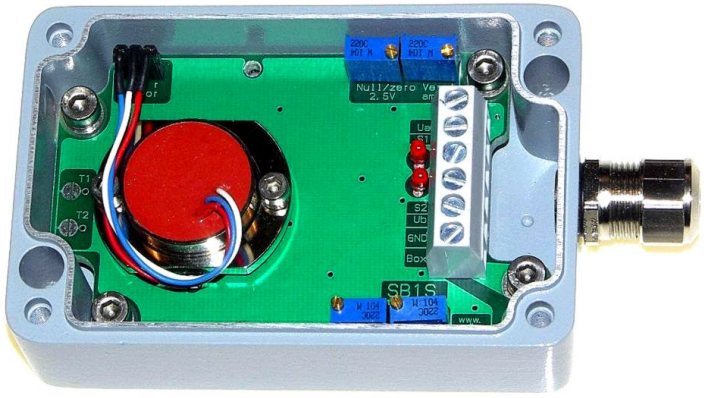
SB1S (0-5V)

Single Axis Inclinometer + Switch Output

Rugged, all weather housing with integrated sensor & signal amplifier for Analog 0…5 V output. Includes (2) Open-collector Switch Outputs.



Description

The SB1S sensor package is for measuring acceleration or inclination along a single axis under harsh operating conditions. Its pressure die-cast Aluminum IP65 rated housing protects an integrated sensor and signal conditioner - providing Analog 0...5V output with a separate, highly stable supply voltage that can be used externally as a reference point.

The signal conditioner also 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 switch outputs. Two helical trim-potentiometers enable the adjusting of two trigger thresholds within the measuring range, the exceeding of which causes the corresponding output switch to trigger. Optionally at time of order, 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.

The SB1S accommodates the N and NG sensor types, the larger NG type has a higher measuring accuracy. A special electronic temperature compensation system significantly reduces the temperature sensitivity of the implemented sensor.

Applications

Suitable for applications requiring precise inclination or acceleration measurements under harsh circumstances, returning of a 0.5 ... 4.5V 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.

Features

- *Rugged Die-cast Aluminum Housing (IP65) with Saltwater Proof Coating.*
- *Twist Free 4-point fastening of rigid, 3.2mm thick PCB.*
- *Integrated Signal Conditioner with 0…5V Output.*
- *Temperature Drift Compensation*
- *8...30 Volt supply voltage.*
- *Housing and sensitive axis orientations per customer specification.*
- *Output signal calibrated to customer 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 adjustable Open-Collector Switch outputs - switch status indicated via two internal red LED's.*

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Technical Data	
Internal Wiring Terminals	6 x 1.5 mm^2
Cable fixing	M12 x 1.5 cable gland, clamping range 6mm - 7.5mm
Measuring ranges	In accordance with the actual sensor
Protection degree	IP65
Mounting	Any direction
Measuring plane (N Series)	3 main housing planes
Measuring plane (NG Series)	Parallel to the bottom of housing
Measuring directions (B or BDK Series)	Place in X, Y, Z coordinates to the housing
Supply voltage to the box	+8… +30 Volt
Operating current	5mA
Normalized output voltage range	0.5V…4.5V
Output zero point	2.5Volt
Maximum output voltage range	0.05V… 4.95V
Reference initial voltage	(5+/-0.005) Volt (max.10mA) 20ppm/ºC
Output impedance	100 Ohm
Capacitive output loading capacity	any, taking dynamic requirements into account
Switching transistors BCX56	Switching transistors BCX56
Output switch loading capacity	50Volt, 0.3A
Adjustable parameters via potentiometers	zero point (2.5V), amplification, lower and upper switch output trigger threshold
Low-pass filter	Active, 5th order, minimal ripple
Operating temperature	-40ºC…+85ºC (-40ºF…+185ºF)

Options

Special measuring ranges, custom switching hysteresis, switching state transition: LOW to HIGH or HIGH to LOW, calibration record, silicon encapsulation (RTV for IP67), cable to length available upon request. 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.

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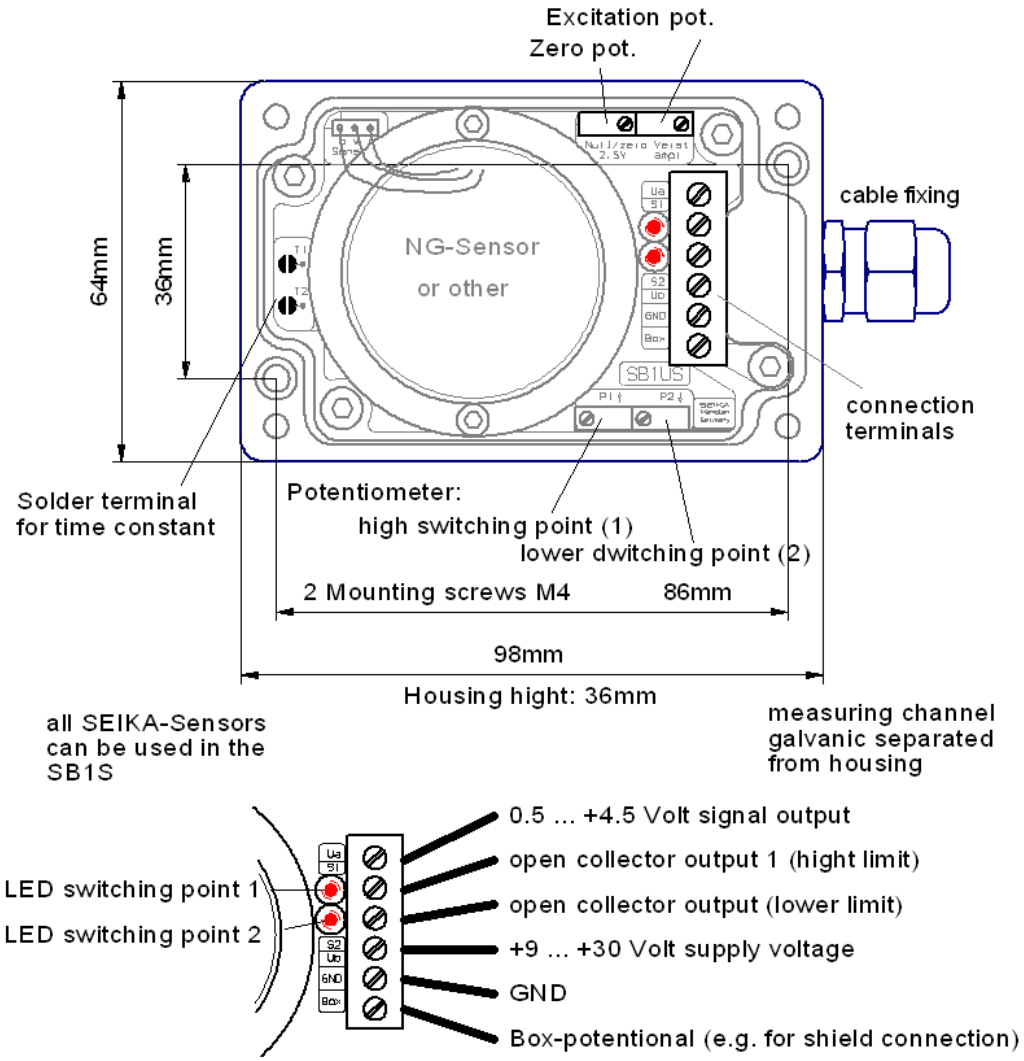
Figure 1: **Dimensions and Mounting Position (inches [mm])** - Shown with NG-type inclinometer.



NOTES:

1) **WARNING!** Do not short circuit the supply voltage with one of the outputs. The supply voltage (8 to 30VDC) must NOT be incorrectly connected to any output signal.
2) Diodes protect the open-collector outputs against voltage spikes when switching inductive loads.
3) Open-collector Switch Output Options:

   Version (L): upon exceeding trigger threshold conducting - 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): upon exceeding trigger threshold non-conducting - offers greater security in the activation of an alarm, since a transmission line break or supply voltage failure causes a traversing of the trigger threshold (principle of quiescent current).

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