

## QG65N2 CANopen Standard accuracy series

QG65N2-KDXYh-030-CAN-C(F)M-UL

### Inclination sensor

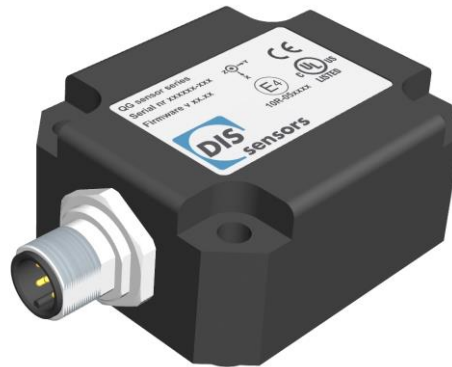
2 axis horizontal mounting

Programmable device

Interface: CANopen

Parameters programmable by DIS configurator and CANopen object dictionary

Measuring range  
 $\pm 30^\circ$



CANopen



### General specifications 12824, 12827, v20221011

|   |   |
|---|---|
| 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)<br>Mounting on flat surface only. Screw crosswise with maximum Torque 2.5 Nm |
| 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                                      | 10 - 32 V dc  |
| Polarity protection                                 | Yes   |
| Current consumption                                 | 50mA typ. 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                                     | $\pm 30^\circ$  |
| Centering function                                  | Yes (CANout 0 = 0°), range: $\pm 5^\circ$   |
| Frequency response (-3dB)                           | 0 - 10 Hz   |
| Accuracy (overall @20°C)                            | 0,15° typ.  |
| Offset error  | $\pm 0,05^\circ$ typ. ( $\pm 0,1^\circ$ 2 $\sigma$ ) after centering  |
| Non linearity                                       | $\pm 0,1^\circ$ typ., $\pm 0,15^\circ$ 2 $\sigma$ , $\pm 0,2^\circ$ max.  |
| Sensitivity error                                   | not applicable. Repeatability 0,1°  |
| Resolution  | 0,01°   |
| Temperature coefficient                             | T>0°C: 0.015°/K typ. en T<0°C: 0.03°/K typ.   |
| Max mechanical shock                                | 10,000g (max 0,2ms)   |
| 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, CiA301 V4.2.0 & EN 50325-4 + Device Profile CiA410 DSP 2.0.0 for inclinometers   |
| Baud rate   | 250 kbit/s (default, range 10/20/50/100/125/250/500/800/1000 kbit/s   |
| Node Id   | 01h (range: 01h - 7Fh)  |
| TPDO  | For Node ID=01h: TPDO1: 181h, TPDO2: 281h   |
| Event time  | TPDO1: 10 - 500 ms (default: 100 ms)  |
| Sync mode   | On/off (default: off)   |
| Heartbeat   | On/off (default: on, 2s)  |
| Programming options                                 | Baudrate, Node Id, Event time, Sync mode, Heartbeat, Output format, CANbus termination, filtering   |
| Output format                                       | Integer: -3000 to +3000 (PDO1:X=byte 2,1;Y=byte 4,3)  |
| Filtering   | Bessel LPF 10Hz on, TPDO averaging off, Output filter off   |
| Modes of operation                                  | Event mode, Sync-mode. Default: auto-startup Event mode   |
| Internal CANbus termination                         | 120 Ohm on/off (default: off)   |
| Boot time   | < 0.5 s   |
| Programming options                                 | by optional DIS Configurator and CANopen object dictionary (CAN parameters, filtering)  |

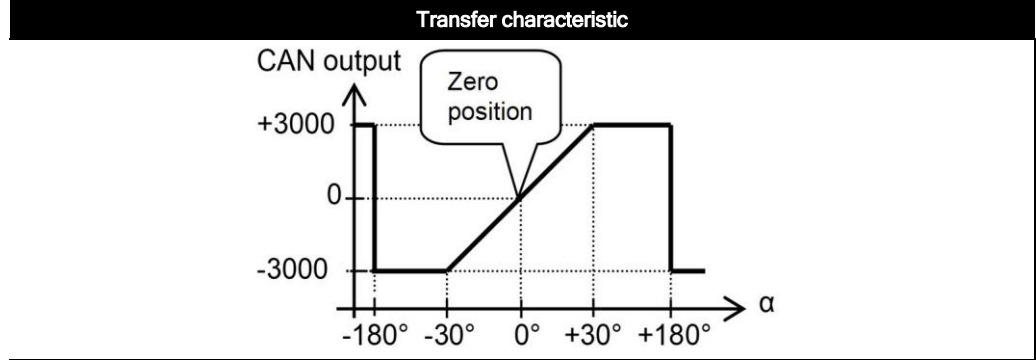
# QG series

## QG65N2-KDXYh-030-CAN-C(F)M-UL

CANoutput =  $100 \cdot \alpha$

Clipping outside measuring range

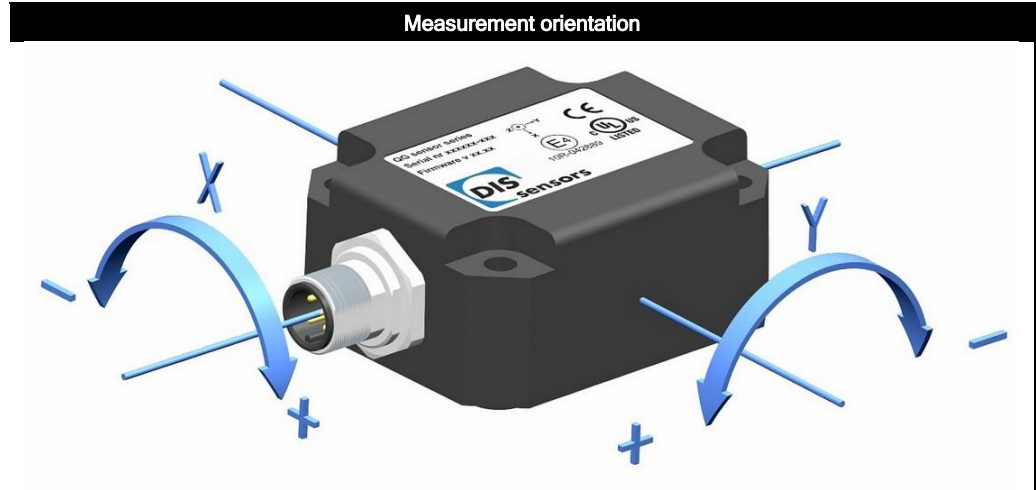
Zeroing can be done to eliminate mounting offsets.



Default 0°: horizontal (label upwards), no acceleration applied. To eliminate mounting offsets the sensor can be zero-ed within  $\pm 5^\circ$  tilt (by the CAN object dictionary)

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

→ one axis  $< 10^\circ$  tilt for max. accuracy



Connection

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

Male only or Male & Female (internal T-junction) M12 connector (5 pins, A-coding) ( CiA303 V1.8.0 ) (Brass Nickel coated, contacts copper alloy)

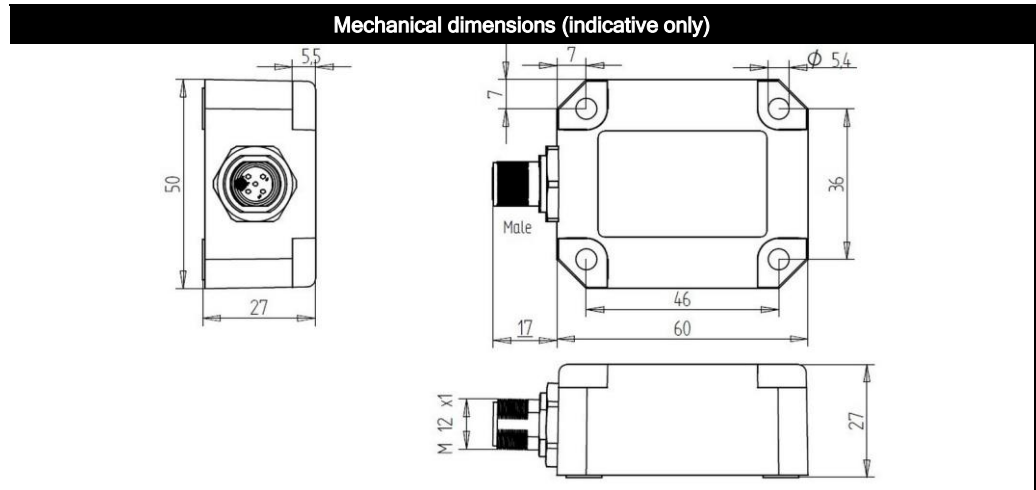
A CANbus always has to be terminated properly according to customers bus topology and general CAN rules. The sensor has an on-board internal 120 Ohm CANbus termination resistor that can be switched on by the CANopen dictionary (default: off). Alternatively an external M12 termination resistor can be connected when using a Male & Female (internal T-junction) model.

External M12 termination resistors and T-connectors are available as accessoires, see DIS website.

Wire / pin coding



Mechanical dimensions (indicative only)



## E4ready, UL, CAN-manual, EDS-file, Ordering codes

Before using this device, please read this datasheet, the Manual and the Declaration of Conformity carefully (download from [dis-sensors.com](http://dis-sensors.com))

This product is E4ready and meets Automotive EMC requirements

Connect this sensor only to an approved CAN controller which must have a grounded shield. Alternatively, connect the sensor housing to a grounded shield. All mentioned EMC standards that are met (see Declaration of Conformity) have been done with the housing connected to a grounded shield.

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>)

Optional: for accurate mounting two factory mounted positioning pins can be mounted (Ø4mm) replacing 2x M5x25 mm.

As this device is accelerometer-based the sensor is inherent sensitive for accelerations/vibrations.

A CAN-manual can be downloaded from [www.dis-sensors.com](http://www.dis-sensors.com) (type I)  
EDS-file ( CiA306 V1.3.0) can be downloaded from [www.dis-sensors.com](http://www.dis-sensors.com) (type I)

Ordering codes:

M12 Male: QG65N2-KDXYh-030-CAN-CM-UL, 12824

M12 Male & Female: QG65N2-KDXYh-030-CAN-CFM-UL, 12827