

# QG series

## QG40N-series

QG40N-KDXYh-090-AV-CM-UL

### Inclination sensor

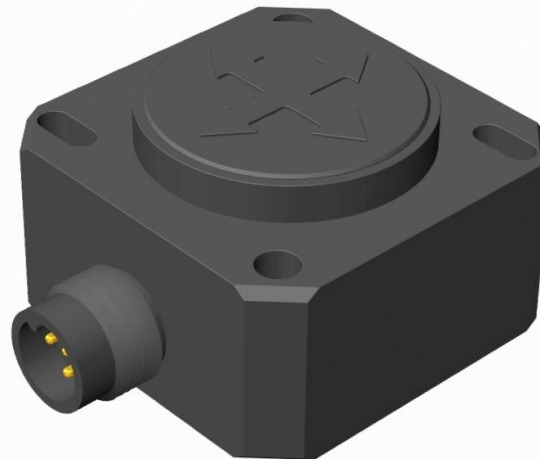
2 axis horizontal mounting

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, v20230828

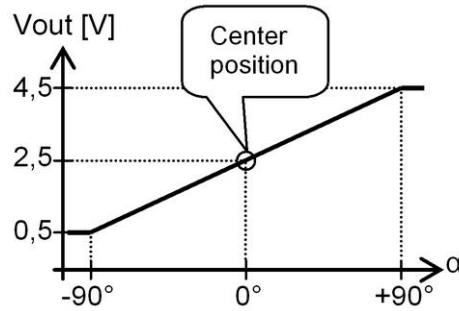
Housing	Plastic injection molded housing (Arnite T06 202 PBT black)
Dimensions (indicative)	40x40x25 mm
Mounting	Included: 2x M3x25 mm zinc plated steel pozidrive pan head screws, self-tapping (PZ DIN 7500CZ) Mounting on flat surface only. Screw with care
Ingress Protection (IEC 60529)	IP67, IP69K (with IP69K mating connector)
Relative humidity	0 - 95% (non condensing, housing fully potted)
Weight	approx. 45 gram
Supply voltage	6 - 30 V dc
Polarity protection	Yes
Current consumption	$\leq 15$ mA
Operating temperature	$-40 \dots +80$ °C
Storage temperature	$-40 \dots +85$ °C
Measuring range	Factory defaults: $\pm 90^\circ$
Centering function	Yes (2,5 V = $0^\circ$ ), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 10 Hz
Accuracy (overall @20°C)	$0,5^\circ$ typ.
Offset error	$\pm 0,2^\circ$ typ. after centering
Non linearity	$\pm 0,4^\circ$ typ.
Sensitivity error	not applicable. Repeatability $0,2^\circ$
Resolution	$0,1^\circ$
Temperature coefficient	$\pm 0,08^\circ/\text{K}$ typ.
Max mechanical shock	10.000g
Output	0,5 - 4,5 V
Output load	Rload $\geq 20\text{k}\Omega$ , Cload $\leq 20$ 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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### Transfer characteristic

$V_{out} = 2,5 + 2 \cdot (\alpha/90)$  [V]  
clipping outside measuring range

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

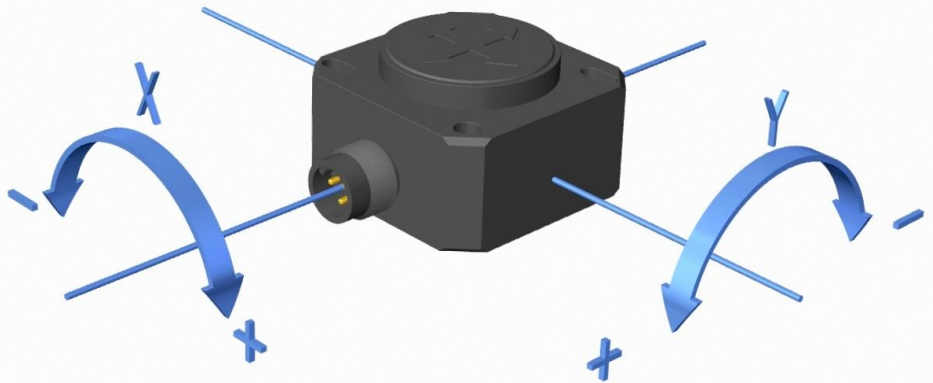


Default 0°: horizontal (round nose upwards), no acceleration applied.

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

→ one axis  $<10^\circ$  tilt for max. accuracy  
→ only one axis may exceed  $45^\circ$  tilt

### Measurement orientation



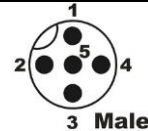
### Connectivity (cable length $\pm 10\%$ )

#### Connection

Wire / pin coding

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

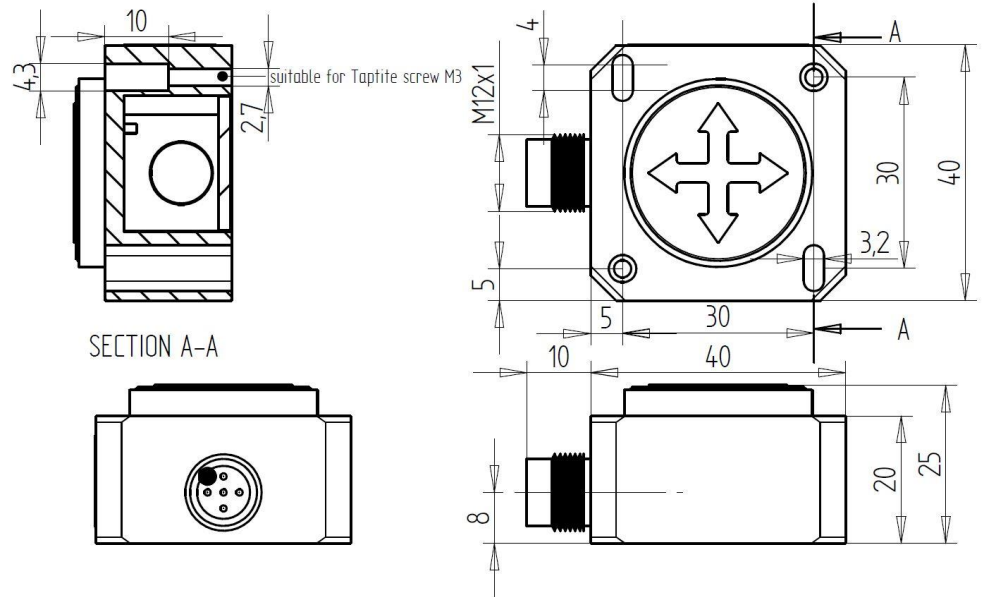
Pin 1: + Supply Voltage  
Pin 2: output Y  
Pin 3: Gnd  
Pin 4: output X  
Pin 5: centering



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

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

## Mechanical dimensions (indicative only)



## 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 & 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.