CS-iWPVT-01

Description

CS-iWPVT-01 is a combined sensor integrating temperature, vibration, and pressure acquisition by Bluetooth communication mode. It uses a three-axis accelerometer as a detection unit to collect acceleration, while collecting equipment surface temperature, and occasions where pressure data needs to be collected, broadcasts data regularly in Bluetooth transmission, and conducts near-end monitoring, detection, analysis, and judgment of vibration, temperature and pressure and other parameters in the industrial machinery environment through data analysis, so as to realize the predictive health management of equipment failure to reduce the economic loss caused by equipment failure.

The terminal uses a built-in disposable lithium battery.

Features

The Intelligent Temperature and Vibration Combined Sensor uses a small 32-bit low-power ARM processor and integrates the BLE 5.0 protocol stack, so that the sensor has a higher level of integration and smaller size.

The sensor is powered by disposable lithium battery, built-in high-precision acceleration sensor and high-sensitivity temperature sensor for acceleration acquisition, frequency solving and device surface temperature measurement. At the same time, the sensor contains an external pressure interface.

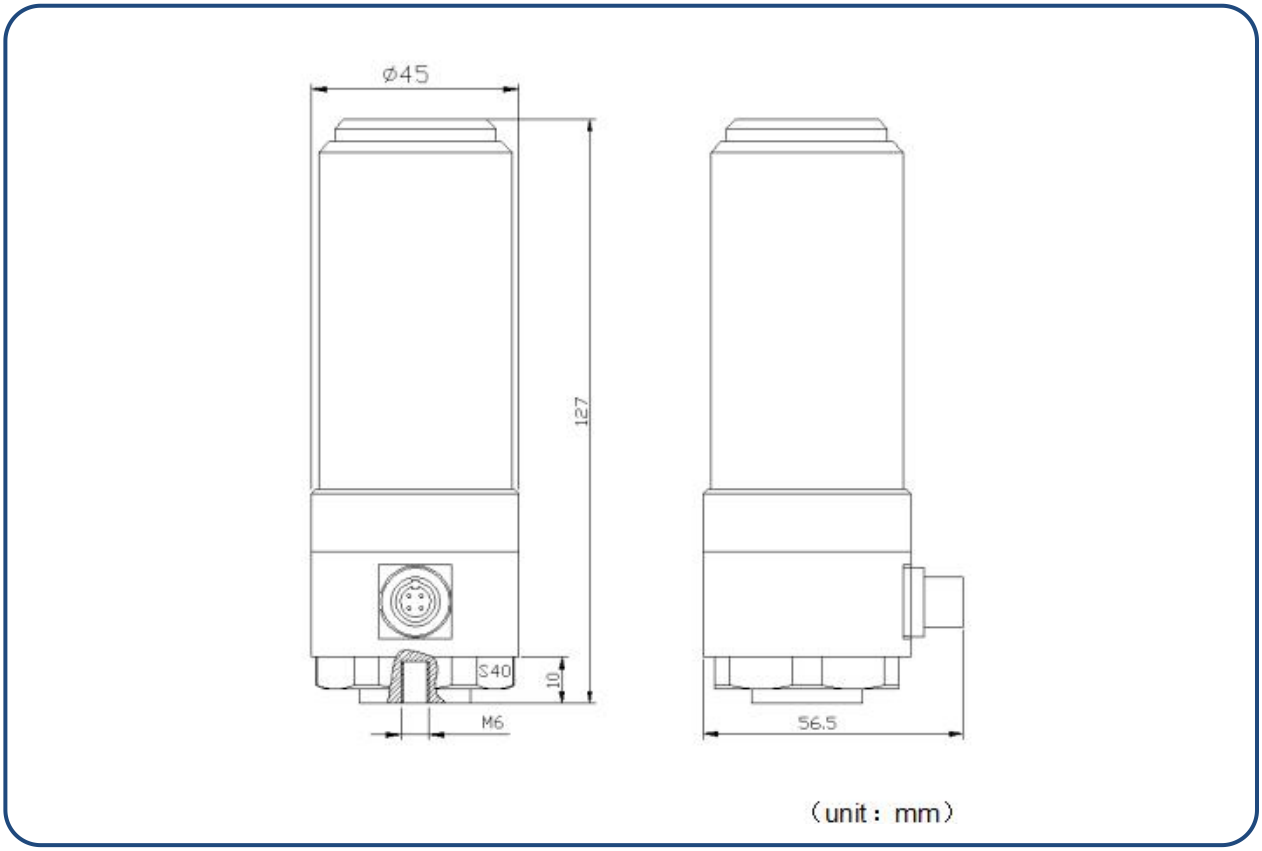
The sensor can perform timing sampling and alarm settings on the sensor according to the set collection time, and the data is sent to the APP through Bluetooth, so that the data could be easily obtained on the mobile phone.

Performance Specifications

Item	Technical parameters	Remarks
Operating voltage	DC 3.6V	Built-in lithium battery（ER26500）
Operating maximum current	＜20mA	
Sleep current	＜15μA	
Battery life	≥ 3years @ room temperature	Sampling and send once in 1 minute (10s scheduled broadcast)
Mode of communication	Bluetooth	BLE 5.0
Antenna	Built-in antenna	
Acceleration detection range	±/2±4/±8/±16g	3 axes
Acceleration resolution	5mg@±16g	
Vibration frequency detection range	bandwidth 1Hz-1.5KHz	
Temperature range	（-20～125℃）±3℃	
Pressure range	Customizable	The pressure sensor is external
Degree of protection	IP67	
Housing material	Stainless steel + nylon	
Operating temperature	(-20～+85)℃	
Storage temperature	(-40～+85)℃	
Operating humidity	0～95%RH	

Note: The above parameters only apply to the Intelligent Temperature and Vibration Combined Transmitter.

Structure and Dimension (mm)



Communication Protocols

Broadcast packets 1			
	Broadcast packet data length	Broadcast packet type	Broadcast data
Data length (BYTE)	1	1	7
Data meaning and default values	8(Type + Data)	0x09（Vendor name）	"CSiWPVT"

Broadcast packets 2			
	Broadcast packet data length	Broadcast packet type	Broadcast data
Data length (BYTE)	1	1	26
Data meaning and default values	27(Type + Data)	0xFF（Vendor name）	See vendor data package

Vendor packet data format	
Data length (BYTE)	Data meaning
2	Vendor ID(No ID default 0xFFFF)
4	Equipment ID
2	Protocol version
1	Battery charge
1	Pressure sensor status (0x04 Indicates normal)
4	Time at sampling time (calibration and solution required)
2	Pressure value unit 0.1bar
2	Temperature value unit 0.1℃
2	Minimum acceleration on the X-axis 3.9mg/LSB
2	Maximum acceleration on the X-axis 3.9mg/LSB
4	Total run time

The time data format at the time of sampling	
Data length (bit)	Data meaning
12bit	Year(+2000)
4bit	month
5bit	day
5bit	hour
6bit	minute

Usage Method

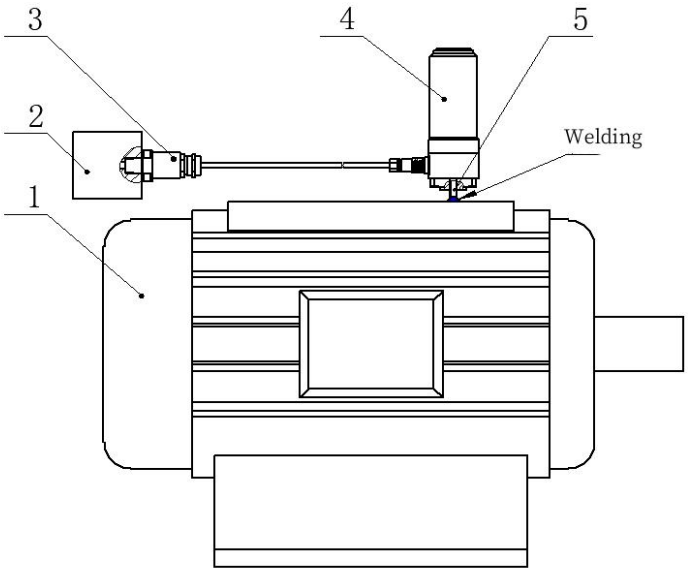
Power on default to send non-connectable broadcast data (data format as shown above), use the magnet close to the top of the device for more than 1 second, and then take away, The device switches to connectable broadcast, at this time using the mobile phone to connect the device after sending instructions in the Bluetooth APP to modify the configuration parameters (broadcast interval, sampling interval), you can also send instructions to obtain the sampling data stored in flash. The storage data format is as follows:

Storage data format	
Data length (BYTE)	Data meaning
4	The time at the time of sampling
2	Pressure value unit 0.1bar
2	Temperature value units 0.1℃
2	Minimum acceleration on the X-axis 3.9mg/LSB
2	Maximum acceleration on the X-axis 3.9mg/LSB

Installation Method

Fix the product on the M6 stud position.

Note: The specific installation location is determined according to the on-site installation environment.



1. The measured temperature and vibration device.

2. The measured pressure device.

3. Pressure sensor (optional).

4. Intelligent temperature, vibration and pressure sensor.

5. Installing screw M6 X16.

Order guidance

CS-iWPVT-01 Order code information graphic:

CS－iWPVT－01 － P

Product name

Pressure sensors

NP = No pressure sensor (default)

P = Equipped with pressure sensor

For example：

Order model number: CS-iWPVT-01-P

Intelligent Temperature and Vibration Combined Transmitter needs to be with pressure sensor.

Note: If integrated with pressure sensor, the relative parameters need to be confirmed when placing the order.

Attachment

	Attachment	Explain
1	ER26500 lithium battery	The product comes with batteries, if you need additional batteries, please specify when purchasing
2	pressure sensor	Optional, if the need for pressure testing, please indicate when purchasing

Notes

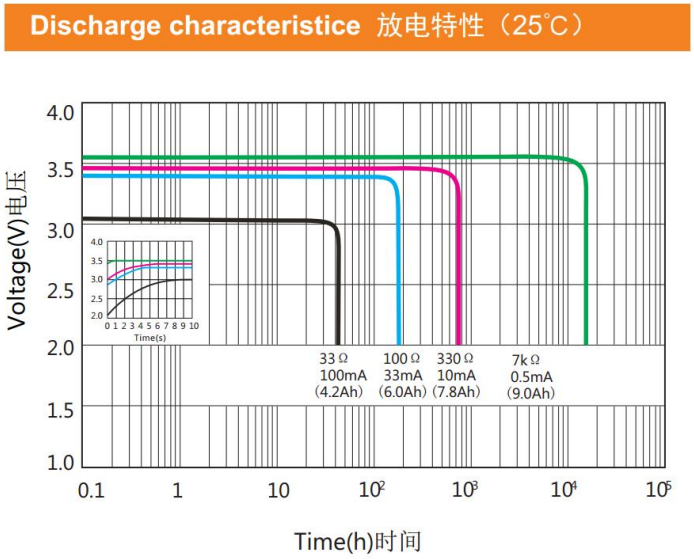
1) The installation of sensors must be firm to ensure reliable and stable monitoring data.

2）Battery Level Description

a. The battery life is estimated under the condition of collecting once every 1 minute and broadcasting once every 10 seconds. The Intelligent Temperature and Vibration Combined Transmitter strictly meets the technical requirements of product life.

b. Based on the discharge characteristics of the lithium sub-battery (Figure 3), it is close to the inflection point of the discharge curve, and the detection of the battery level is inaccurate at this time. The remaining battery power information provided in the data packet of the Intelligent Temperature and Vibration Combined Transmitter is for reference only and is subject to actual use. From the factory date of the product, it is recommended to replace the battery when the service time is more than 3 years (that is, the battery life).

The discharge characteristics of the ER26500 lithium sub-battery used in the terminal are shown in the following figure：



FAQ

The table below lists the possible problems with the sensor terminal and the solutions. If the problem is not listed or the solution does not solve your problem, please contact us.

Fault phenomenon	Possible reasons	Solution
Unable to receive sensor Bluetooth broadcast packet	Product power-on initialization failure	The product is powered back on.
	The Bluetooth antenna feeder point is loose	The Bluetooth antenna feeder points were refixed.
	Low battery power	Replace battery.
Bluetooth connection failed	The product magnetic steel activation mode is wrong	Use magnetic steel to reactivate the product.
	The Bluetooth broadcast interval time is set to be large	Set the Bluetooth broadcast interval time to a small time.
LED indicator light is always on after power on	Product power-on startup loading error	Power off the product, and power back on.

Disposal methods of hazardous wastes such as waste circuit boards and their components after the end of product life.

After the end of the product life, each part shall be distinguished according to the “National hazardous waste list” to determine whether it is hazardous waste. Among them, the waste lithium battery not disassembled is not hazardous waste, and the waste circuit board (including components, chips, plug-ins, pins, etc. attached to the waste circuit board) belongs to hazardous waste.

The part that is not hazardous waste shall be treated as general industrial solid waste, and the lithium battery shall be handed over to the nearby renewable resource recovery department or sent to the product manufacturer for recycling.

Hazardous wastes must be handed over to legally qualified departments for disposal in accordance with national regulations, and shall not be dumped or stacked without authorization.If it is really necessary to store temporarily, protective measures meeting the national environmental protection standards must be taken, and the storage period shall not exceed one year. At the same time, the time and place of temporary storage and the protective measures taken shall be reported to the competent environmental protection department. Hazardous waste transfer activities can be arranged according to the actual production situation. The system shall be strictly implemented in the transfer process.

Statement

The company reserves the right to modify the specifications and contents of this manual. Subject to modification without notice. Due to the update of the product, the individual details of this document may not match the product, please refer to the actual product. The interpretation right of this document belongs to our company.