## Sensor box containing one sensor, one signal conditioner with 0...5V output and two open-collector output switches

## Features

- **robust pressure die cast aluminium housing (IP67)**
- **robust pressure die cast aluminium housing (IP67) with saltwater proof coating**
- **twist free 4-point fastening of rigid, 3.2mm thick base PCB**
- **integrated signal conditioner with 0 ... 5V output**
- **temperature drift compensation**
- **9...30 Volt supply voltage**
- **all SEIKA sensors fit the housing and can be installed in different directions of operation**
- **output signal calibrated to customer's specifications**
- **sensor and signal conditioner electrically isolated from housing**
- **EMC certified**
- **highly stable sensor supply voltage**
- **programmable dynamic response**
- **either connection polarity**
- **high overload resistance**
- **low pass filter with optional choice of cut-off frequency for suppression of interference frequencies**
- **two separate, individually adjustable open-collector output switches**
- **switching status indication via two red LEDs**

## Description

The SB1S is a pressure die cast aluminium sensor housing (IP67) with an integrated sensor for measuring uniaxial acceleration or inclination.
As well as the sensor, the box contains a signal conditioner with a 0 ... 5V output and a separate, highly stable supply voltage that can be used externally as a reference point. Furthermore, the signal conditioner includes an active low pass filter, whole upper cut-off frequency / settling time can be tailored to suit the measurement task, and a noise voltage filter to guarantee the EMC. Interference signals caused by unwanted ground currents are eliminated by electrically isolating sensor and signal conditioner from the housing.
In addition to the voltage output, the SB1S has two open-collector output switches. Two helical trimpotentiometers enable the adjusting of two trigger thresholds within the measuring range, the exceeding of which causes the corresponding output switch to trigger. Optionally, the state transition can be set to be either off to on or on to off. The switching hysteresis can be adapted to the measuring task.
Unlike the SB2.., the SB1S can accommodate larger inclinometers, such as the NG-series, that have a higher measuring accuracy. A special electronic temperature compensation system can significantly reduce the temperature sensitivity of the implemented sensor.
The compact PG metal cable gland and small housing size in combination with the max. 6-wire connection enable the use of this high quality measuring system in harsh operating conditions.

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## Application

The SB1S is suitable for applications requiring precise inclination or acceleration measurements under harsh circumstances, returning of a 0 ... 5V output signal and the availability of output switches. Areas of successful implementation include construction, mining, agricultural machinery, transportation and conveyor systems, ships, operation and automation technology as well as general mechanical engineering. The output switches have their application in safety surveillance systems and direct process control.

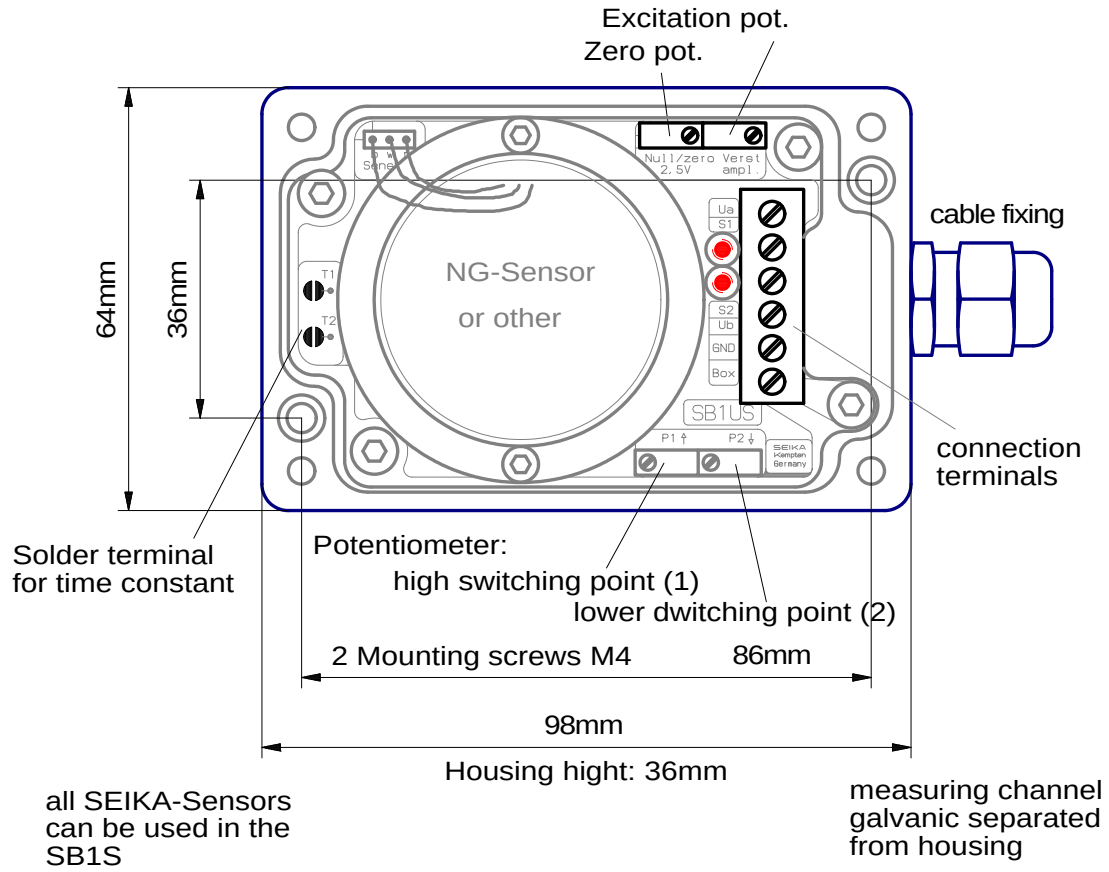
## Technical Specifications

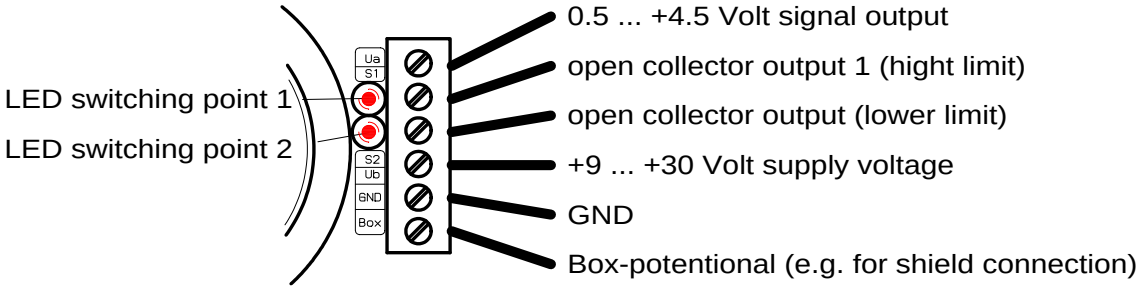
| | |
|---|---|
| Terminals | 6 x 1.5mm$^2$ |
| Cable fixing | M12 x 1.5 cable gland, clamping range 6mm … 7.5mm |
| Measuring range, Resolution, etc. | dependent on implemented SEIKA sensor |
| Degree of protection | IP67 |
| Mounting orientation | Any |
| Measuring planes (N.. sensor) | 3 main housing planes |
| Measuring plane (NG.. sensor) | parallel to bottom of housing |
| Measuring direction (B.., BD.. sensor) | X,Y,Z coordinates of housing |
| Supply voltage | 9V ... 30V |
| Operating current | max. 5mA |
| Normalized output voltage range | 0.5V … 4.5V |
| Output zero point | 2.5Volt |
| Maximum output voltage range | 0.05V … 4.95V |
| Output resistance | 100 Ohm |
| Capacitive output loading capacity | any, taking dynamic requirements into account |
| Switching transistors | BCX56 |
| Output switch loading capacity | 50Volt, 0.3A |
| Adjustable variables | zero point (2.5V), amplification, lower and upper trigger threshold |
| Low pass filter | active, 5th order, minimal ripple |
| Operating temperature | -40°C ... +85°C |

Options: special measuring ranges, custom switching hysteresis, switching state transition: LOW to HIGH or HIGH to LOW, calibration record, silicon encapsulation, custom wiring

## Dimensions (in mm) and Connections

Diodes protect the open-collector outputs against voltage spikes when switching inductive loads.




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

Optionally, the open-collector outputs can be manufactured as:
upon exceeding trigger threshold conducting - version L
or: upon exceeding trigger threshold non-conducting - version N

Version L offers the possibility of connecting both open-collector outputs to one line (wired OR), thereby activating the control signal (e.g. siren) if either of the trigger thresholds is traversed. Version N offers greater security in the activation of an alarm, since an transmission line break or a supply voltage failure causes a traversing of the trigger threshold (principle of quiescent current).