SVT-S Series Vibration Sensors

THETA

The SVT-S series vibration sensors are industrial-grade sensors designed for equipment condition monitoring and fault diagnosis applications. Each sensor integrates vibration and temperature sensing capabilities, featuring low noise, high accuracy, ultra-low power consumption, and robust durability, making it suitable for long-term use in various harsh industrial environments.

The sensors use high-performance triaxial accelerometer sensors to capture equipment vibration signals. SVT210S incorporates a triaxial MEMS accelerometer, SVT220S1 employs a single-axial piezoelectric accelerometer, and SVT220S3 utilizes a single-axial piezoelectric accelerometer for the main axis (Z-axis) alongside MEMS accelerometer for the secondary axes (X-axis and Y-axis). Meanwhile, SVT520ZS features a triaxial piezoelectric accelerometer.

With an industrial-grade structural design, the sensor can seamlessly and non-destructively collect vibration signals from the measured equipment. Additionally, the sensor boasts powerful edge computing capabilities, capable of calculating feature vibration data for detecting various mechanical anomalies and faults.

The sensor is equipped with an RS485 interface, capable of transmitting the feature data and waveform data through the Modbus protocol. Users can remotely monitor the vibration and temperature parameters of the equipment, promptly detect any abnormal operating conditions, ensure the safe operation of the equipment, and avoid unplanned downtime, thus reducing maintenance time and costs.

Features and Advantages

Accurate	⇨	Low noise, high-performance sensing, high frequency response.
Easy-to-install	⇨	Stud, adhesive, or magnetic mounting.
Edge computing	⇨	Outputs various vibration feature data for state monitoring and fault diagnosis.
Stable	⇨	Capable of transmitting both feature data and waveform data.
Ruggedized	⇨	Waterproof, dustproof, shockproof, corrosion-resistant, and intrinsically safe; suitable for harsh industrial environment.
Flexible	⇨	Configurable measurement range, sampling frequency, sampling points, and sampling period to meet specific requirements.
Accessible	⇨	Remotely accessible anytime, with automatic alerts and maintenance-free operation.
Convenient	⇨	Bluetooth compatible and can be connected via mobile app.

Product Models

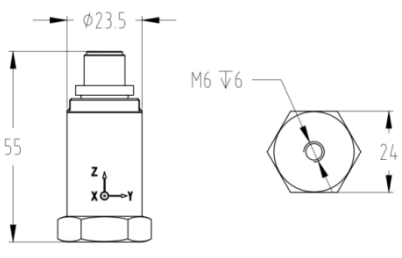
Model	Accelerometer	Frequency Response (Z)	Frequency Response（XY）
SVT210S	MEMS	0Hz-6kHz	0Hz-5kHz
SVT220S1	Piezoelectric	2Hz-15kHz	-
SVT220S3	Piezoelectric/MEMS	2Hz-15kHz	0Hz-5kHz
SVT520ZS	Piezoelectric	2Hz-15kHz	2Hz-15kHz

SVT-S Series Vibration Sensors

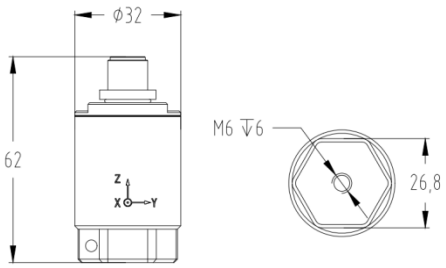
THETA SENSORS CORPORATION

Specifications

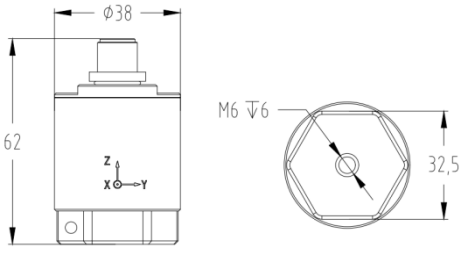
Product Model	SVT210S	SVT220S1	SVT220S3	SVT520ZS
Accelerometer Type	Triaxial MEMS	Single-axis piezoelectric	Z: Piezoelectric; X/Y: MEMS	Triaxial piezoelectric
Acceleration Resolution	16 bits	24 bits	Z: 24 bits; X/Y: 16 bits	24 bits
Acceleration Range	±16g	±50g or ±100g	Z: ±50g or ±100g; X/Y: ±16g	±50g or ±100g
Acceleration Sensitivity	0.5mg/LSB	Frontend 40mV/g, 0.006mg/LSB	Z: Frontend 40mV/g, 0.006mg/LSB X/Y: 0.5mg/LSB	0.006mg/LSB
Acceleration Frequency Response	Z: 0Hz-6kHz X/Y: 0Hz-5kHz	2Hz-15kHz	Z: 2Hz-15kHz X/Y: 0Hz-5kHz	10Hz-10kHz(±10%) 2Hz-15kHz(±3dB)
Temperature Drift	1%/°C	±10% (-40~125°C)	Z: ±10% (-40~125°C); X/Y: 1%/°C	±10% (-40~125°C)
Nonlinearity	2%	1%	Z: 1%; X/Y: 2%	1%
Noise	75μg/√Hz	4μg/√Hz	Z: 4μg/√Hz; X/Y: 75μg/√Hz	8μg/√Hz
Acceleration Sampling Frequency	0.417 - 26.67ksps	0.4 - 64ksps	Z: 0.4 - 64ksps X/Y: 0.417 - 26.67ksps	0.4 - 64ksps
Feature Data Sampling Number	1k/2k/4k			
Velocity Frequency Range	10Hz-1kHz			
Displacement Frequency Range	10Hz-1kHz (Low: 10Hz-200Hz; High: 200Hz-1kHz)			
Envelope Acceleration	Sampling rates of 25.6/26.67/51.2/64ksps: 500Hz-10kHz (SKF ENV3) Other sampling rates: 500Hz high-pass filter			
Acceleration FFT	2048 lines (optional)			
Vibration Feature Data	Frequency, peak acceleration, acceleration RMS, velocity RMS, peak-to-peak displacement, envelope acceleration			
Temperature Range	-40~125°C			
Temperature Precision	±1°C			
Data Acquisition Period	Minimum 1 second; configurable			
Waveform Data Acquisition Time	10~20000ms			
Data Storage	64MB			
Communication	Modbus protocol; RS485 interface			
Wireless	Bluetooth 5.0			
Power	12-24VDC			
Dimensions	See the diagram below			
Weight	96g	185g		221g
Operating Temperature	-40~85°C			
Operating Humidity	10%~90% RH			
Enclosure	Stainless steel			
Explosion Protection	EX ia IIC T4 Ga			
Ingress Protection	IP67			
Mounting	Stud, adhesive, or magnetic mounting			



SVT210



SVT220S



SVT520Z

+86 17769615368
info@thetasensors.com
www.thetasensors.com
7th Floor, 152 Huixin Road, Jiaxing, Zhejiang, China