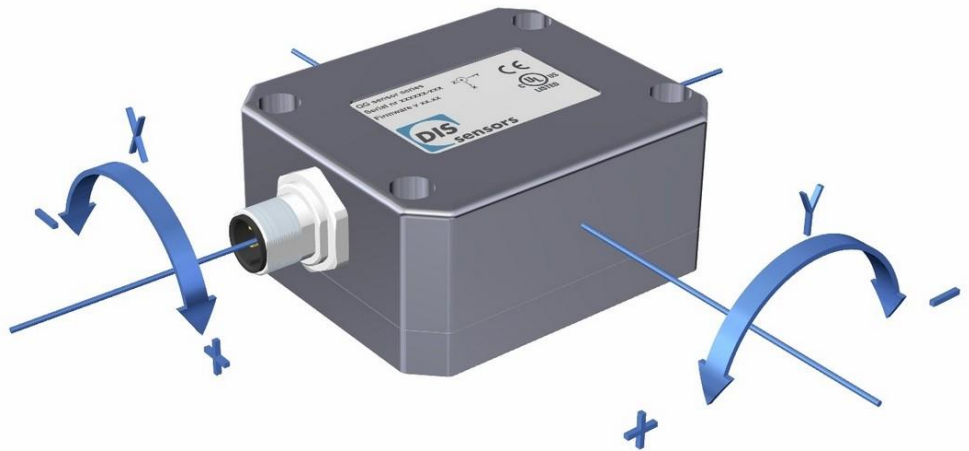


Default 0°: horizontal (label upwards), no acceleration applied.

Cross tilt sensitivity error:
 $< (0,12 \cdot \text{cross tilt angle})^2 \% \text{ typ.}$

→ one axis <10° tilt for max. accuracy

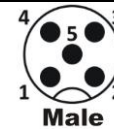
Measurement orientation



Connectivity (cable length ±10%)

M12 male 5p A-coding connector (stainless steel 1.4404 (316L), contacts copper alloy)

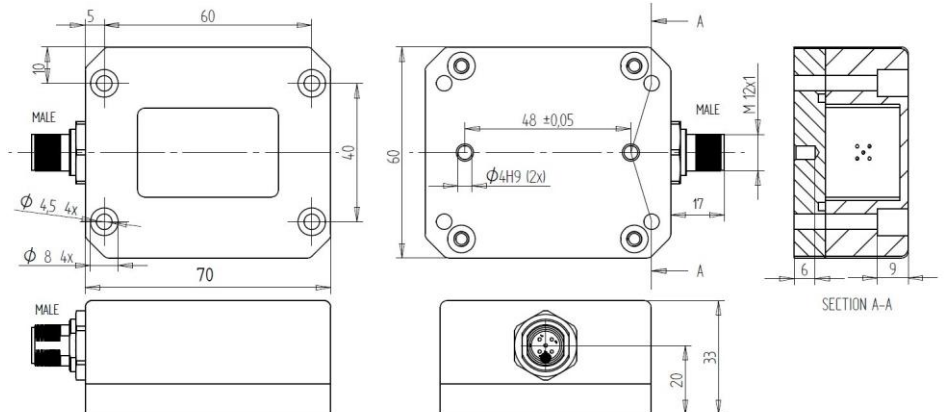
- Pin 1: + Supply voltage
- Pin 2: Output Y
- Pin 3: Gnd
- Pin 4: Output X
- Pin 5: Zero adjustment input



Connection

Wire / pin coding

Mechanical dimensions (indicative only)



Remarks, Installation instructions, UL, E4ready

QG series sensors are intended to measure inclination/acceleration/tilt. Flawless function (acc. spec.) is ensured only when used within specifications. This device is not a safety component acc. to EU Machine Directive (ISO13849). For full redundancy two devices can be used. 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)

Installation instructions:

1. The cable must always be used as a whole (wires may not be separated from each other)
2. For the automotive (non-R10) standards ISO 13766-1 and -2 (earth moving machinery) and ISO 14982 (agricultural), the sensor may not be directly powered from the vehicle's battery.

As this device is accelerometer-based the sensor is inherent sensitive for accelerations/vibrations. Application specific testing must be carried out to check whether this sensor will fulfil your requirements. Before using this device, please read this datasheet, the Manual and the Declaration of Conformity carefully (download from dis-sensors.com)

This product is E4ready and meets Automotive EMC requirements