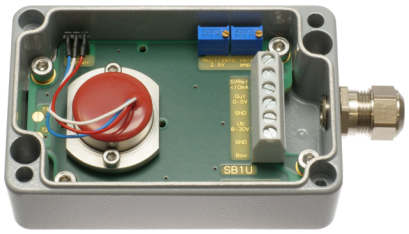


Sensorbox containing one sensor and one signal conditioner with 0.5 ... 4.5 Volt output

Features

- **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 0.5 ... 4.5 Volt output**
- **temperature drift compensation of the sensitivity**
- **9V ... 30V supply voltage**
- **all SEIKA sensors fit the housing and can be installed in different directions of operation**
- **the output signal of the sensor is calibrated to customer's specifications in the required direction of operation**
- **sensor and signal conditioner electrically isolated from housing**
- **EMC certified**
- **highly stable sensor supply voltage**
- **programmable dynamic response**
- **high mechanical overload resistance**
- **low pass filter with optional choice of cut-off frequency for suppression of interference frequencies**

Description

The SB1U 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 0.5 ... 4.5 Volt 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, whose upper cut-off frequency / settling time can be adjusted 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. Unlike the SB2.., the SB1U can accommodate larger inclinometers, such as the NG.. series, that have a higher measuring accuracy. Electronic temperature compensation largely compensates for the temperature drift of the implemented sensor's sensitivity. Optionally, the temperature drift of both offset and sensitivity can be reduced significantly through individual compensation.

The compact metal cable gland and small housing size in combination with the max. 5-wire connection enable the use of this high quality measuring system in harsh operating conditions.

Application

The SB1U is suitable for applications requiring precise inclination or acceleration measurements under harsh circumstances and returning of a 0.5 ... 4.5 Volt output signal. Areas of successful implementation include construction, mining, agricultural machinery, transportation and conveyor systems, ships, operation and automation technology as well as general mechanical engineering.

Specifications

Terminals	6 x 1.5 mm^2
Cable gland	M12 x 1.5, metal cable gland with integrated strain relief, clamping range 6mm ... 7.5mm
Measuring range, Resolution, etc.	depending on implemented SEIKA sensor
Degree of protection	IP67
Mounting orientation	any (standard: wall mounting, cable on the right)
Measuring planes (N sensor)	3 main housing planes
Measuring plane (NG sensor)	parallel to bottom of housing
Measuring directions (B or BDK sensor)	X,Y,Z coordinates of housing
Supply voltage	9V ... 30V
Operating current	approx. 2mA
Normalized output voltage range	0.5V ... 4.5V
Output zero point	2.5 Volt
Maximum output voltage range	0.05V ... 4.95V
Output resistance	100 Ohm
Capacitive output loading capacity	any, taking dynamic requirements into account
Output reference voltage	5±0.0025 Volt (max. 5mA, max. 5ppm/K)
Adjustable variables	zero point (2.5V), amplification
Low pass filter	active, 5th order, minimal ripple
Operating temperature	-40...+85°C
Weight	approx. 300g

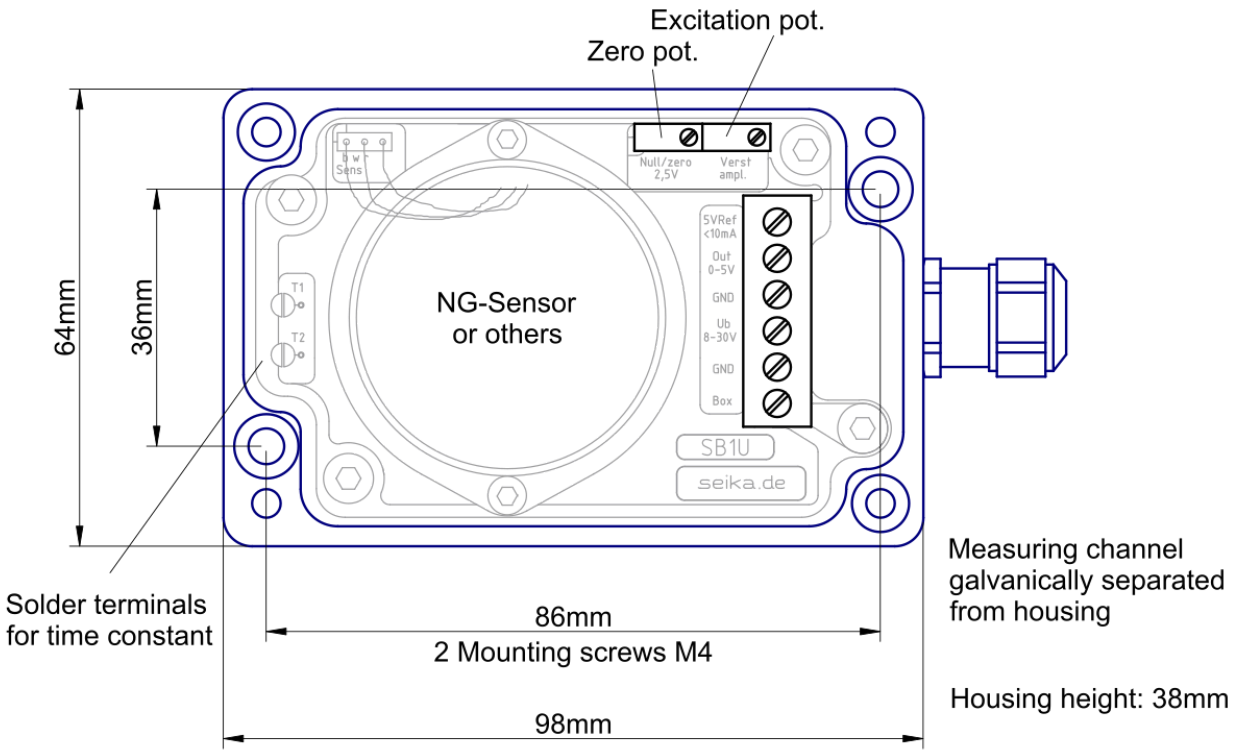
• The box is delivered with an individual calibration record that includes the precise offset and sensitivity values, the static characteristic curve and the linearity deviation curve.

Options:

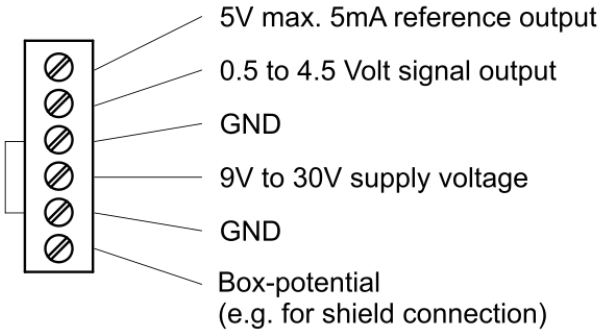
• special measuring ranges • silicon encapsulation • custom wiring

• individual temperature drift compensation of the offset and the sensitivity

Dimensions (in mm) and Connections

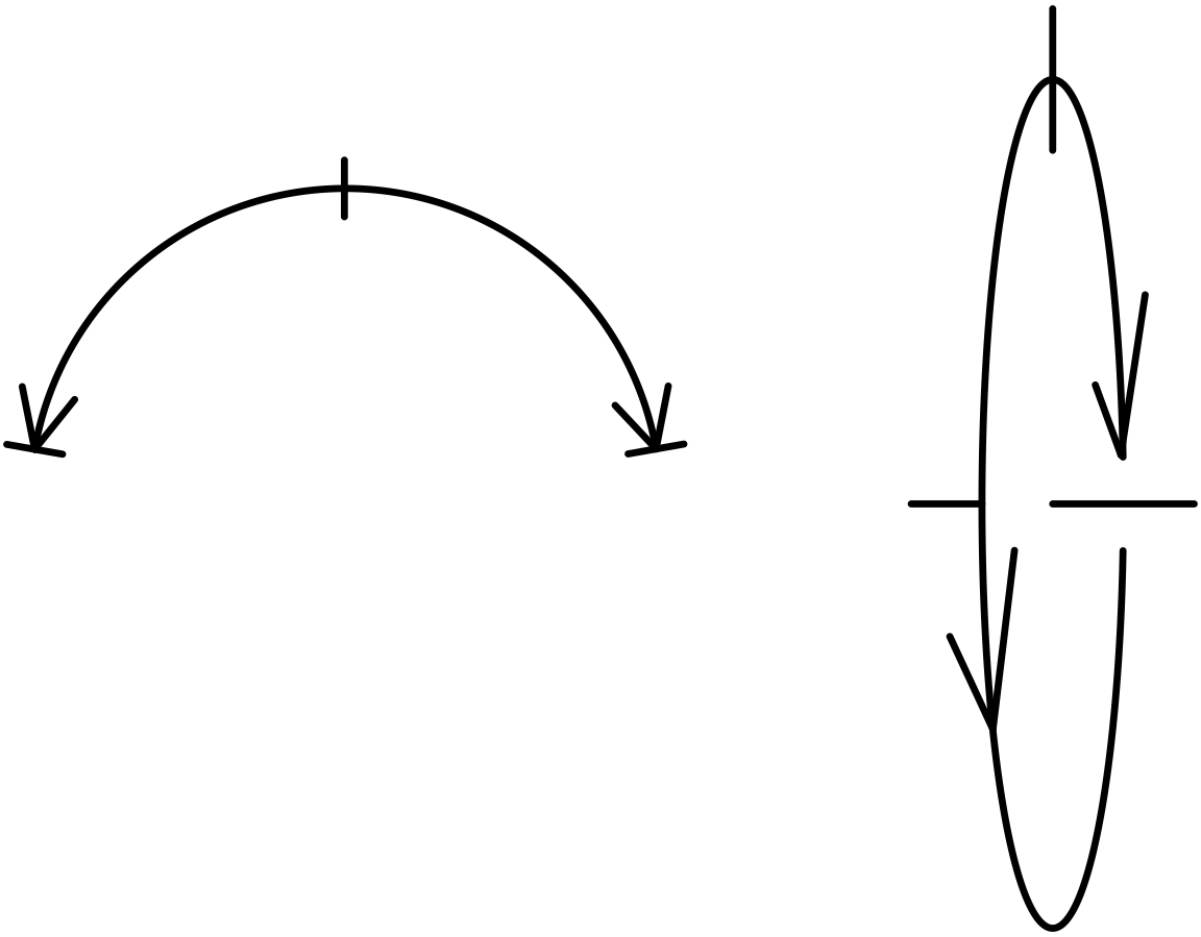


All SEIKA Sensors can be used in the SB1U

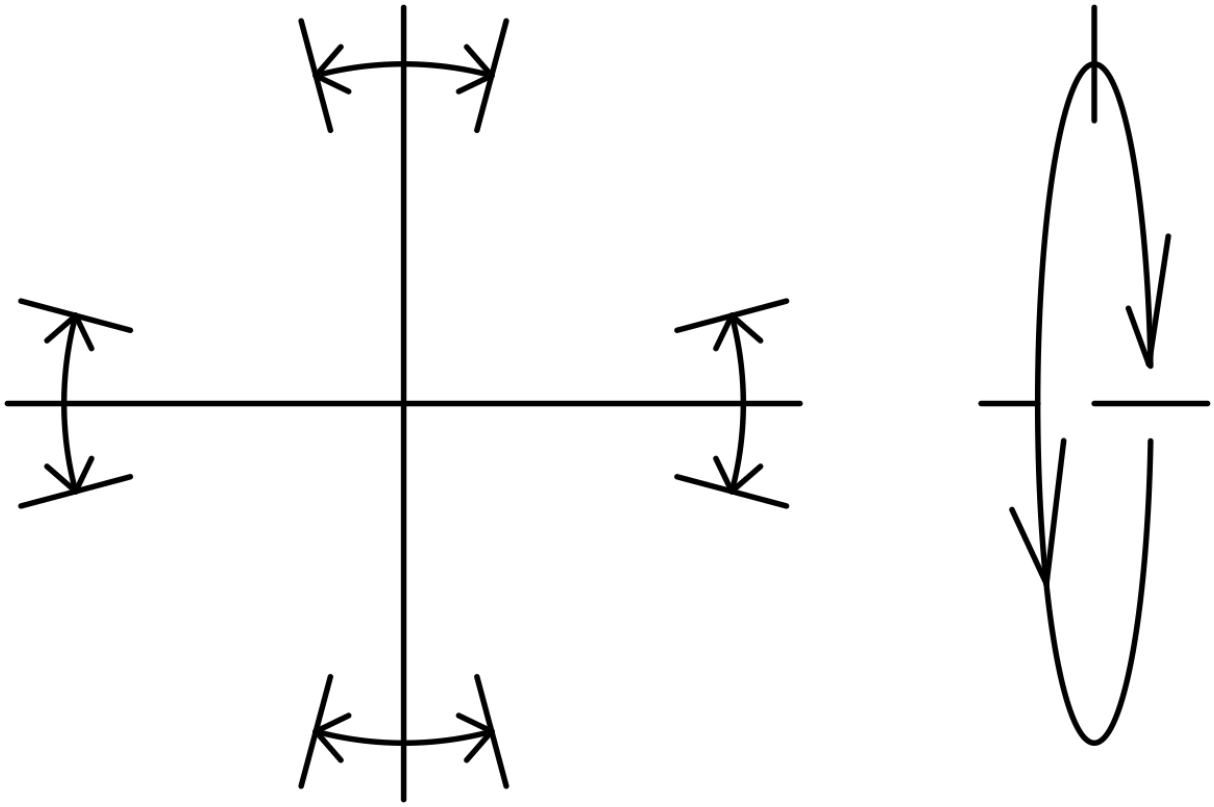


Attention! Do not short circuit the supply voltage with one of the outputs.

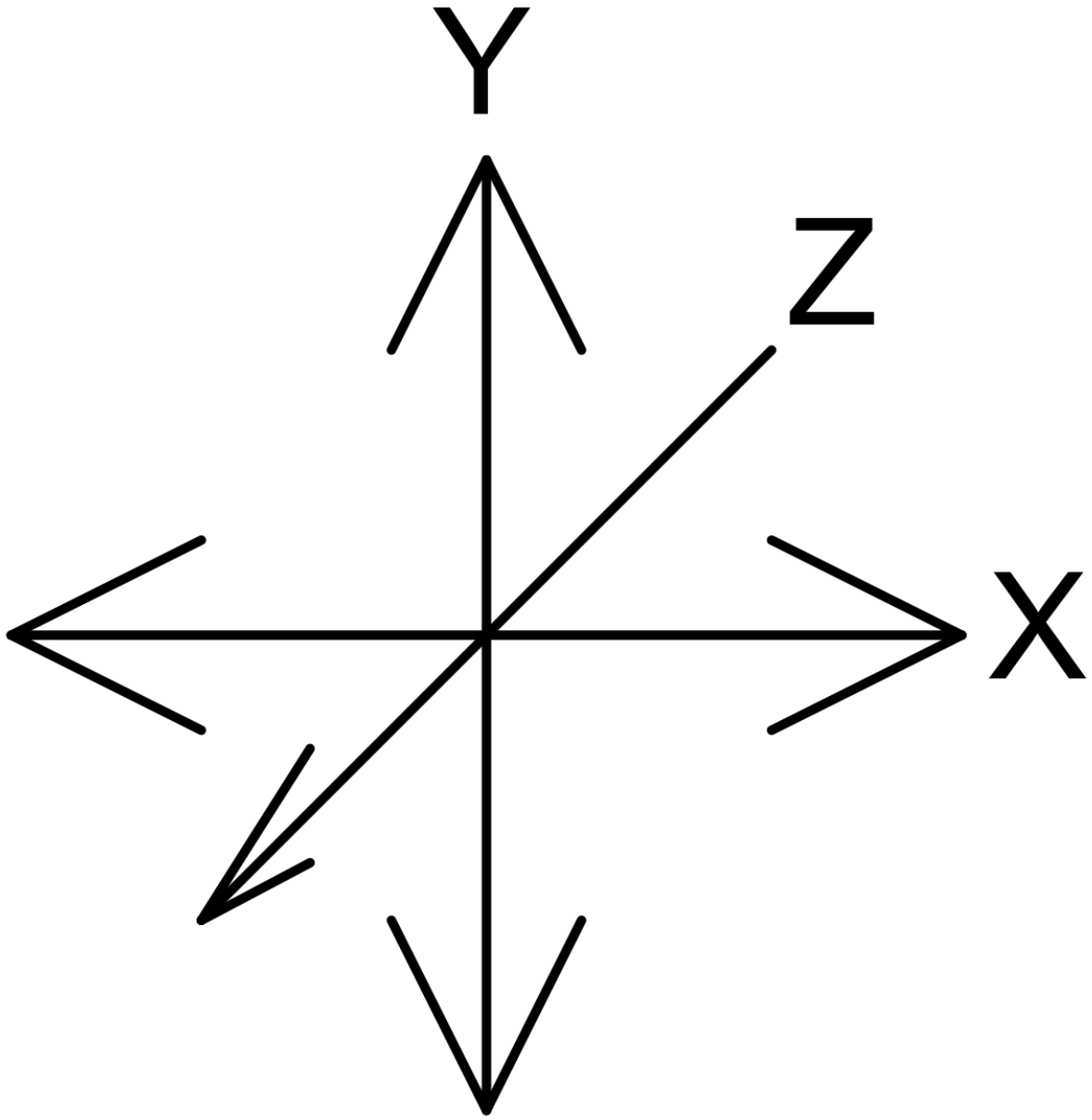
Measuring planes and directions for N..., NB..., B... und BDK... sensors:



N-sensors: any zero-angle and +/- rotation in both directions can be realised. The cable output can be on the right (as drawn), left, bottom or top of the box. The measuring direction as drawn for the NG-sensor (see drawing 1) can also be realised.



NB-sensors: four zero-angles offset by 90° can be realised as well as +/- rotation in both directions.



B-, BDK-sensors: acceleration can be measured in X-, Y- and Z-axes. For X- and Y-axes both +/- measuring directions can be realised.
As illustrated here most rotation planes and acceleration directions can be measured with SEIKA sensorboxes. The resulting multitude of possibilities make configuration difficult, however. We'd be glad to give you advice on putting together the components best suited for your measurement task and are happy to receive your information on what planes and directions the inclinations and/or accelerations are to be measured. A sketch of your situation is often very helpful.