

# QG series

SIL2 / PLd Certified sensor

QG65N-KIXv-360-CANS-CFM-2d

**Inclination sensor**  
**SIL CL 2 (acc. to IEC 62061)**  
**PLd (acc. to EN ISO 13849)**  
 1 axis vertical mounting

Output  
 CANopen Safety

Supply voltage  
 8 - 60 Vdc SELV

Measuring range  
 360°



CANopen  
 safety easy to use



## General specifications 12077, v20160808

Reinforced plastic injection molded (Faradex DS, black, EMI shielded by stainless steel fiber in PC)

60x50x27 mm

4x M5x25 mm zinc plated pozidrive screws included (optional: 2x Ø4mm positioning pins)

IP67

0 - 100%

ca. 110 gr

8 - 60 Vdc SELV

Yes

≤ 75 mA

-40 .. +85°C

-40 .. +85°C

360°

Yes (CANout 0 = 0°), range: 360°

0 - 10Hz

overall 0,15° typ.

< ± 0,03° typ. (< ± 0,08° max.) after centering

< ± 0,15° typ. (< ± 0,24° max.)

not applicable

0,01°

± 0,009°/K typ.

10.000 g

CAN 2.0 A and B according to ISO 11898-1 & ISO 11898-2

CANopen Safety according to EN50325-5 & CANopen according to EN50325-4 (CiA301 4.2.0)  
 Device profile according to CiA410 DSP 2.0.0 for inclinometers

125 kbit/s (default, range 10/20/50/100/125/250/500/800/1000 kbit/s)

01h (default, range: 01h - 3Fh) (01h - 7Fh with adapted COB-ID's)

50 ms (default, range 10-500 ms)

off (default, range on/off)

Integer: -17999 to 18000 (SRDO:byte2, 1) (byte 3,4,5,6,7,8: integer 0)

FFh + 2x node ID (for Node ID=01h: SRDO1 COB-ID1=101h)

100h + 2x node ID (for Node ID=01h: SRDO1 COB-ID2=102h)

80ms in CAN object dictionary, worst case 100ms

20ms

Output filter disabled

Emergency message 080h+Node-ID followed by NMT stop state (no CAN communication)

< 1s

## Housing

Dimensions (indicative)

Mounting

Ingress Protection (IEC 60529)

Relative humidity

Weight

Supply voltage

Polarity protection

Current consumption

Operating temperature

Storage temperature

Measuring range

Centering function

Frequency response (-3dB)

Accuracy (2σ)

Offset error

Non linearity

Sensitivity error

Resolution

Temperature coefficient

Max mechanical shock

CAN interface (hardware)

CAN communication profile

Baud rate

Node Id

TPDO1 event time

Sync mode (TPDO's), Heartbeat

Output format

SRDO1 COB-ID1

SRDO1 COB-ID2

Safeguard cycle time (SCT)

Safety related validation time (SRVT)

Filtering

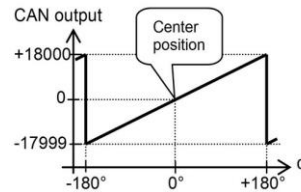
Reaction on error

Boot time

## QG65N-KIXv-360-CANS-CFM-2d

CANoutput =  $100 \cdot \alpha$   
clipping outside measuring range

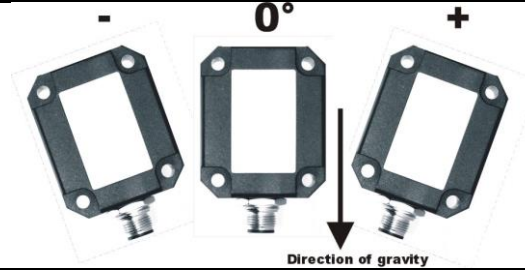
### Transfer characteristic



Rotation in vertical plane.  
To eliminate mounting offsets the sensor can be centered over full 360° (by the CAN object dictionary)

Lateral tilt sensitivity error:  
<math>\pm 0,03^\circ/</math> lateral tilt (typ.)  
Max. lateral tilt: 45°

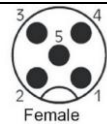
### Measurement orientation



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

M12 connectors: 1x male + 1x female (internal T-junction) (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 separate M12 termination resistor (optional: T-connector)

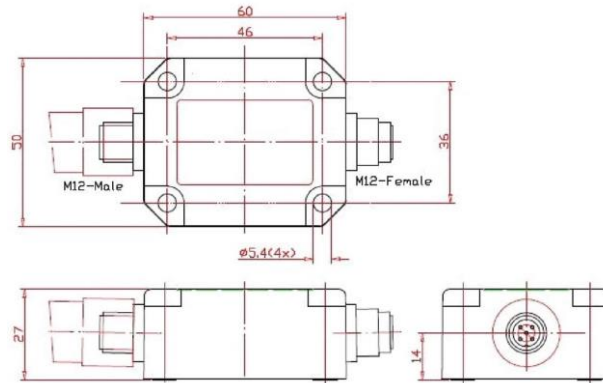
Pin 1: Shield  
Pin 2: Vcc  
Pin 3: Gnd & CAN\_GND  
Pin 4: CAN\_H  
Pin 5: CAN\_L



Connection

Wire / pin coding

### Mechanical dimensions (indicative only)



### CAN-manual, EDS-file, Safety information

A CANopen-safety manual, EDS-files ( CiA306 V1.3.0) and a Declaration of Conformity are available on [www.dis-sensors.com/downloads](http://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 EXAM GmbH Reg. no.: ZP/C015/16
- hardware architecture: HFT=0 (according IEC 62061, CAT.2 (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 Angle (error if angle-difference > this value): customer adjustable (default 3°)
- 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)

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 fulfill your requirements.