



**Inclinometers of high measurement accuracy with an integrated 4...20mA signal conditioner for inclination measurement in the ranges of  $\pm 10$ ,  $\pm 30$  and  $\pm 80$  degrees**

## Features

- integrated sensor electronics including signal conditioner
- temperature compensated, normalized 4...20mA output signal
- 2-wire connection - sensor power obtained from current loop
- linear output characteristics
- high measurement accuracy
- minimal linearity deviation
- high long-term stability
- hysteresis free output signal
- no interference by ambient electromagnetic fields
- shock proof as without moving mechanical parts
- hermetically sealed
- sensor electrically isolated from point of measurement - no ground connection
- zero point adjustable through 360° using clamping ring
- loop current limitation
- EMC certified

## Description

The NG2I, NG3I and NG4I are capacitive and liquid based inclinometers with integrated sensor electronics and current amplifier. 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 NG4I) 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.

The power is obtained from the measurement current loop, thereby eliminating the need for a separate power supply and enabling operation with two wire connection.

## Application

The NG2I, NG3I and NG4I are suitable for applications requiring high measurement accuracy with high linearity and temperature stability as well as high long-term stability for measurement of large inclination angles and for which the power is to be supplied via a 4...20mA current loop without the need for a separate supply voltage.

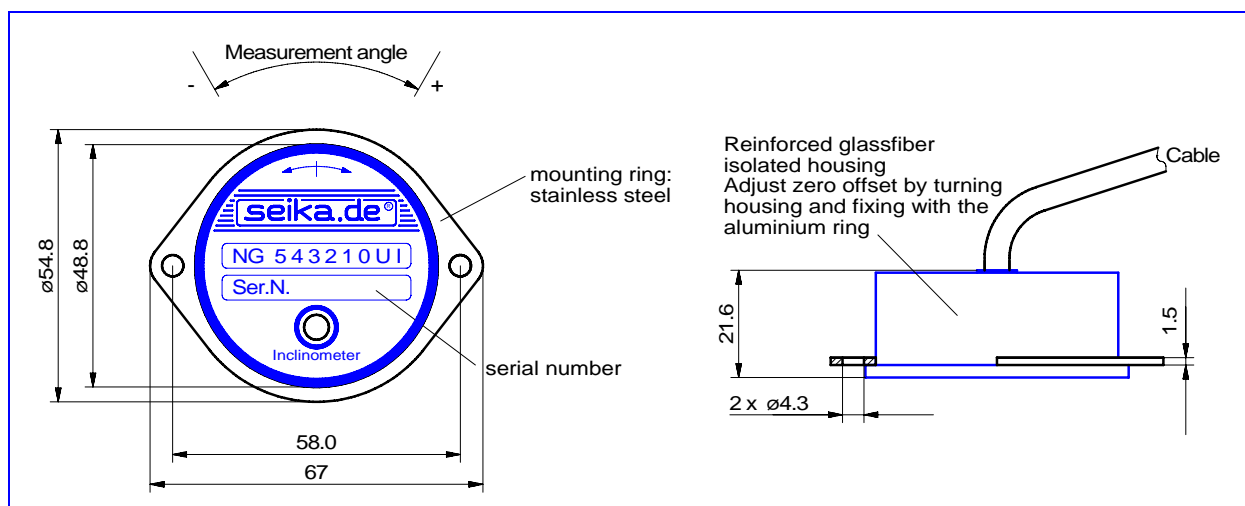
We recommend the sensor box SB1I with an integrated NG - inclinometer and a 4...20mA output signal for operation in especially harsh operating conditions.

These inclinometers are typically used in construction, mining, vehicles, aircraft, ships, transportation and conveyor systems and process control as well as for safety engineering.

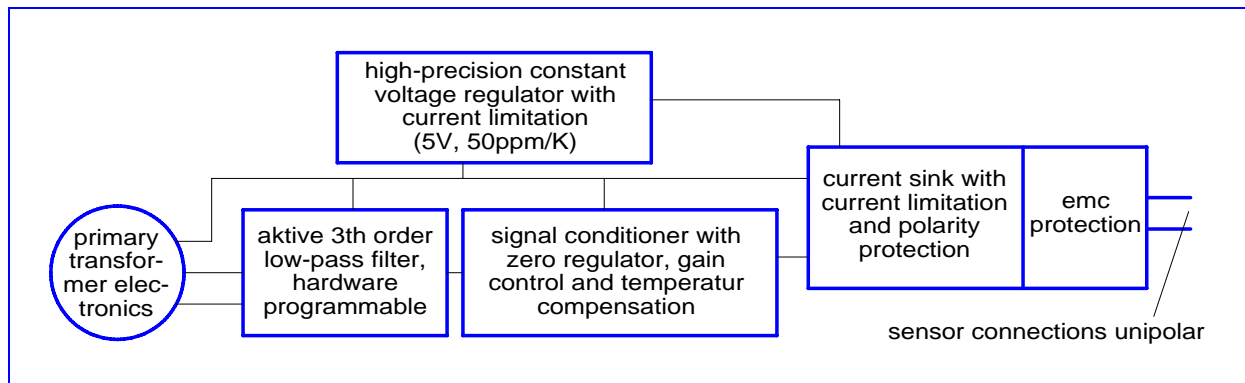
**Technical Specifications**

Type	NG2I	NG3I	NG4I
Measuring range	±10 degrees	±30 degrees	±80 degrees
Resolution	<0.001degrees	<0.003degrees	<0.01degrees
Standardized sensitivity (other standardizations on request)	0.8mA/degree	0.266mA/degree	0.1mA/degree
Linearity deviation	<1·10 <sup>-3</sup> F.S.		
Transverse sensitivity	<0.5% at 45° tilt		
Settling time	approx. 0.3 seconds (1s, 2s or 3s optional)		
Temperature drift of sensitivity	approx. ±0.01% / K		
Temperature drift of zero point	approx. ±10 <sup>-3</sup> degrees / K		
Terminal voltage	10V ... 30V either polarity!		
Output current offset for sensor zero position	12mA		
Degree of protection	IP65		
Operating temperature	-40°C ... +85°C		
Lagertemperatur	-45°C ... +90°C		
Weight (without clamping ring or cable)	approx. 110 grams		
Standard electrical connection	0.5m cable Ø4.6 mm, 2-wires different cable lengths optional		

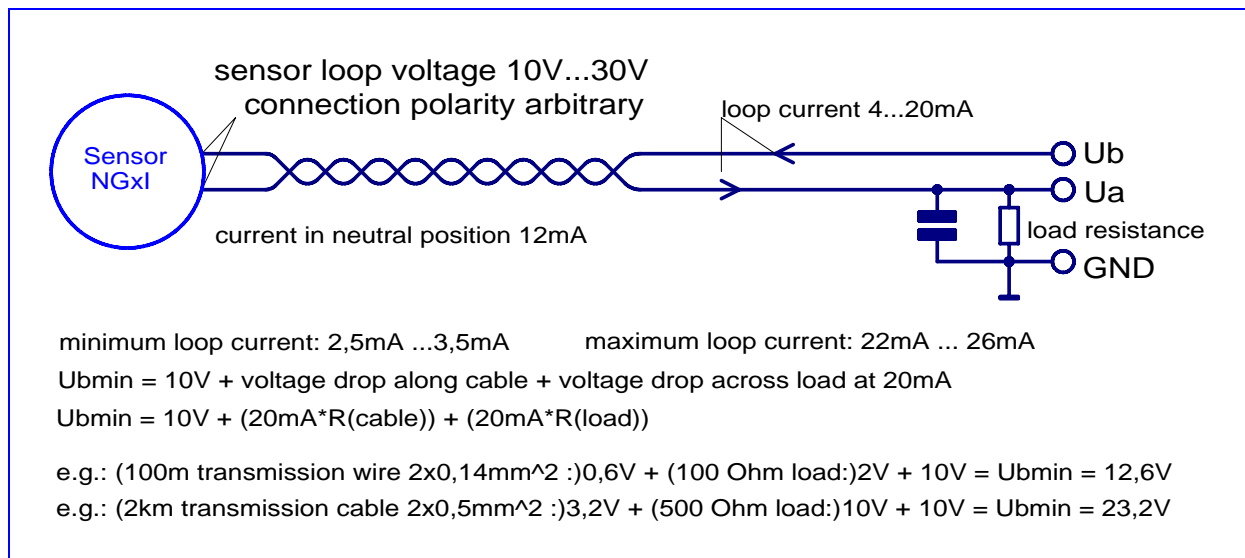
**Dimensions (in mm)**



**Block diagram**



**Connections**



Each sensor will be delivered with individual calibration dates (offset, sensitivity) and calibration record.

On request: special ranges, special EMC-rules.