NGi Series

General Specifications Brochure

Accurate Electronic Inclinometer with an Integrated Signal Amplifier for a 2-Wire Analog 4…20mA Output in Ranges of ±10, ±30 and ±80°

Description

The NGi Series of inclinometers - **NG2i (±10°), NG3i (±30°),** and **NG4i (±80°)** - are liquid capacitive gravity based sensors with integrated sensor and excitation electronics. The thermal drift of the primary sensor is further compensated by an electronic equalization of the temperature.

An integrated highly stable voltage regulator makes it possible to supply the inclinometer from any unregulated supply or battery as low as +8V and up to +30VDC. The measuring principle assures a linear angle output with 4…20mAs calibrated to equal the measuring range of the sensor. The measuring time constant can be ordered with longer rise times as an option. The power is obtained from the measurement current loop, thereby eliminating the need for a separate power supply and enabling operation with a two wire connection.

Applications

The NGi Series with its current loop output is well suited for industrial use where high accuracy and long-term stability are required in a noisy environment where high temperature changes occur and non-stable supply voltages are present.

For additional functionality the **SB1i** and **SB2i** Inclinometer Sensor Packages have both zero and gain adjustments. For dual axis applications refer to the SB2i. The SB2i is also available with CSA Certification for Intrinsic Safety.

Typically used in building and bridge construction, mining, radar alignment systems, pitch and roll, agricultural/construction equipment, and process machinery.

Features

- *Temperature compensated 4…20mA output*
- *Non regulated +8…+30 V power supply*
- *Integrated sensor electronics with 4…20mA excitation*
- *Linear output characteristics*
- *2 wire connection – sensor power obtained from the current loop*
- *High measurement accuracy*
- *Very low relative linearity errors*
- *High long-term stability*
- *EMC protected*
- *Vibration and shock insensitive due to non mechanical internal parts*
- *Hermetically sealed housing to IP67*
- *Sensor galvanically isolated from housing*
- *Sensor zero mechanically adjusted with mounting ring*
- *Current loop limitation*
- *Hysteresis free measuring signal*

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NGi Model Specifications	NG2i	NG3i	NG4i
MEASURING RANGE	±10°	±30°	±80°
RESOLUTION	< 0.001°	< 0.003°	< 0.01°
SENSITIVITY	0.8mA/°	0.266mA/°	0.1mA/°
MAX. NON-LINEARITY	$< 1*10^{-3}$ FS		
TRANSVERSE SENSITIVITY	<1% at 45° tilt		
RESPONSE TME	< 0.3 Sec. (<300mSec), (optional 1s, 2s, 3s)		
TEMPERATURE DRIFT OF SENSITIVITY	<-0.01% /°C		
TEMPERATURE DRIFT OF ZERO	$<\pm10^{-3}$ °/°C		
ZERO OFFSET	12mA		
POWER SUPPLY	8…30VDC non-regulated (either polarity)		
CURRENT CONSUMPTION	Approx. 10mA		
MECHANICAL CHARACTERISTICS			
HOUSING	30% Glass Filled PBT Plastic		
ENVIRONMENTAL PROTECTION	IP65		
MOUNTING	Flat Vertical Surface with Supplied Mounting Ring		
OUTLINE DIMENSIONS	Ø 1.92" (Ø 48.8mm) X 0.85" (21.6mm) h		
	With Mounting Ring: Ø 2.64" (Ø 67mm) X .85" (21.6mm) h		
ELECTRICAL CONNECTION	Ø 0.182" (Ø 4.6mm) Cable x 1.65' (0.5m) (2-wire pigtails leads)		
WEIGHT	Approx. 3.88 ounces (110 grams) (not including mounting ring)		
OPERATING TEMPERATURE	-40°F to +185°F (-40° to +85°C)		
STORAGE TEMPERATURE	-49°F to +194°F (-45° to +90°C)		
CABLE WIRING TABLE:			
BROWN	+VDC input or output		
WHITE	+VDC input or output		
Note: wires are interchangeable.			

Figure 1: **Block Diagram**

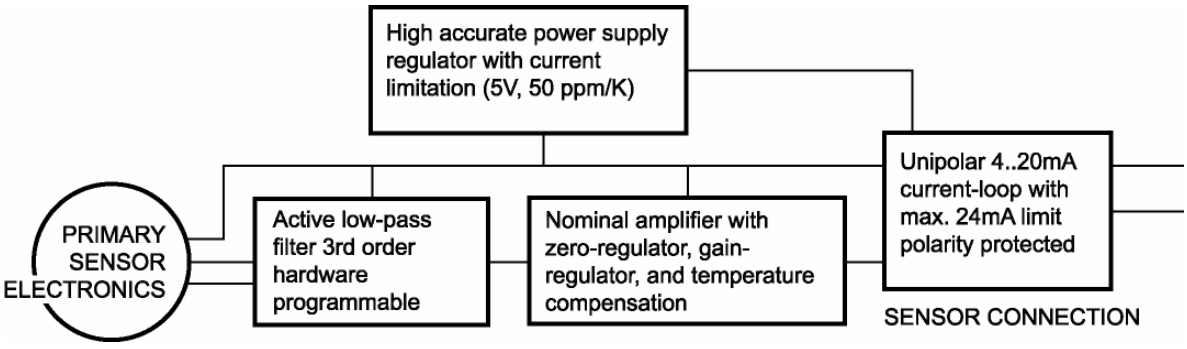

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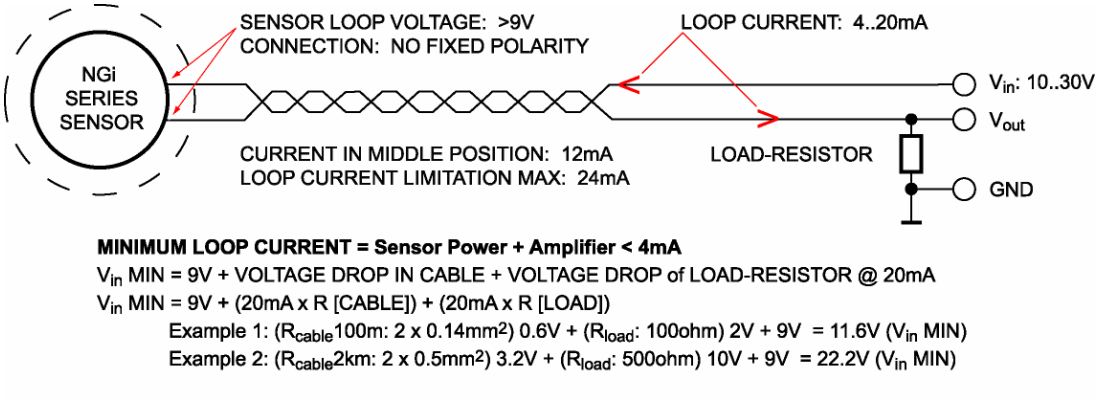
Figure 2: Wiring Connections



MINIMUM LOOP CURRENT = Sensor Power + Amplifier < 4mA

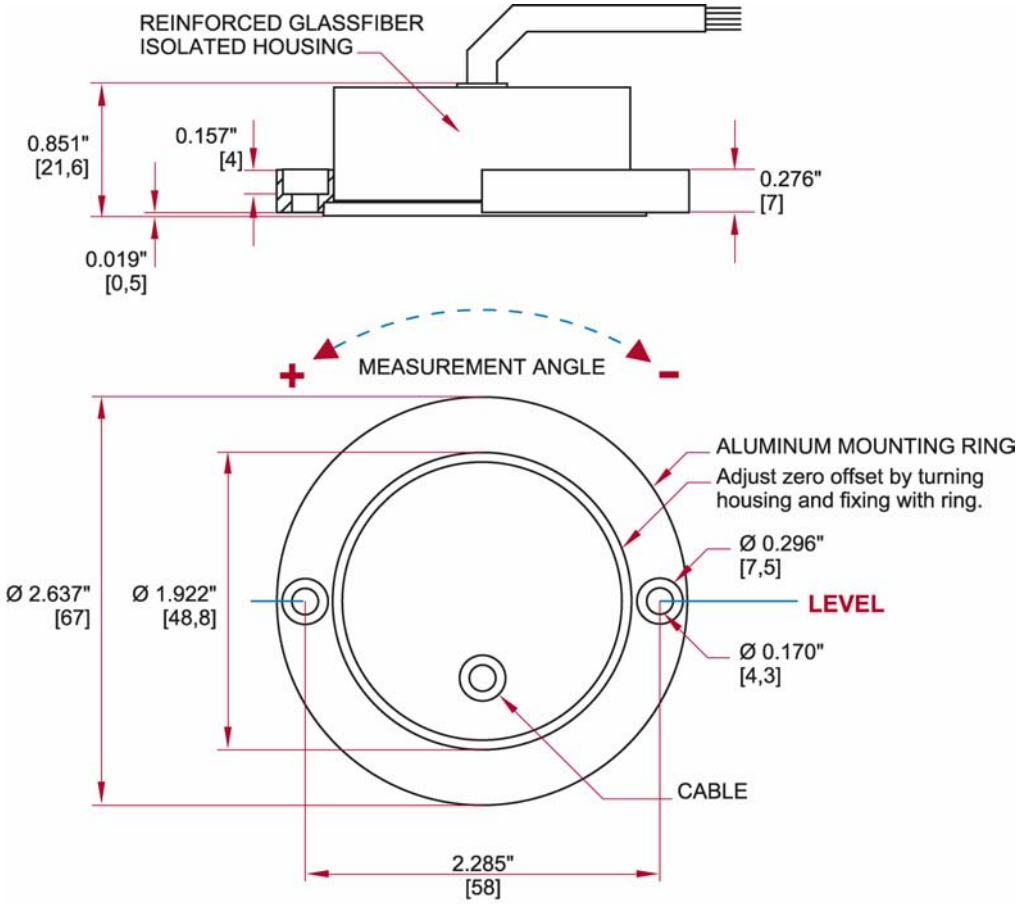
V_{in} MIN = 9V + VOLTAGE DROP IN CABLE + VOLTAGE DROP of LOAD-RESISTOR @ 20mA

V_{in} MIN = 9V + (20mA x R [CABLE]) + (20mA x R [LOAD])

Example 1: (R_{cable}100m: 2 x 0.14mm²) 0.6V + (R_{load}: 100ohm) 2V + 9V = 11.6V (V_{in} MIN)

Example 2: (R_{cable}2km: 2 x 0.5mm²) 3.2V + (R_{load}: 500ohm) 10V + 9V = 22.2V (V_{in} MIN)

Figure 3: Dimensions and Mounting Position (inches [mm])



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