

The SBL1S is a Rugged Inclinometer Package with Two (2) Independent Sensors for Uni-Axial Measurement of Tilt, including Two (2) Safety Relays for Threshold Monitoring.



### Features

- Large, robust pressure die-cast aluminum housing (IP65)
- Angular adjustable, vibration damped 3-point fastening of rigid, 3.2mm thick base PCB
- Two (2) integrated, independent measuring channels (4...20mA current-loop output and 0...5 VDC output), electrically isolated from each other and housing for redundant single axis measurements.
- Temperature drift compensation

### Channel 1

- Signal conditioner with 4...20mA, 2-wire output
- No separate supply voltage necessary

### Channel 2

- Signal conditioner with 0...5V output
- 12 or 24 Volt supply voltage
- two separate, individually adjustable safety relay outputs, each with a separate open and close mechanism

### Both Channels

- Temperature drift compensation
- Extensive EMC protection
- Either connection polarity
- Highly stable sensor supply voltage
- Mechanical overload resistance
- Low pass filter with optional choice of cut-off frequency for suppression of interference frequencies

### Description

In addition to the sensors, the housing contains one signal conditioner with 4...20mA output and one signal conditioner with 0...5V output. These include active low pass filters, whose upper cut-off frequencies / settling times can be adjusted to fit the measuring task, and noise voltage filters to ensure the EMC. Interference signals caused by undefined ground currents are eliminated by electrically isolating sensors and signal conditioners from each other and housing.

The voltage output of the SBL1S has two switch outputs, each with a safety relay. Two helical potentiometers allow the setting of two trigger thresholds within the measuring range, at which the corresponding relay triggers. Each relay output has an independent opening and closing contact. The switching hysteresis can be adapted to the measurement task.

The SBL1S - with a double securing ON/OFF safety control system with both current and voltage outputs combined with special electronic temperature compensation significantly reduces the temperature sensitivity - provides a very stable and strong tilt measuring system for utilization under harsh circumstances.

### Applications

Recommended for use where precise inclination measurements must be taken where an added level of vibration damping is needed. Industries include construction, mining, agricultural machinery, transportation and conveyor systems, civil engineering (bridge applications), operation and automation technology.



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## Single Axis/Dual Sensor + Safety Relays

TECHNICAL DATA	
<b>Cable Connection</b>	Max.: 15 x 1 mm <sup>2</sup> (screw connectors)
<b>Cable Diameter</b>	Ø12...Ø21,5mm
<b>Cable Fixing</b>	PG21 (Metal with integrated stress relief)
<b>Measuring Ranges</b>	In accordance with the actual sensor
<b>Protection Degree</b>	IP65 (with RTV fill IP67)
<b>Mounting</b>	In accordance with the actual sensor
<b>Operating Temperature</b>	-40 ... +85°C
<b>Inclinometer Measuring Plane</b>	N or NB Series: 3 directions of mounting NG Series: Parallel to the base of housing
<b>Channel 1</b>	<b>4...20mA current-loop output</b>
<b>Supply Voltage to Box</b>	+8 ... +30 Volt
<b>Minimum Loop Current</b>	3mA (approximately)
<b>Maximum Loop Current</b>	24mA (approximately)
<b>Output Current Loop Signal</b>	4...20mA (12mA as zero point)
<b>Zero/Amplifier Potentiometer</b>	Signal-zero (12mA), Span
<b>Max. Load Impedance</b>	500 Ohm (at 24 Volt loop supply)
<b>Channel 2</b>	<b>0.5 VDC voltage and relay outputs</b>
<b>Supply Voltage</b>	+12 or +24 Volt
<b>Supply Current</b>	Maximum 5mA
<b>Nominal Measuring Range</b>	+0.5 to +4.5 Volt
<b>Nominal Zero Output</b>	+2.5 Volt
<b>Maximum Operating Range</b>	+0.05 to +4.96 Volt
<b>Output Load Impedance</b>	100 Ohm
<b>Capacitive Signal Output Load</b>	Any, considering the high-powered ones
<b>Switching stages</b>	<b>Two SIEMENS safety relays (type SR2A311) – which meet the safety and technical regulations for usage as safeguard relays</b>
<b>Contacts</b>	an independent open and close contact per relay
<b>Contact Load</b>	250V, 6A
<b>Adjustable Potentiometers</b>	Signal zero (2.5V), amplifier, under- and over-trigger threshold
<b>Low-pass Filter</b>	Active, 4 <sup>th</sup> order, minimum ripple
<b>Options</b>	Special measuring ranges, custom switching hysteresis, calibration record
This 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 your needs.	

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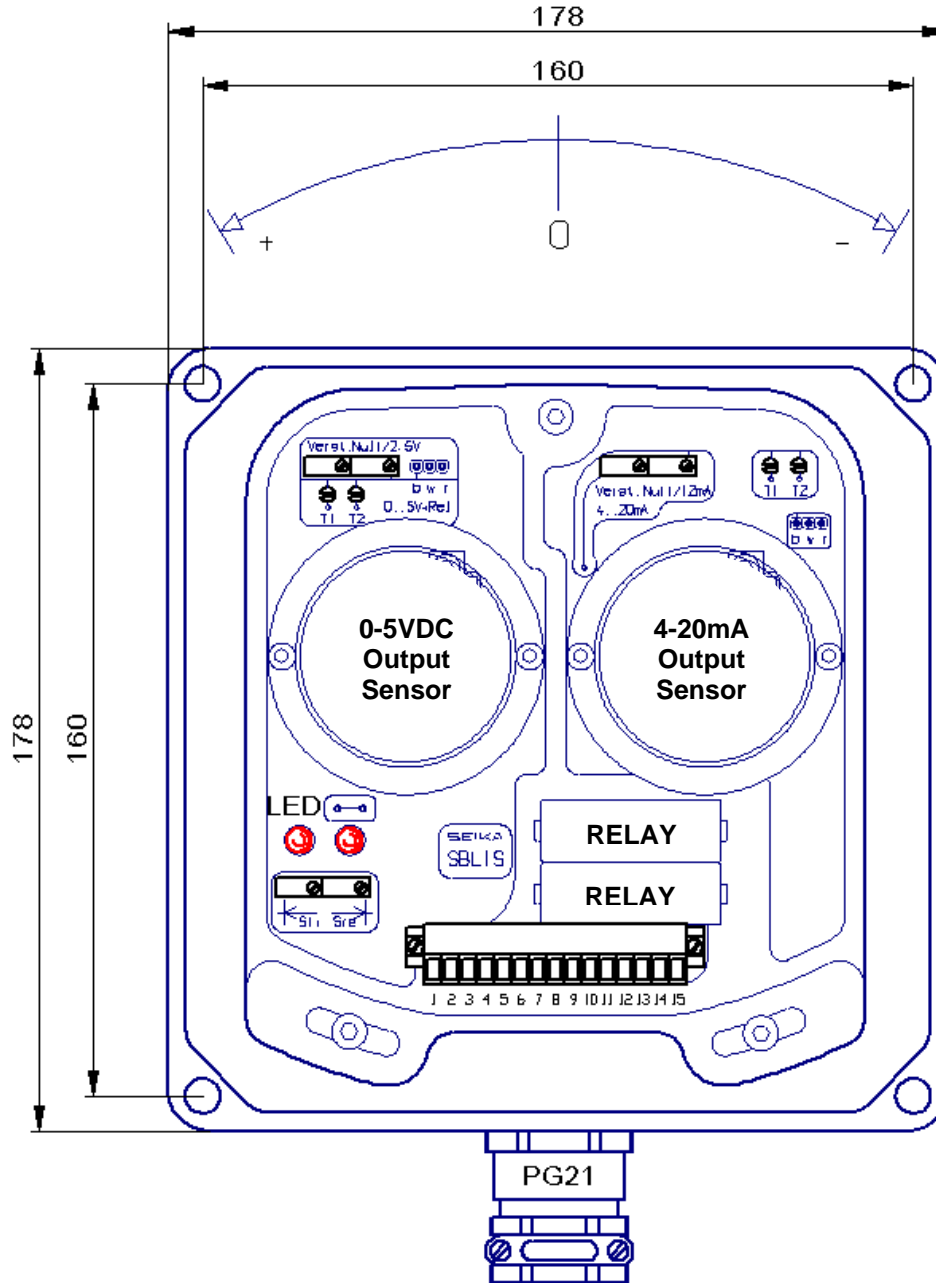
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**FIGURE 1:** Mounting Position, Dimensions in [mm]

- Housing Height 100mm



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**FIGURE 2:** Wiring Connections and Set Points

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