

## QG76N2 CANopen High accuracy series

QG76N2-SDXYh-090H-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  
 $\pm 90^\circ$



CANopen



### General specifications v20230412

Stainless steel (AISI 316)

70x60x33 mm

Not Included: 4x M4x30 mm stainless steel (A4) Hexagon socket head screws

IP67, IP69K (with IP69K mating connector), (IP68 with optional cable gland)

0 - 95% (non condensing, housing fully potted)

approx. 700 gram

10 - 32 V dc

Yes

50mA typ. For CFM models (daisy-chained CANbus): max. current internal T-junction: 2.5A

-40 .. +80 °C

-40 .. +85 °C

$\pm 90^\circ$

Yes (CANout 0 = 0°), range:  $\pm 5^\circ$

0 - 10 Hz

0,07° typ.

$\pm 0,01^\circ$  typ. ( $\pm 0,02^\circ$  2 $\sigma$ ) after centering

$\pm 0,06^\circ$  typ.,  $\pm 0,1^\circ$  2 $\sigma$ ,  $\pm 0,15^\circ$  max.

not applicable. Repeatability 0,05°

0,01°

$\pm 0.003^\circ/\text{K}$  typ.,  $\pm 0.005^\circ/\text{K}$  (2 $\sigma$ )

10,000g (max 0,2ms)

According to ISO 11898-1 & ISO 11898-2 (CAN 2.0 A/B), Short circuit protected

CANopen, CiA301 V4.2.0 & EN 50325-4 + Device Profile CiA410 DSP 2.0.0 for inclinometers

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

01h (range: 01h - 7Fh)

For Node ID=01h: TPDO1: 181h, TPDO2: 281h

TPDO1: 10 - 500 ms (default: 100 ms)

On/off (default: off)

On/off (default: on, 2s)

Baudrate, Node Id, Event time, Sync mode, Heartbeat, Output format, CANbus termination, filtering

Integer: -9000 to +9000 (PDO1:X=byte 2,1;Y=byte 4,3)

Bessel LPF 10Hz on, TPDO averaging off, Output filter off

Event mode, Sync-mode. Default: auto-startup Event mode

120 Ohm on/off (default: off)

< 0.5 s

by optional DIS Configurator and CANopen object dictionary (CAN parameters, filtering)

### 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 (overall @20°C)

Offset error

Non linearity

Sensitivity error

Resolution

Temperature coefficient

Max mechanical shock

CAN interface (physical layer)

CANopen application layer and communication profile

Baud rate

Node Id

TPDO

Event time

Sync mode

Heartbeat

Programming options

Output format

Filtering

Modes of operation

Internal CANbus termination

Boot time

Programming options

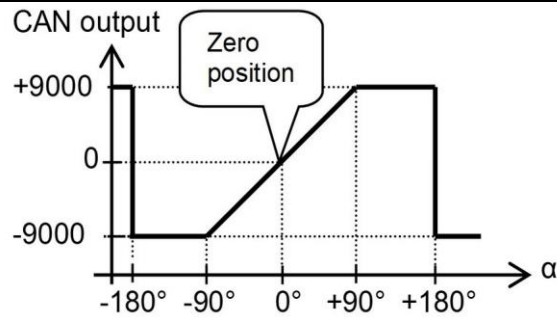
## QG76N2-SDXYh-090H-CAN-C(F)M-UL

CANoutput = 100\*α

Clipping outside measuring range

Zeroing can be done to eliminate mounting offsets.

### Transfer characteristic

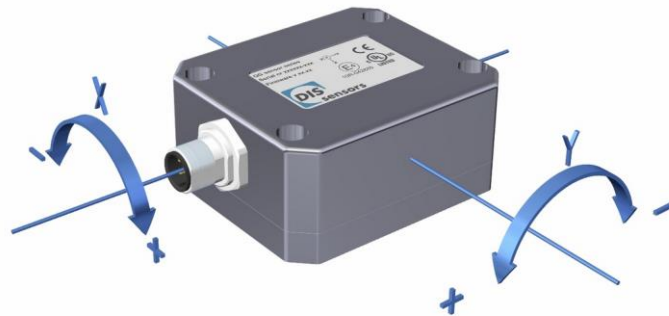


Default 0°: horizontal (label upwards), no acceleration applied. To eliminate mounting offsets the sensor can be zero-ed within ±5° tilt (by the CAN object dictionary)

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

- one axis <10° tilt for max. accuracy
- only one axis may exceed 45° tilt

### Measurement orientation



### Connectivity (cable length ±10%)

Male only or Male & Female (internal T-junction) M12 connector (5 pins, A-coding) ( CiA303 V1.8.0 ) (stainless steel 1.4404 (316L), contacts copper alloy)

A CANbus always has to be terminated properly according to customers bus topology and general CAN rules.

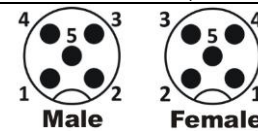
The sensor has an on-board internal 120 Ohm CANbus termination resistor that can be switched on by the CANopen dictionary (default: off).

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 accessory, see DIS website.

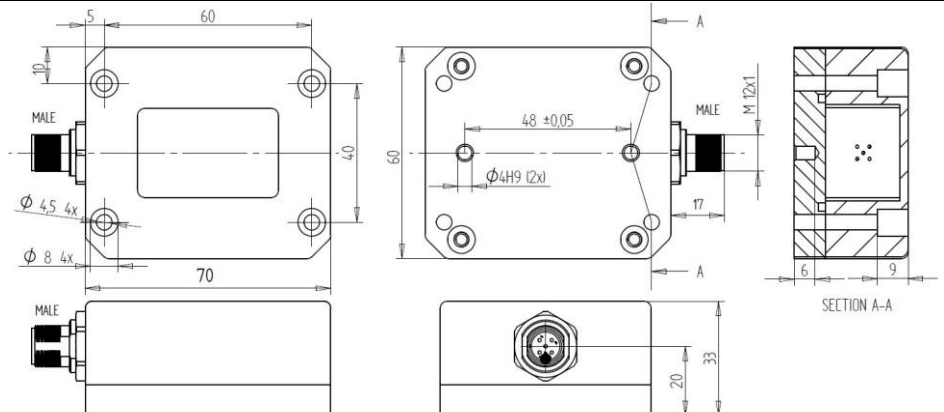
Connection

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



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>)

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: QG76N2-SDXYh-090H-CAN-CM-UL, tbd

M12 Male & Female: QG76N2-SDXYh-090H-CAN-CFM-UL, tbd