QG series

Full redundant sensor for safety applications

QG40N-KIXv-090-2AI-PTS

Inclination sensor for safety applications

1 axis vertical mounting

Programmable device
Output: 4 - 20 mA redundant

full redundant in one housing
redundant power lines

Measuring range
± 90°

CE

General specifications v20200210	
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)
Ingress Protection (IEC 60529)	IP67
Relative humidity	0 - 95% (non condensing, housing fully potted)
Weight	approx. 45 gram (cable excluded)
Supply voltage	10 - 30 V dc
Polarity protection	Yes
Current consumption	≤ 30 mA (excluding output signal)
Operating temperature	-40 .. +80 °C
Storage temperature	-40 .. +80 °C
Measuring range	± 90°
Centering function	Yes (12 mA = 0°), range 360°
Frequency response (-3dB)	0 - 10 Hz
Typ. Accuracy @20°C (2σ)	overall 0,5° typ.
Offset error	< ± 0,3° (after centering)
Non linearity	< ± 0,4° Typ.
Sensitivity error	not applicable
Resolution	0,1°
Temperature coefficient	± 0,04°/K typ.
Max mechanical shock	10.000 g
Output	4 - 20 mA / 20 - 4 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	by optional QG40N-configurator + brakeout cable (measuring range, filtering).

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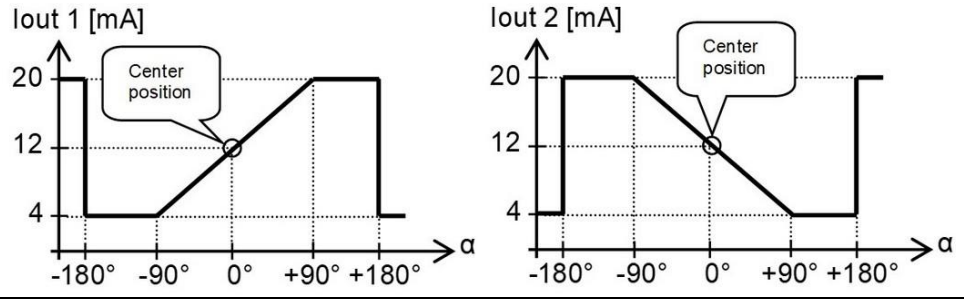
Iout1 = 12 + 8*(α/90) [mA]
Iout2 = 12 - 8*(α/90) [mA]

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.
Centering: both channels individually

Transfer characteristic

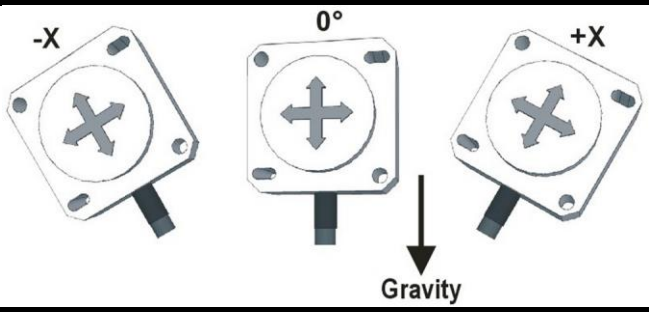


Rotation in vertical plane.

Turning towards "+x" from 0°:
Iout1 increasing, Iout2 decreasing

Lateral tilt sensitivity error:
< ± 0,03°/° lateral tilt (typ.)
Max. lateral tilt: 45°

Measurement orientation



Connectivity (length ±10%)

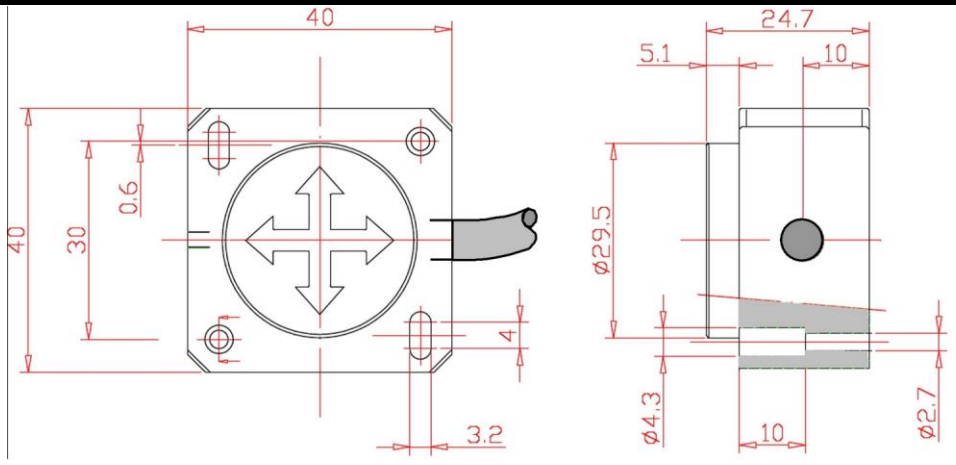
Connection

2 m PUR/TPE Li12y11y, black Ø 6,3 mm, wires: 8x0,25 mm² DIN colors

Wire / pin coding

Red	+ Supply Voltage 1
Blue	Gnd 1
Grey	Output 1
White	Center 1
Brown	+ Supply Voltage 2
Green	GND 2
Yellow	Output 2
Pink	Center 2

Mechanical dimensions (indicative only)



Functional safety, Intended use, Remarks

Functional Safety information:
• This is not a safety device according to European Standard EN ISO 13849-1
• This sensor can be used in safety applications, by taking both sensor outputs into account, compare these outputs and program an algorithm that brings the application into safe state if the difference between the two sensor outputs exceeds the limit appropriate for the application.
Judgement whether this device can be used as safety device in customers application or not is the solely responsibility of the customer involved. Calculations can be based on the MTTFd and DC values specified in this datasheet
• MTTFd = 690 year for each individual output
• Diagnostic Coverage (DC) = 0% for each individual output

This is a full redundant device. All components (including MEMS-chip, µC and Voltage regulator and powerlines) are redundant. The device consists of two seperate sensors in one housing, with seperate power lines.
Hardware architecture for each individual output: CAT.1

Connectivity options:
The Vcc / Gnd can be connected seperate or combined (internal T-junction).
standard: 6-wire cable (combined Vcc and combined Gnd): ordering code QG40N-KIXv-090-2AI-PT
optional: 8-wire cable (seperate Vcc and seperate Gnd): ordering code QG40N-KIXv-090-2AI-PTS

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. QG series sensors are intended to measure inclination/acceleration/tilt. Flawless function (acc. spec.) is ensured only when used within specifications. Modifications or non-approved use will result in loss of warranty and void any claims against the manufacturer.

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A Declaration of conformity is available on www.dis-sensors.com/downloads