QG series

Discontinued: QG76 analog H-series. Successor: QG76N2 High accuracy series

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

Inclination sensor

2 axis horizontal mounting

Factory programmable device
Output: 4 - 20 mA

Measuring range programmable
between ±1° and ±90°

Measuring range
Factory defaults: ± 90°



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CE

	General specifications v20241104
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	≤ 25 mA (excluding output signal)
Operating temperature	-40 .. +80 °C
Storage temperature	-40 .. +85 °C
Measuring range	Factory defaults: ± 90°
Centering function	Yes (12 mA = 0°), range: ±5°
Frequency response (-3dB)	0 - 10 Hz
Accuracy (overall @20°C)	0,09° typ. (-60°…+60°)
Offset error	± 0,03° typ. (± 0,08° 2σ) after centering
Non linearity	± 0,07° typ., ± 0,1° 2σ ± 0,15° max. (-60°…+60°)
Sensitivity error	not applicable. Repeatability 0,05°
Resolution	0,01°
Temperature coefficient	± 0,005°/K typ.
Max mechanical shock	20.000g
Output	4 - 20 mA
Output load	Rload ≤ (50*Vs -300) (Ω) (Eg: Vs = 24 V: Rload ≤ 900 Ω)
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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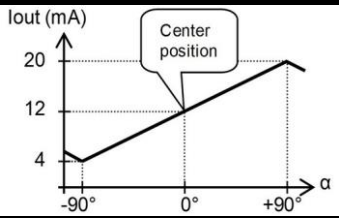
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Iout = 12 + 8*(α/90) [mA]

No clipping outside measuring range

Transfer characteristic



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

Cross tilt sensitivity error:
< (0,12 * cross tilt angle)² % typ.

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

Measurement orientation



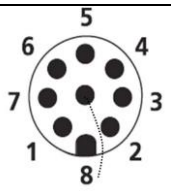
Connectivity (cable length ±10%)

Connection

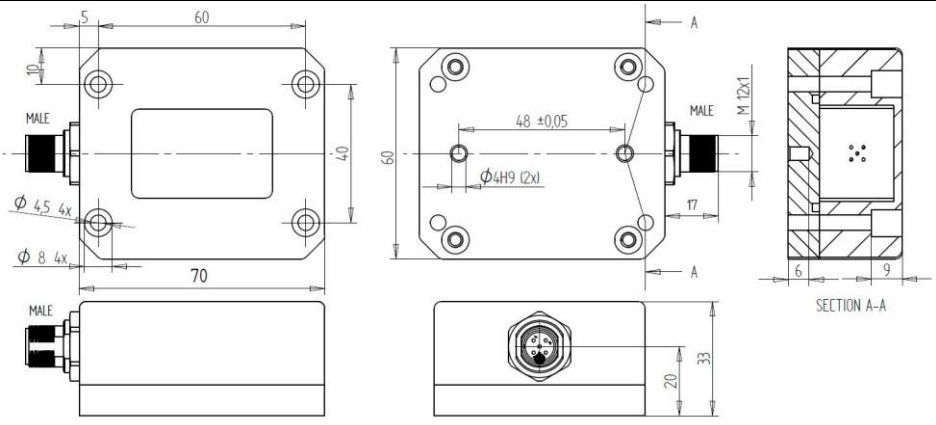
Wire / pin coding

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)



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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.

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