



Small Inclinometers for inclination measurement in the ranges of  $\pm 10$ ,  $\pm 30$  and  $\pm 70$  degrees.

## Features

- linear output characteristics
- high measurement accuracy
- high long-term stability
- hysteresis free output signal
- minimal zero point drift
- integrated sensor electronics
- low power consumption
- small housing
- light weight
- different output signal options
- no interference by ambient electromagnetic fields
- shockproof as without moving mechanical parts
- hermetically sealed
- sensor electrically isolated from point of measurement using high quality plastic housing - no ground connections
- zero point adjustable through  $360^\circ$  using clamping ring

## Description

The N2, N3 and N4 are capacitive, liquid based inclinometers with integrated sensor electronics. They are manufactured with an analog DC output. The sensor electronics require only minimal power and are in conjunction with the capacitive primary transformer characterized by high accuracy, a high signal-to-noise ratio and high long-term stability.

The measurement technique enables a linear relationship between the angle to be measured and the output signal. The determined angle is independent of the local gravitational acceleration, that means that no matter where the measurement is being taken, whether in Europe, Australia, on Mount Everest or on the moon, the inclination will be measured correctly anywhere.

## Application

The inclinometers N2, N3 and N4 are suitable for applications requiring a small, light sensor for measurement of relatively large inclinations.

Typical areas of application include measuring instruments and inspection systems, vehicles, automation and safety engineering, scientific devices, medical and communications equipment as well as navigational systems.

## Technical Specifications

Type	N2	N3	N4
Measuring range	$\pm 10$ degrees	$\pm 30$ degrees	$\pm 70$ degrees
Resolution	<0.002 degrees	<0.005 degrees	<0.01 degrees
Linearity deviation	0.2% of measuring range		
Transverse sensitivity	<1% at $30^\circ$ tilt		
Settling time	<0.3 seconds		
Supply voltage $U_b$ (regulated)	5 Volt		
Permissible supply voltage range $U_{bz}$	3V ... 6V		

# N2, N3, N4

Mechanical overload resistance	10 000 g (approx. 100 000 m/s <sup>2</sup> )		
Current drawn at U <sub>b</sub> = 5V	approx. 1mA		
Degree of protection	IP65		
Operating temperature	-40°C ... +85°C		
Lagertemperatur	-45°C ... +90°C		
Weight (in metal housing without cable)	18.5 grams		
Standard electrical connection	3 highly flexible, color-coded wires ø1mm, length approx. 18 cm (special lengths on request)		
Alternative electrical connection	0.5m strong, flexible, shielded cable ø2.1mm (special lengths on request) 3 flexible, color-coded wires with Teflon insulation for extended temperature range		
Values for analog DC output at U <sub>bN</sub> = 5 Volt			
Sensitivity	approx. 12mV/degree	approx. 6mV/degree	approx. 3.6mV/degree
Temperature drift of sensitivity	-0.17% / K	-0.12% / K	
Temperature drift of zero point	<±0.05mV/K	<±0.025mV/K	
Zero offset at U <sub>b</sub> =5V	(2.5±0.1)Volt - generally: 0.5U <sub>b</sub> ±4%		
Output impedance	10 kOhm		

On request: PWM-output

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

## Dimensions (in mm) and Connections

