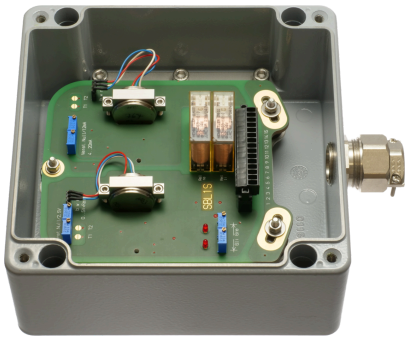


Sensorbox for use in particularly harsh operating conditions containing two sensors, one signal conditioner with 4...20mA output, one signal conditioner with 0.5 ... 4.5 Volt output and two safety relays for threshold monitoring

Features

- **large, robust pressure die cast aluminium housing (IP67)**
- **angular adjustable, vibration damped 3-point fastening of rigid, 3.2mm thick base PCB**
- **all SEIKA sensors fit the housing and can be installed in different directions of operation**
- **two integrated, independent measuring channels, electrically isolated from each other and the housing and redundant if operating direction is the same**
- **Channel 1**
  - **signal conditioner with 4...20mA, 2-wire output**
  - **temperature drift compensation of the sensitivity**
  - **no separate supply voltage necessary**
  - **either connection polarity**
- **Channel 2**
  - **signal conditioner with 0.5 ... 4.5 Volt output**
  - **temperature drift compensation of the sensitivity**
  - **12 Volt or 24 Volt supply voltage (standard: 24V)**
  - **either connection polarity**
  - **two separate, individually adjustable safety relay outputs with a separate open and a separate close mechanism each**
- **Both channels**
  - **the output signals for each sensor are calibrated to customer's specifications**
  - **extensive EMC protection**
  - **highly stable sensor supply voltage**
  - **high mechanical overload resistance**
  - **low pass filter with optional choice of cut-off frequency for suppression of interference frequencies**

Description

The SBL1S is a pressure die cast aluminium housing (IP67) with two integrated sensors for uniaxial measurement of inclinations.

In addition to the sensors, the housing contains one signal conditioner with 4...20mA output and one signal conditioner with 0.5 ... 4.5 Volt 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 the 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. Electronic temperature compensation largely compensates for the temperature drift of the implemented sensors' sensitivity. Optionally, the temperature drift of both offset and sensitivity can be reduced significantly through individual compensation.

The compact metal cable gland and compact housing size in combination with the 15-wire connection enable the use of this high quality measuring system in harsh operating conditions.

Application

The SBL1S has its application in areas requiring precise inclination measurements under harsh circumstances and consideration of special safety demands. Areas of successful implementation include construction, mining (especially large open pit mining machinery), agricultural machinery, transportation and conveyor systems, ships, operation and automation technology as well as general mechanical engineering.

Specifications

Terminal connector	15-channel x 1.5mm^2 (pin rail)
Cable gland	M25 x 1.5, metal cable gland with integrated strain relief, clamping range 12.5mm ... 20.5mm
Measuring range, Resolution, etc.	dependent on implemented SEIKA sensor
Degree of protection	IP67
Mounting orientation	any (standard: wall mounting, cable down)
Measuring planes (N-, NB-sensor)	3 main housing planes
Measuring plane (NG-sensor)	parallel to housing bottom
Operating temperature	-40°C ... +85°C
Channel 1	4...20mA current output
Terminal voltage	10V ... 30V
Minimum loop current	2.5mA ... 3.5mA
Maximum loop current	23mA ... 26mA
Output loop current	4...20mA (12mA for sensor zero position)
Adjustable variables	zero (12mA), amplification
Maximum load resistance	500 Ohm (at 24 Volt supply voltage)
Channel 2	0.5 ... 4.5 Volt voltage and relay output
Supply voltage optional	12 Volt or 24 Volt (standard: 24V)
Operating current	max. 10mA
Normalized output range	0.5V ... 4.5V
Zero voltage	2.5 Volt
Maximum output range	0.05V ... 4.95V
Output impedance	100 Ohm
Capacitive output signal loading capacity	any, taking dynamic requirements into account
Switching stages	two SIEMENS safety relays SA2A311; these relays comply with safety regulations

Contacts	an independent open and close contact per relay
Contact loading capacity	250 Volt, 6 Ampere
Adjustable variables	zero (2.5V), amplification, upper and lower trigger threshold
Low pass filter	active, 4th order, minimal ripple
Weight	approx. 2.5kg

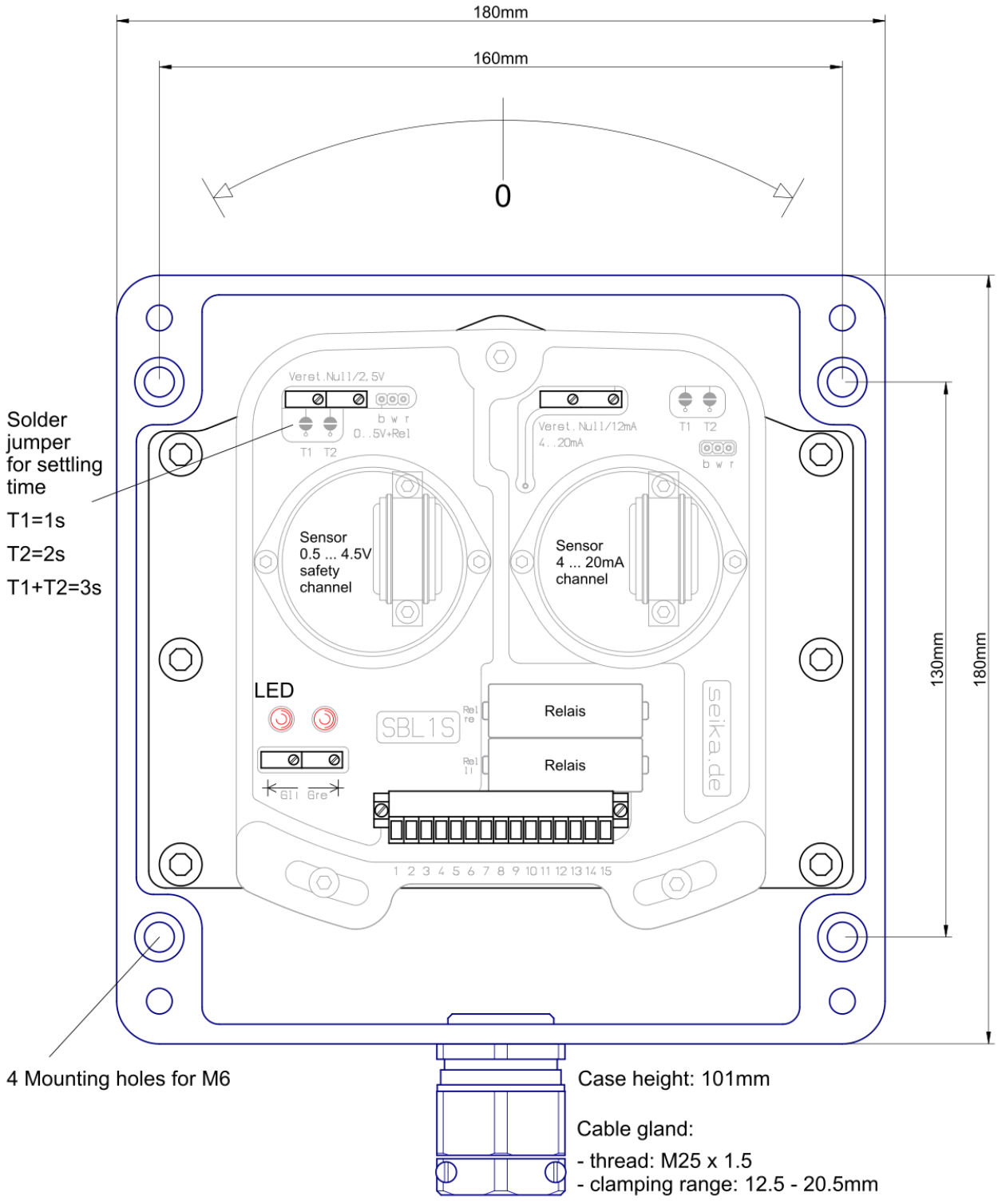
• The box is delivered with an individual calibration record that includes the precise offset and sensitivity values, the static characteristic curve and the linearity deviation curve.

Options:

• custom switching hysteresis • switching state transition: LOW to HIGH or HIGH to LOW

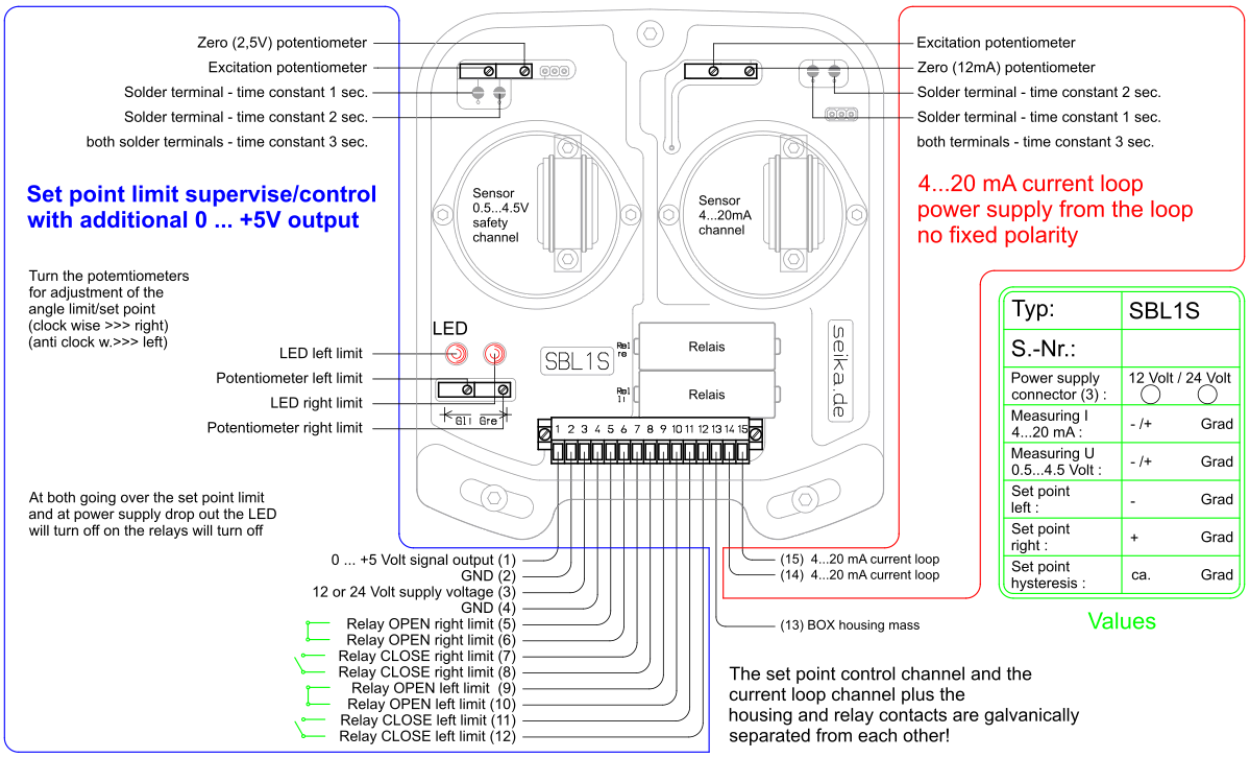
• special measuring ranges

Dimensions (in mm)



Base board is mounted on 3 vibration dampers

Connections



Typ:	SBL1S	
S.-Nr.:		
Power supply connector (3) :	12 Volt / 24 Volt ◯ ◯	
Measuring I 4...20 mA :	- /+	Grad
Measuring U 0.5...4.5 Volt :	- /+	Grad
Set point left :	-	Grad
Set point right :	+	Grad
Set point hysteresis :	ca.	Grad

Values

Attention! Do not short circuit the supply voltage with one of the signal outputs.