

# QG series

## QG76 analog H-series

QG76-SD-010H-AI-CM-UL

### Inclination sensor

2 axis horizontal mounting

Factory programmable device

Output: 4 - 20 mA

Measuring range programmable

between  $\pm 1^\circ$  and  $\pm 10^\circ$

Measuring range

Factory defaults:  $\pm 10^\circ$



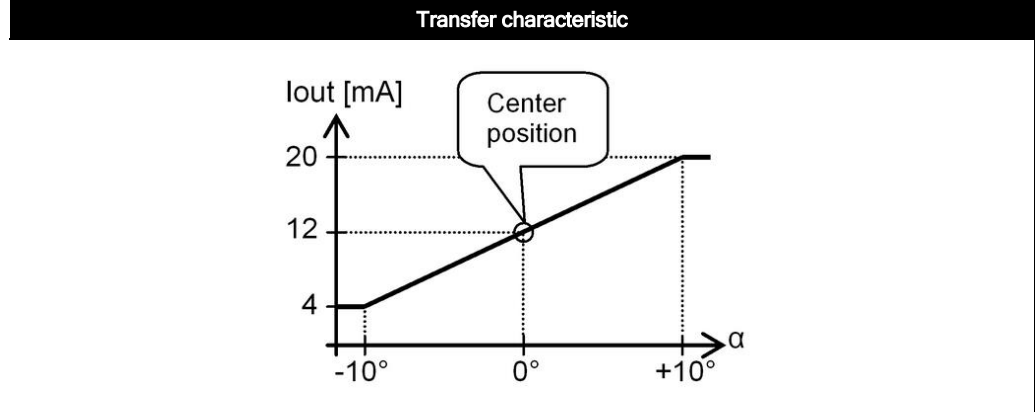
### General specifications 12388, v20230412

Housing	Stainless steel (AISI 316)
Dimensions (indicative)	70x60x33 mm
Mounting	Not Included: 4x M4x30 mm stainless steel (A4) Hexagon socket head screws
Ingress Protection (IEC 60529)	IP67, IP69K (with IP69K mating connector), (IP68 with optional cable gland)
Relative humidity	0 - 95% (non condensing, housing fully potted)
Weight	approx. 700 gram
Supply voltage	10 - 30 V dc
Polarity protection	Yes
Current consumption	$\leq 25$ mA ( excluding output signal )
Operating temperature	-40 .. +80 °C
Storage temperature	-40 .. +85 °C
Measuring range	Factory defaults: $\pm 10^\circ$
Centering function	Yes (12 mA = 0°), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 10 Hz
Accuracy (overall @20°C)	0,04° typ.
Offset error	$\pm 0,02^\circ$ typ. ( $\pm 0,05^\circ 2\sigma$ ) after centering
Non linearity	$\pm 0,04^\circ$ typ., $\pm 0,07^\circ 2\sigma$ , $\pm 0,09^\circ$ max.
Sensitivity error	not applicable. Repeatability 0,05°
Resolution	0,01°
Temperature coefficient	$\pm 0,005^\circ/K$ typ.
Max mechanical shock	20.000g
Output	4 - 20 mA
Output load	Rload $\leq (50 \cdot V_s - 300)$ ( $\Omega$ ) (Eg: $V_s = 24$ V: Rload $\leq 900 \Omega$ )
Short circuit protection	Yes (T<55°C), Max 10 s (T>55°C)
Output refresh rate	20 ms
Programming options	Factory programmable (measuring range, filtering)

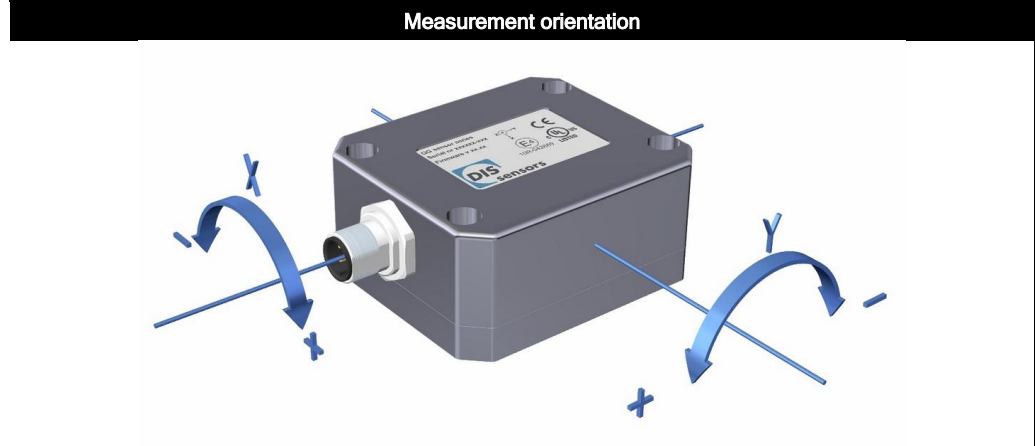
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$I_{out} = 12 + 8 \cdot (\alpha/10)$  [mA]  
 clipping outside measuring range



Default 0°: horizontal (top upwards), no acceleration applied.  
 Cross tilt sensitivity error:  
 $< (0,12 \cdot \text{cross tilt angle})^2$  % typ.  
 → one axis <10° tilt for max. accuracy



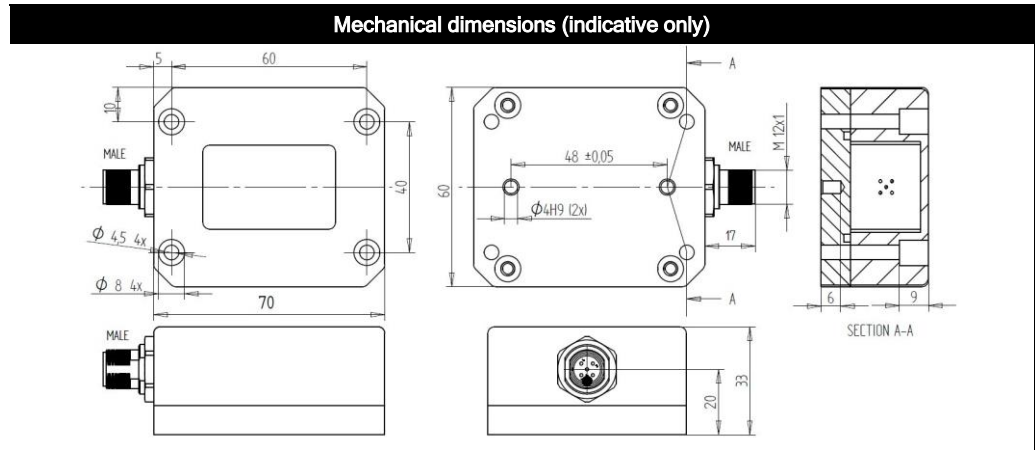
Connection  
 Wire / pin coding

### 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

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 mm<sup>2</sup>), recommended ≤23 AWG (≥0,25 mm<sup>2</sup>)

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.