Inclinometers of high measuring accuracy with an integrated 0.5V ... 4.5V signal conditioner for inclination measurement in the ranges of ±10, ±30 and ±80 degrees

Features

- **normalized 0.5 ... 4.5V output signal**
- **electronic compensation of the temperature drift of the sensitivity**
- **non-regulated supply voltage in range of 9V ... 30V**
- **integrated sensor electronics including signal conditioner**
- **linear output characteristics**
- **high measurement accuracy**
- **minimal linearity deviation**
- **high long-term stability**
- **hysteresis free output signal**
- **no interference by ambient electromagnetic fields**
- **shockproof as without moving mechanical parts**
- **hermetically sealed**
- **sensor electrically isolated from point of measurement - no ground connections**
- **zero point adjustable through 360° using clamping ring**
- **EMC certified**

Description

The NG2U, NG3U and NG4U are capacitive, liquid based inclinometers with integrated sensor electronics and signal conditioner. Electronic temperature compensation makes up for the temperature drift of the sensitivity of the primary transformer. An integrated, highly stable voltage regulator ensures stable operation for a range of supply voltages. The measurement technique provides a linear relationship between the angle to be measured (up to (80 degrees for the NG4U) and the output signal that is calibrated during manufacture. The measuring time constant can be matched to the requirements of the measurement task by appropriate hardware programming.

Application

The inclinometers NG2U, NG3U and NG4U are suited for applications requiring high measurement accuracy with low linearity deviation, low temperature sensitivity and high long-term stability for measurement of large inclination angles, returning a large output signal while using a non-regulated supply voltage. For particularly harsh operating conditions, we recommend the sensor casing XB1U or SB1U with the same outputs or the casing XB1S or SB1S featuring additional switch outputs. These inclinometers have their application in areas such as construction, mining, vehicles, aircraft, ships, surveying equipment, transportation and conveyor systems and process automation as well as safety engineering.

Specifications

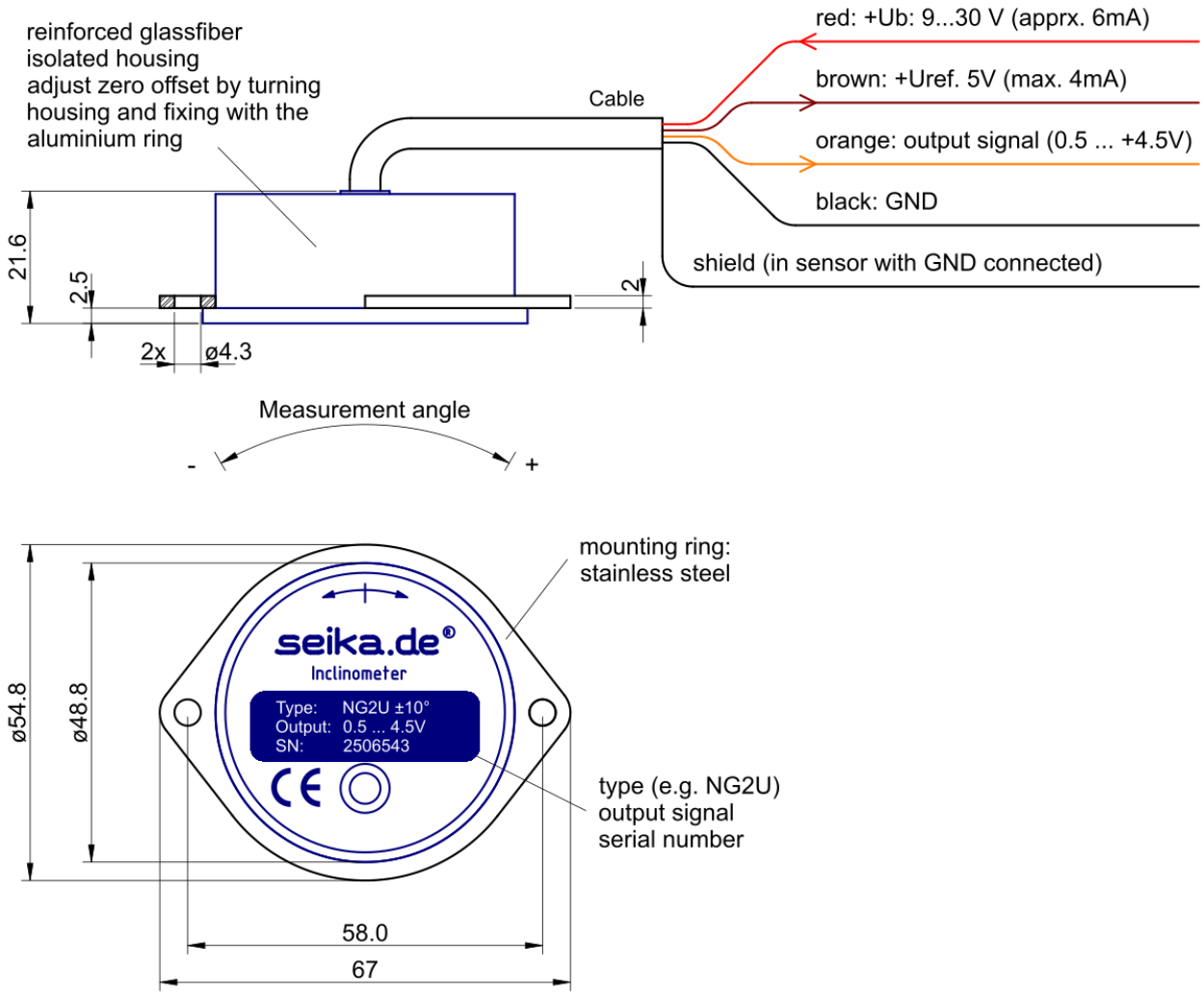
Type	NG2U	NG3U	NG4U
Measuring range	±10 degrees	±30 degrees	±80 degrees
Resolution	<0.001 degrees	<0.003 degrees	<0.01 degrees
Normalized sensitivity (other normalizations on request)	200 mV/degree	66.67 mV/degree	25 mV/degree

Shared specifications	
Dimensions	see dimension drawing
Linearity deviation	<0.1% of measuring range
Transverse sensitivity	<0.5% at 45° tilt [TBD]
Settling time	approx. 0.3 seconds (1s, 2s, 3s optional)
Temperature drift of sensitivity	approx. -0.005(8)%/K
Temperature drift of zero point	approx. 0.001(5)°/K
Supply voltage U_b	9V ... 30V (optional 5V, regulated)
Output voltage offset for sensor zero position	2.5V
Current drawn	approx. 6mA
Degree of protection	IP65
Operating temperature	-40°C ... +85°C
Storage temperature	-45°C ... +90°C
Weight (without clamping ring or cable)	approx. 111g
Electrical connection	• 0.5m shielded cable Ø4.6mm, 4-wire • special lengths on request

• Each sensor is calibrated after production. It is delivered with an individual calibration record that includes the precise offset and sensitivity values, the static characteristic curve and the linearity deviation curve.

• On request: special measuring range

Dimensions (in mm) and Connections



Attention! Do not short circuit the supply voltage (9 bis 30V) with one of the outputs.