

# QG series

## QG40N-series

QG40N-KDXyh-090-AI-CM-UL

### Inclination sensor

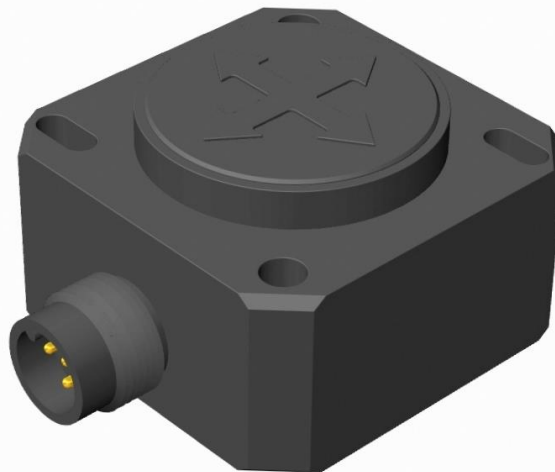
2 axis horizontal mounting

Programmable device

Output: 4 - 20 mA

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

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



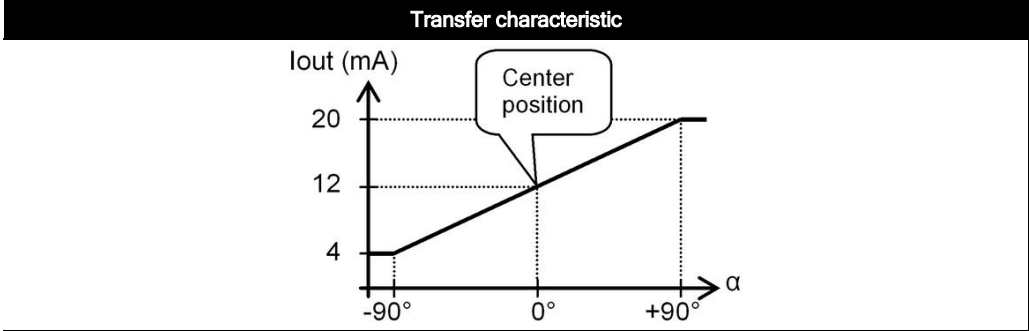
### General specifications 11746, v20210611

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 maximum Torque 2 Nm
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	10 - 30 V dc
Polarity protection	Yes
Current consumption	$\leq 15$ mA ( excluding output signal )
Operating temperature	$-40 \dots +80$ °C
Storage temperature	$-40 \dots +85$ °C
Measuring range	Factory defaults: $\pm 90^\circ$
Centering function	Yes (12 mA = $0^\circ$ ), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 10 Hz
Accuracy (overall @20°C)	0,5° typ.
Offset error	$\pm 0,2^\circ$ typ. after centering
Non linearity	$\pm 0,4^\circ$ typ.
Sensitivity error	not applicable. Repeatability 0,2°
Resolution	0,1°
Temperature coefficient	$\pm 0,04^\circ/\text{K}$ typ.
Max mechanical shock	10.000g
Output	4 - 20 mA
Output load	$R_{load} \leq (50 \cdot V_s - 300)$ ( $\Omega$ ) (Eg: $V_s = 24$ V: $R_{load} \leq 900$ $\Omega$ )
Short circuit protection	Yes ( $T < 55^\circ\text{C}$ ), Max 10 s ( $T > 55^\circ\text{C}$ )
Output refresh rate	20 ms
Programming options	by optional QG40N-configurator (measuring range, filtering)

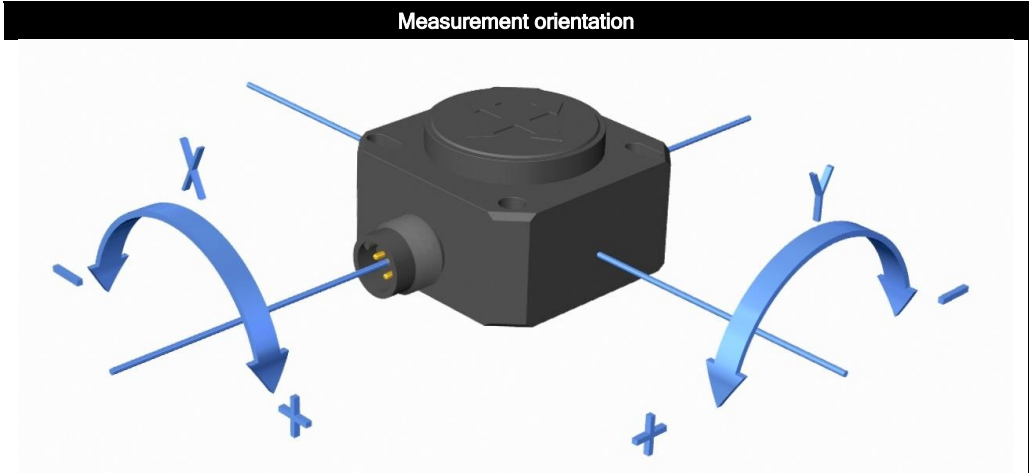
# QG series

## QG40N-KDXYh-090-AI-CM-UL

$I_{out} = 12 + 8(\alpha/90)$  [mA]  
 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.



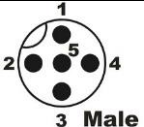
Default 0°: horizontal (round nose  
 upwards), no acceleration applied.  
  
 Cross tilt sensitivity error:  
 $< (0,12 * \text{cross tilt angle})^2$  % typ.  
  
 → one axis <10° tilt for max.  
 accuracy  
 → only one axis may exceed 45° tilt



**Connection**  
  
 Wire / pin coding

**Connectivity (cable length ±10%)**

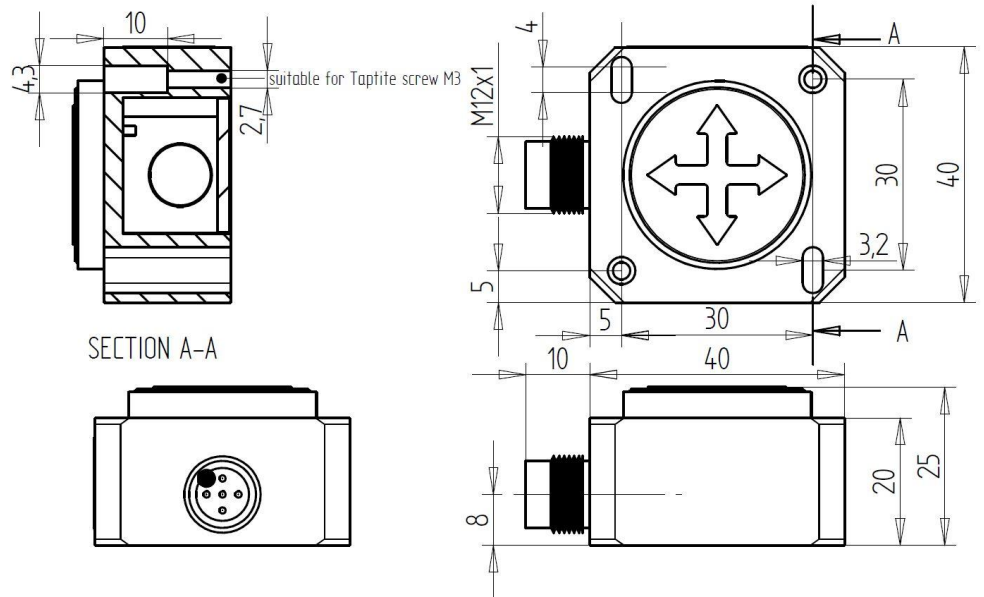
M12 5p male connector (Glass fibre reinforced grade, contacts CuZn pre-nickeled galv. Au)

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.