

QG series

QG76 analog H-series

QG76-SD-090H-AI-CM-UL

Inclination sensor

2 axis horizontal mounting

Factory programmable device

Output: 4 - 20 mA

Measuring range programmable

between $\pm 1^\circ$ and $\pm 90^\circ$

Measuring range

Factory defaults: $\pm 90^\circ$



General specifications v20210921

Stainless steel (AISI 316)

70x60x33 mm

Included: 4x M4x30 mm stainless steel (A4) 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 - 30 V dc

Yes

≤ 25 mA (excluding output signal)

$-40 \dots +80$ °C

$-40 \dots +85$ °C

Factory defaults: $\pm 90^\circ$

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

0 - 10 Hz

0,09° typ. ($-60^\circ \dots +60^\circ$)

$\pm 0,03^\circ$ typ. ($\pm 0,08^\circ$ 2 σ) after centering

$\pm 0,07^\circ$ typ., $\pm 0,1^\circ$ 2 σ $\pm 0,15^\circ$ max. ($-60^\circ \dots +60^\circ$)

not applicable. Repeatability 0,05°

0,01°

$\pm 0,005^\circ/\text{K}$ typ.

20.000g

4 - 20 mA

Rload $\leq (50 \cdot V_s - 300)$ (Ω) (Eg: $V_s = 24$ V: Rload ≤ 900 Ω)

Yes ($T < 55^\circ\text{C}$), Max 10 s ($T > 55^\circ\text{C}$)

20 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

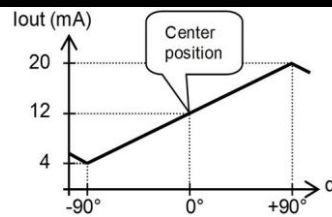
Programming options

QG76-SD-090H-AI-CM-UL

$$I_{out} = 12 + 8 \cdot (\alpha/90) \text{ [mA]}$$

No clipping outside measuring range

Transfer characteristic

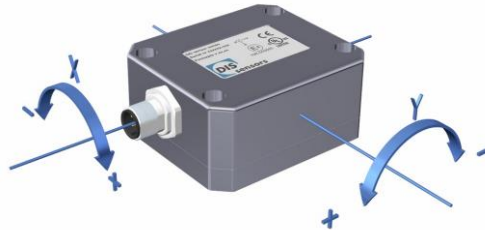


Default 0°: horizontal (label upwards), no acceleration applied.

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

- one axis <10° tilt for max. accuracy
- only one axis may exceed 45° tilt

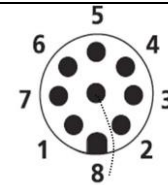
Measurement orientation



Connectivity (cable length ±10%)

M12 male 8p connector (stainless steel 1.4404 (316L), contacts copper alloy)

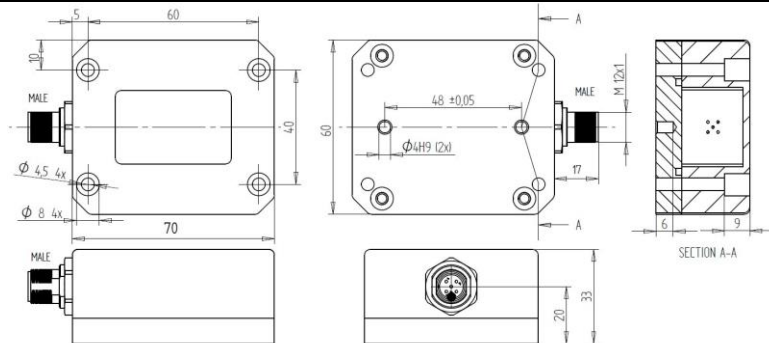
- | | |
|--------|----------------------|
| Pin 1: | Output Y |
| Pin 2: | Supply voltage |
| Pin 3: | for factory use only |
| Pin 4: | for factory use only |
| Pin 5: | Gnd |
| Pin 6: | Centering input |
| Pin 7: | Output X |
| Pin 8: | Not connected |



Connection

Wire / pin coding

Mechanical dimensions (indicative only)



Center function, intended use & UL

Centering can be done to eliminate mechanical offsets. To execute centering connect center input to ground (>0,5sec) within 1 min. after power up. After centering you have 1 min. left for another centering. Normally the center input should be left unconnected.

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)

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.