

# QG series

## QG76 analog H-series

QG76-SI-360H-AI-CM-UL

### Inclination sensor

1 axis vertical mounting

Factory programmable device

Output: 4 - 20 mA

Measuring range programmable  
between 1° and 360°

Measuring range  
Factory default: ±180°



### General specifications 12399, 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 .. +80 °C

-40 .. +85 °C

Factory default: ±180°

Yes (12 mA = 0°), range 360°

0 - 10 Hz

0,07° typ.

± 0,03° typ. ( ± 0,08° 2σ ) after centering

± 0,06° typ., ± 0,1° 2σ, ± 0,15° max.

not applicable. Repeatability 0,05°

0,01°

± 0,005°/K typ.

20.000g

4 - 20 mA

Rload ≤ (50\*Vs -300) (Ω) (Eg: Vs = 24 V: Rload ≤ 900 Ω)

Yes (T<55°C), Max 10 s (T>55°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-SI-360H-AI-CM-UL

$$I_{out} = 12 + 8 \cdot (\alpha / 180) \text{ [mA]}$$

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.

Rotation in vertical plane.

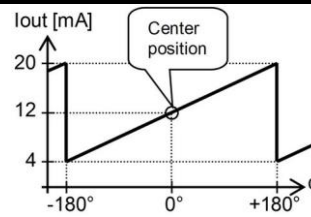
Lateral tilt sensitivity error:  
 $< \pm 0,03^\circ$  lateral tilt (typ.)  
 Max. lateral tilt:  $45^\circ$

Drawn in default  $0^\circ$  position.

Connection

Wire / pin coding

### Transfer characteristic



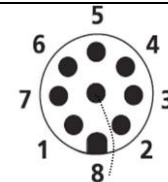
### Measurement orientation



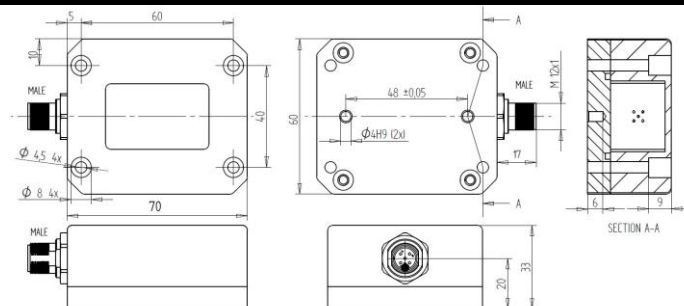
### Connectivity (cable length $\pm 10\%$ )

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

- Pin 1: Output for factory use only
- 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
- 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 (>0,5sec) 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  $80^\circ\text{C}$  (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.