



Inclinometers

Small size for measuring in the ranges of ± 10 , ± 30 and ± 70 Degree

With non-amplified output / or digital pulse output.
Typical OEM product at low cost.

Features

- Linear output characteristics
- Minimal zero drift
- Hysteresis free measuring signal
- High measurement accuracy
- Very low relative linearity errors
- High long-term stability
- Different output signals
- No EMC influence
- Vibration and chock insensitive due to non mechanical parts inside
- Hermetically sealed housing to IP65
- Sensor are galvanic separated from the isolated housing
- Sensor 360° mechanically adjustable due to mounting ring

Description

The inclination sensors **N2**, **N3** and **N4** are capacitive liquid based sensors with integrated sensor electronics. These sensors can be supplied with an analog DC output or with a digital impulse-width modulated output signal that is linear to the degree of angle. The power consumption of these sensors are very low (approx. 1mA)

The measuring principle assures a linear angle output equal to the measuring range of the sensor with a maximum range of ± 70 degrees on **N4** ! This is independent of the size of gravity at the measuring point, so it doesn't matter if you are in Europe, Australia or even on the moon the angle of inclination is measured correctly everywhere.

Applications

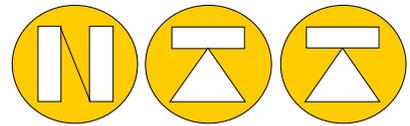
The **N** series are well suited for industrial use where the demands for compact inclinometers with good long-term stability and relatively large tilt angle measuring ranges are wanted.

These **N** series inclinometers have been used with very good results in the medical industry, food industry, agriculture machinery, cranes, process machines, transport systems, and for vehicle tilt monitoring, plus many other applications. They are commonly used as OEM sensors combined with OEM electronics.

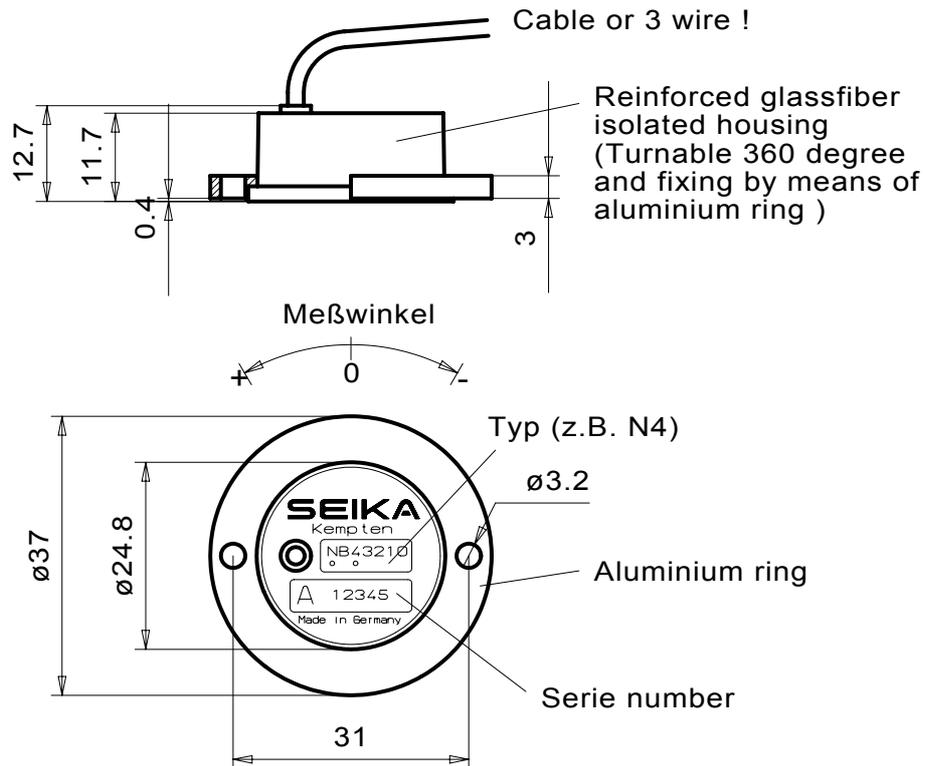


Technical Data

Type	N2	N3	N4
Measuring range	±10 degrees	±30 degrees	±70 degrees
Typical instrument resolution (noise-signal relationship)	< 0,004 degrees	< 0,010 degrees	0,018 degrees
Dimensions	See drawing		
Max. Non-linearity	<0,2% from measuring value !		
Transverse Sensitivity	<1% at 30° tilt		
Rise-time constant	< 0,3 Sec.		
Power Supply U_{bN}	5 Volt		
Min. .. Max. Supply U_{bz}	3 ... 6 Volt		
Current consumption $U_b=5V$	app.1mA		
Protection degree	IP65		
Working Temperature	-40 to +85°C		
Storage Temperature	-45 to +90°C		
Weight (without cable and mounting ring)	app.. 18,5 Grams		
Standard cabling	3 high flexible wires 180mm long shielded \varnothing app.1,0mm optional: Shielded cable \varnothing 2,1mm x 0,5m length		
Values for analogous DC output model at $U_{bN}=5V$			
Sensitivity	app.12mV/ degrees	app.5 mV/ degrees	app.3,2 mV/degrees
Temperature drift on sensitivity	-0,17% / °C	<-0,12% / °C	
Temperature drift on zero	<±0,05mV/ °C	<±0,025mV/ °C	
Zero offset at $U_b=5V$	2,5±0,1Volt - -general: 0,5 U_b ±4%		
Output Impedance	10 k Ω		
Values for duty cycle for digital pulse model output at $U_{bN}=5V$			
Sensitivity $dt_{(E)}/(t_{high}+t_{low})$	app.76*10 ⁻³ /degrees	app.33 *10 ⁻³ /degree	app.20*10 ⁻³ /degree
Temperature drift sensitivity	-0,17% / °C	<-0,12% / °C	
Temperature drift on zero	< ±1,6*10 ⁻⁴ F.S./ °C	<± 8*10 ⁻⁵ F.S./ °C	
Middle initial point t_{high}/t_{low}	1±4%		
Output frequency	app.20Hz to app.1MHz (optional available)		



Dimensions and connections



Connections 3 wire:
 red +5 Volt stable
 white: Output signal
 blue: GND, inside shield

Cable connections:
 red: +5 Volt (stable)
 blue: output signal
 Shield GND, inside shield

Caution! Do not reverse the operating voltage polarity!

6 Volts is the maximum supply voltage!