清诚 QAWRUMS

TECHNICAL DATASHEET

V21S Series



three-axis temperature vibration sensor

V21S three-axis temperature vibration sensor integrates vibration and temperature acquisition, edge computing and remote monitoring, and supports equipment status monitoring and fault early warning.

Product Description and Features

The V21S three-axis temperature vibration sensor is a high-precision sensor designed with low noise and industrial grade structure, suitable for applications such as monitoring and detecting the operating status of rotating machinery and diagnosing mechanical faults. The sensor adopts three-axis MEMS accelerometer, which can collect three-axis vibration data and temperature data at the same time. It has strong edge computing capability, extracts multiple vibration characteristic parameters in real time, and supports remote monitoring and automatic early warning.

Sensors obtain characteristic parameter data through analysis and calculation, and achieve remote monitoring and early warning of equipment status by analyzing vibration characteristic parameter data and waveform data. The sensor is equipped with RS485 interface and supports Modbus RTU protocol, making it easy to integrate into existing industrial control systems. It can be quickly inspected and data viewed on site through a mobile app.

Convenient deployment and installation

Non invasive design for rapid deployment and installation of sensors

Polish and remove the surface protective paint of the tested object, apply coupling agent, and install the sensor flexibly through M6 thread fastening, adhesive or magnetic suction.

Convenient deployment and installation

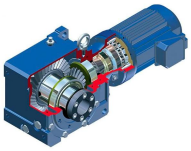
Non invasive design for rapid deployment and installation of sensors

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Features

The mobile inspection APP (under development) enables rapid on-site inspection, flexible configuration of sampling frequency, collection points, sampling intervals, etc. Modbus RTU protocol is connected to the user's industrial control system to stably transmit vibration characteristic parameter data and waveform data.

Gearbox fault monitoring
Gear fault monitoring

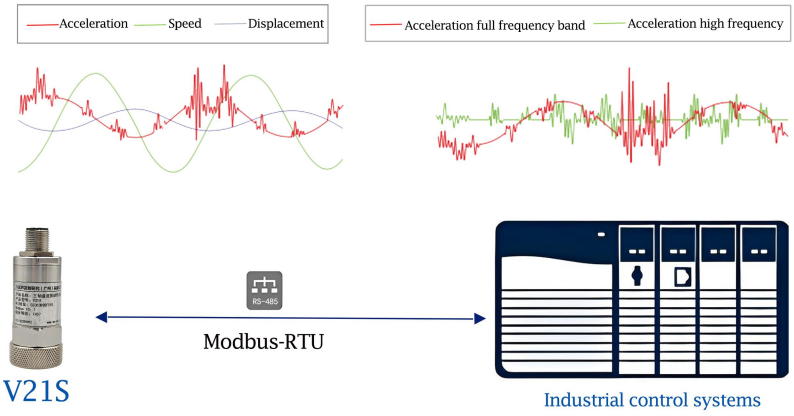


Rotating equipment
Unbalance and looseness monitoring



Rotating equipment
Bearing pitting and wear monitoring





- Equipped with RS485 interface and using Modbus RTU protocol, it can be integrated into existing industrial control systems.
- Low noise, high-precision, explosion-proof design, suitable for vibration monitoring in harsh environments.
- Real time data display, through vibration characteristic parameter data and vibration waveform analysis, identifies common faults such as looseness, imbalance, bearing gear damage, rotating machinery, etc., achieving remote monitoring and automatic alarm.
- It supports periodic acquisition, has edge computing capability, and outputs multiple vibration characteristics from data.

Advantages

- **Accurate measurement:** Adopting low-noise, industrial grade structural design, it can achieve precise equipment vibration measurement.
- **Convenient installation:** Sensors can be easily installed through bolt fastening, pasting, or magnetic attraction.
- **Stable transmission:** Characteristic data and long wave waveform data can be stably transmitted through the RS485 interface.
- **Edge computing:** output a variety of vibration characteristic parameters, which can be used for condition monitoring and fault diagnosis.
- **Durable and sturdy:** waterproof, dustproof, shockproof, corrosion-resistant, intrinsically safe explosion-proof, suitable for harsh industrial environments.
- **Flexible configuration:** Parameters such as range, sampling frequency, number of sampling points, and sampling interval can be set as needed.
- **Remote monitoring:** can obtain data anytime and anywhere, achieve automatic alarm, and require no maintenance for a long time.
- **Mobile Direct Connection:** Supports Bluetooth 5.0 technology and can directly connect to mobile apps for device inspection.

Product Technical parameters

Parameter	Specification
Communication	RS-485 interface, Modbus protocol
Wireless options	Bluetooth 5.0 and can be inspected through a mobile app (under development)
Acceleration frequency response Z-axis	0Hz~6KHz
Acceleration frequency response X/Y axis	0Hz-5KHz
Velocity range	± 16g
Speed range (@ 80Hz)	0-200mm/s
Acceleration sampling resolution	16 bits
Acceleration sampling frequency	0.417-26.67ksps
Acceleration sensor type	three-axis MEMS
Acceleration sensitivity	0.5mg/LSB
Temperature drift	1%/℃
Nonlinear	2%
Noise (μ g/√ Hz)	75

Parameter	Specification
Feature data sampling points	1K/2K/4K; Configurable
Effective speed frequency range	10Hz~1KHz
Frequency range of peak to peak displacement	10Hz~1kHz (low frequency: 10Hz~200Hz); High frequency: 200Hz~1KHz)
Acceleration envelope	Sampling rates: 25.6/26.67/51.2/64 kSps: 500Hz-10kHz (SKF ENV3); other sampling rates: 500Hz high-pass filter
Acceleration FFT	2048 lines (optional)
Vibration characteristic parameter data	Frequency, peak acceleration, effective acceleration, effective velocity, peak displacement, acceleration envelope
Temperature measurement range	-40～85℃
Temperature measurement accuracy	±1℃
Data collection interval	Minimum 1 second; Configurable
Sampling time of waveform data	10～20000ms
Data storage space	64MB
voltage	12-24VDC
weight	96g
Operating temperature	-40～85℃
Operating Humidity	10%～90% RH
housing material	Stainless steel
Explosion-proof grade	EX ia IIC T4 Ga
Protection rating	IP67
Installation method	M6 thread fastening, adhesive, magnetic suction (optional)

RMS = root mean square. LSB = least significant bit. g = standard gravitational acceleration; mg and μg are milli-g and micro-g.