

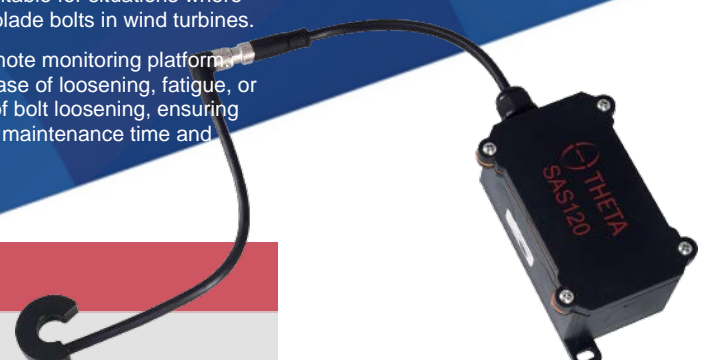
SAS Series Wireless Bolt Preload Sensors

The SAS series wireless bolt preload sensors are industrial-grade sensors designed specifically for monitoring the health status of critical bolts in industrial equipment. The sensors feature resistance to interference, high accuracy, ultra-low power consumption, and durability, making them suitable for long-term operation in harsh industrial environments.

Each sensor uses ultrasonic technology to accurately measure the time of the reflective ultrasonic waves. Additionally, the sensor is equipped with a temperature probe to measure the surface temperature of the bolt. By applying a temperature compensation algorithm, the sensor can measure accurately and reliably the bolt's preload (axial stress) at different temperatures.

SAS100/SAS100A come in a single integrated enclosure, ensuring easy and convenient installation. SAS100 is suitable for monitoring regular bolts, while SAS100A is specifically designed for monitoring anchor bolts. Moreover, SAS120 adopts a slim probe design, making it suitable for situations where the bolt's surface has limited height or internal hexagonal holes, such as blade bolts in wind turbines.

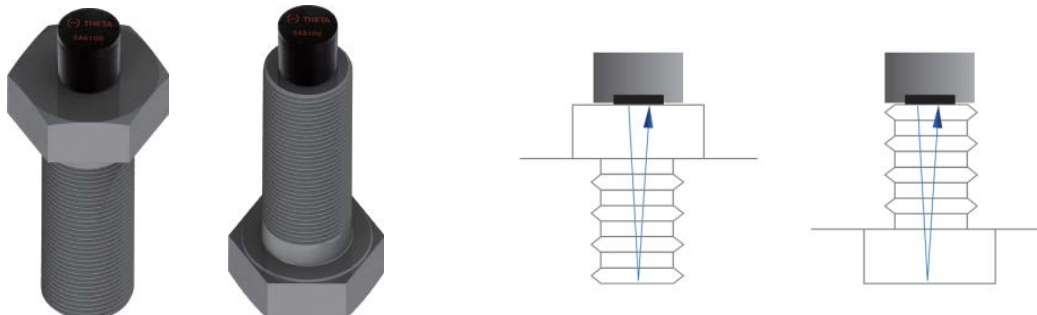
The sensor data is transmitted through a wireless sensor network to a remote monitoring platform. Users can remotely monitor the bolt preload and receive timely alerts in case of loosening, fatigue, or fracture of the bolt. This allows continuous tracking of the entire process of bolt loosening, ensuring safe equipment operation, preventing unplanned downtime, and reducing maintenance time and costs.



Features and Advantages

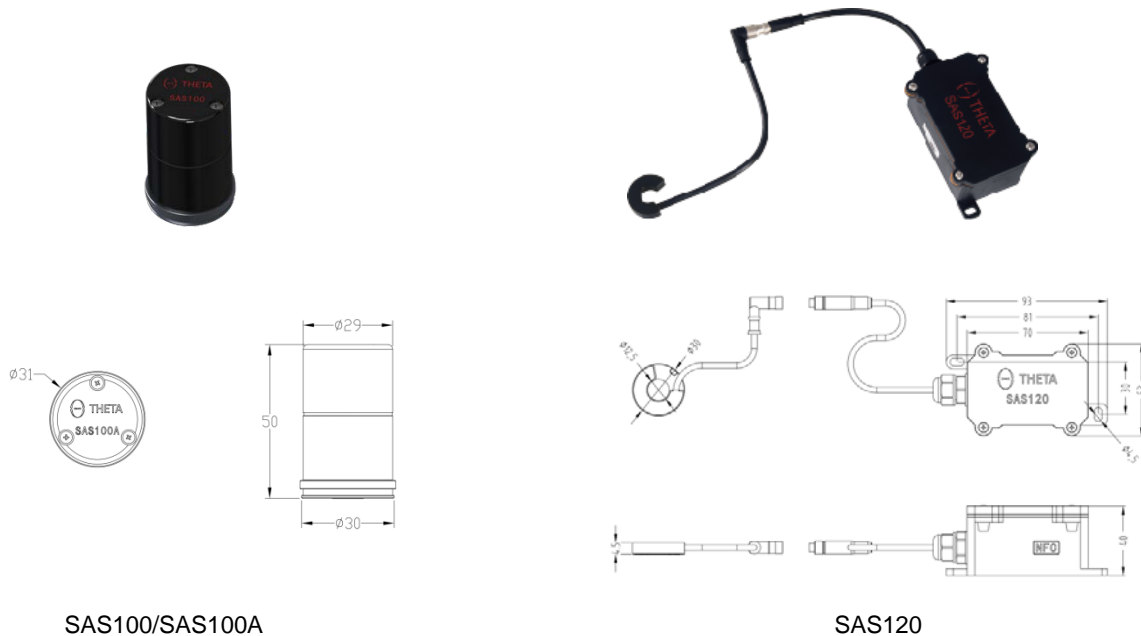
- Non-intrusive ⇒ No impact on the structure or strength of the bolt.
- Accurate ⇒ Interference resistant and highly accurate, with automatic temperature compensation.
- Easy-to-install ⇒ Cable-less; mounted with epoxy, welding, or clamp fixture.
- Wireless ⇒ 2.4GHz wireless sensor network; capable of transmitting data reliably.
- Low-powered ⇒ Built-in battery with 10 years of life for normal usage.
- Ruggedized ⇒ Waterproof, dustproof, shockproof, corrosion-resistant, and intrinsically safe; suitable for harsh industrial environment.
- Accessible ⇒ Remotely accessible anytime, anywhere; automatic alarm; maintenance free.
- Convenient ⇒ Bluetooth compatible and connected via mobile APP.

The SAS series bolt preload sensor is installed non-intrusively on one end of the bolt. The sensor emits ultrasonic waves into the bolt's interior, and when the ultrasonic waves reach the other end or a fracture surface of the bolt, they are reflected back and received by the sensor for processing. Utilizing advanced signal processing technology and temperature compensation algorithms, the sensor can accurately calculate the preload and further determine the bolt's condition, such as loosening, fatigue, or fracture.



Specifications

| Product Model | SAS100/SAS00A | SAS120 |
|-------------------------|--|---|
| Mechanical Design | Integrated design | Ultra-thin probe design; separate main body and probe |
| Application Scenarios | SAS100: Regular bolts SAS100A: Anchor bolts | Bolts with limited installation space or with hexagonal holes |
| Preload Accuracy | 1.5% | |
| Temperature Range | -40~85°C | |
| Temperature Accuracy | ±1°C | |
| Data Acquisition Period | 1/2/5/10/15/20/30/60/120/240/360/480/720/1440 minutes | |
| Communication | 2.4GHz Wireless Sensor Network (Bluetooth 5.0), line-of-sight range 300m | |
| Battery | 1650mAh Li/SOCL2; replaceable | 4000mAh Li/SOCL2; replaceable |
| Dimensions | 31mm x 50mm (D x H) | See the diagram below |
| Weight | 35g | 70g |
| Operating Temperature | -40~85°C | |
| Operating Humidity | 10%~90% RH | |
| Enclosure | Metal and polycarbonate | |
| Explosion Protection | EX ia IIC T4 Ga | |
| Ingress Protection | IP67 | |
| Mounting | Industrial-grade epoxy, optional auxiliary fastening structure | Probe: Industrial-grade epoxy, optional auxiliary fastening structure Main unit: Bracket |



SAS100/SAS100A

SAS120

Mounting

- SAS100/SAS100A: The sensor is adhered to the surface of the bolt.
- SAS120: The probe is adhered to the surface of the bolt.
- Using aerospace-grade epoxy, it has been tested to withstand vibration as high as 30g.

