



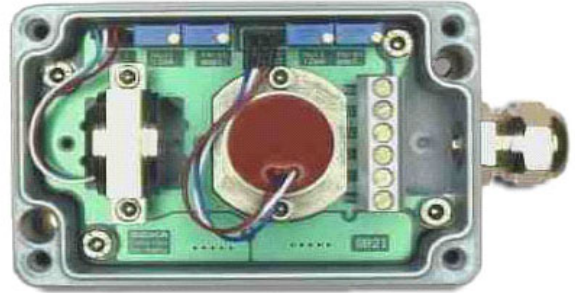
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SB2i (4-20mA)

Dual Axis Inclinometer Sensor Package

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The SB2i is a rugged, environmentally sealed sensor package with an integrated inclinometer & signal amplifier for a 2-wire Analog Current 4...20mA output.



Features

- Rugged pressure die-cast Aluminium housing with saltwater resistant coating
- IP65 to IP67 Environmental Protection
- 2 integrated signal conditioners with 4-20mA, 2-wire outputs
- Temperature drift compensation
- No extra power required
- Angle measuring range can be scaled to customer requirements
- Compatible with B, BD, N, and NB types
- Sensor and amplifier are galvanically separated from the housing
- Extensive EMC protection
- Highly stable sensor supply voltage
- Programmable dynamic response
- Current-loop with maximum current limitation
- High overload resistance
- Reverse polarity protected - possibility of 3-wire connection for both measuring loops
- Low-pass signal filter with optional setting of maximum frequency for suppression of interference frequencies

Description

The SB2i sensor box is packaged in a solid and compact pressure-cast aluminum housing with two integrated sensors for dual axis inclination or acceleration measurements.

Within the box are 2 amplifier sections, each with 4...20mA output signal, which allows for two separate 2-wire systems; and a separate highly stable power supply for the sensor. The amplifiers contain a low-pass filter for upper frequency limitation, with noise suppression filtering and a diode bridge for the unipolar current-loop operation. Both sensor and amplifier are galvanically isolated from the housing - further reducing susceptibility to outside noise. Specific response time constants and maximum current output limitations are additional options.

For a higher degree of accuracy and a considerably reduced temperature drift over the entire operating temperature range, the SB2i box is optimized with special temperature compensation. Add a strong metal PG cable fixing combined with the 2-wire current-loop output the SB2i provides a high-quality system for use under many types of harsh working conditions.

Applications

The SB2i is used where inclination or acceleration measurements need to be combined with a 4...20mA current-loop output: especially where noise and/or distance to source are a concern. Typically used in building and bridge construction, mining, radar alignment systems, pitch and roll, agricultural equipment, and all types of process machinery.

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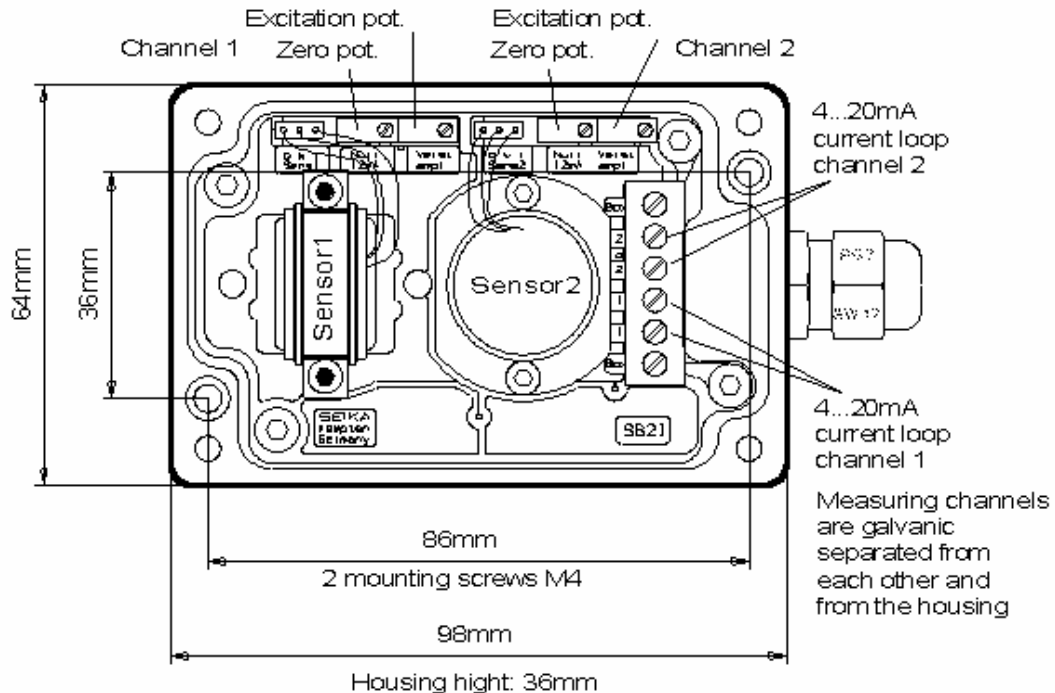
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TECHNICAL DATA	
Termination/Cable Diameter	max.: 6 x 1 mm ² / Ø 5 ... Ø7 mm
Cable Fixing	M12 x 1.5 cable gland, clamping range 6mm ... 7.5mm
Measuring Ranges	In accordance with selected sensor
Environmental Protection Rating	IP65 (with RTV fill IP67)
Mounting	Any direction
Inclinometer Measuring Plane	N Series: 3 directions of mounting
Accelerometer Measuring Directions	B, BD Series: Place in X, Y, Z co-ordinates to the housing
Supply Voltage	+8 ... +30 VDC non-regulated
Minimum Loop Current	3mA
Maximum Loop Current	Approx.24mA
Output Current Loop Signal	4...20mA (12mA as zero point)
Adjustable Parameters via Potentiometers	Signal-zero (12mA), Span
Max. Load Impedance	500 Ohm (at 24 Volt loop supply)
Operating Temperature	-40 ... +85°C
OPTIONS	
Scaled Angle Measuring Ranges, Calibration Certificate, Silicone RTV Filled Housing (IP67)	
The SB2i Sensor Box is extremely versatile, allowing various configurations. If you have an application that requires alternative specifications, one of our engineers will be happy to discuss how to customize the box for your inclination or acceleration needs.	

FIGURE 1: Dimensions ([mm]) and Mounting Position
(Shown with N- or NB-type inclinometer sensor or B- or BD-type Accelerometer)



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FIGURE 2: Mounting Positions and Rotation Directions

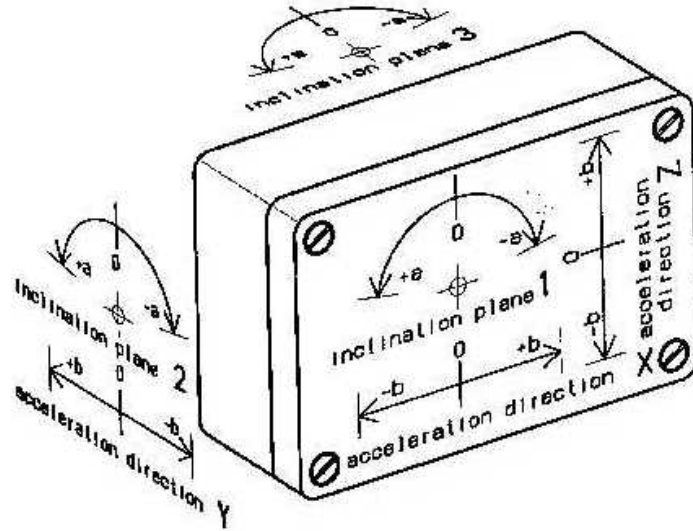
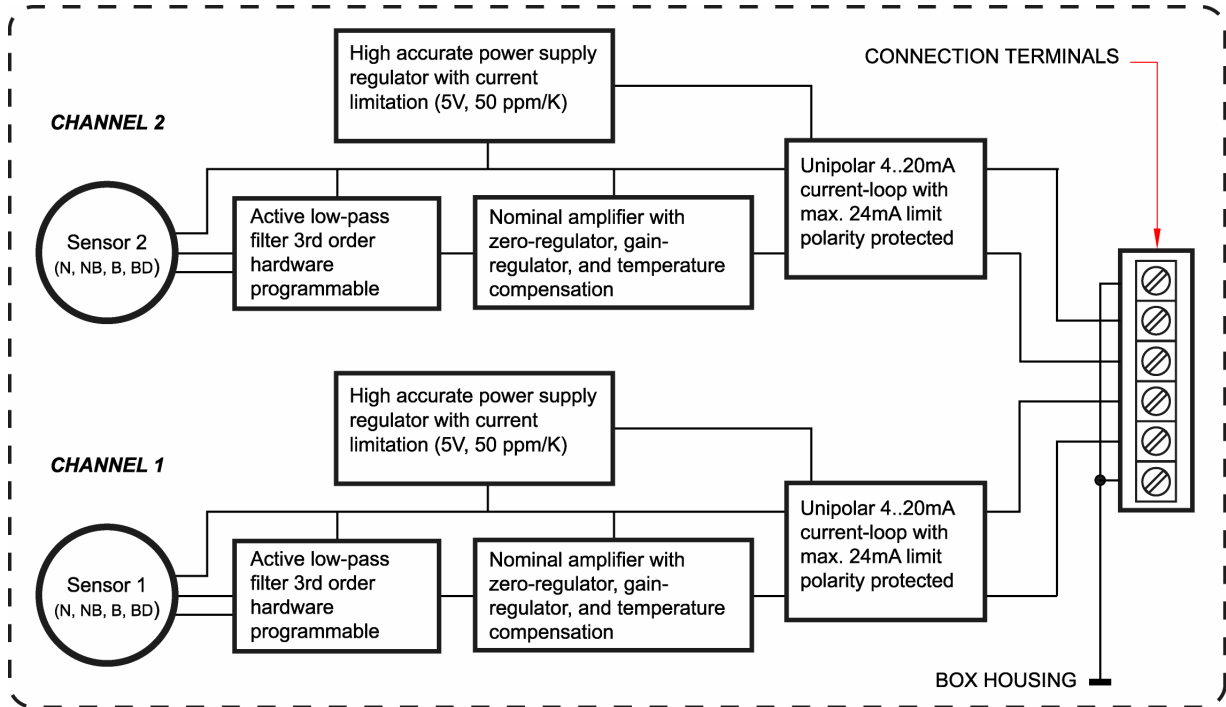


FIGURE 3: Block Diagram



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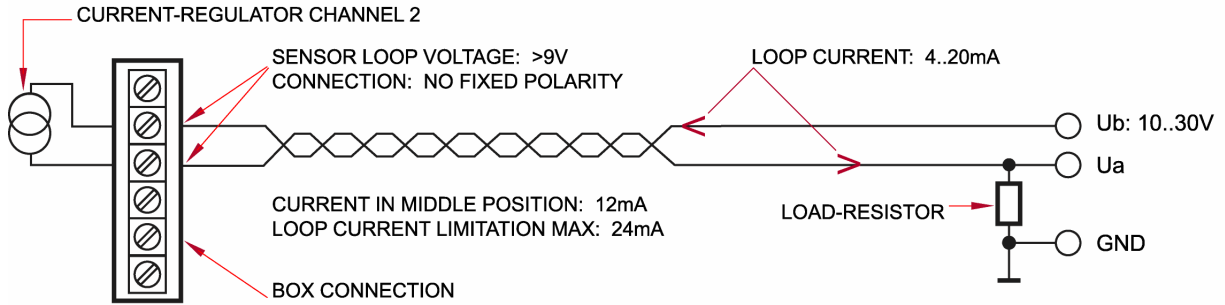
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FIGURE 4: Wiring Connections

One (1) Current-Loop Diagram



Equations:

MINIMUM LOOP CURRENT = CURRENT SUPPLY SENSOR + ELECTRONICS < 4mA

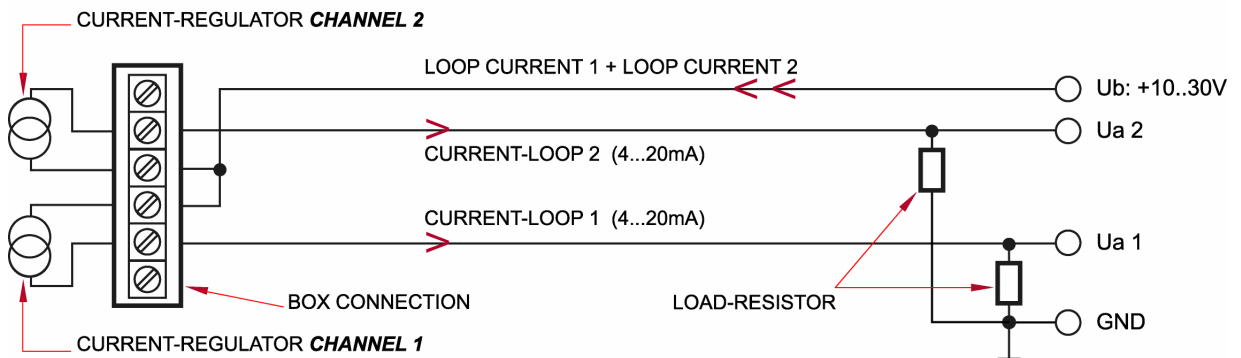
$U_b \text{ MIN} = 9V + \text{VOLTAGE DROP IN CABLE} + \text{VOLTAGE DROP OVER LOAD-RESISTOR TO } 20\text{mA}$

$U_b \text{ MIN} = 9V + (20\text{mA} \times R [\text{CABLE}]) + (20\text{mA} \times R [\text{LOAD-RESISTOR}])$

e.g. 1) (100M WIRE 2 x 0, 14MM:) 0.6V + (RESISTOR 100 Ohm:) 2V + 9V = $U_b \text{ MIN} = 11.6V$

e.g. 2) (2KM CABLE 2 x 0, 5MM:) 3.2V + (RESISTOR 500 Ohm:) 10V + 9V = $U_b \text{ MIN} = 22.2V$

Two (2) Current-Loops with Three (3) Connections



NOTES: Since the supply voltage for the SB2i is obtained from the current-loop and requires a max. 3mA, an input voltage of 9 Volts/min. must be present at the connection block. This is also required in order to guarantee correct operation when the highest loop current of approximately 24mA is used.