

Compact Inclinometer Sensors: NB3 (0...7 Hz) & NB3S (0...60 Hz) provide High Accuracy for Small Measuring Ranges within $\pm 10^\circ$



Description

The NB3 is a static accelerometer (utilized as an inclinometer) with a high degree of accuracy for measuring small tilt angles of any object with respect to gravity. The sensor's primary transformer consists of a capacitive spring-mass system with gas-dynamic damping.

Manufactured either with an Analog DC or a Pulse Width Modulated (PWM) output, the integrated sensor electronics require only minimal power and are in conjunction with the capacitive primary transformer characterized by high accuracy, linearity, and long-term stability.

Applications

Well suited for industrial use where the demands for compact inclinometers with good long-term stability (very low power consumption) and relatively small tilt angle measuring ranges ($\pm 10^\circ$) are preferred.

Typically used for automation and inspections applications as well as safety engineering, medical & communications equipment, and leveling systems.

Features

- Small compact housing, less than 1" diameter
- 0.3 or 0.01 Second Response Time
- Linear output characteristics
- Minimal zero offset drift
- Hysteresis free measuring signal
- High measurement accuracy
- Very low relative linearity errors
- High long-term stability
- Analog or PWM output signals
- Very low power consumption
- Hermetically sealed housing to IP65
- Low transverse sensitivity over full range

MECHANICAL CHARACTERISTICS

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Housing	Nickel Plated Brass
Mounting	M3 Mounting Stud, M4 optional
Mounting Plane	Vertical Surface
Outline Dimensions	$\varnothing 0.945"$ ($\varnothing 24\text{mm}$) X $.434"$ (11mm) h
Electrical Connection	3 highly flexible, color-coded wires $\varnothing 0.04"$ ($\varnothing 1.0\text{mm}$) x 7.0" (18cm)
	Optional: Shielded cable $\varnothing 0.083"$ ($\varnothing 2.1\text{mm}$) x 1.65' (0.5m)
Weight	Approx. 0.89 ounces (25 grams) (not including cable)
Operating Temperature	-40°F to +185°F (-40° to +85°C), optional +257°F (+125°C)
Storage temperature	-49°F to +194°F (-45° to +90°C), optional +257°F (+125°C)

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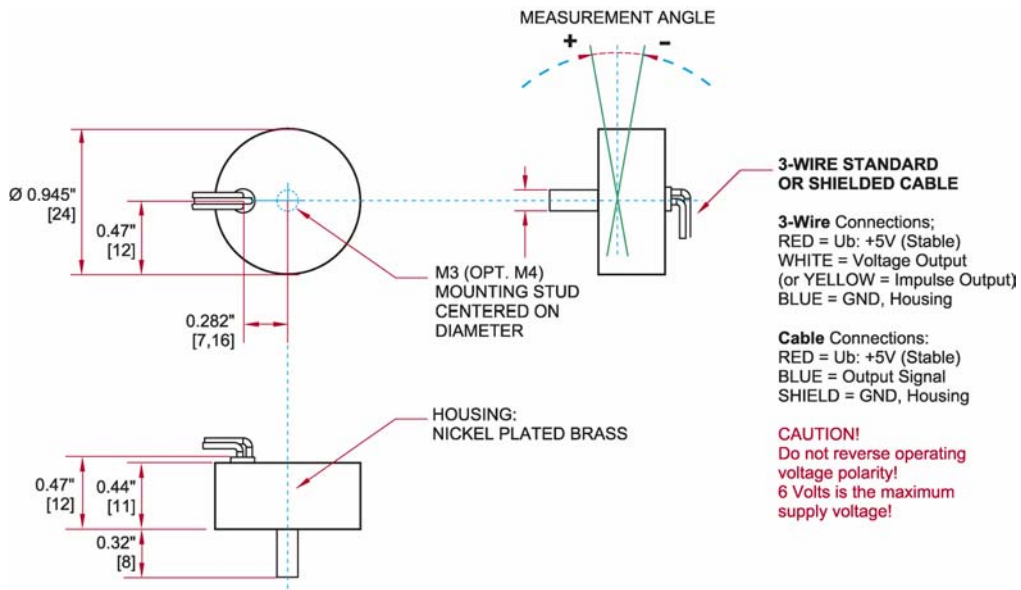
NB MODEL SPECIFICATIONS	
Measuring range	±10°
Resolution	< 0.001°
Max. Non-linearity	< 0.2% Full Range for ±10° model
	< 0.5% Expanded Range for ±20°
Transverse Sensitivity	Negligible
Response Time	NB3 < 0.3 Sec., Frequency 0-7Hz
	NB3S < 0.01 Sec., Frequency 0-60Hz
Power Supply U_b	5 Volt regulated
Min ... Max. Supply U_{bz}	3 ... 6 Volt
Current Consumption $U_b=5V$	Approx. 1mA
Protection Degree	IP65

VALUES FOR ANALOG DC OUTPUT MODEL AT $U_{BN}=5VOLT$	
Sensitivity	Approx. 15mV/°
Temperature drift of sensitivity	< +0.01% /°C
Temperature drift of zero	< ± 0.025mV /°C
Zero offset at $U_b=5V$	2.5 ±0.1 Volt - generally: 0.5 U_b ±4%
Output Impedance	10kΩ

Digital pulse-width modulated output signal - linear to the degree of angle - available upon request.

CABLE WIRING TABLE:			
3-WIRE (standard)		SHIELDED CABLE (optional)	
RED	+5VDC Stable	RED	+5VDC Stable
WHITE	Output Signal	BLUE	Output Signal
BLUE	GND (housing)	SHIELD	GND (housing)

Figure 1: Dimensions and Mounting Position (inches [mm])



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