



Precision angle sensor PWG series

non-contacting multiturn sensor

PWG 50 U 3U (3 turns)

PWG 50 V 3U (3 turns, 2 output signals)

Technical Description

The angle sensor is developed for rough operation under extreme environmental conditions in mobile applications.

The main application is the measurement of the steering angle in safety related electronic-hydraulic steering systems direct on the wheel boogie.

Steering rotation movements in a range of 3600° (10 revolutions) can be detected.

A tough full metal housing, continuous stainless steel shaft with double ball as well as an interlocking top cover protect the electronic from outer force effects. Hermetic sealing as well as the accuracy and reliability of the non-contact magnetic angle measurement are further special characteristics.

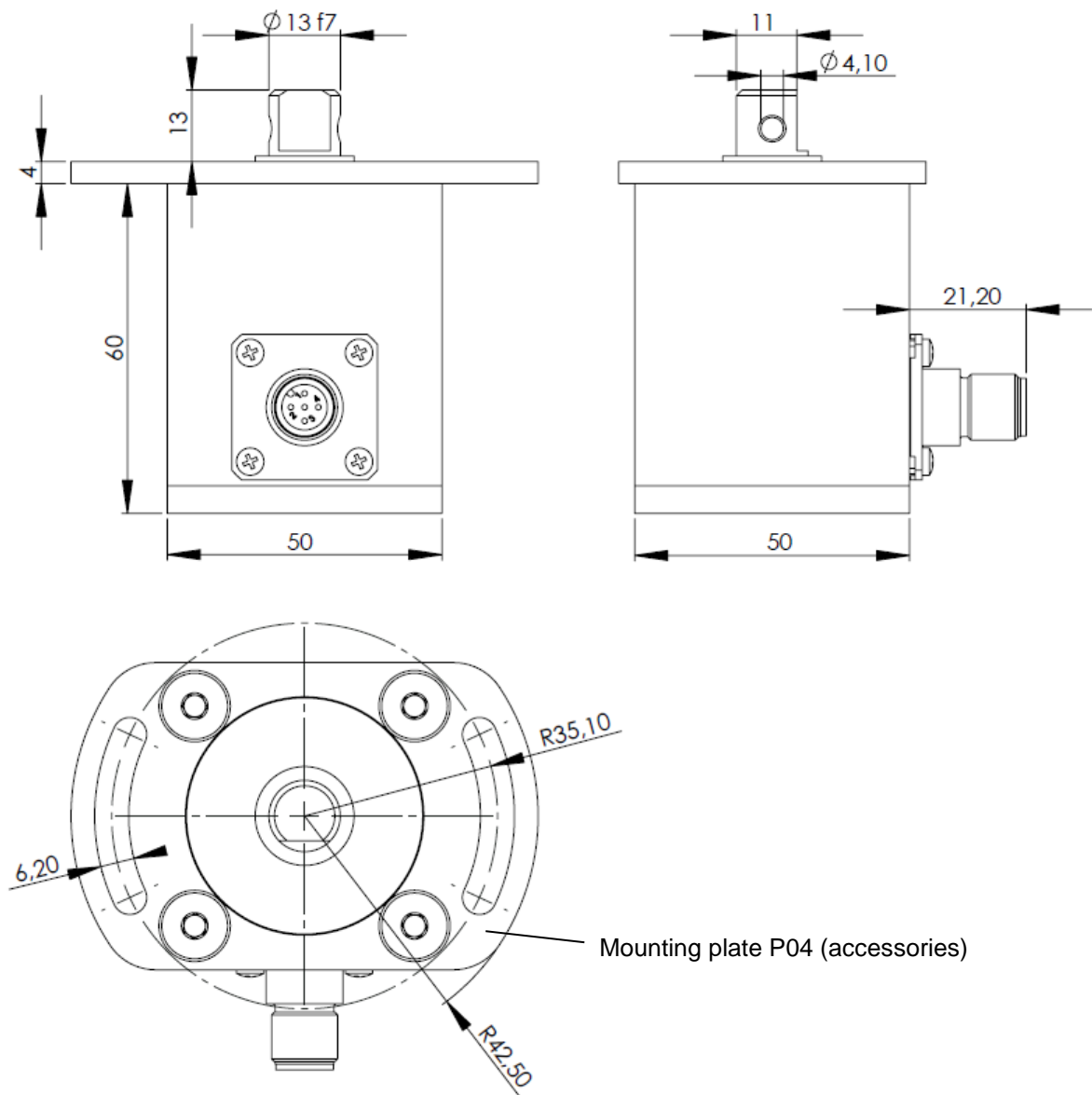
The massive and compact construction allows the direct installation at the axle without additional protective measures.

The stable shaft allows a direct steering via a strong lever or tappet.

Special features

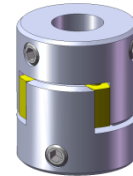
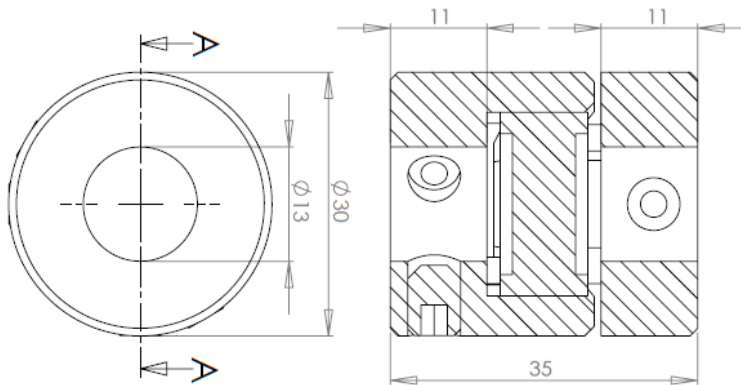
- Non-contacting, magnetic
- 1 or 2 outputs
- Extremely sturdy aluminium construction
- True Power On System: counts turns even when not powered. Patented non-volatile technology does not require gears or batteries
- Very compact cube design
- Measuring range of 1080 ° (3 turns)
- Resolution: 16 Bit
- independent linearity up to ± 0.03 %
- Increased corrosion protection by shaft made of stainless steel and anodized housing made out of massive aluminum.
- No mechanical turning limit

Dimensions

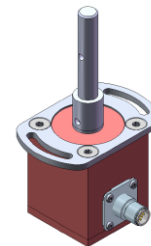
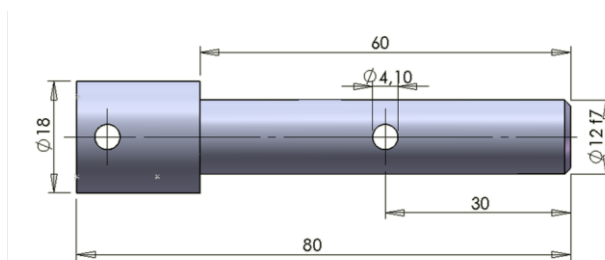


Shaft adapter / electrical connection

elastomer coupling



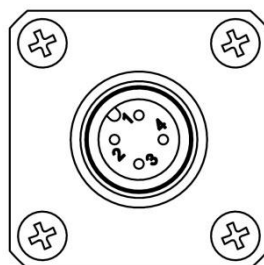
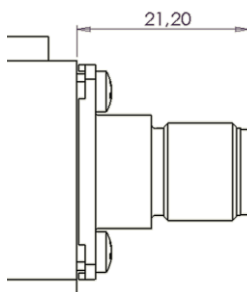
Shaft for gears



Gear

Gears on request
Polyacetal (POM)

Electrical connection - connector M12



| | |
|-----------|-------|
| Supply | Pin 1 |
| Output 1 | Pin 2 |
| GND | Pin 3 |
| Output 2* | Pin 4 |

Connect shield of the cable to ground

* Signal output 2 only at redundant type

Technical data

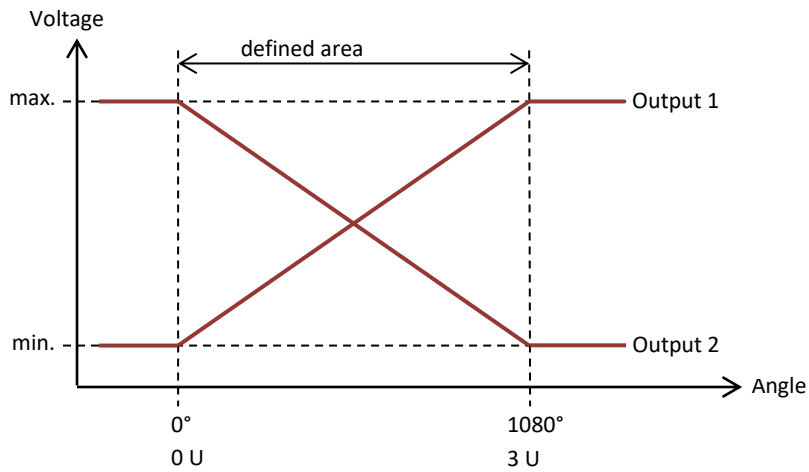
Electrical data

| | PWG 50 U 3U (non-redundant) | PWG 50 V 3U (redundant) |
|---------------------------------|-----------------------------|-------------------------|
| Measuring range | 1080° (3 turns) | |
| Supply voltage U_b | 24 ±6 VDC | |
| Output | 0,1...10V load >10 kΩ | |
| Number of channels | 1 | 2 |
| Load supply current | typ. 30 mA | |
| Reverse voltage | yes | |
| Repeatability | ±0,1 % | |
| Hysteresis | <0,1 % | |
| Linearity typ. | 0,050 % | |
| Linearity max. | 0,150 % | |
| Insulation resistance (500 VDC) | ≥10 MΩ | |

Mechanical data/ environmental data

| | | |
|------------------------------------|---|----------------------|
| Temperature range | -40°C ... +85°C | |
| Protection class (to DIN EN 60529) | IP67 | |
| Mechanical travel | 360° continuous | |
| Torque | 4 Ncm (0,04 Nm) | |
| Corrosion resistance shaft | stainless steel V2A (1.4305) | |
| Corrosion resistance housing | Red anodized aluminium, sea water resistant | |
| Weight | 0,5 kg | |
| MTTF (DIN EN ISO 13849-1) | 184 years | 184 years per output |
| Vibration (IEC 68000-2-6) | 5...2000Hz A _{max} = 0,75mm a _{max} = 20g | |
| Shock (IEC 68000-2-27) | 50g (6ms) | |
| EMC compatibility | EN 61000-4-2 EN 61000-4-3 EN 61000-4-4 EN 61000-4-6 EN 61000-4-8 EN 55011/EN 5522/A1 | |

Output signals



Order code

PWG - - Z- P04

housing

50 - 50x50x64

type

U - voltage output single
V - voltage output redundant

electrical function angle

3U - 1080°

centring

1 - centring flange

shaft

13 - Ø13x12mm
14 - Ø 12x 80mm for gear

connector

01 - M12 (Pin 1-2-3)
03 - M12 (Pin 1-2-3-4), semi-redundant (SIL2)

line type

A - without cable (connector on housing)

shaft material

0 - stainless steel V2A (1.4305)