

# QG series

SIL2 / PLd Certified sensor

QG76N-SAXYZ-8,0-CANS-C(F)M-2d

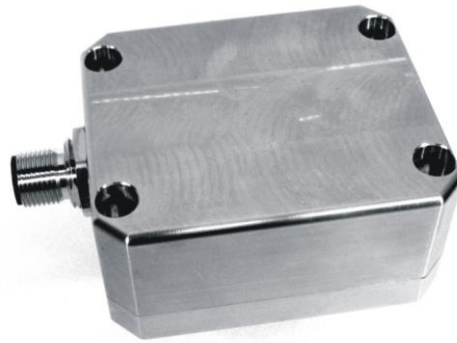
## Safety acceleration sensor

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  
 $\pm 8$  g



CANopen  
safety easy to use



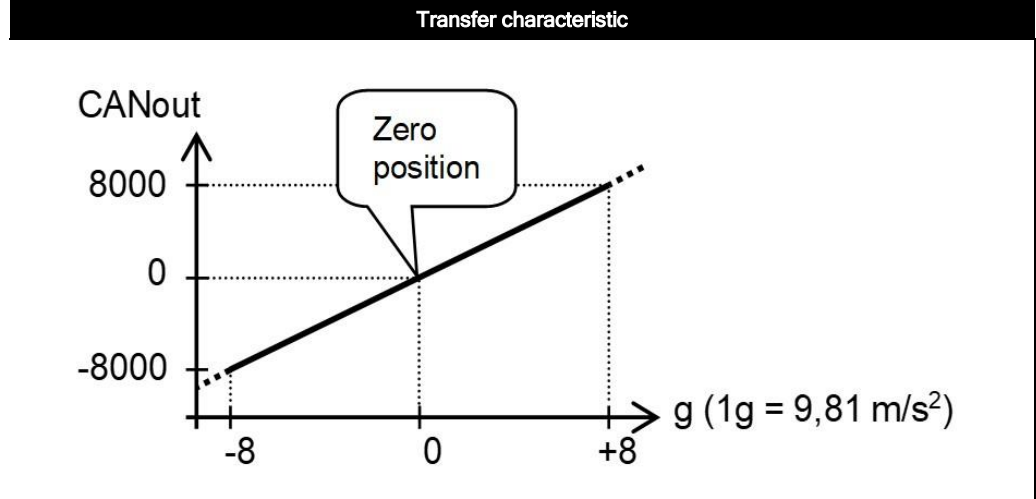
Housing
Dimensions (indicative)
Mounting
Ingress Protection (IEC 60529)
Relative humidity
Weight
Supply voltage
Polarity protection
Current consumption
Operating temperature
Storage temperature
Measuring range
Centering function
Frequency response (-3dB)
Typ. Accuracy @20°C (2σ)
Offset error
Non linearity
Sensitivity error
Resolution
Temperature coefficient
Max mechanical shock
CAN interface (hardware)
CANopen application layer and 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
Programming options

General specifications v20190501	
Material	Stainless steel (AISI 316)
Dimensions	70x60x33 mm
Mounting	Included: 4x M4x30 mm stainless steel (A4) Hexagon socket head screws
Ingress Protection	IP67 (IP68 with optional cable gland)
Relative humidity	0 - 100%
Weight	approx. 700 gram
Supply voltage	8 - 60 V dc SELV
Polarity protection	Yes
Current consumption	$\leq 25$ mA
Operating temperature	-40 .. +85 °C
Storage temperature	-40 .. +85 °C
Measuring range	$\pm 8$ g
Centering function	Yes, 2 horizontal axes only, (CANout 0 = 0 g), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 1600 Hz
Typ. Accuracy @20°C (2σ)	$\pm 1.5/4/8$ g: overall 0,04/0,07/0,1 g typ.
Offset error	$< \pm 20$ mg after zeroing
Non linearity	$< \pm 1\%$ full scale
Sensitivity error	$< \pm 2\%$
Resolution	0,016 g
Temperature coefficient	$\pm 0,3$ mg/K typ.
Max mechanical shock	10.000 g
CAN interface (hardware)	According to ISO 11898-1 & ISO 11898-2 (also known as CAN 2.0 A/B)
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	125 kbit/s (default, range 10/20/50/100/125/250/500/800/1000 kbit/s)
Node Id	01h (default, range: 01h - 3Fh) (01h - 7Fh with adapted COB-ID's)
TPDO1 event time	50 ms (default, range 10-500 ms)
Sync mode (TPDO's), Heartbeat	off (default, range on/off)
Output format	+AC945 Integer: -8000 to +8000 (SRDO:X=byte 2,1; Y=byte 4,3; Z=byte 6,5)
SRDO1 COB-ID1	FFh + 2x node ID (for Node ID=01h: SRDO1 COB-ID1=101h) (range 101h - 180h)
SRDO1 COB-ID2	100h + 2x node ID (for Node ID=01h: SRDO1 COB-ID2=102h) (range 101h - 180h)
Safeguard cycle time (SCT)	80ms in CAN object dictionary, worst case 100ms
Safety related validation time (SRVT)	20ms
Filtering	Output filter disabled
Reaction on error	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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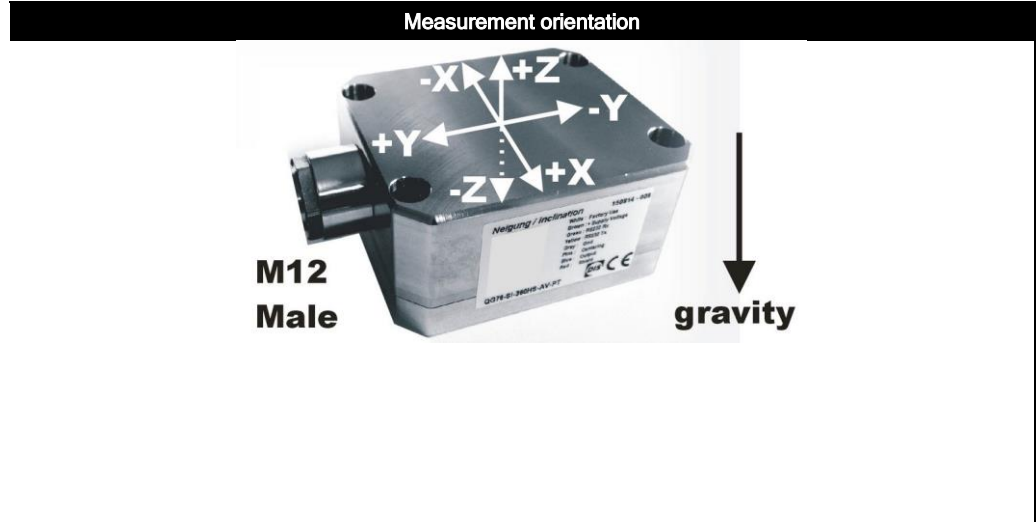
## QG76N-SAXYZ-8,0-CANS-C(F)M-2d

CANoutput = 1000\*g  
 No clipping outside measuring range



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 zeroed within  $\pm 5^\circ$  tilt (by the CAN object dictionary) to eliminate mounting offsets. The axis parallel to earth gravity cannot be zeroed. Optional the axis parallel to earth gravity can be compensated for 1 g gravity by the CAN object dictionary.

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



Connection

Wire / pin coding

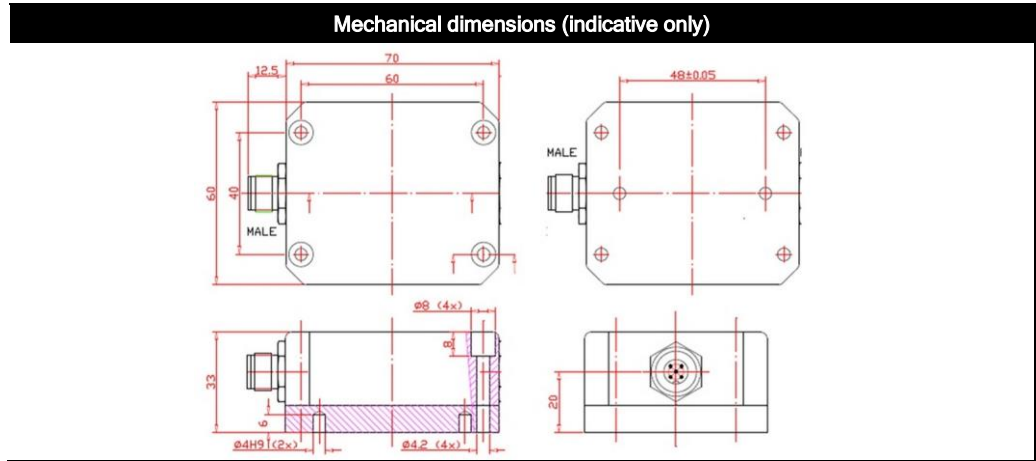
### Connectivity (length $\pm 10\%$ )

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)  
 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



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

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 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: QG76N-SAXYZ-8,0-CANS-CM-2d

M12 Male & Female: QG76N-SAXYZ-8,0-CANS-CFM-2d