GeoSIG
swiss made to measure

User Manual
breva Biaxial Tiltmeter

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Switzerland

Table of Contents

Warnings and Safety

The sensor housing provides no protection against explosive atmosphere. It must not be directly operated in area where explosive gases are present.

1. Basic specifications

Sensor Series	breva
Input range	Tilt, ±3°
Output range	0 ± 10 Volt differential output (20 Vpp)
Protections	All connector pins are over voltage protected by Transzorb diodes
Power supply	9.7 – 15 VDC
Current drain	Average 75 mA @ 15 VDC

On scaling factor (LSB) calculation always refer to the relevant recorder's user manual.

2. Electrical Connector

2.1. Binder Serie 623

GeoSIG	P/N #J_CIR.012.002.F
Binder Serie 623	99 4606 00 12

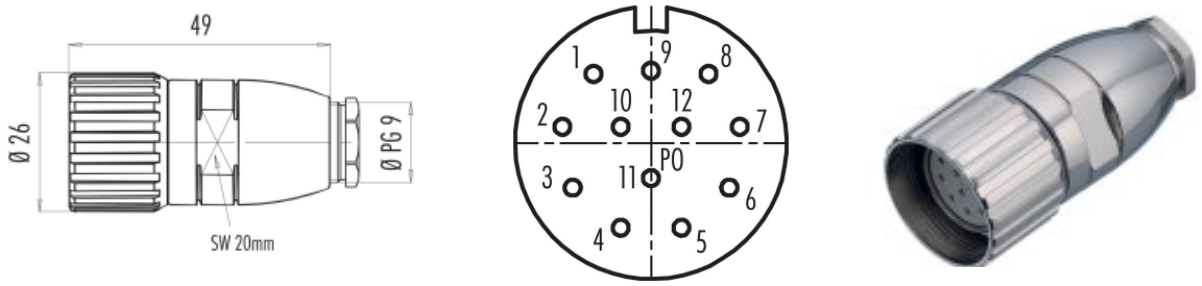


Figure 1, Binder Serie 623 Connector

The cable gland nut is determined according to external diameter of the cable and must be ordered separately. It must also provide the cable shield connection to the connector case.

2.2. Binder Serie 423 12

GeoSIG	P/N #J_CIR.012.010.M
Binder Serie 423	P/N 99 5629 00 12

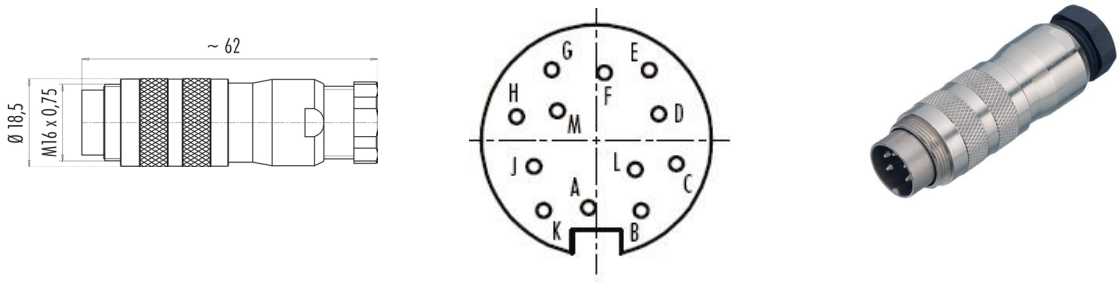
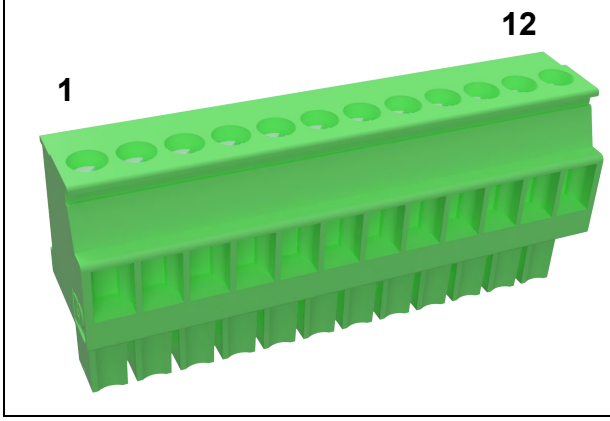


Figure 2, Binder Serie 423 connector

The cable gland nut is determined according to external diameter of the cable and must be ordered separately. It must also provide the cable shield connection to the connector case.

2.3. Internal Connector Pinout

GeoSIG	P/N: #J_WIR.012.003.F	*GeoSIG*	P/N: #J_WIR.012.002.F
Phoenix Contact	P/N: 1862959	Phoenix Contact	P/N: 1840463



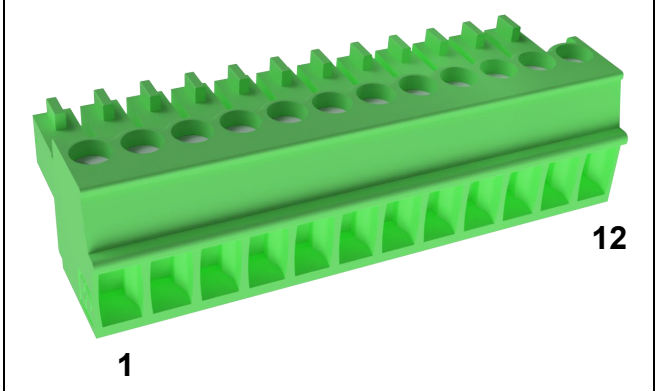


Figure 3, Internal sensor connector

2.4. Connector Pin Description (Voltage Output)

The connector pin assignment and the standard cable colour code can be observed in the table below:

Connector			SIGNAL	Comment	Colour	
Serie 623	Serie 423	Int. Conn				
Pin	Pin	Pin				
1	A	1	OUTPUT X (+)	0 V ± 10 V voltage output, 47 Ω output impedance	White	
2	B	2	OUTPUT X (-)	0 V ± 10 V voltage output inverted, 47 Ω output impedance	Brown	
3	C	3	OUTPUT Y (+)	0 V ± 10 V voltage output, 47 Ω output impedance	Green	
4	D	4	OUTPUT Y (-)	0 V ± 10 V voltage output inverted, 47 Ω output impedance	Yellow	
5	E	5	N/C	Reserved	Grey	
6	F	6	N/C	Reserved	Pink	
7	G	7	N/C	Reserved	Blue	
8	H	8	N/C	Reserved	Red	
9	J	9	+12 VDC power	Power input, +9.5 to +18 VDC range, 90 mA @ +15 VDC	Black	
10	K	10	0 VDC power	Power return	Violet	
11	L	11	N/C	Reserved	Grey/Pink	
12	M	12	N/C	Reserved	Red/Blue	

Table 1. breva Connector Pin Assignment and Cable Colour Code[1]

[1] Pin assignments may vary based on the cable's wire count.

3. Opening the housing

To access the sensor, simply unscrew the four hex screws positioned at each corner of the housing. Once the screws are loosened, carefully lift the sensor lid. When closing the sensor, ensure to handle it with care, avoiding any pressure on the O-ring or wires.

STATIC ELECTRICITY
The instrument contains CMOS devices and when serviced, care must be taken to prevent damage due to static electricity. This is very important to ensure long-term reliability of the unit. Such risk exists when both the instrument cover and the front panel are removed.

Under normal circumstances, there is no need to remove the lid of the sensor.
In any case, only trained person should open the sensor's lid. Moreover, untrained access may lead to serious damage to the instrument, as well as may void the warranty.

Before opening the sensor:
1. *Turn the unit off*
2. *Wait for 10 minutes*
3. *Disconnect all cables connected to the unit*

4. Mounting

Small size and single bolt attachment allow the breva to be easily installed, saving installation time. Levelling can be done by the three-point levelling screws system. The integrated bubble level allows preliminary levelling.

The tiltmeter must be firmly mounted to a surface and levelled, as the application requires. Check to ensure that the tiltmeter is aligned to produce the desired output signals.

Depending on the measurement setup, the sensor axes should be aligned to the monitored structure (any main direction of the structure) or to the coordinate plane (North/South, East/West).

An acute angle tilt in the arrow's direction indicated on the case will produce a positive output signal.

In case the sensor will be aligned to the coordinate plane, make sure the surface has a scribed north/south orientation line accurately surveyed from reliable markers. The X-axis of the sensor must be pointed to East or to any other main direction of the structure to monitor. The axes can then be interpreted as following:

- +X = East
- +Y = North

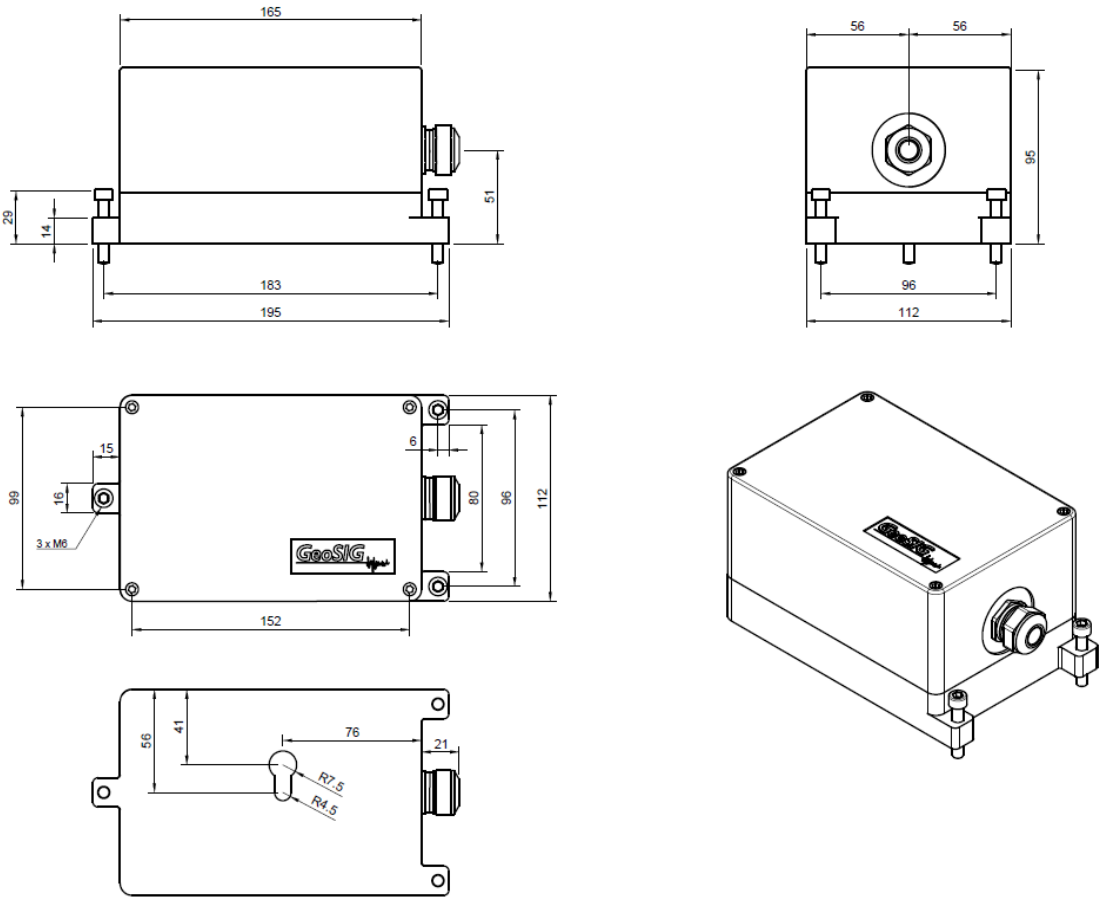


Figure 4, Sensor housing dimensions

The tiltmeter has a single-bolt fixation. One M8 expanding nut rock anchor must be used for the sensor fixation.

The screw is applied on the mounting surface using the anchor, and the screw head is left outcropping for 1-2 cm. The sensor then is slotted via the opening under the sensor housing.

Levelling can be done with the help of the bubble level on the housing and the three-point levelling mechanism.

Do not overtighten the three-point levelling mechanism. This may damage the sensor.