

QG series

H-series

QG40-KD-030H-AI-CM-UL

Inclination sensor 2-axis

Non-programmable device

Output: 4 - 20 mA

2-axis horizontal mounting
1-axis hori-/vertical mounting

For demanding applications

Measuring range
 $\pm 30^\circ$



General specifications 12291, v20180112

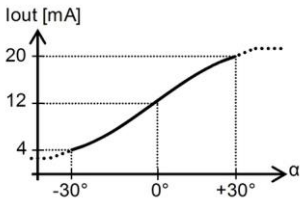
Housing	Plastic injection molded housing (Arnite T06 202 PBT black)
Dimensions (indicative)	40x40x25 mm
Mounting	Included: 2x M3x25 mm zinc plated steel pozidrive pan head screws, self-tapping (PZ DIN 7500C)
Ingress Protection (IEC 60529)	IP67, IP69K
Relative humidity	0 - 100%
Weight	approx. 45 gram
Supply voltage	10 - 30 V dc
Polarity protection	Yes
Current consumption	≤ 30 mA (excluding output signal)
Operating temperature	-40 .. +85 °C
Storage temperature	-40 .. +85 °C
Measuring range	$\pm 30^\circ$
Centering function	No
Frequency response (-3dB)	0 - 18 Hz (± 10 Hz)
Typ. Accuracy @20°C (2 σ)	overall 0,6° typ. (offset excluded)
Offset error	$< \pm 1^\circ$ typ. ($< \pm 3^\circ$ max.)
Non linearity	$< \pm 0,4^\circ$
Sensitivity error	$< \pm 2\%$ typ. ($< \pm 3.5\%$ max.)
Resolution	0,01°
Temperature coefficient	$\pm 0,01^\circ/\text{K}$ typ
Max mechanical shock	20.000g
Output	4 - 20 mA
Output load	Rload $\leq (50 \cdot V_s - 300)$ [Ω] (Eg: $V_s = 24$ V: Rload $\leq 900 \Omega$)
Short circuit protection	Yes (max 10 s)
Repeatability	0,1°
Programming options	not applicable

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$I_{out} = 12 + 16 \cdot \sin(\alpha)$ [mA]
 Outside measuring range sensor transfer formula is valid until clip level of approximately 2.5mA & 22.5mA

Transfer characteristic



0° positions drawn in plot at the right.

Horizontal mounting:
 1-axis or 2-axis usage
 Connect output-X and/or output-Y according the plot at the right.

In case of 2-axis usage:
 Tilting one axis will influence the other axis, significant influence (10%) when > 25°.

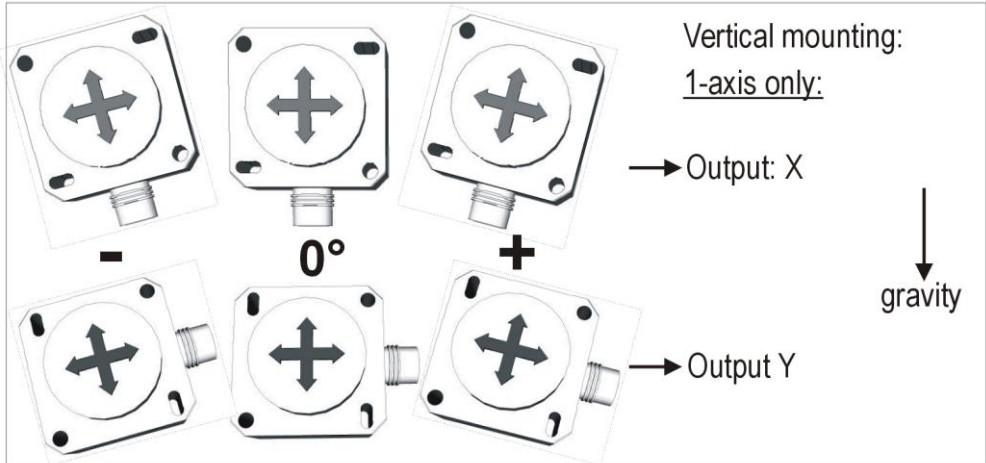
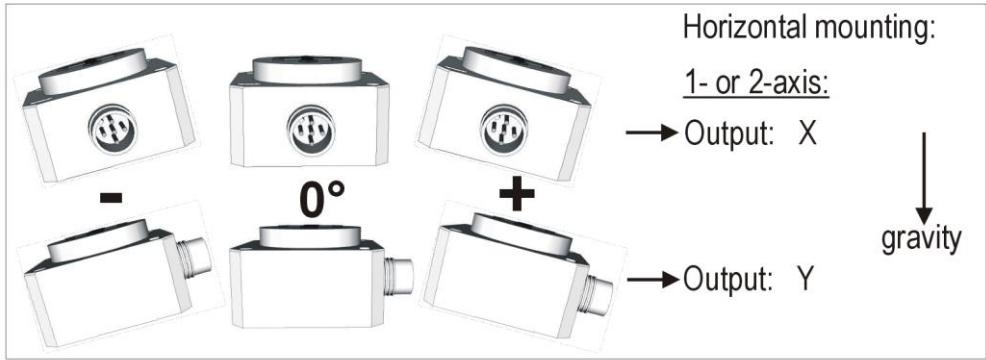
Upside down mounting possible (sensor-nose down)

Vertical mounting:
 1-axis usage only
 Connect output-X and/or output-Y according the plot at the right.

Connector down: Y-output not valid
 Mounting with M12 to top possible

Connector side: X-output not valid
 Mounting with M12 to left possible

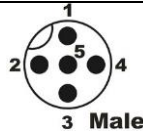
Measurement orientation



Connectivity (length ±10%)

M12 5p male connector (Glass fibre reinforced grade, contacts CuZn pre-nickelated galv. Au)

- Pin 1: + Supply Voltage
- Pin 2: output Y
- Pin 3: Gnd
- Pin 4: output X
- Pin 5: not connected



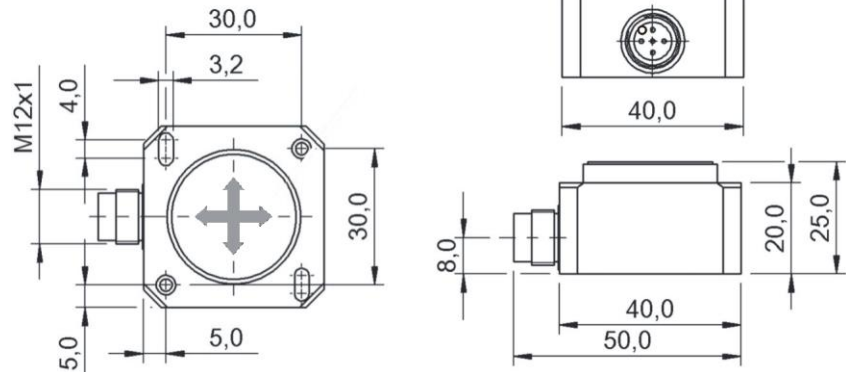
If connected with M12 F (accessory sold by DIS):

- Brown: '+ Supply Voltage
- White: output Y
- Blue: Gnd
- Black: output X
- Green/yellow: not connected

Connection

Wire / pin coding

Mechanical dimensions (indicative only)



Intended use, UL, Remarks

QG series sensors are intended to measure inclination, acceleration or tilt angle after installing in machines, equipment and systems. Flawless function in accordance with the specifications is ensured only when the device is used within its specifications. This device is not a safety component according to the EU Machine Directive (ISO13849). For full redundancy two devices can be used in the application. Modifications or non-approved use are not permitted and will result in loss of warranty and void any claims against the manufacturer.

UL certificate: UL File number: E312057

UL & c-UL listed product (UL508 standards UL60947-5-2 & CSA-C22,2 No. 14)

Product Identity / Category Code Number (CCN): Industrial Control Equipment / NRKH & NRKH7

Enclosure / Temperature rating: Enclosure type 1 / Temperature -40° .. +85 °C

Electrical rating: Intended to be used with a Class 2 power source in accordance with UL1310

Electrical ratings: max. input Voltage 30V dc, max. current 500mA

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.