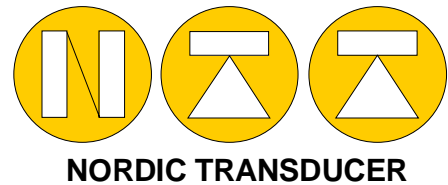


# SEIKA / NTT NA2-05, NA2-10 NA3-30, NA4-45, NA4-70



**High Performance Inclinometer  
With very high accuracy and integrated  
0.5V - 4.5Volt excitation electronics.**

**3 NA sensor models with working  
ranges of:  $\pm 5$ ,  $\pm 10$ ,  $\pm 30$ ,  $\pm 45$  &  $\pm 70$  degrees**



1:1

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## Features

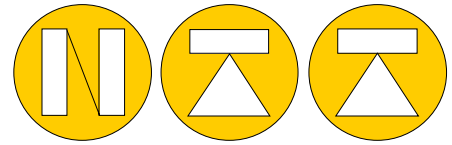
- Temperature compensated voltage output
- Non regulated +9... +30 V power supply
- Integrated sensor electronic with 5VDC excitation
- Linear output 2.5V at zero +/-2VDC range
- High measurement accuracy
- Very low relative linearity errors
- High long-term stability
- Hysteresis free measuring signal
- EMC protected
- Optional 5VDC reference output
- Hermetical closed housing to IP65
- Sensor galvanic isolated from housing
- Sensor 360° mechanically adjustable due to mounting ring

## Description

The capacitive, dielectric liquid based inclinometers NA2-05, NA2-10, NA3-30, NA4-45 and NA4-70 contain new sensor electronics. These are made up of a highly stable, laser-trimmed signal conditioner with electronic compensation for temperature drift, highly stable supply voltage regulation circuitry and low-pass filtering of the measurement signal to eliminate unwanted noise. The capacitive measurement principle guarantees a very stable, linear relationship between the inclination being measured and the normalised output signal. The sensor electronics require minimal power and, together with the capacitive primary transformer, are characterised by low errors, high signal-to-noise ratio and high long-term stability. Contrary to measuring inclinations using accelerometers, this measurement principle enables a linear relationship between the inclination to be measured and the output signal, independent of the constant of gravity at the place of measurement, i.e. Independently of where the measurement is taking place, whether in Europe, Australia, on Mount Everest or the Moon.

## Nordic Transducer

# SEIKA / NTT NA2 - NA3 - NA4



## NORDIC TRANSDUCER

### Applications

The NA2, NA3 and NA4 can be used for measurements requiring small and light devices, replacability, measurement of relatively large inclinations and a normalised, analogue voltage output signal. Measurements of inclinations in measuring instruments and inspection equipment, in water, land and air vehicles, in automation and safety technology, on cranes and lifting equipment, on robots, in the manufacture of scientific equipment, in medicine and telecommunication as well as navigation systems are typical examples.

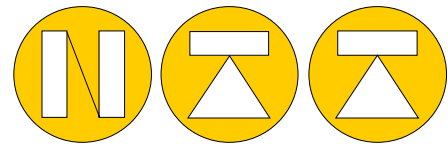
### Technical Data

Type:	NA2-05	NA2-10
Measuring ranges	±5 degrees	±10 degrees
Typical instrument resolution (noise-signal relationship)	±0,002 degrees	±0,003 degrees
Sensitivity	400mV/degrees	200mV/degrees
Dimensions	See drawing page 3	
Non linearity (over whole range)	<±0,02 degrees	<±0,03 degrees
Transverse Sensitivity	<1% of measured value up to 45° tilt	
Rise-time Constant	Approx.0,3 sec.	
Temperature drift of span	<-0,018% / °C	
Temperature drift of zero	<± 0.002 Angle degree / °C	
Power Supply	8...30 Volt	
Zero degree output signal	2.5 Volt	
Current consumption	App.1mA	
Reference output ( optional)	5V ±25ppm/K	
Protection degree	IP65	
Temperature Range	-40 to +85°C	
Storage Temperature	-45 to +90°C	
Weight	App.23 - 26 Grams	
Standard Cabling	180mm 4 wire ø1mm (as optional 500mm 3 wire cable ø2.1mm)	

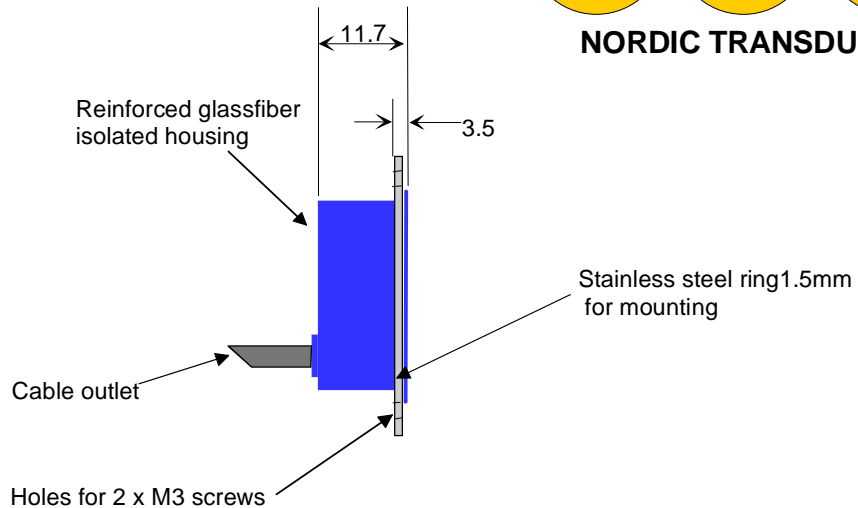
### Technical Data

Type:	NA3-30	NA4-45	NA4-70
Measuring ranges	±30 degrees	±45 degrees	±70 degrees
Typical instrument resolution (noise-signal relationship)	±0,007 degrees	±0,012 degrees	±0,014 degrees
Sensitivity	66.6mV/degrees	44.4mV/degrees	28.57mV/degrees
Dimensions	See drawing page 3		
Non linearity (over whole range)	<±0,06 degrees	<±0,14 degrees	<±0,28 degrees
Transverse Sensitivity	<1% of measured value up to 45° tilt		
Rise-time Constant	Approx.0,3 sec.		
Temperature drift of span	<-0,018% / °C		
Temperature drift of zero	<±0.002 Angle degree/°C -----<±0.003 Angle degree/°C-----		
Power Supply	8...30 Volt		
Zero degree output signal	2.5 Volt		
Current consumption	App.1mA		
Reference output ( optional)	5V ±50ppm/K		
Protection degree	IP65		
Temperature Range	-40 to +85°C		
Storage Temperature	-45 to +90°C		
Weight	App.23 - 26 Grams		
Standard Cabling	180mm 4 wire ø1mm (as optional 500mm 3 wire cable ø2.1mm)		

# SEIKA / NTT NA2 - NA3 - NA4



**NORDIC TRANSDUCER**

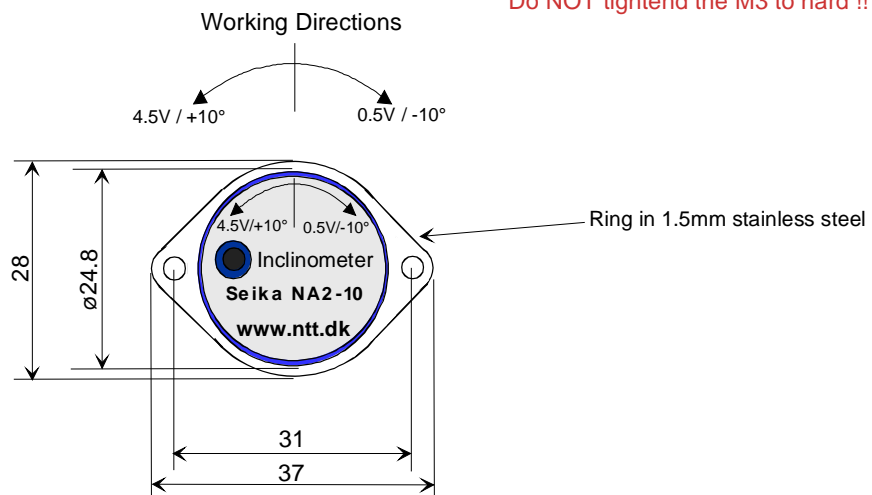


Working position as shown here when you look at it like this with front text as upside down position, it will work from side to side as show with + to left side

The Inclinometer housing can be turned mechanically inside the ring, when the wanted position is reached the 2 x M3 is tightened, and so the outside ring press on the housing so it is fixed in position.

**Do NOT tightend the M3 to hard !!**

Dimensions in mm



**Wiring: 3/4 wire**  
 Red: + supply 8..30V ( approx. 1mA)  
 Black: GND  
 White: + output signal +0.5 - +4.5V = working range  
 (Optional, Brown: + U ref.: 5V )

**Cable:**  
 Red: + supply 8..30V ( approx. 1mA)  
 Shield: GND  
 Blue: + output signal +0.5 - +4.5V = working range

**Nordic Transducer**



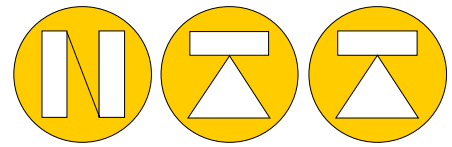
500mm cable  
 ø2,1mm 2 wire cable  
 with shield as gnd.



180mm 3/4wire  
 3xø1,0mm wire  
 with + 5V ref. as optional

**Nordic Transducer**

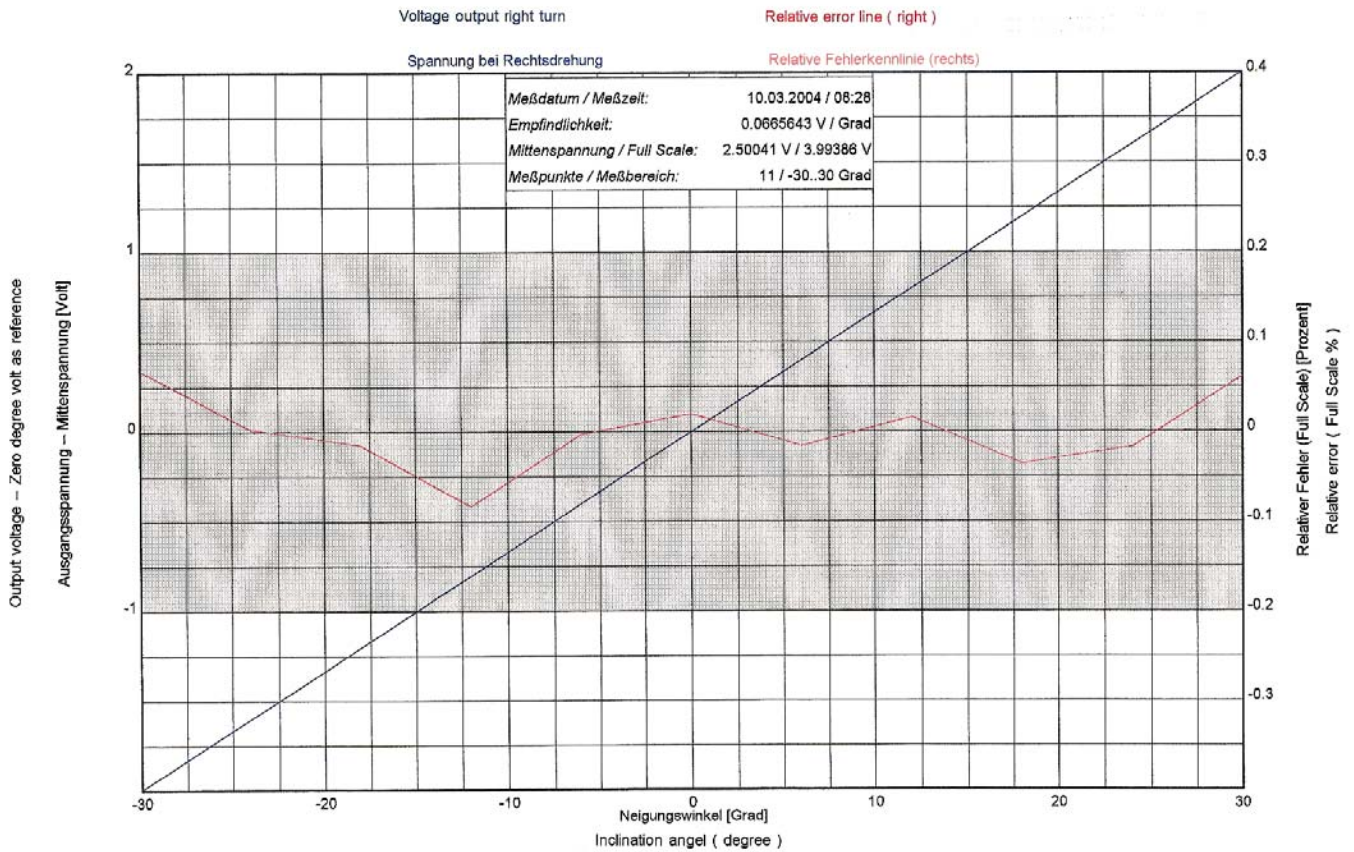
# SEIKA / NTT NA2 - NA3 - NA4



**NORDIC TRANSDUCER**

All NAX inclinometers are supplied with test data as shown below so you get a correct picture of how the actual sensor is on linearity, volt value on zero and per degree inclination

Nordisk Transducer Teknik, Als Odde DK-9560 Hadsund, tel. +45 98581444 fax. +45 98581866 e-mail: ntt@ntt.dk  
 Sensor type: NA3 Serial number: 1023



## Nordic Transducer