

# QG series

**Discontinued: QG65 analog H-series. Successor: QG65N2 High accuracy series**

QG65-KD-090H-AI-CM

## Inclination sensor

2 axis horizontal mounting

Factory programmable device

Output: 4 - 20 mA

Measuring range programmable

between  $\pm 1^\circ$  and  $\pm 90^\circ$

Measuring range

Factory defaults:  $\pm 90^\circ$



### General specifications 11442, v20241021

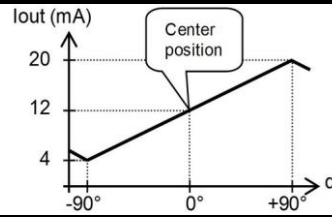
Housing	Reinforced plastic injection molded (Faradex DS, black, EMI shielded by stainless steel fiber in PC)
Dimensions (indicative)	60x50x27 mm
Mounting	Included: 4x M5x25 mm zinc plated steel pozidrive pan head screws, self-tapping (PZ DIN7500CZ) Mounting on flat surface only. Screw with care
Ingress Protection (IEC 60529)	IP67, IP69K (with IP69K mating connector)
Relative humidity	0 - 95% (non condensing, housing fully potted)
Weight	approx. 110 gram
Supply voltage	10 - 30 V dc
Polarity protection	Yes
Current consumption	$\leq 25$ mA (excluding output signal)
Operating temperature	-40 .. +85 °C
Storage temperature	-40 .. +85 °C
Measuring range	Factory defaults: $\pm 90^\circ$
Centering function	Yes (12 mA = 0°), range: $\pm 5^\circ$
Frequency response (-3dB)	0 - 10 Hz
Accuracy (overall @20°C)	0,09° typ. (-60°...+60°)
Offset error	$\pm 0,03^\circ$ typ. ( $\pm 0,08^\circ$ max) after centering
Non linearity	$\pm 0,07^\circ$ typ., $\pm 0,1^\circ$ 2 $\sigma$ $\pm 0,15^\circ$ max. (-60°...+60°)
Sensitivity error	not applicable. Repeatability 0,05°
Resolution	0,01°
Temperature coefficient	$\pm 0,005^\circ/K$ typ.
Max mechanical shock	20.000g
Output	4 - 20 mA
Output load	Rload $\leq (50 \cdot V_s - 300)$ ( $\Omega$ ) (Eg: $V_s = 24$ V: Rload $\leq 900$ $\Omega$ )
Short circuit protection	Yes (T<55°C), Max 10 s (T>55°C)
Output refresh rate	20 ms
Programming options	Factory programmable (measuring range, filtering)

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$$I_{out} = 12 + 8 \cdot (\alpha/90) \text{ [mA]}$$

No clipping outside measuring range

### Transfer characteristic



Default 0°: horizontal (label upwards), no acceleration applied.

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

- one axis <math>10^\circ</math> tilt for max. accuracy
- only one axis may exceed  $45^\circ</math> tilt$

### Measurement orientation



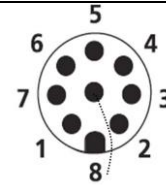
### Connection

Wire / pin coding

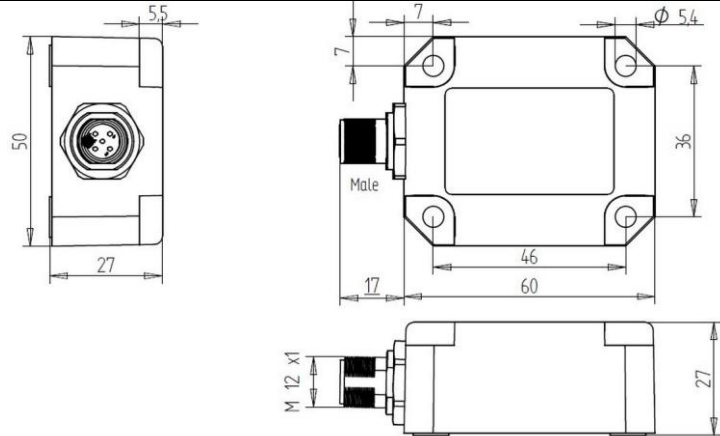
### Connectivity (cable length $\pm 10\%$ )

M12 male 8p A-coding connector (Brass Nickel coated, contacts copper alloy)

- Pin 1: Output Y
- Pin 2: Supply voltage
- Pin 3: for factory use only
- Pin 4: for factory use only
- Pin 5: Gnd
- Pin 6: Centering input
- Pin 7: Output X
- Pin 8: Not connected



### Mechanical dimensions (indicative only)



### Center function

Centering can be done to eliminate mechanical offsets. To execute centering connect center input to ground ( $>0,5\text{sec}$ ) within 1 min. after power up. After centering you have 1 min. left for another centering. Normally the center input should be left unconnected.

Optional: for accurate mounting two factory mounted positioning pins can be mounted ( $\varnothing 4\text{mm}$ ) replacing 2x M5x25 mm.

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 fulfil your requirements.