

The SBL1S is a Rugged Inclinometer Package with 2 Independent Sensors for Uni-Axial Measurement of Tilt, including 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.



TECHNICAL DATA	
Cable Connection	Max.: 15 x 1 mm <sup>2</sup> (screw connectors)
Cable Diameter	Ø12...Ø21,5mm
Cable Fixing	PG21 (Metal with integrated stress relief)
Measuring Ranges	In accordance with the actual sensor
Protection Degree	IP65 (with RTV fill IP67)
Mounting	In accordance with the actual sensor
Operating Temperature	-40 ... +85°C
Inclinometer Measuring Plane	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>
Supply Voltage to Box	+8 ... +30 Volt
Minimum Loop Current	3mA (approximately)
Maximum Loop Current	24mA (approximately)
Output Current Loop Signal	4...20mA (12mA as zero point)
Zero/Amplifier Potentiometer	Signal-zero (12mA), Span
Max. Load Impedance	500 Ohm (at 24 Volt loop supply)
<b>Channel 2</b>	<b>0.5 VDC voltage and relay outputs</b>
Supply Voltage	+12 or +24 Volt
Supply Current	Maximum 5mA
Nominal Measuring Range	+0.5 to +4.5 Volt
Nominal Zero Output	+2.5 Volt
Maximum Operating Range	+0.05 to +4.96 Volt
Output Load Impedance	100 Ohm
Capacitive Signal Output Load	Any, considering the high-powered ones
<b>Switching stages</b>	<b>Two SIEMENS safety relays (type SR2A31) - which meet the safety and technical regulations for usage as safeguard relays</b>
Contacts	an independent open and close contact per relay
Contact Load	250V, 6A
Adjustable Potentiometers	Signal zero (2.5V), amplifier, under- and over-trigger threshold
Low-pass Filter	Active, 4 <sup>th</sup> order, minimum ripple
Options	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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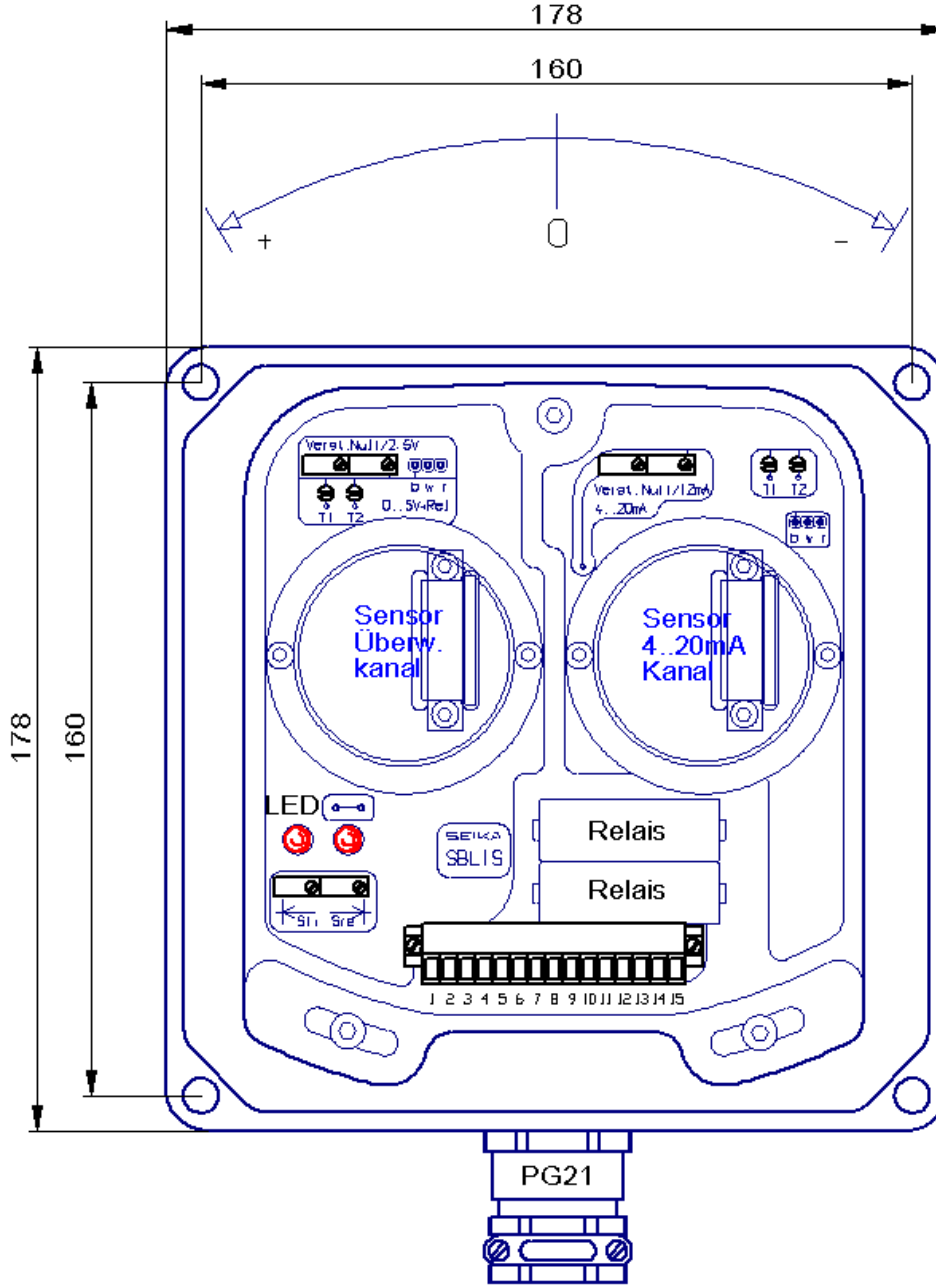


# SBL1S

## Single Axis/Dual Sensor with Safety Relays



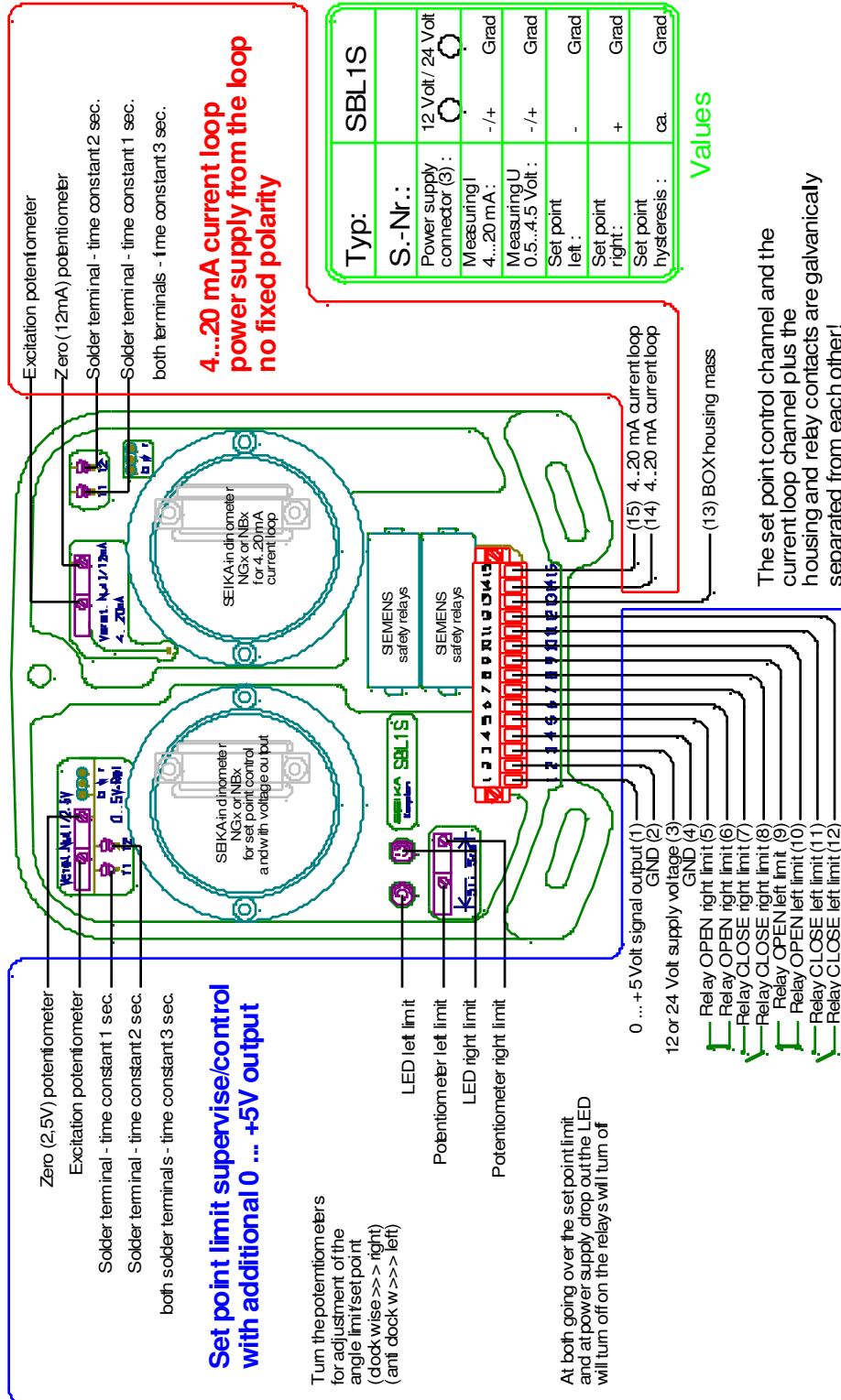
**FIGURE 1:** Mounting Position, Dimensions in [mm]  
- Housing Height 100mm



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



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