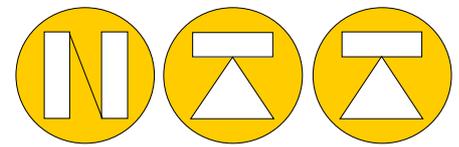
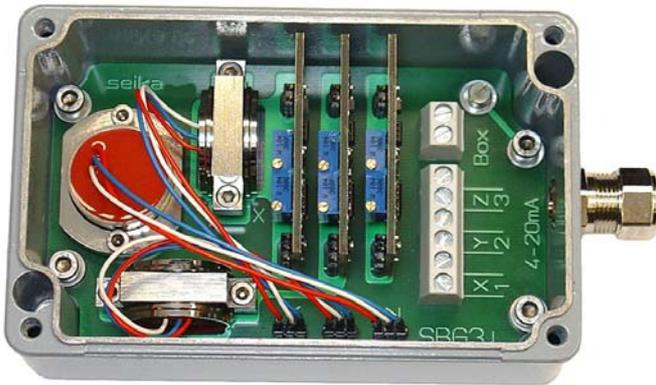


# SEIKA SBG3i



NORDIC TRANSDUCER



**4-20mA Acceleration  
3 axis from 0.5g DC with  
B1 sensor, down to 0.1g  
with NB3 sensor all with 4-  
20mA output**

## SBG3i-B1/B2 & NB3 Acceleration

### Features

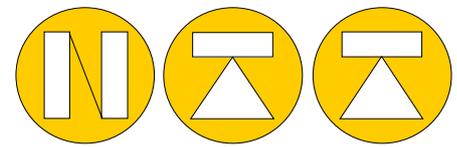
- ❑ robust pressure die cast aluminium housing (IP65) with saltwater proof coating
- ❑ twist free 4-point fastening of rigid, 3.2mm thick base PCB
- ❑ three integrated signal conditioners with 4...20mA, 2-wire outputs
- ❑ no separate supply voltage necessary
- ❑ all SEIKA sensors of the B and BDK series fit the housing and can be installed in different directions of operation
- ❑ output signals calibrated to customer's specifications
- ❑ sensors and signal conditioners electrically isolated from housing
- ❑ both output channels are electrically isolated from and independent of each other
- ❑ EMC certified
- ❑ internal, highly stable sensor supply voltages
- ❑ 10V ... 30V terminal voltage
- ❑ programmable dynamic response
- ❑ high mechanical overload resistance
- ❑ either connection polarity - possibility of 4-wire connection for both measuring loops
- ❑ low pass filter with optional choice of cutoff frequency for suppression of interference frequencies

### Description

The **SBG3i** is a pressure die cast aluminium sensor housing (IP65) with two integrated sensors for measuring accelerations and/or inclinations along three axis acceleration and/or two axis inclination.

As well as the sensors, the box contains three independent signal conditioners, each with a 4...20mA, 2-wire output, and three separate, highly stable voltage supply feeding off the corresponding current loop, one for each sensor. Furthermore, each signal conditioner includes an active low pass filter, whose upper cut-off frequency / settling time can be adjusted to suit the measurement task, an output stage with current limitation, a noise voltage filter and a diode bridge for unipolar connection to the current loop. Interference signals caused by unwanted ground currents are eliminated by electrically isolating each sensor and signal conditioner from each other and the housing.

A special electronic temperature compensation system can significantly reduce the temperature sensitivity of the implemented sensors. The compact PG cable gland and compact housing size in combination with the 6 or 4 wire connection enable the use of this high quality measuring system in harsh operating conditions.



## Technical Data

Termination	max.: 6 x 1,35 mm <sup>2</sup>
Cable gland	M12x1.5 cable gland, range 6mm...7.5mm
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	+10 ... +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

Options: Special measuring ranges, calibration record up to +/-1g, silicon encapsulation, custom wirings and cables.

### Type Sensor mounted: B1

### B2

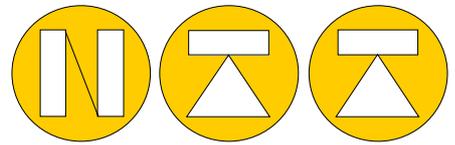
Measuring range	±3g (app.±30m/s <sup>2</sup> )	±10g (app.±100m/s <sup>2</sup> )
Resolution	<10 <sup>-3</sup> g	<5*10 <sup>-3</sup> g
Frequency range	0...160Hz	0...350Hz
Non-linearity		<0.2% F.S.
Cross axis sensitivity		<1%
Sensitivity	App.2.666mA/g	app. 0.800mA /g
B1 special range down to	app. 16.000mA/g ( +/-0.5G range as minimum)	
Temperature drift on		
Sensitivity		<0,05% / °C
Temperature drift on zero		<0,05mA/°C
Mechanical overloading		
in measuring direction		10 000 g (app. 100 000 m/s <sup>2</sup> )
Nominal power supply		U <sub>BN</sub> = 24 Volt
Permissible range of		
power supply		10-30Volt
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)		500 Gram

At order a special Low Pass filter can be ordered to fit your application

Please notice: A B1,B2 work from DC and up, so they will be sensitive to tilt also  
A BDK sensor work from approx. 0.5Hz up, and this is not sensitive to tilt !!!

When BDK sensor to be used please look at separate BDK brochure.

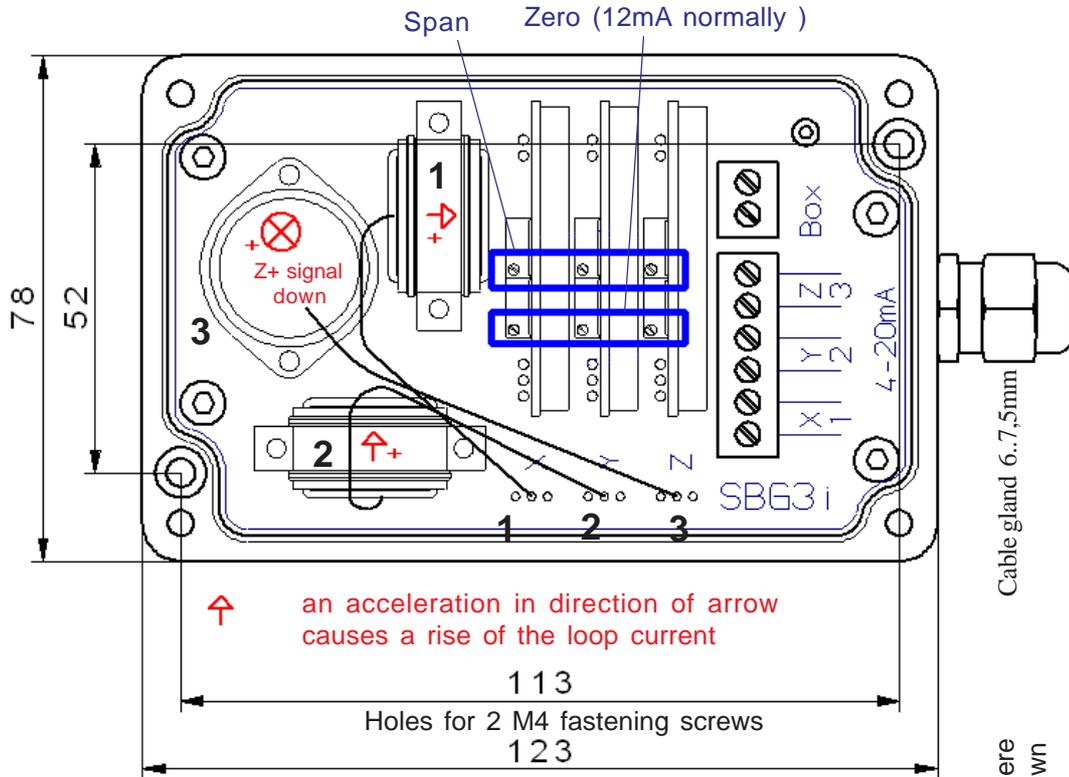
SBG3i can also be fitted with a combination of accelerometers and Inclinometers



**Dimensions in mm**

Box total height = 57mm

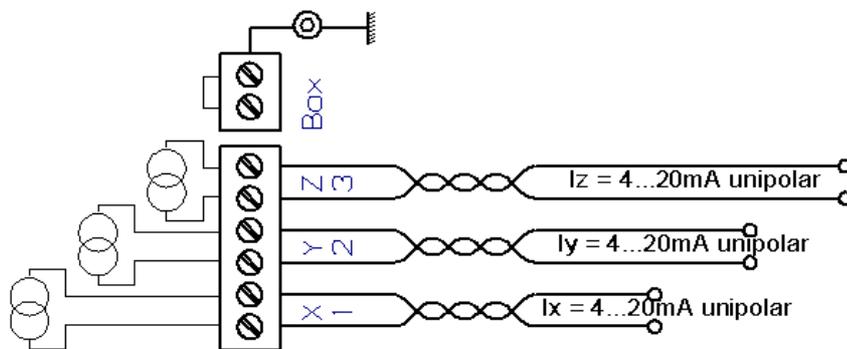
Span/Excitation and zero adjustment separate per axis, normally set up from factory



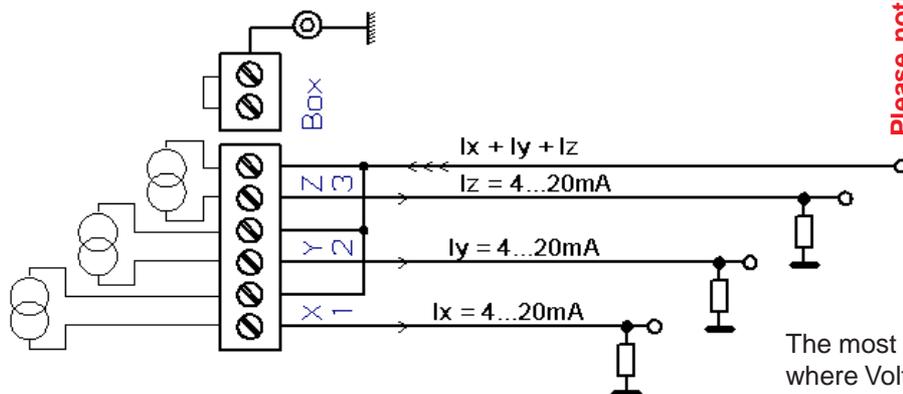
**Table mount connection like this**

6 Wire connection where each sensor get it's own Voltage supply and 0 direct to say a 2wire input on a PLC

Cable connection to SBG3i in 2 ways



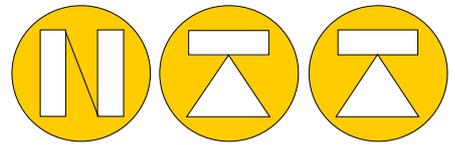
**Table mount connection like this**



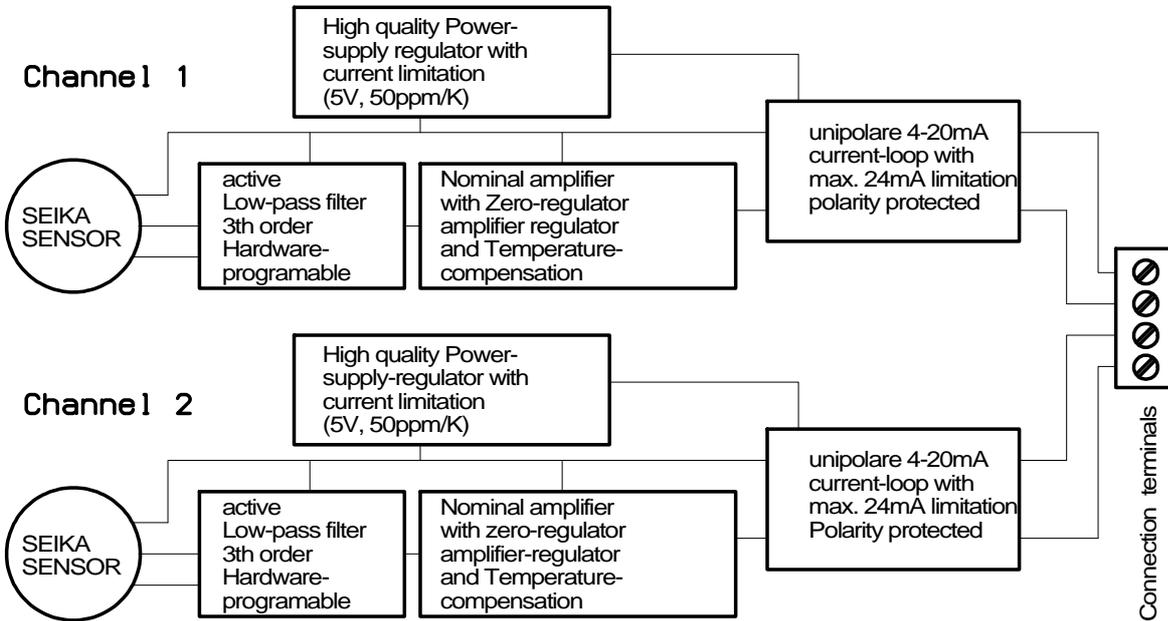
**Please notice at wall mount it will look like this.**

Y	3
Z	2
X	1

The most common is this where Voltage supply to all 3 sensors are done via 1 line and the output via 3 wires as shown

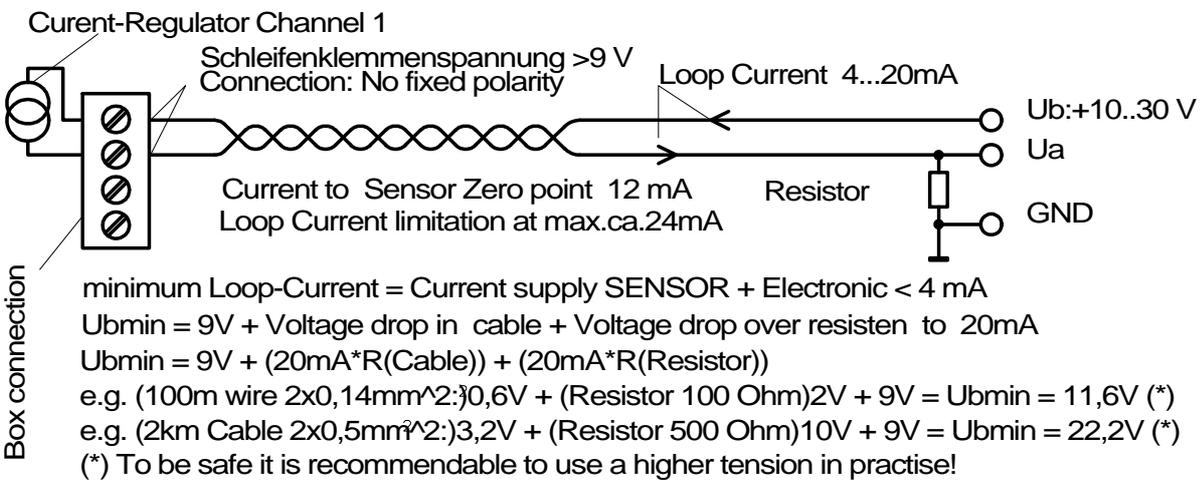


Block diagram

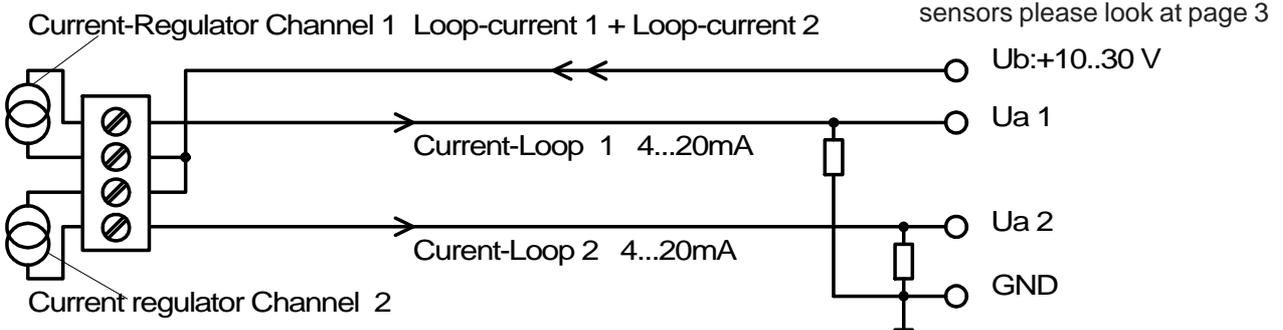


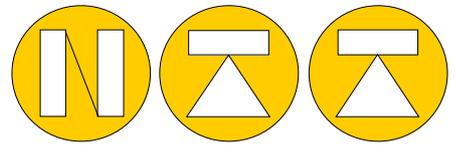
Similar for Channel 3

Current-Loop diagram



Two Current-loop's with 3 connections

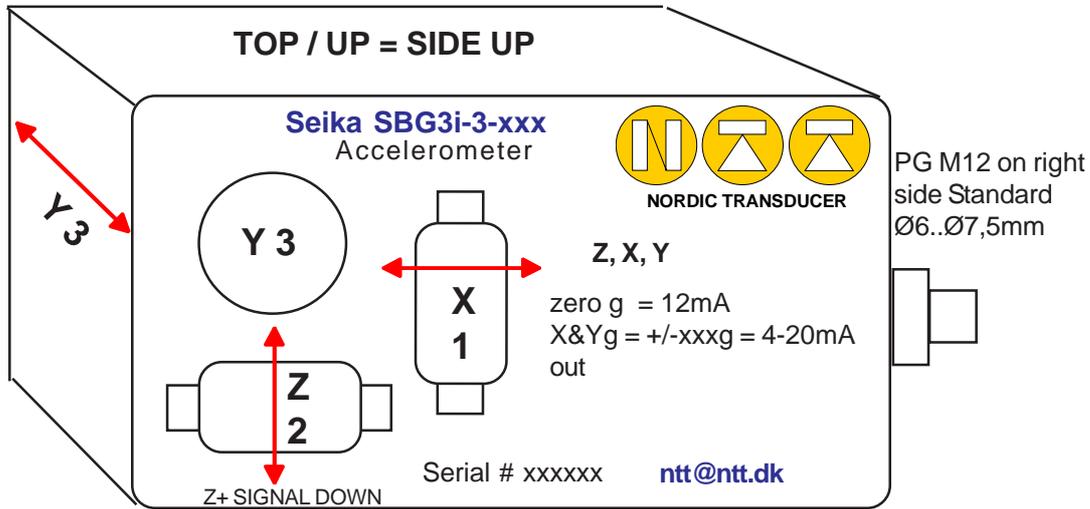




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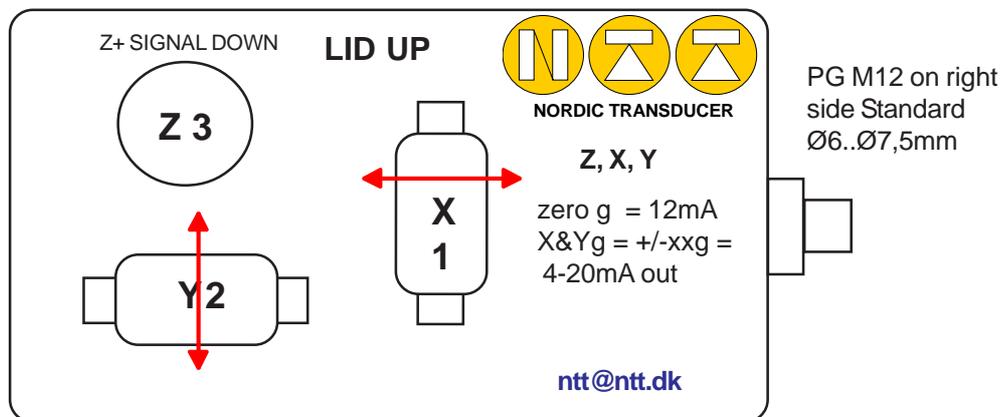
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**SBG3i-3-B1 or B2 or NB3-SUR for wall mounting with this orientation !**

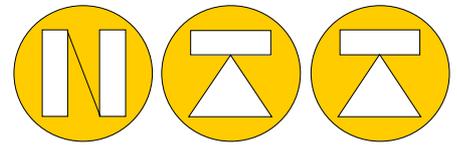


PG12 can at order time be ordret on left side !!

**SBG3i-3-B1 or B2 or NB3-LUR for table mounting with this orientation !**



## Options



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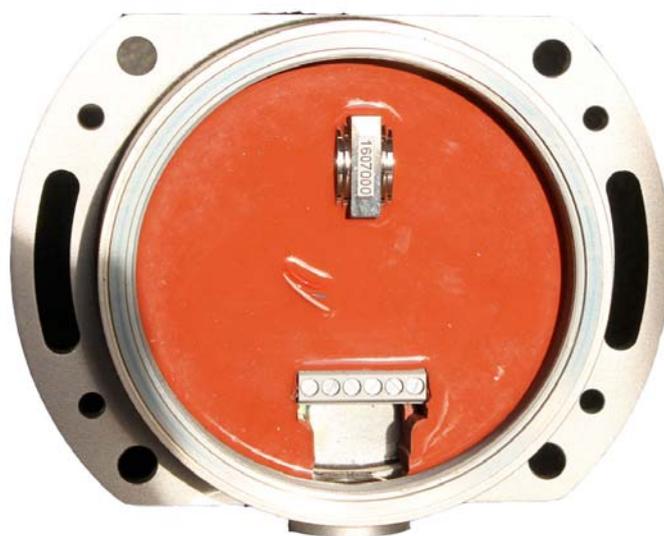
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For very demanding jobs the Sensor Box. can be supplied with a special TZ Temperatur Compensation regulated on the components by laser cutting direct on the components which do give a very high long term accuracy, mainly used down at the lower end of ranges typical from 0,5g down !



The sensor box can be supplied as IP67 with the box filled up with Silicone fillings like this.

For very demanding jobs and under water jobs SBG3i can be supplied in this XB box for working down to 100meter under water

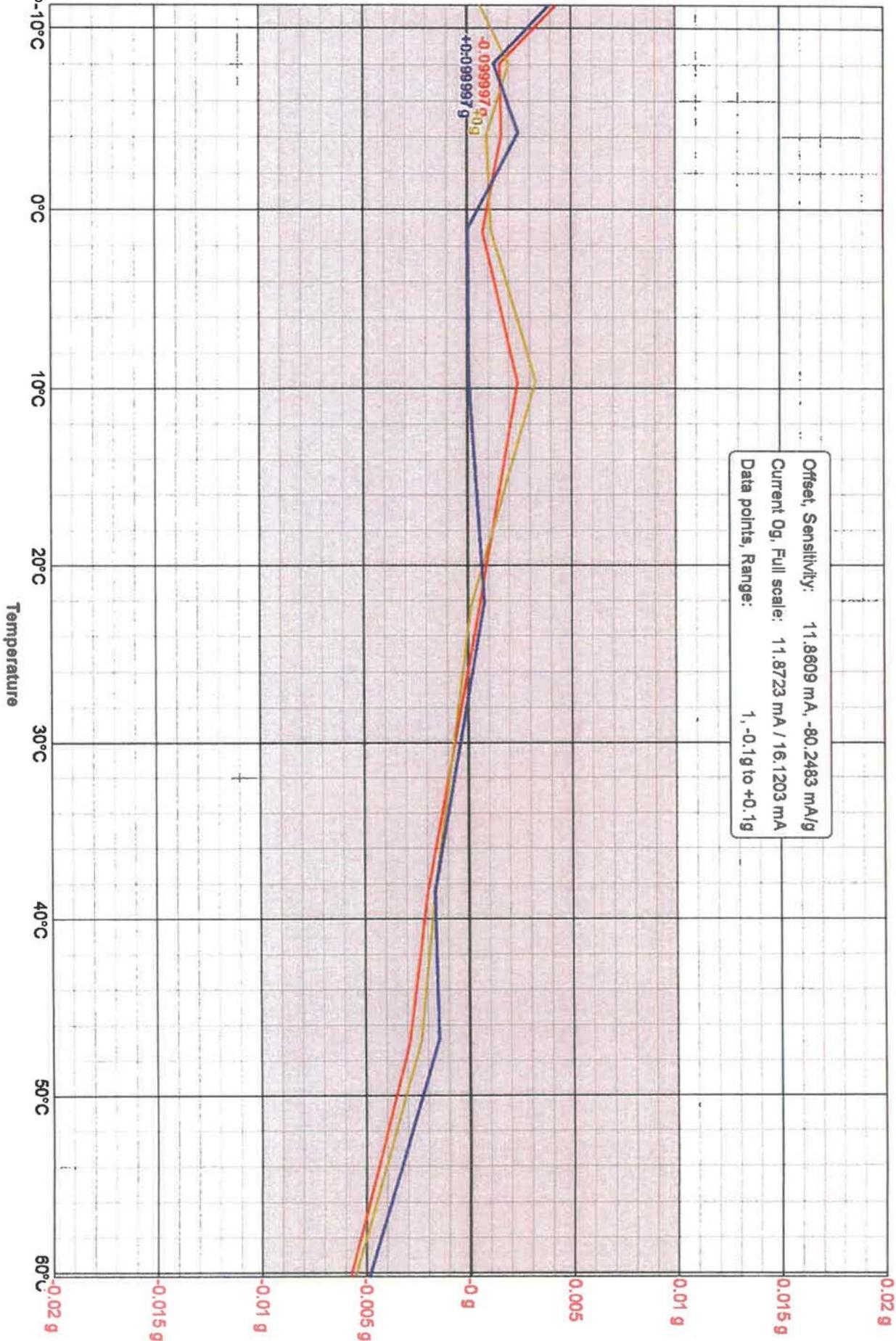


Test example of TZ compensation on a +/- 0.1g sensor mounted inside SBg3i box, there will be one for each Sensor in the box.

This type of graph test will be done for working ranges under 1g.

Ranges 1g and up will test tested at 1g with high resolution instrument so zero mA and 1g in mA with 3 decimal figures will be shown for each sensor.

Type: SBG3i Mounting: Table Cable: Right Serial number: 1806176/1



Linearity test of a NB3 sensor with working range on +/- 0,1g showing that it is typical fare inside the promised range of in accuracy.

