

SA-S Series Bolt Loosening Sensors

The SA-S series bolt loosening sensors are industrial-grade sensors designed to monitor the fastening status of critical bolts in industrial equipment. Built for harsh environments, these sensors offer exceptional resistance to interference, high accuracy, ultra-low power consumption, and long-lasting durability for continuous operation.

Utilizing MEMS technology, each sensor accurately measures the relative rotation angle between the nut and bolt, effectively tracking bolt loosening. Additionally, the integrated attitude sensor detects movement and potential drops, providing enhanced monitoring capabilities.

The SA210S model is ideal for standard bolt applications, while the SA220S features an ultra-thin design, perfect for installations in confined spaces such as blade bolts in wind turbines.

Each sensor is equipped with an RS485 interface, capable of transmitting the data through the Modbus protocol. Users can remotely monitor the loosening rotation angle and receive timely alerts in case of bolt loosening, continuously track the entire process of bolt loosening, ensure the safe operation of equipment, prevent unplanned downtime, and reduce maintenance time and costs.

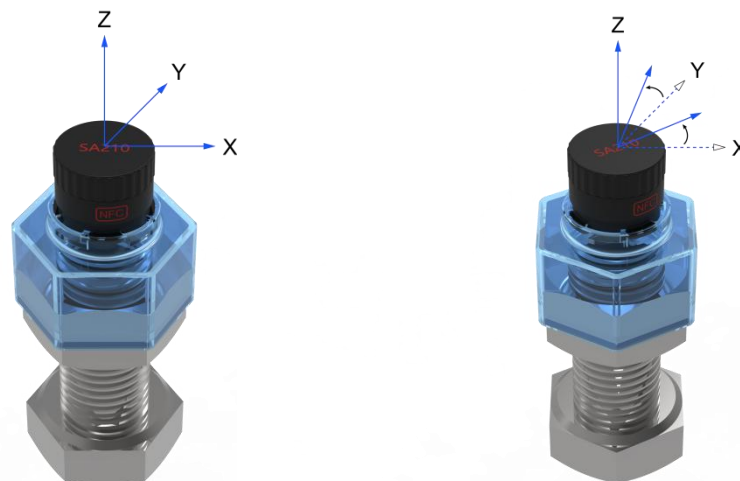


Features and Advantages

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|-----------------|---|--|
| Non-intrusive | ⇒ | No impact on the structure or strength of the bolt. |
| Accurate | ⇒ | Interference resistant and highly accurate, with a precision within $\pm 0.5^\circ$. |
| Easy-to-install | ⇒ | Compact, and lightweight design; mounted with adhesive and twist lock methods. |
| Ruggedized | ⇒ | Waterproof, dustproof, shockproof, and corrosion-resistant; suitable for harsh industrial environment. |
| Accessible | ⇒ | Remotely accessible anytime, with automatic alarm and maintenance-free operation. |
| Convenient | ⇒ | Bluetooth compatible and can be connected via mobile app. |

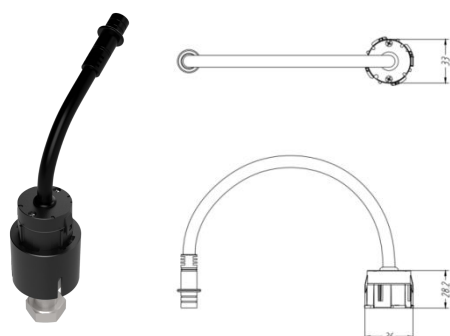


The bolt loosening sensor is installed non-intrusively on the nut. It uses advanced signal processing technology and algorithms to rapidly and precisely measure the nut's loosening rotation angle relative to the bolt, providing an accurate assessment of the bolt's fastening status.

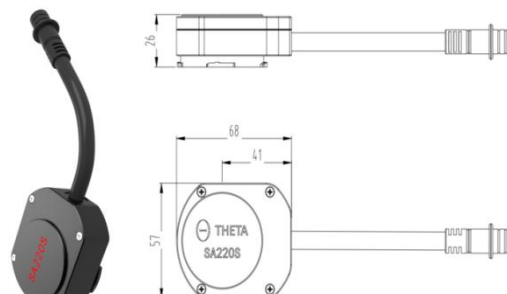


Specifications

Product Model	SA210S	SA220S
Form Factor	Compact design	Ultra-thin design
Application Scenarios	Regular bolts	Bolts with limited installation space
Loosening Angle Precision	$\pm 0.5^\circ$	
Feature Data	Loosening angle, measurement index, motion index, attitude index, temperature	
Data Acquisition Rate	Up to 1Hz; configurable	
Interface and Protocol	RS485; Modbus	
Power	12-24VDC	
Dimensions	36.2mm x 28mm (D x H)	57mm x 68mm x 26mm (L x W x H)
Weight	26g	60g
Operating Temperature	$-40\sim 85^\circ\text{C}$	
Operating Humidity	10%~90% RH	
Enclosure	Polyamide with fiberglass	
Explosion Protection	EX ia IIC T4 Ga	
Ingress Protection	IP67	
Mounting	Adhesive and twist lock / welding and twist lock	



SA210S



SA220S



Mounting

