

# 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 v20230412

Stainless steel (AISI 316)

70x60x33 mm

Not 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

$\leq 25$  mA (excluding output signal)

$-40 \dots +80^\circ\text{C}$

$-40 \dots +85^\circ\text{C}$

Factory defaults:  $\pm 90^\circ$

Yes (12 mA =  $0^\circ$ ), 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 $\sigma$ ) after centering

$\pm 0,07^\circ$  typ.,  $\pm 0,1^\circ$  2 $\sigma$   $\pm 0,15^\circ$  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  $\leq (50 \cdot V_s - 300)$  ( $\Omega$ ) (Eg:  $V_s = 24$  V: Rload  $\leq 900$   $\Omega$ )

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

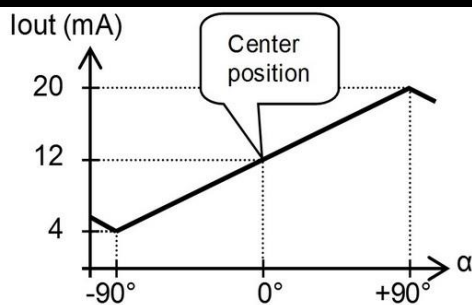
Output refresh rate

Programming options

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

No clipping outside measuring range

## Transfer characteristic

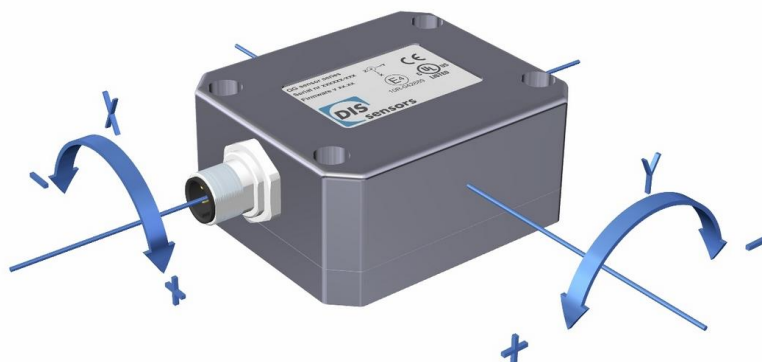


Default 0°: horizontal (label upwards), no acceleration applied.

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

→ one axis  $< 10^\circ$  tilt for max. accuracy  
 → only one axis may exceed  $45^\circ$  tilt

## Measurement orientation



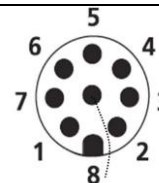
## Connection

Wire / pin coding

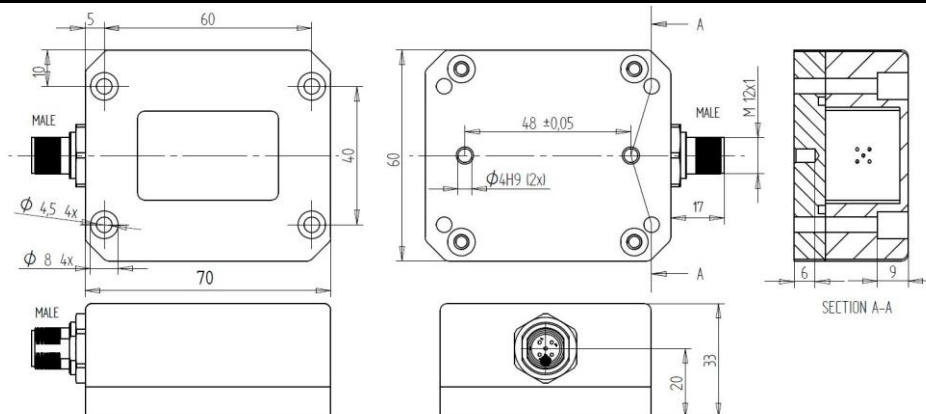
## Connectivity (cable length $\pm 10\%$ )

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



## 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 ( $>0,5\text{sec}$ ) 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  $80^{\circ}\text{C}$  (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 ( $0,05\text{ mm}^2$ ), recommended  $\leq 23\text{ AWG}$  ( $\geq 0,25\text{ mm}^2$ )

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.