

Highly sensitive $\pm 1^\circ$, environmentally sealed servo inclinometer with ± 5 Volt output signal



Description

The SBS1U sensor box is packaged in a solid and compact pressure-cast aluminum housing (IP65) with an integrated sensor for highly sensitive single axis inclination or acceleration measurements.

Within the box are 2 sections: a voltage amplifier with a ± 5 Volt output signal and a separate highly stable voltage regulator that supplies power to the sensor.

The amplifier also contains an active low pass filter to suppress interference signals and transient suppression to ensure conformance to EMV regulations. The sensor and the amplifier are galvanically isolated from the housing to avoid interference from signals generated by undefined earth currents. An asymmetric 0 to 5V or a symmetrical ± 5 V analog voltage signal, each mutually inverse, can be measured on both signal outputs.

The tightly sealed PG metal cable connector and the compact dimensions of the 100% metal sensor housing enable this high quality measurement system to be used under severe operating conditions.

Applications

The SBS1U is recommended for use where extremely precise inclination and acceleration measurements must be taken under difficult conditions and harsh environments.

Typical applications include stability monitoring in the building, machinery, and construction industries as well as inclination monitoring of bridges, dams, towers, tunnels, slopes, and of all structures where there is risk of earthquakes or collapse.

Features

- Servo inclinometer with $\pm 1^\circ$ measurement range and extremely high resolution
- ± 5 V output signal for reduced error susceptibility over long signal cables
- Rugged IP65 rated pressure-cast aluminum housing with seawater resistant coating
- 12VDC $\pm 20\%$ supply voltage
- Output signal calibration to customer's specifications
- Sensor and voltage scaling galvanically isolated from housing
- EMC Protected
- Highly stable internal voltage regulator
- Reverse voltage polarity protected
- High mechanical shock resistance
- Internal low pass filter for interfering frequency suppression



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SBS1U

Single Axis Servo Inclinator Package

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| TECHNICAL DATA | |
|--|---|
| TERMINAL CONNECTIONS | Max.: 6 x 1.5mm ² (6 x 16 AWG) |
| CABLE CONNECTION | PG9, clamping range 6.5mm - 9.5mm (metal with integrated strain relief) |
| MEASUREMENT RANGE | Max. ±1 degree |
| RESOLUTION | 0.01 arc seconds = 48µm/km! |
| PROTECTION LEVEL | IP65 |
| INSTALLATION POSITION | See FIGURE 1 |
| OPERATING VOLTAGE OPTIONS | 12Volt or 24Volt (±10%) |
| OPERATING CURRENT | Max. 100mA |
| STANDARD ASYMMETRIC OUTPUT VOLTAGE RANGE (GND → UA+) | 0.5V ... 4.5V |
| STANDARD ASYMMETRIC OUTPUT VOLTAGE RANGE (GND → UA-) | 4.5V ... 0.5V |
| STANDARD SYMMETRICAL OUTPUT VOLTAGE RANGE (UA- → UA+) | -4V ... 4V |
| ASYMMETRIC ZERO OUTPUT VOLTAGE (GND → UA+) | +2.5 VDC |
| ASYMMETRIC ZERO OUTPUT VOLTAGE (GND → UA-) | +2.5 VDC |
| SYMMETRIC ZERO OUTPUT VOLTAGE (UA- → UA+) | 0 VDC |
| SIGNAL OUTPUT IMPEDANCE | Approx. 100Ohm |
| RECOMMENDED CABLE | See FIGURE 2 |
| CABLE LENGTH TAKING INTO ACCOUNT VOLTAGE DROP BY THE OPERATING CURRENT | Any (ex. 500m for 12V supply voltage or 1 km for 15V supply voltage when using the recommended or equivalent cable) |
| CAPACITIVE OUTPUT LOAD CAPACITY | Any |
| RESISTIVE OUTPUT LOAD CAPACITY | In excess of 100 kOhm |
| OUTPUT DRIVER | Operational amplifier TLC2274 |
| ADJUSTMENT CONTROL | Amplification |
| SIGNAL RESPONSE TIME | Approx. 2 seconds (98% OF THE EXPECTED VALUE) |
| JUMP OVERRUN FUNCTION | PT2 procedure |
| AMBIENT OPERATING TEMPERATURE | -40... +85 °C |
| MECHANICAL ANGLE ADJUSTMENT RANGE | ±2° |

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SBS1U

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FIGURE1: MOUNTING POSITION, DIMENSIONS IN [MM], AND TERMINAL CONNECTIONS

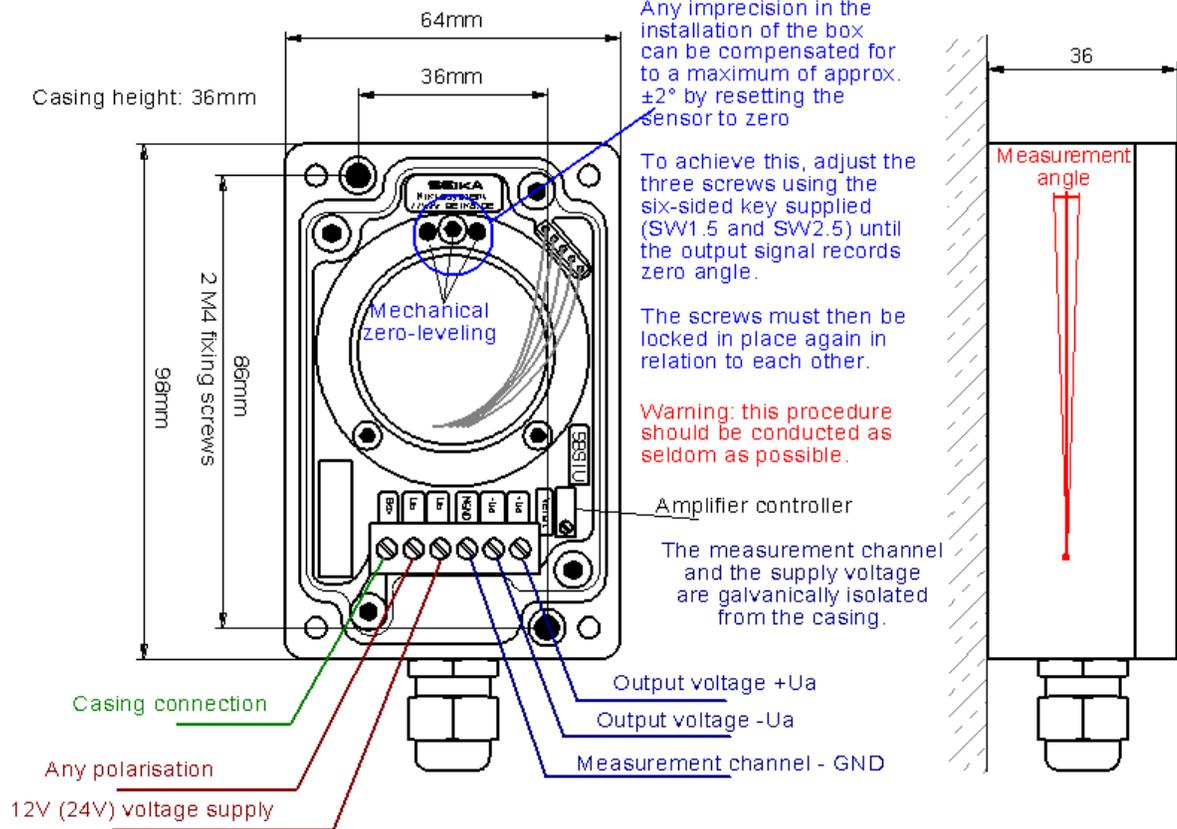
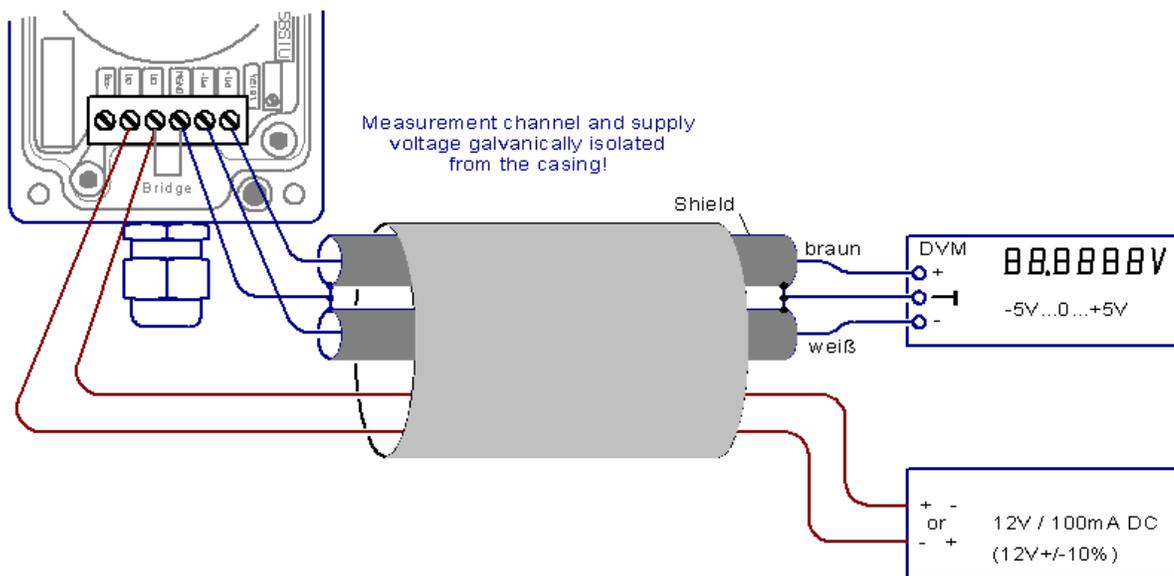


FIGURE2: CABLE CONNECTIONS



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