QG series

SIL2 / PLd Certified sensor

QG65N-KAXYZ-8,0-CANS-C(F)M-UL-2d

Safety acceleration sensor
3 axis horizontal/vertical mounting
(RMS or Signed Peak value)

Programmable device
Interface: CANopen Safety

SIL CL 2 (acc. to IEC 62061)
PLd (acc. to EN ISO 13849)

Measuring range
± 8 g



	General specifications 12847/12205, v20230725
Housing	Reinforced plastic injection molded (Faradex DS, black, EMI shielded by stainless steel fiber in PC)
Dimensions (indicative)	60x50x27 mm
Mounting	Included: 4x M5x25 mm zinc plated steel pozidrive pan head screws, self-tapping (PZ DIN7500CZ) 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. 110 gram
Supply voltage	8 - 32 V dc SELV
Polarity protection	Yes
Current consumption	≤ 25 mA For CFM models (daisy-chained CANbus): max. current internal T-junction: 2.5A
Operating temperature	-40 .. +80 °C
Storage temperature	-40 .. +85 °C
Measuring range	± 8 g
Centering function	Yes, 2 horizontal axes only, (CANout 0 = 0 g), range: ±5°
Frequency response (-3dB)	0 - 1600 Hz
Accuracy (overall @20°C)	±1.5/4/8 g: overall 0,05/0,1/0,2 g typ.
Offset error	± 20 mg typ. (± 40 mg 2σ) after zeroing
Non linearity	±0,04 g typ.
Sensitivity error	± 2% typ.
Resolution	16 mg
Temperature coefficient	± 0,5 mg/K typ.
Max mechanical shock	10.000g
CAN interface (physical layer)	According to ISO 11898-1 & ISO 11898-2 (CAN 2.0 A/B), Short circuit protected
CANopen application layer and communication profile	CANopen Safety protocol: EN 50325-5, CANopen protocol: EN 50325-4 (CiA 301 v4.0 and 4.2.0)
Baud rate Node ID Event timer for TPDO1 Sync mode (TPDO's) Heartbeat Output format SRDO1 COB-ID1 SRDO1 COB-ID2 Safeguard cycle time (SCT) Safety related validation time (SRVT) Filtering Reaction on error	125 kbit/s (default, range 10/20/50/100/125/250/500/800/1000 kbit/s) 01h (default, range: 01h - 7Fh) 50 ms (default, range 10-5000 ms) off (default, range on/off) off (default, range on/off) Integer: -8000 to +8000 (SRDO:X=byte 2,1; Y=byte 4,3; Z=byte 6,5) (byte 7,8: integer 0) 101h (default, range: FFh + 2x Node ID -> 101h-17Fh) 102h (default, range:100h + 2x Node ID -> 102h-180h) 80ms(default, worst case 100ms) 20ms Output filter disabled. Default output mode: Signed Peak Emergency message 080h+Node-ID followed by NMT stop state (no CAN communication)
Boot time	< 1 s
Programming options	by CANopen object dictionary (CAN parameters, filtering)

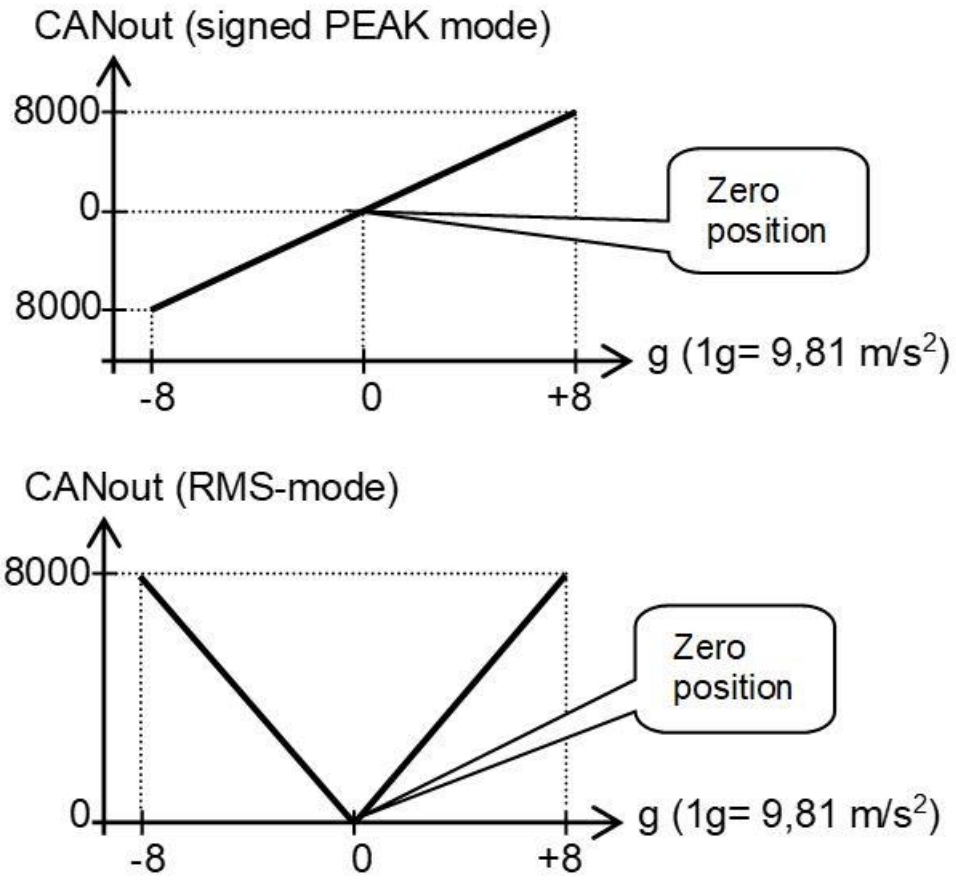
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CANoutput = 1000*g

No clipping outside measuring range

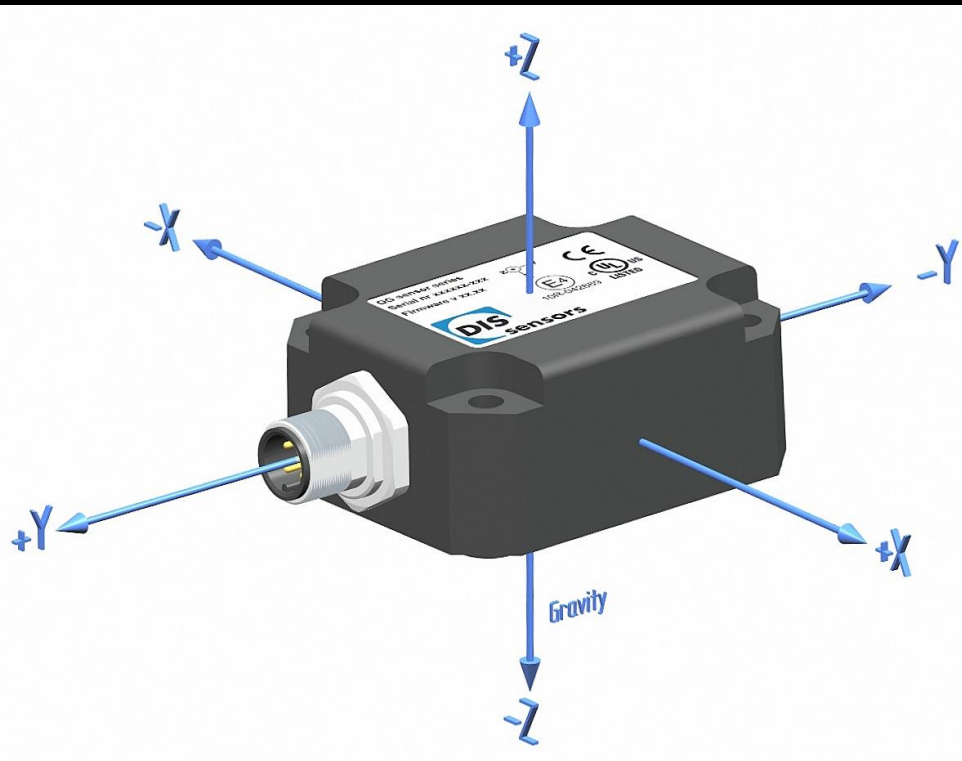
Transfer characteristic



The default 0 g position is when the sensor is mounted horizontal or vertical and no acceleration is applied. The axis parallel to earth gravity will indicate 1 g, the two horizontal axes will indicate 0 g.
The two horizontal axes can be zero-ed within ±5° tilt (by the CAN object dictionary) to eliminate mounting offsets.
The axis parallel to earth gravity cannot be zero-ed.
Optional the axis parallel to earth gravity can be compensated for 1 g gravity by the CAN object dictionary

Output value: Signed Peak (default) or RMS (selectable by CAN object dictionary)

Measurement orientation

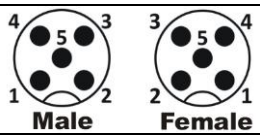


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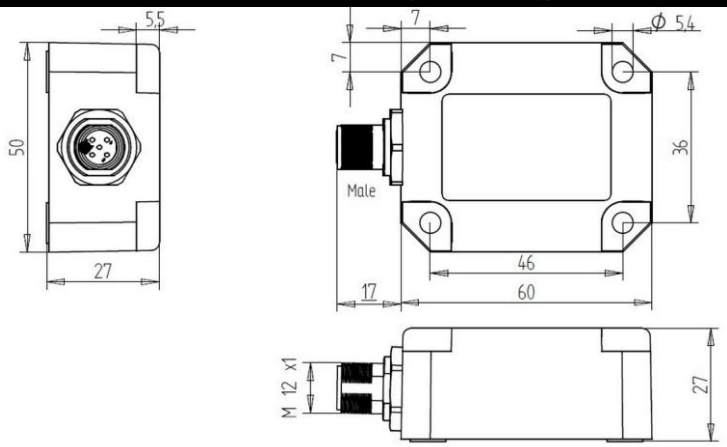
QG series

Connectivity (cable length ±10%)

Connection	Male only or Male & Female (internal T-junction) M12 connector (5 pins, A-coding) (CiA303 V1.8.0) (Brass Nickel coated, contacts copper alloy) No bus termination inside. A CANbus always has to be terminated properly. For bus termination order seperate M12 termination resistor (optional: T-connector)
Wire / pin coding	Pin 1: Shield Pin 2: Vcc Pin 3: Gnd & CAN_GND Pin 4: CAN_H Pin 5: CAN_L



Mechanical dimensions (indicative only)



UL, CAN-manual, EDS-file, Safety information, Ordering codes

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. Modifications or non-approved use are not permitted and 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 mm²), recommended ≤23 AWG (≥0,25 mm²)

A CANopen-safety manual (Dtype), EDS-files (CiA306 V1.3.0) and a Declaration of Conformity are available on www.dis-sensors.com/downloads

Safety information:
- this datasheet + relevant manual must be read and understood before using this safety device
- certified level: SIL CL 2 (acc. to IEC 62061), PLd (acc. to EN ISO 13849)
- EC type examination by DEKRA testing and Certification GmbH Certificate no. 4821024.21001
- Hardware architecture: HFT=1 (according IEC 62061, CAT.3 (according to EN ISO 13849)
- Standard (-40°C to +45°C): MTTFd: 447 year, DC: 93%, CCF: 70 pt, SFF: 98%, PFHd: 14E-09
- High Temp. (up to +85 °C): MTTFd: 73 year, DC: 93%, CCF: 70 pt, SFF: 98%, PFHd: 91E-09
- only a SELV power supply should be used
- Redundancy Compare Time (error if this time is expired): customer adjustable (default 2000ms)
- Redundancy Compare Acceleration (error if acceleration-difference > this value): customer adjustable (default 580mg)
- Redundancy error: Redundancy Compare Angle & Redundancy Compare Time exceeded
- Error: any detected error or a redundancy error
- Safety Related Fault Respons Time (SRFRT): 100ms + Redundancy Compare Time (default 2000ms)

This sensor is inherent sensitive for accelerations/vibrations.
Application specific testing must be carried out to check whether this sensor will fulfil your requirements.

Ordering codes:
M12 Male: QG65N-KAXYZ-8,0-CANS-CM-UL-2d, 12847
M12 Male & Female: QG65N-KAXYZ-8,0-CANS-CFM-UL-2d, 12205

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