



**Inclinometers of high measuring accuracy with an integrated 0...5 Volt signal conditioner for inclination measurement in the ranges of  $\pm 10$ ,  $\pm 30$  and  $\pm 80$  degrees**

## Features

- temperature compensated, normalized 0 ... 5V output signal
- 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 SB1U or the casing 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.

**Technical Specifications**

Type	NG2U	NG3U	NG4U
Measuring range	±10 degrees	±30 degrees	±80 degrees
Resolution	<0.001 degrees	<0.003 degrees	<0.01 degrees
Standardized sensitivity (other standardizations on request)	200mV / degree	66.67mV / degree	25mV / 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, 3s optional)		
Temperature drift of sensitivity	<-0.01% / Kelvin		
Temperature drift of zero point	<±10 <sup>-3</sup> degrees / K		
Supply voltage U <sub>b</sub>	9V ... 30V (optional 5V, regulated)		
Output voltage offset for sensor zero position	2.5 Volt		
Current drawn	approx. 5mA		
Degree of protection	IP65		
Operating temperature	-40...+85°C		
Storage temperature	-45...+90°C		
Weight (without clamping ring or cable)	approx. 110 grams		
Standard electrical connection	0.5m shielded cable Ø4.6mm, 4-wires other lengths optional		

On request: special ranges

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

Dimensions (in mm) and Connections

