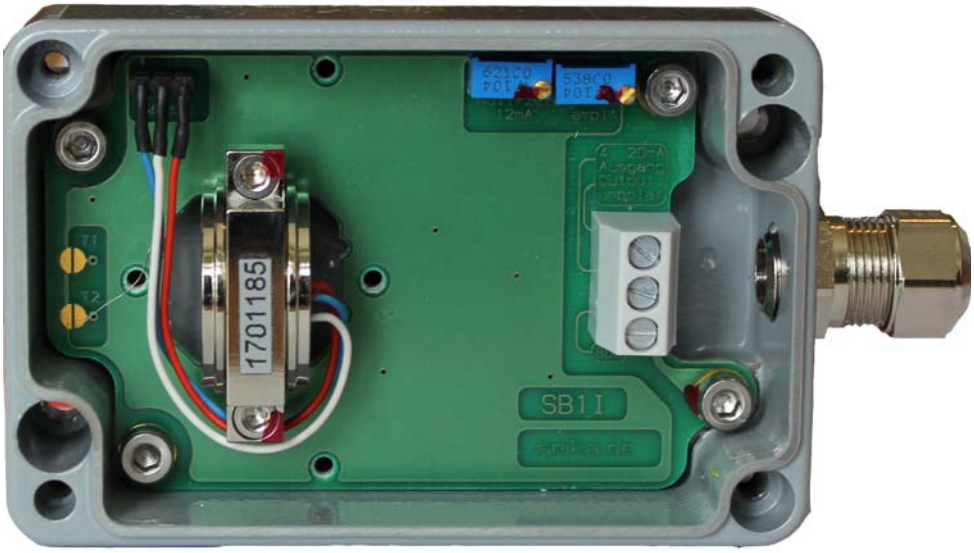
SEIKA SB1i-B

NORDIC TRANSDUCER

SB1i B1/B2/B3 & NB3 DC Acceleration

4-20mA 2 wire output
DC Acceleration



B1 HIGH SENSITIVITY ACCELERATION
From DC to 160 Hz down at +/-0.1G X or Y direction depending og type of sensore used.

Description

SB1i-B1, B2, B3 (& NB3) is capacitive spring mass accelerometers with integrated sensor electronics in the SB1i box. Resonant peaks are minimised by means of a special gas-dynamic damping in the primary transformer.

The SB1i accelerometer can be supplied an a variety of models from very high sensitive units with a very small working range down to +/-0.1G = 4-20mA output and a sensitivity at 1/10000 g, typical NB3 or B1 sensors are involved in these.

The sensor electronics requires only very low power consumption and is characterised by a high degree of long-term stability. They can be ordered with a selection of Low Pass filtering fitting to the job.

Application

The acceleration sensors **B1, B2, B3** are typically used also where high overloading occurs, from 0.5g up, in applications which require high long-term stability, measurements at a very low frequency or of static signals, very short rise-times, and/or small power consumption is required, at super sensitive measurements **NB3** are used down to a complate working range of +/- 0.1g = 4-20mA output.

As special option Seika can supply a laser based temperatur compensation both on zero and span drift over a large range typically from -20°C to + 60°C

Typical applications are:

- **Measurement on vehicles, machines, buildings, Wind mills at low frequence**
- **In process control systems as well as in safety installations**
- **Seismic measurements down to +/-0.1G as total working range**
- **Inclination measurements**
- **Dynamic measurements**
- **Machine vibration measurement**
- **Dynamic rate determination**

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Technical Data

Termination	max.: 2 x 1,5 mm^2
Cable gland	PG M12 Size in metric metal mode
Measuring ranges	In accordance with the actual SEIKA-Sensor
Protection degree	IP65
Mounting	Any direction
Working planes sensor (B1 - B3 Sensor)	3 directions of mounting
Measuring directions (B1 - B3 Sensor)	in X,Y,Z-co-ordinate to the housing
Supply voltage to the box	+8 ... +30 Volt
Minimum loop current	3mA
Maximum loop current	Approx.24mA
Output current loop signal	4...20mA (12mA as zero point)
Adjustable area's via pot.-meters	Signal-zero (12mA), Span
Max. Load impedance	500 Ohm (at 24 Volt loop supply)
Working temperature	-40 ... +85°C

Type Sensor mounted:	B1	B2	B3
Measuring range	±3g (app.±30m/s^2)	±10g (app.±100m/s^2)	±50g (app.±500m/s^2)
Resolution	<10^{-3}g	<5*10^{-3}g	<2*10^{-2}g
B1 range 0.05, 0.1 & 0.5g = 0.001g resolution			
Frequency range up to	0...160Hz	0...350Hz	0...550Hz
Non-linearity	<0.4% F.S. (option 0.2% for small ranges)		
Cross axis sensitivity		<1%	
Sensitivity	App.2.666mA/g	app. 0.800mA /g	app. 0.160mA/g
B1 special range down to app. 16.000mA/g (+/-0.05G range as minimum)			
Temperature drift on Sensitivity		<0,05% / °C	
Down to NB3, +/-0.1g range = 0.002g at -10C° to +60C°			
Temperature drift on zero		<0,05mA/°C	
Mechanical overloading in measuring direction		10 000 g (app. 100 000 m/s^2)	
Nominal power supply Permissible range of		U_{bN} = 24 Volt (se page 3)	
Power supply		10-30Volt (se page 3)	
Protection degree		IP65 (Optional IP67)	
Working temperature		-40°C to +85°C (optional 125°C)	
Storage temperature		-45°C to +90°C (optional 125°C)	
Weight (Metal housing without cable)		364 Gram	
Electrical standard connection		PG7 size on metric model (PG9 as optional)	
Alternative electrical connections		IP67 connecctor and special cables	

At order a special Low Pass filter can be ordered

Where dynamic acceleration is a demand then please look at BDK sensor at separate BDK brochure !!

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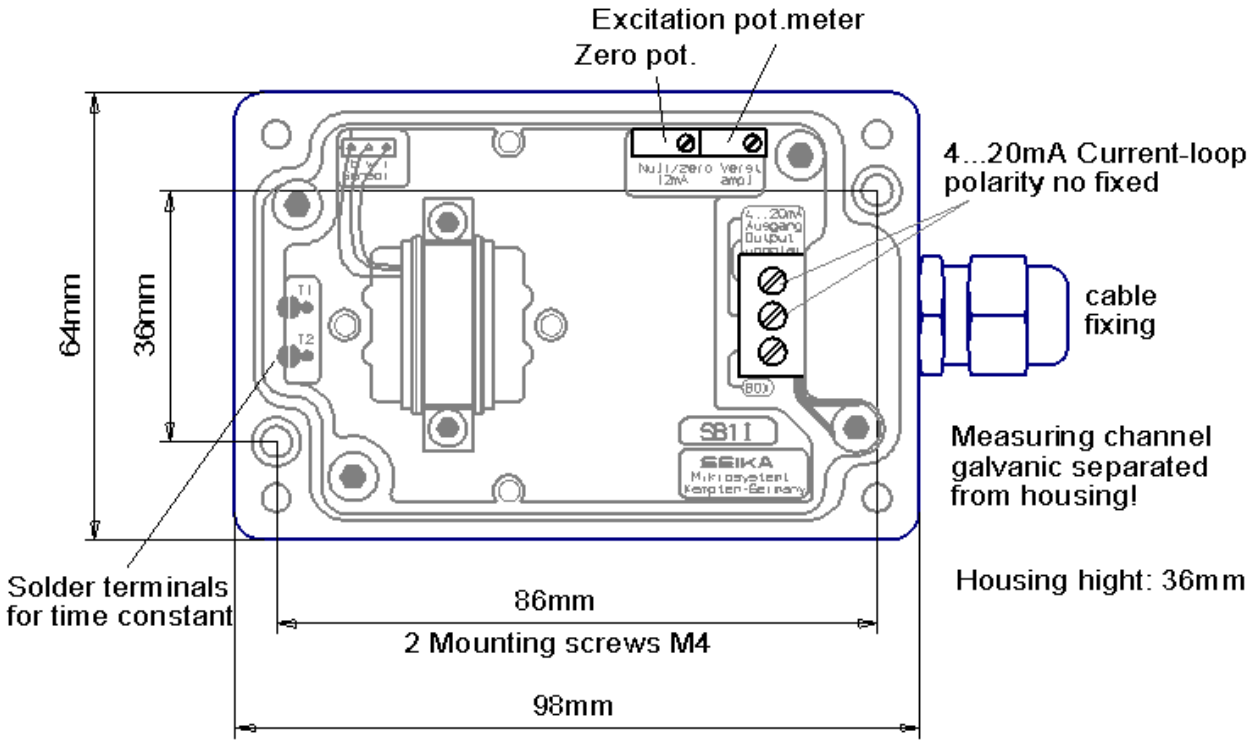
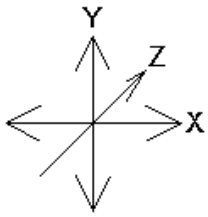


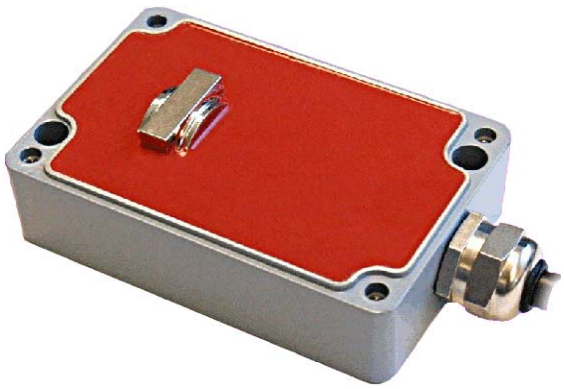
NB..., B..., BD..., BDK...

Measuring level and directions:



B-,BD,-BDK-Sensors

Acceleration measuring can direct mounted in X, Y and Z-Direction with +.- measuring direction in X and Y direction



SB1i *can also be complete potted inside for IP67 protection*

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Dimensions in mm

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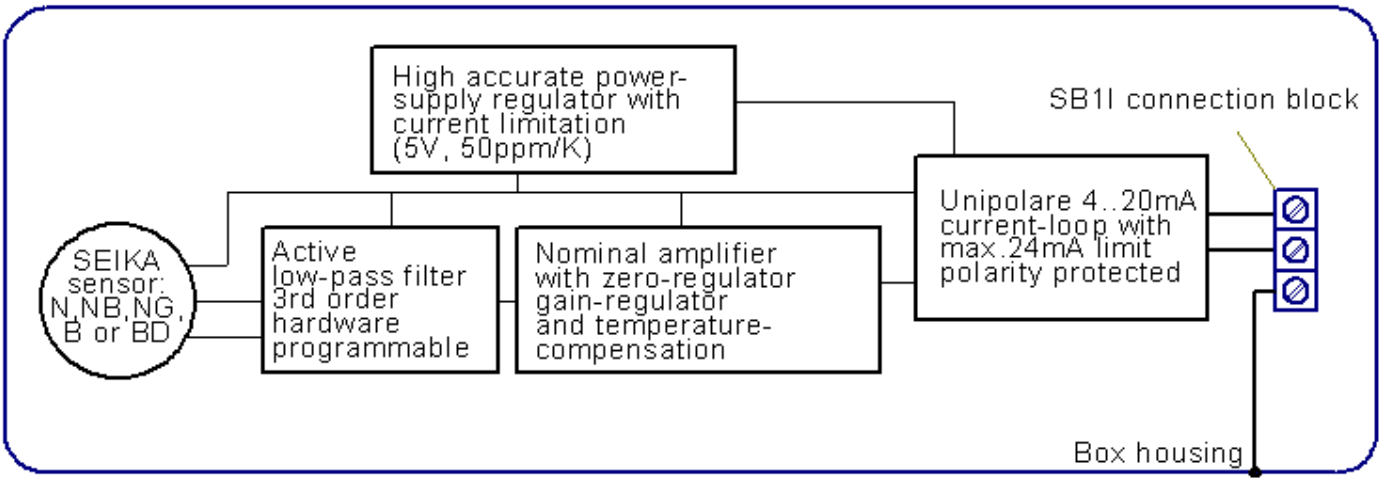
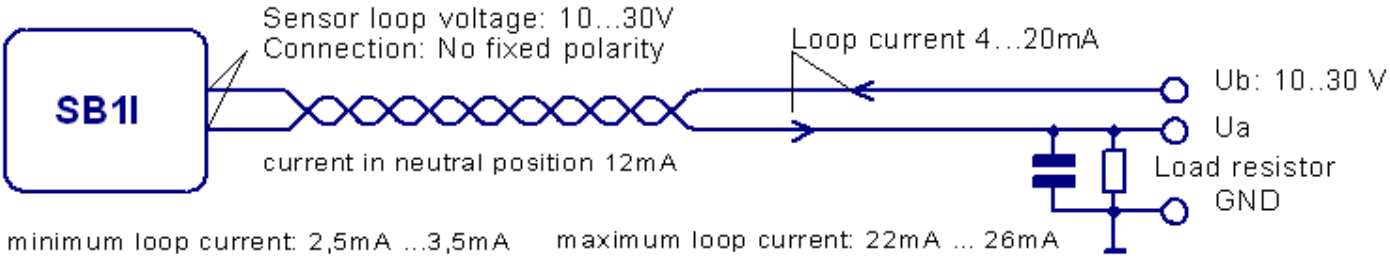




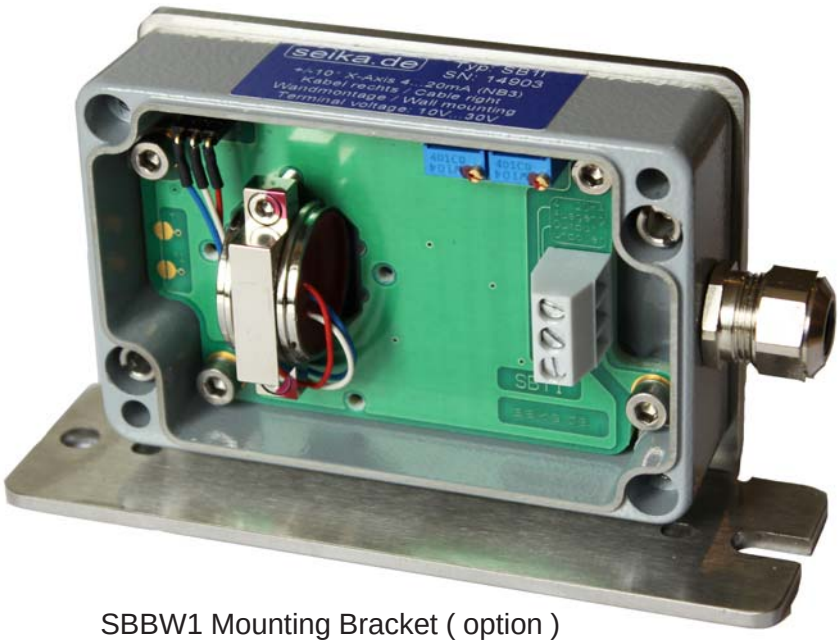
minimum loop current: 2,5mA ...3,5mA maximum loop current: 22mA ... 26mA

Ubmin = 10V + voltage drop along cable + voltage drop across load at 20mA

Ubmin = 10V + (20mA*R(cable)) + (20mA*R(load))

e.g.: (100m transmission wire 2x0,14mm^2 :)0,6V + (100 Ohm load:)2V + 10V = Ubmin = 12,6V

e.g.: (2km transmission cable 2x0,5mm^2 :)3,2V + (500 Ohm load:)10V + 10V = Ubmin = 23,2V



SBBW1 Mounting Bracket (option)

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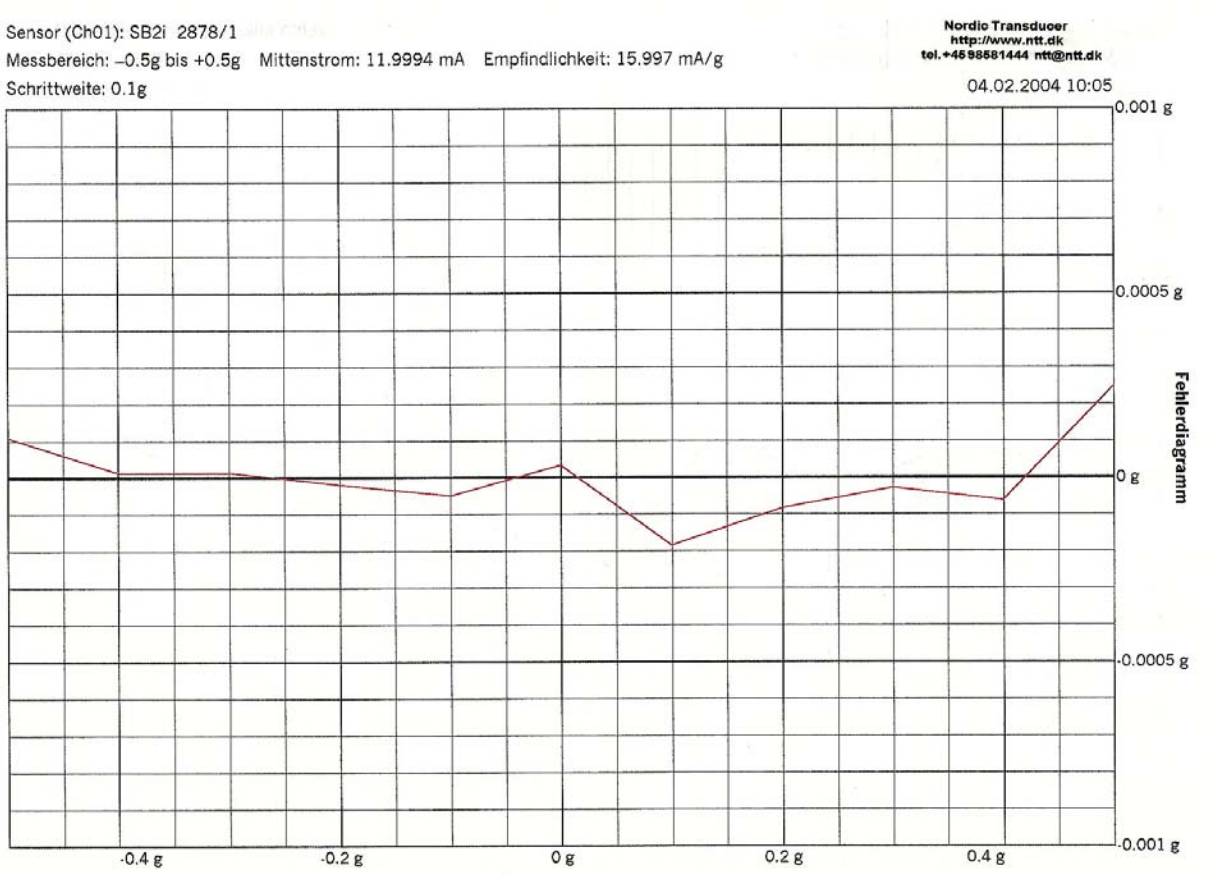

The SB1i-Bx sensor boxes can be supplied with accurate test data as shown here up to +/-1g

XB1i

As option a special XB1 very strong stainless steel housing can also be supplied for the SB1i for down to 100 meter water

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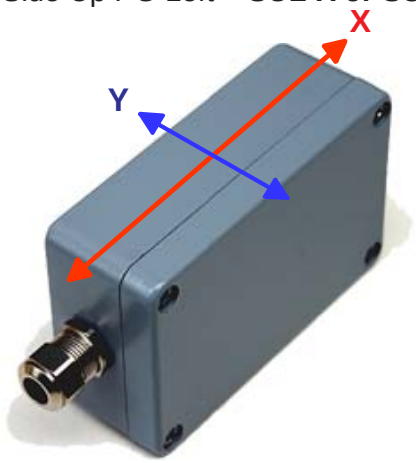
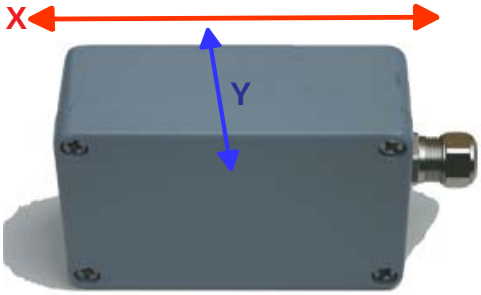
Measuring Directions

As shown here there is 12 different ways of mounting the SB1i box and each of these can be with the 1 sensors in differents directions as shown, please notice when using Z direction the zero point will then be deducted by 1G.
The SB1i box must be fixed rigid in a level position for both X and Y axis as the zero point will be influenced by tilting, a DC accelerometer do in principle also measure inclination so it is important to level it correct.
If this is a problem then BDK sensors can be implemented, but notice that these do only go down to 1 Hz, they can be situated as you wish without changing the zero point.

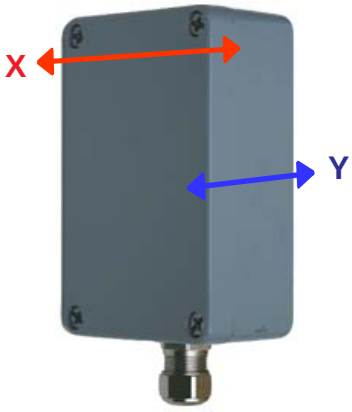
Side Up PG Left = **SUL-X or SUL-Y**



Side Up PG Right = **SUR-X or SUR-Y**

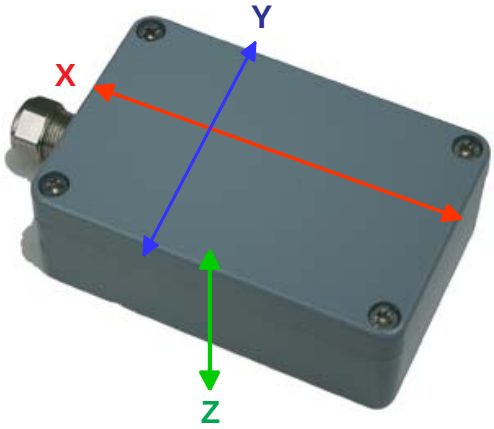


End Up = **EUD-X or EUD-Y**

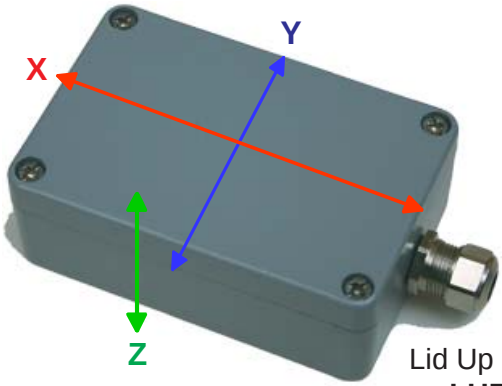


Side Up PG Right = **SUR-Z**

End Up = **EUD-Z**



Lid Up PG Left = **LUL-X**
or LUL-Y
or LUL-Z



Lid Up PG Right = **LUR-X**
or LUR-Y
or LUR-Z

When using Z axis, 1g will be off-set which has to be deducted from sensor range, so a B1 senor will then only have a range of +/-2g max.
BDK3, BDK10 sensors will work on the full range.
NB3 sensor can not be used in Z axis.

Mounting plates for SB1i box made of stainless steel

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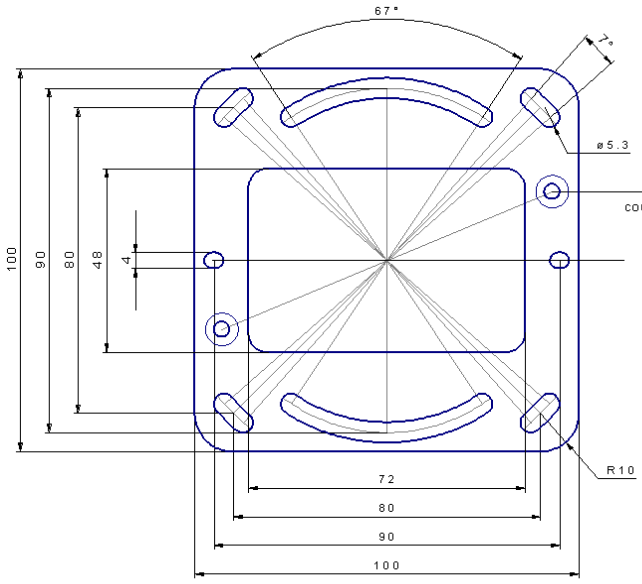


Recommended parts for mounting:

hexagon socket-type (Allen) screw M5
stainless steel DIN 912

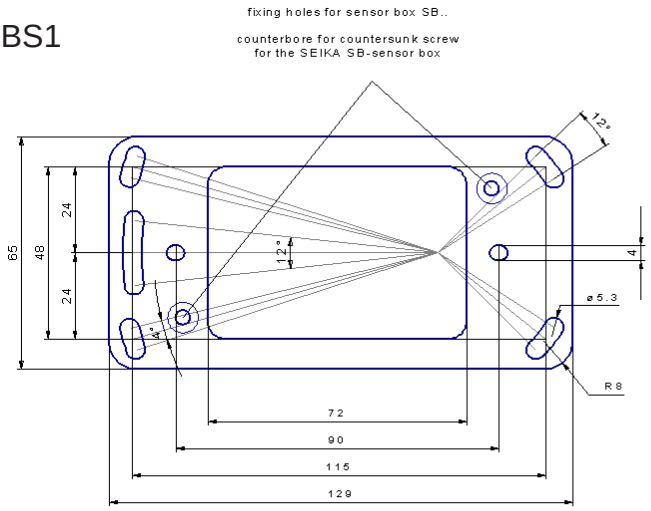
spring washers
stainless steel DIN 127

washers, stainless steel
outer diameter 9...10mm DIN 433 or DIN 125

SBBB1

Material: stainless steel, thickness 3mm

SBBS1



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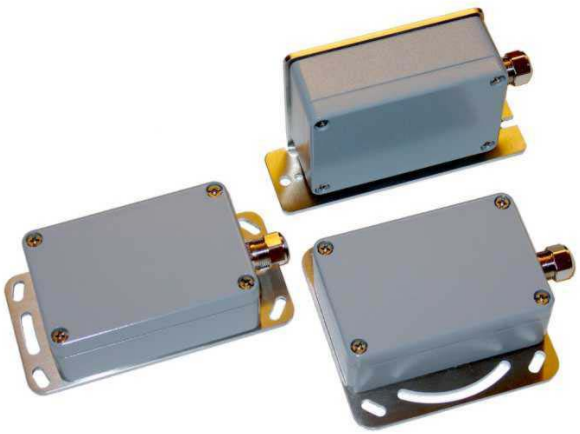
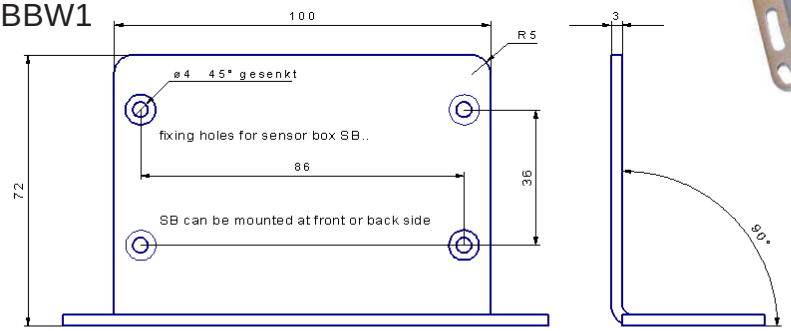
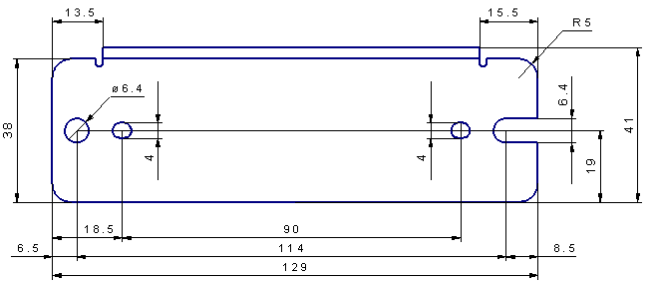


SBBW1





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