

QG series

QG40N-series

QG40N-KDXYh-090-AV-CM-UL

Inclination sensor

2 axis horizontal mounting

Programmable device

Output: 0,5 - 4,5 V

Measuring range programmable
between $\pm 1^\circ$ and $\pm 90^\circ$

Measuring range
Factory defaults: $\pm 90^\circ$



General specifications 11740, v20170713

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	6 - 30 V dc
Polarity protection	Yes
Current consumption	≤ 15 mA
Operating temperature	-40 .. +85 °C
Storage temperature	-40 .. +85 °C
Measuring range	Factory defaults: $\pm 90^\circ$
Centering function	Yes (2,5 V = 0°), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 10 Hz
Typ. Accuracy @20°C (2 σ)	overall 0,5° typ.
Offset error	$< \pm 0,3^\circ$ (after centering)
Non linearity	$< \pm 0,4^\circ$ Typ.
Sensitivity error	not applicable
Resolution	0,1°
Temperature coefficient	$\pm 0,04^\circ/\text{K}$ typ.
Max mechanical shock	10.000 g
Output	0,5 - 4,5 V
Output load	Rload $\geq 20\text{k}\Omega$, Cload ≤ 20 nF
Short circuit protection	Yes (max 10 s)
Output refresh rate	20 ms
Programming options	by optional QG40N-configurator (measuring range, filtering)

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$$U_{out} = 2,5 + 2 \cdot (\alpha/90) \text{ [V]}$$

clipping outside measuring range

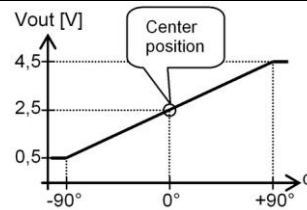
Centering: eliminate mech. offsets
 Connect center input to ground (>0,5sec) within 1 min. after power up. Normally the center input should be left unconnected.

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

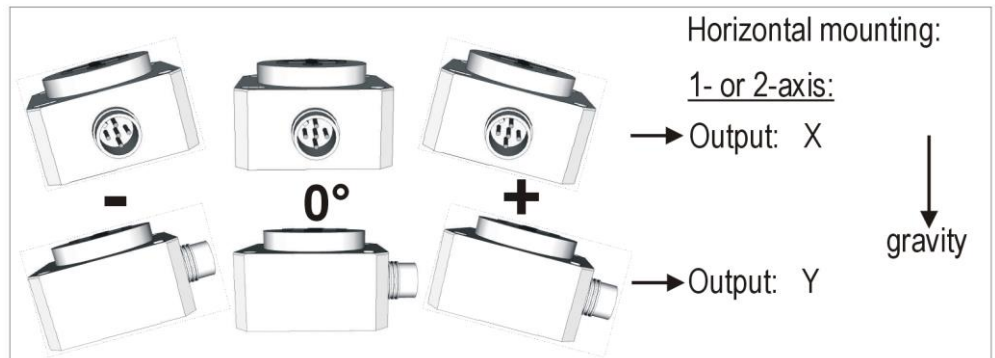
Cross tilt sensitivity error:
 $< (0,12 \cdot \text{cross tilt angle})^2 \%$ typ.

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

Transfer characteristic



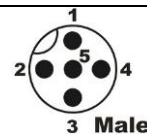
Measurement orientation



Connectivity (length ±10%)

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

- Pin 1: + Supply Voltage
- Pin 2: output Y
- Pin 3: Gnd
- Pin 4: output X
- Pin 5: centering



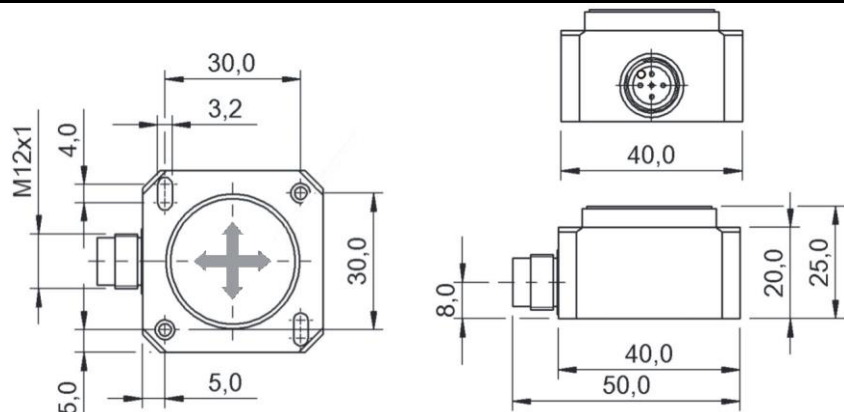
If connected with M12 F (accessory sold by DIS):

- Brown: + Supply Voltage
- White: output Y
- Blue: Gnd
- Black: output X
- Green/yellow: centering

Connection

Wire / pin coding

Mechanical dimensions (indicative only)



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Intended use, UL, Remarks

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 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.