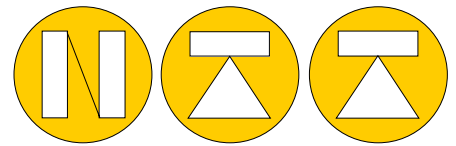
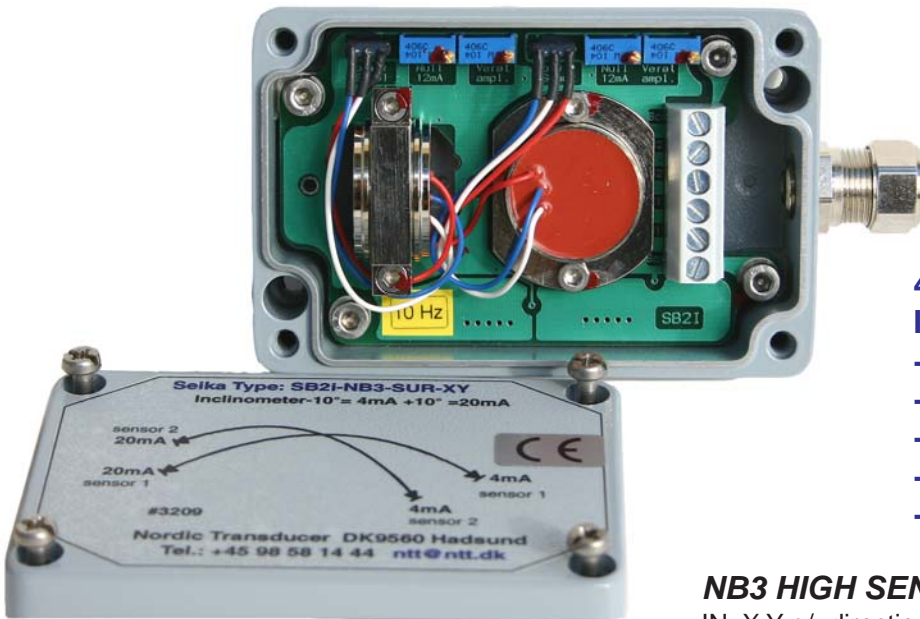


# SEIKA SB2i-NB3 or N2,N3,N4



**NORDIC TRANSDUCER**

## SB2i-xxx INCLINOMETER



**4-20mA output signal**  
**Inclination ranges**  
**+/-2 degree**  
**+/-10 degree**  
**+/- 20 degree**  
**+/-30 degree**  
**+/-70 degree**

**NB3 HIGH SENSITIV INCLINATION**  
IN X Y +/- direction

### Description

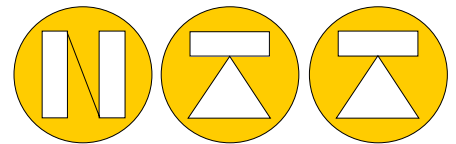
The **SB2i** sensor box is a pressure-cast aluminium box (IP65) with integrated sensor for twin axis Inclination or for Acceleration measurement. The **SB2i** contains two amplifier parts with 4...20mA output signal possibility, this as 2 separate, 2 wire systems and also as a separate part on the board a high-stable power supply for supplying the actual sensors. The amplifier for the current-loop contains also a low-pass filter for upper frequencies limitation. Rise-time constant as a specific value, + a max. current output limitation, can also be a part of the custom built unit. Supply noise suppression filter and Diode Bridge for unipolar linking to the current loop are also a standard part. Sensor and amplifier are galvanic isolated from the housing.

The **SB2i** box can also be implemented with a special temperature compensation, which means a very high degree of a accuracy on the measuring of inclination and a considerably reduced temperature drift over the whole temperature range.

A strong metal PG cable gland and the solid and compact housing for the whole Sensor box in connection with the 2 x 2 wire current-loop output gives all together a high-quality system for use under many types of difficult working conditions.

### Typical applications are:

- **Measurement on vehicles, machines, buildings, Wind mills & ships**
- **In process control systems as well as in safety installations**
- **Seismic measurements**
- **Inclination measurements on machine tools for up-lining up.**
- **Safety systems on truck cranes**
- **Machine Inclination measurement**
- **Tilt measuring on cranes**



### Technical Data box.

Termination	max.: 2 x 1,5 mm <sup>2</sup>
Cable gland	PG7 Size in metric metal mode
Measuring ranges	In accordance with the actual SEIKA-Sensor
Protection degree	IP65
Mounting	Any direction
Working planes sensor (N1 - NB3 Sensor)	3 directions of mounting
Measuring directions (N1 - NB3 Sensor)	in X,Y-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

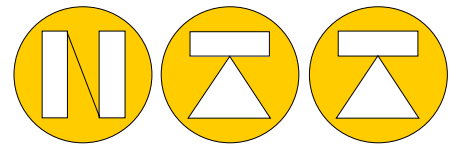
### Technical Data N type Sensors

Type sensor:	N2	N3	N4
<b>Measuring range</b>	<b>±10 degrees</b>	<b>±30 degrees</b>	<b>±70 degrees</b>
Typical instrument resolution (noise-signal relationship)	±0,004 degrees	±0,010 degrees	±0,018 degrees
Sensitivity	0,8mA / degrees	0,266mA / degrees	0,1mA / degrees
Non linearity		<± 0.1% F.S.	
Transverse Sensitivity		<1% at 30° tilt	
Rise-time Constant	Approx.0,3 sec. (Optional 1s , 2s , 3s)		
Temperature drift of span & zero total sum over range** -25°C..+70°C	<± 0.25°	<± 0.70°	<± 1.20°
Power Supply	8...30 Volt		
Zero degree output signal		12mA	
Current consumption		App.10mA per sensor	
Protection degree		IP65	
Temperature working range		-40 to +85°C	
Storage Temperature		-45 to +90°C	

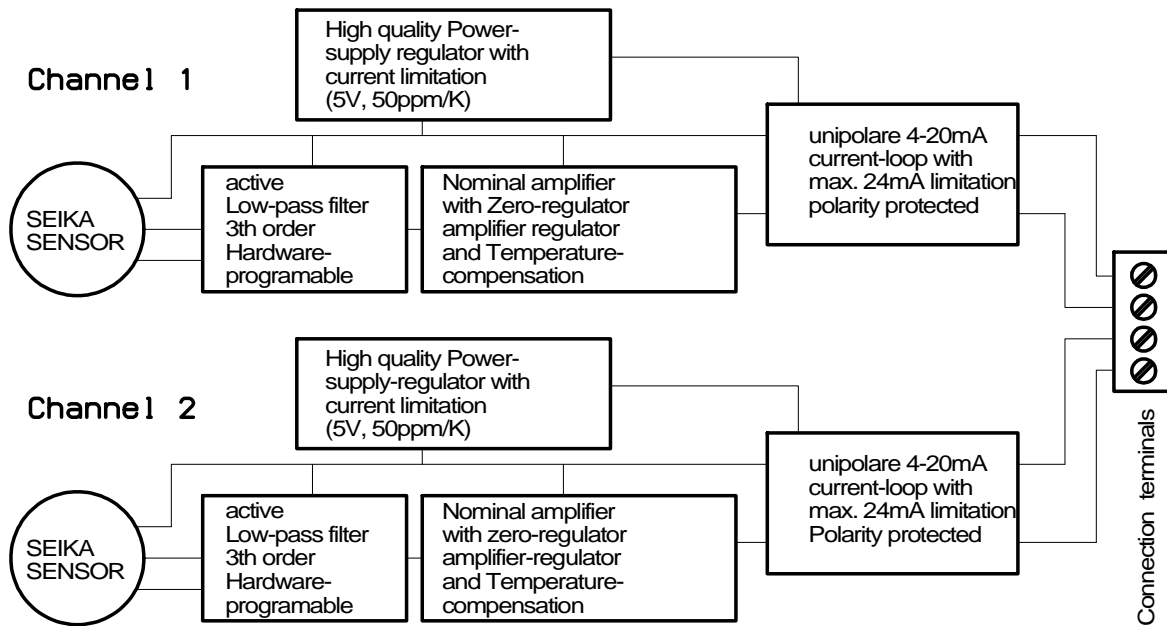
Type sensor: NB3	Normal range	Expanded range
<b>Measuring range</b>	<b>±10 degrees</b>	<b>±10-20 degrees</b>
Typical instrument resolution (noise-signal relationship)	±0,003 degrees	±0,008 degrees
Sensitivity	0,8mA / degrees	0,4mA / degrees
Non linearity ( from measuring)	<± 0.2%	<± 0.5% from 10-20 degree
Transverse Sensitivity		practical near zero
Rise-time Constant	Approx.0.3 sec. (Optional shorter time down to 0.02 sec)	
Temperature drift of span & zero total sum over range** -25°C..+70°C	<± 0.14°	<± 0.25°
Power Supply	8...30 Volt	
Zero degree output signal	12mA	
Current consumption	App.10mA per sensor	
Protection degree	IP65	
Temperature working range	-40 to +85°C	
Storage Temperature	-45 to +90°C	

\*\* Temperatur compensated range -25°C..+70°C

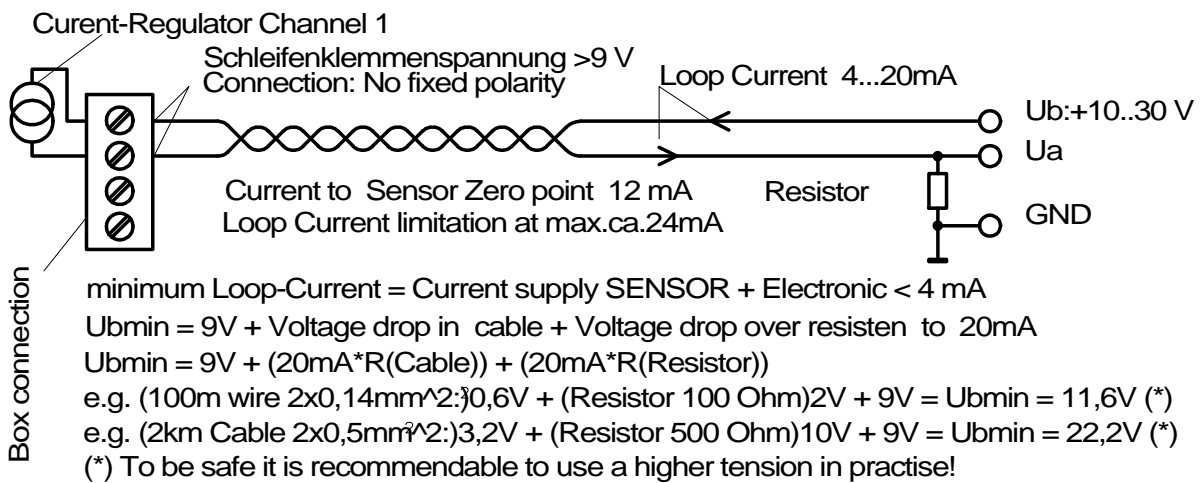
At order a special Low Pass filter can be supplied.



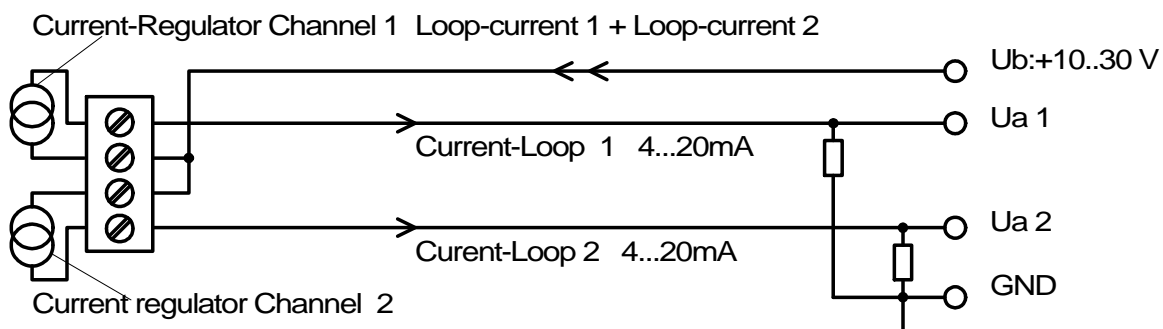
## Block diagram



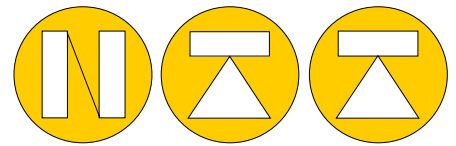
## Current-Loop diagram



## Two Current-loop's with 3 connections



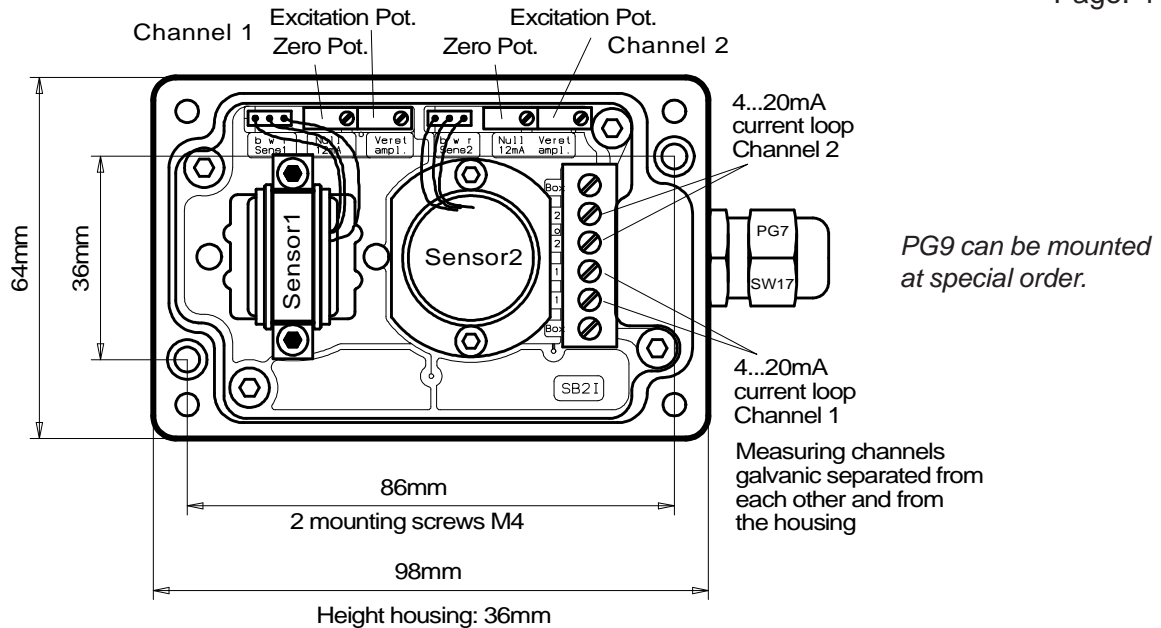
# SEIKA SB2i-NB3 or N2,N3,N4



**NORDIC TRANSDUCER**

Page: 4

*Dimensions in mm*

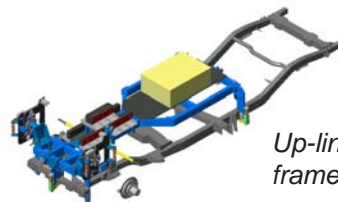


**NB3** sensor will be used where very high sensitivity is asked for together with demand of no transverse fault, plus where a very fast reaction down to 0.02sec. can be an important parameter, this can be controlled also by a low pass filter.

**Options:**

- The sensor box can be mounted with connector
- The box can be silicon filled for IP67 protection
- A low pass filter can at order time be supplied.

**Just some jobs for SEIKA SB2i Inclinometers**



Up-lining systems for truck frames based on SB2i-NB3



Safety systems on ships & roll and pits measuring



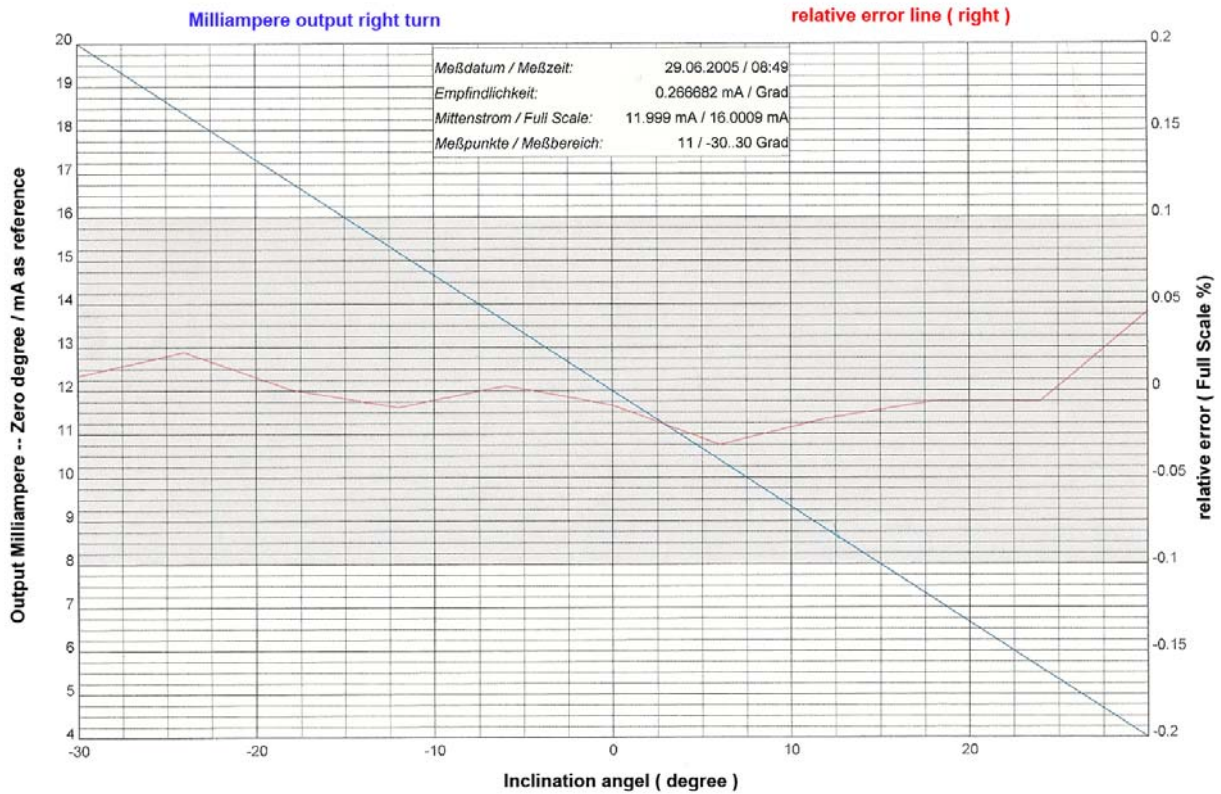
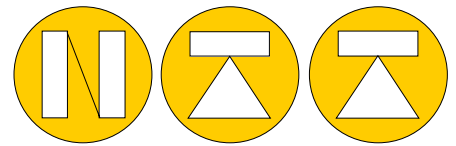
Inclination system in combination with weighing on wheel loaders



Crane safety tilting systems

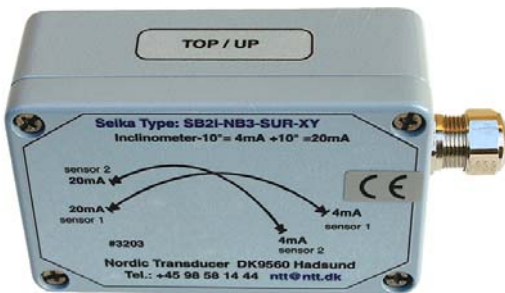






The SB2i-xx sensor boxes is supplied with accurate test data as shown here

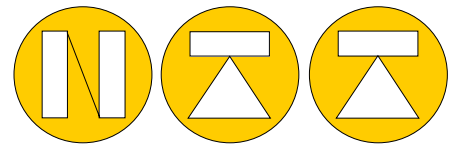
Most common way of mounting



**SB2i-NB3-SUR-XY**



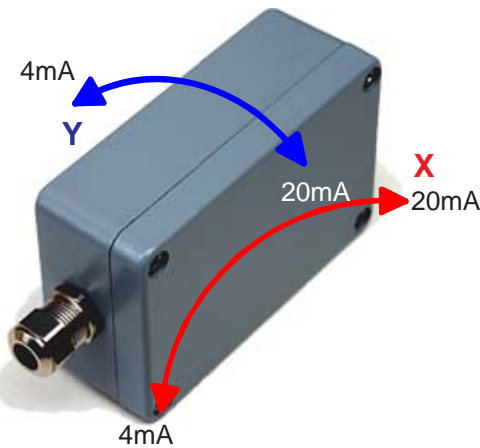
As option a special XB2 very strong stainless steel housing can also be supplied for the SB2i, please look at XB2 brochure for more information.



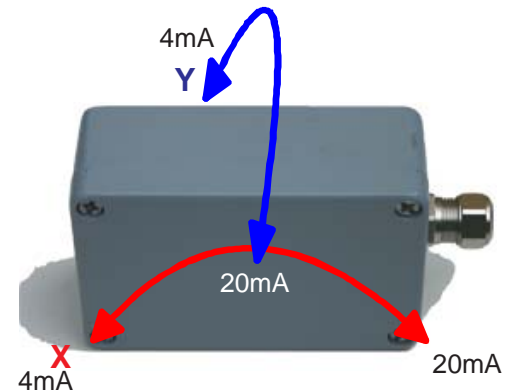
**NORDIC TRANSDUCER**

As shown here there is 3 different ways of mounting the SB2i box and each of these can be with the 2 sensors directions shown. The SB2i box must be fixed rigid in a level position for both X and Y axis as the zero point will be influenced by tilting, zero is 12mA at both axis. The sensor box can at order be with zero point mechanical at any point. As standard zero point is 12mA.

Side Up Left = SUL

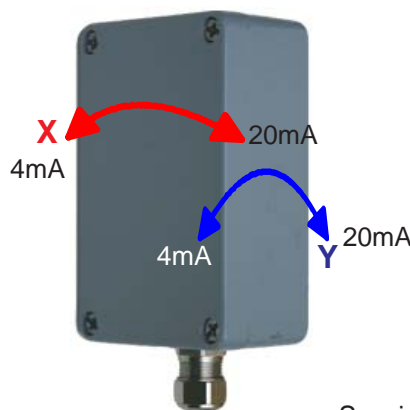


Side Up Right = SUR

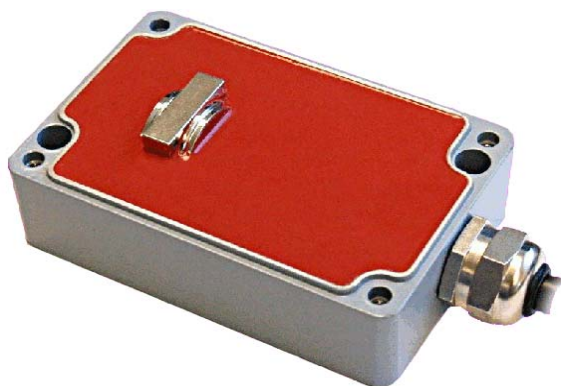


mA signal direction shown here as standard.

End Up = EU



Special model can be made also, mA signal can be other way around at special order.



SB2i can also be complete potted inside for IP67 protection (Standard for ATEX & CSA)

**Ordering example: SB2i-N3-SUR-XY**

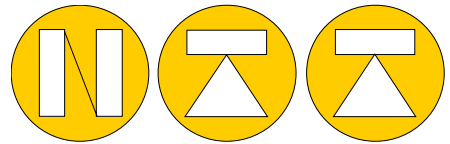
**ATEX certifications:**

II 2G EX ia IIC T4 and II 3G Ex nA IIC T4

**CSA certifications:**

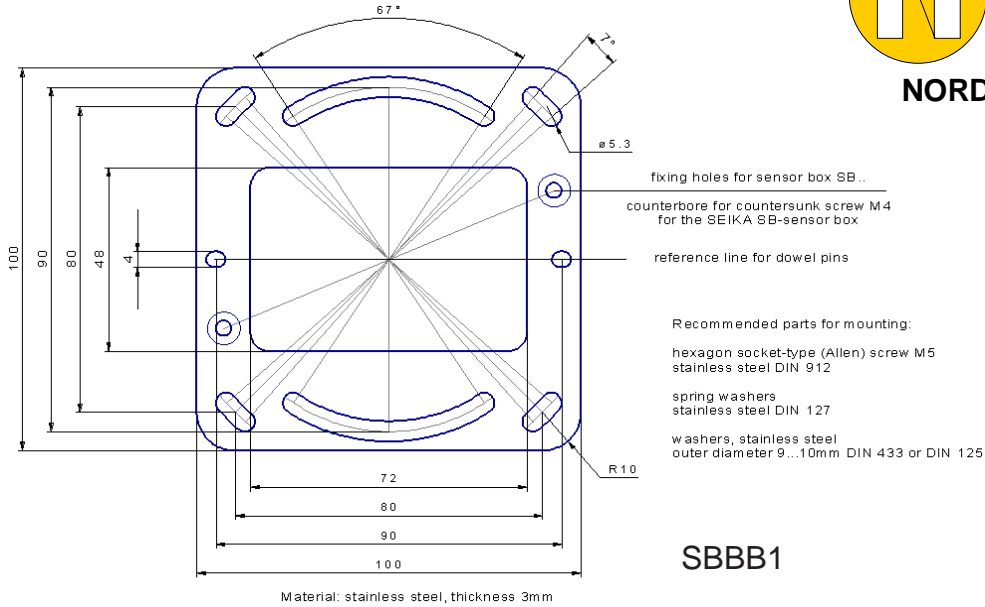
Class I, Division 1, Groups A, B, C, D; Ex ia IIC T4 and Class I, Division 2, Groups A, B, C, D; Ex nA IIC T4

# Mounting plates for SB2 box made of stainless steel

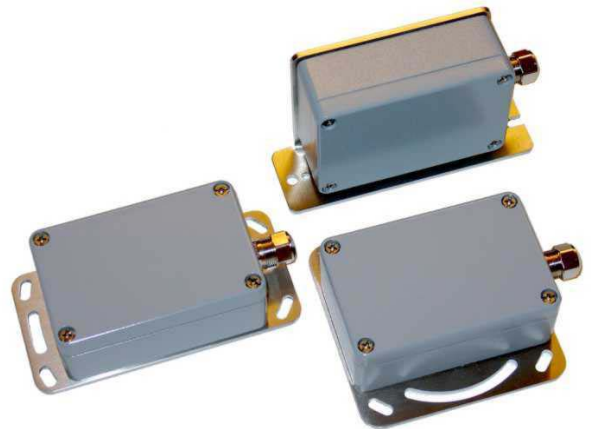
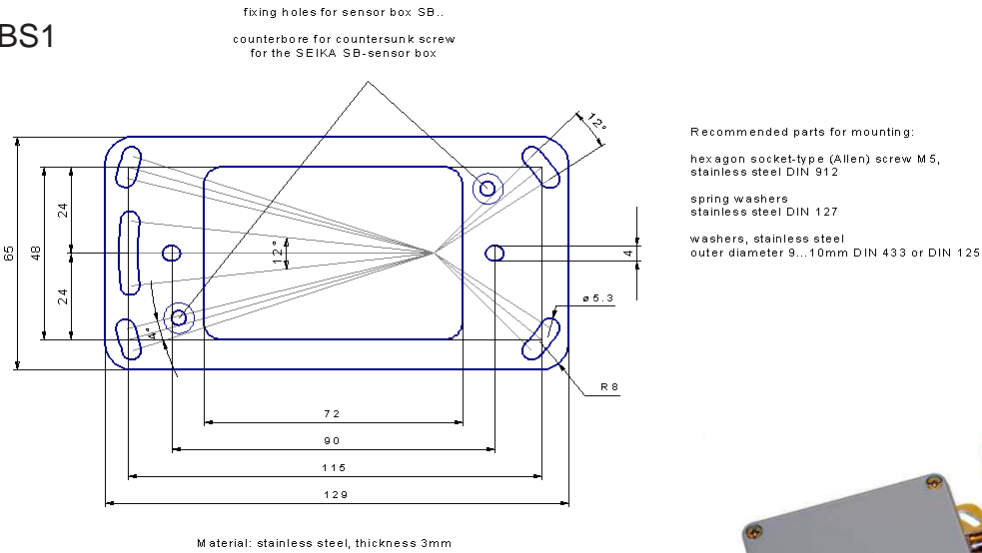


**NORDIC TRANSDUCER**

Page: 7



## SBBS1



## SBBW1

