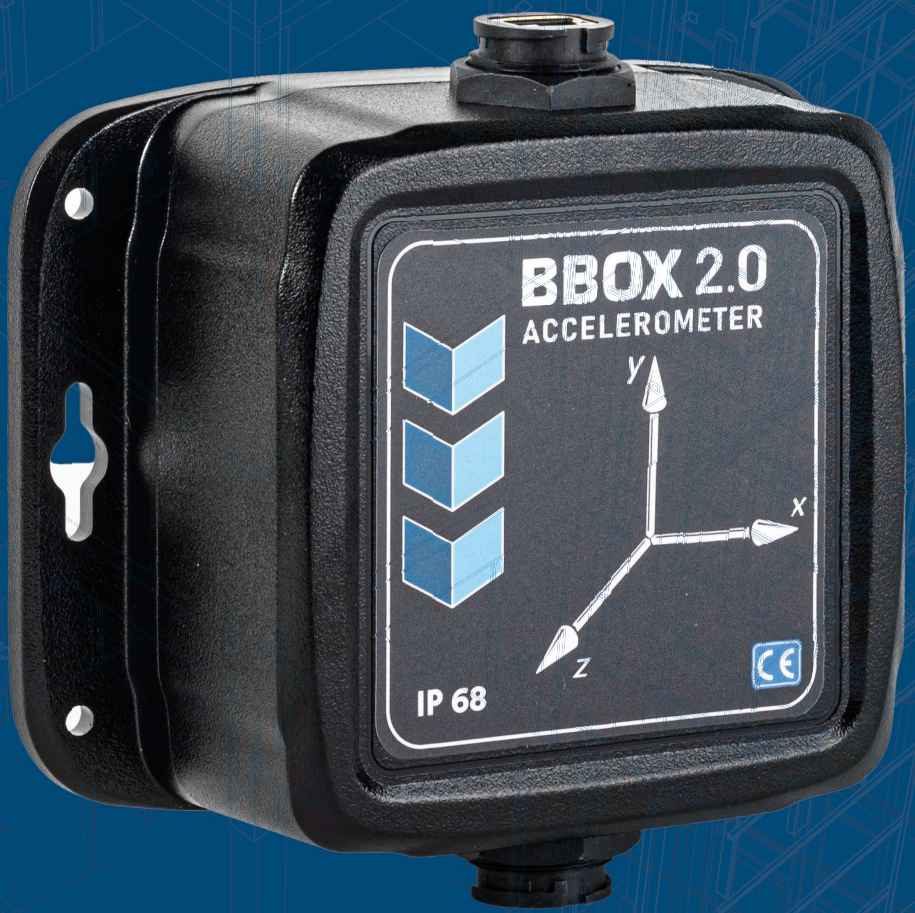
BBOX®
STRUCTURAL MONITORING

BBOX 2.0 Sensor

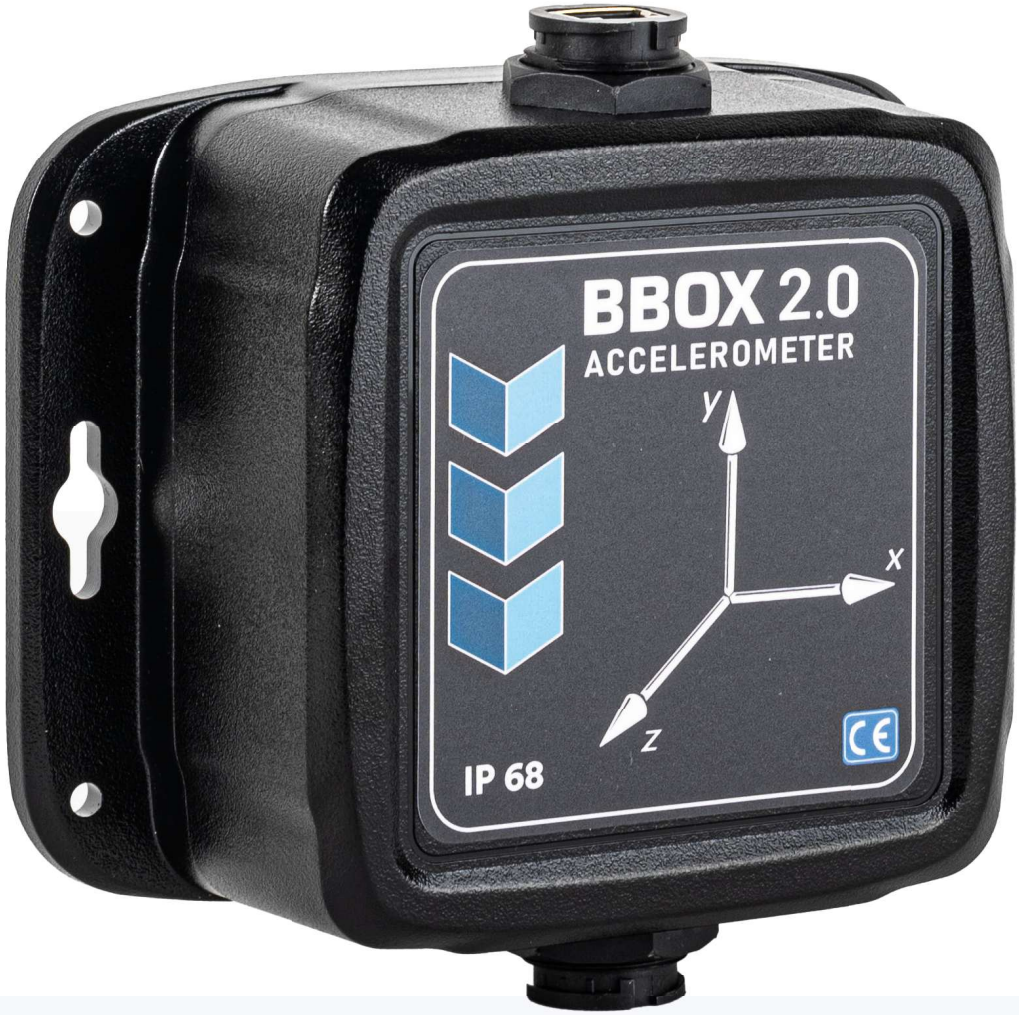
Technical Datasheet



The BBOX 2.0 Sensor is a high-performance, low-noise triaxial MEMS accelerometer, purpose-built for the continuous structural monitoring of civil and industrial infrastructures and buildings.

The sensor provides a digital output and can be used to perform accurate acceleration measurements in order to:

- Monitors the dynamic response of the structure during seismic events and other catastrophic actions, including wind loads, floods, and accidental impacts.
- Carry out dynamic identification analyses of the monitored structure (SHM – Structural Health Monitoring).



The sampling frequency of the BBOX 2.0 Sensor can be adjusted to optimize measurements depending on monitoring objectives. Adjustments can be executed remotely or via procedures embedded in the Data Logger to which the sensor is connected.

When operated in clinometric mode, the sensor can also perform static inclination measurements. In addition, the daisy-chain cabling (in/out scheme) via a single cable significantly simplifies both installation and long-term maintenance of the monitoring system.

Technical Specifications

- Sensor type: Triaxial MEMS with integrated A/D converter
- Output: Digital, 18-bit
- Full scale: ±2 g
- Sensitivity: 15 µg / LSB (Least Significant Bit)
- Sampling frequency: 32 Hz to 1000 Hz
- Noise density: Ultra-low, 22.5 µg/√Hz — enabling accurate detection of minimal structural responses
- Operating temperature: -30 °C to +105 °C
- Storage temperature: -30 °C to +110 °C
- Enclosure material: Flame-retardant Polycarbonate UL94 5VA, UV resistant, waterproof
- Protection rating: IP68
- Dimensions (mm): 155 × 120 × 60
- Weight: 330 g
- Power supply: 24 V or 48 V selectable (300 mW), galvanically isolated, system-generated
- Power consumption: 300 mW
- Thermal stability: 0.15 mg/°C (= 0.00375% of measurement scale)

Clinometric Mode

When operated in clinometric mode, the BBOX 2.0 Sensor provides high-precision inclination measurements with the following specifications:

- Full scale: ±5°
- Resolution: 0.001°
- Repeatability: 0.01°
- Thermal offset drift: 0.15 mg/°C

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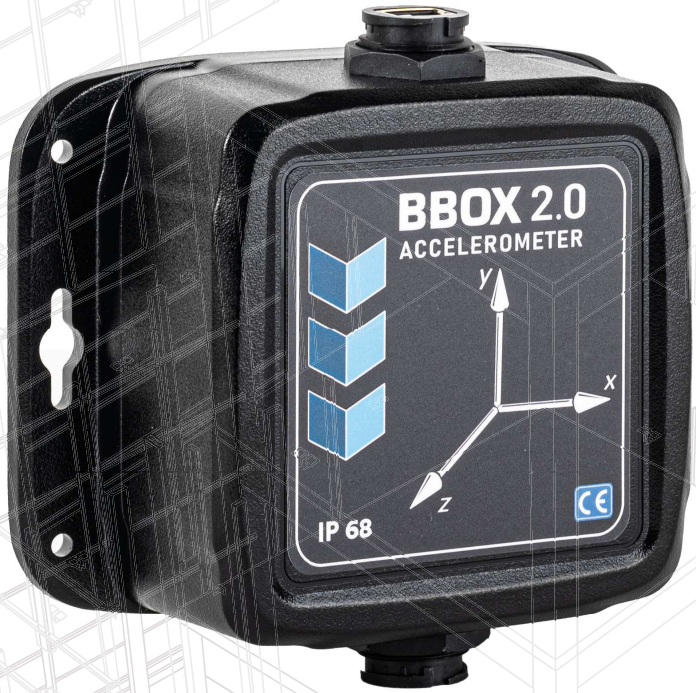
Key Features

BBOX 2.0 Sensor

- Triaxial MEMS accelerometer with up to 1000 samples per second per axis
- Configurable sampling rates: 32, 62,5 125, 250, 500, 1000 Hz per axis
- Integrated inclinometric function with resolution up to 0.001° and precision of 0.01°
- Acceleration measurement range: -2 g to +2 g
- Ultra-low noise density: 22.5 µg/√Hz
- Integrated temperature sensor
- IP68-rated, designed for long-term operation in extreme environmental conditions
- Wide operating temperature range: -30 °C to +105 °C



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