KPMG60

Intelligent temperature vibration sensor User Manual V1.03

⚠ Dangers and warning

■Batteries should not be thrown away and should be disposed of in an environmentally friendly manner.
■The equipment should be placed on a reliable surface during installation, dropping may cause damage to the equipment.
■Don't open the equipment at will, so as not to affect the sealing, the equipment is only allowed to be installed by professional personnel.
■D ıot place the device in an environment lower than -40℃ or higher than 85℃.
■There is a risk of explosion if the battery is not replaced correctly. Only replace the battery with the same or equivalent type recommended by the manufacturer.
■The manufacturer will not be held responsible for malfunctions caused by failure to comply with the instructions in this manual.

1、System Architecture

Vibration data from the equipment is collected by KPMG60 sensors and transmitted wirelessly to the platform via WIFI router. This architecture enables both localized data monitoring and remote monitoring and diagnosis of the data.

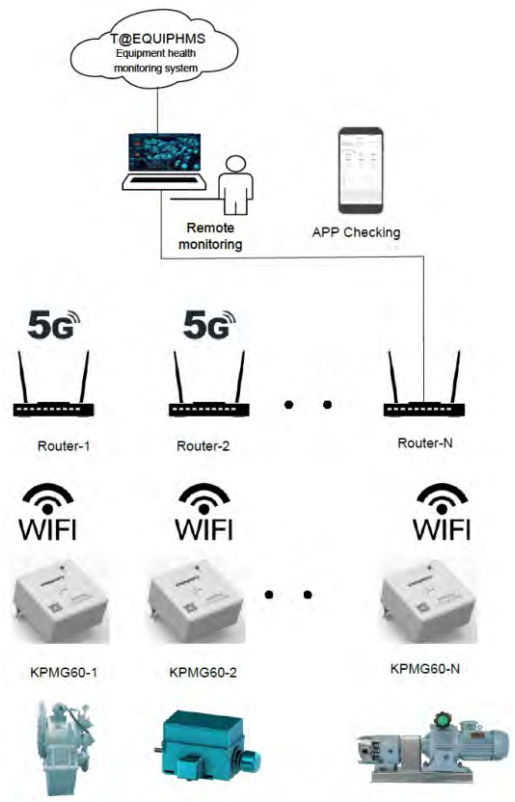

Figure 1. System block diagram

Installation Instructions

The following diagram shows the sensor installation instructions, the sensor and the equipment between the installation, the following describes several common installation methods. The mounting bracket is optional spare parts, can be customized according to the actual installation needs of the customer site processing, factory default magnetic suction mounting method.

3.1 Aluminum clamp installation method

Figure 4. Aluminium card mounting diagram

Figure 5. Aluminium card fixing diagram for smart temperature and vibration sensors

Note: 1. The aluminium card in Fig. 4 needs to be cleaned of dust and rust from the heat sink rib before installation.2. Before tightening the fixing screws in Fig. 5, ensure that the axial direction of the sensor is in a horizontal position.

3.2 Flat bottom mounting method

2、Technical indicators

Vibration Characteristics	Measurement of vibration parameters	3 axes (each axis contains displacement peak value, acceleration peak value, velocity RMS value)
	Speed measurement range	0.01~200mm/s
	Acceleration measurement range	±16g
	Resolution	0.01m/s²
	Precision	Acceleration: ±5%@80Hz Speed: ±5%@80Hz Displacement: ±5%@80Hz
	Frequency Response Range	10Hz~1600Hz
Temperature Characteristics	Measurement Range	-40 ~ 85°C
	Resolution	0.1°C
	Precision	±1°C(under temperature stable condition)
Ultrasonic measurements	Microphone	Range of amplitude: 0.6 mN/m2 ~ 20 N/m2
		Measurement frequency: 100Hz~80kHz
Power supply parameters	Power supply method	3.6V (Li-ion battery)
	Battery Capacity	Battery capacity 12000mAH, 3.6V
	Standby current	<30uA
	Operating current	<20mA during acquisition, <300mA during data upload
Housing parameters	Housing	Stainless steel/reinforced PBT
	Dimension(L*W*H)	86mm*86mm*41.9mm
	Installation method	Aluminum clamp, flat bottom mounting (on equipment platform or heat sink bars)
	Protection level	IP66
Working Environment	Hitting the Limits	100g
	Ambient temperature range	-40~85°C

Table 1: Vibration Sensor Specifications

Communication requirements	WIFI+ Bluetooth	Bluetooth: 1、For setting and commissioning period: distribution network and threshold and other parameters setting 2. Bluetooth® v5.0 compliant 3. Frequency: 2.400 GHz to 2.482 GHz 4、Communication range: within 10 m 5、Antenna built-in WIFI: 1, for motor data transmission (MQTT protocol) and firmware upgrade 2. IEEE 802.11 b/g/n compliant 3. Frequency: 2.400 GHz to 2.48 GHz 4、Communication range: 150 m or more 5、Built-in Antenna 6、Low power consumption: working <150mA, standby <50uA
Storage	Built-in memory	When the connection to the platform is interrupted, data is saved for at least 48 hours (in the case of a 5-minute data measurement interval) and the un-uploaded data is automatically uploaded when the platform is connected.
Remote Upgrade	Remote firmware upgrade via WIFI	
Application Scenarios	1、Supported clicks: Asynchronous and synchronous motors. Block: IEC motor block number 56 to 500 2、Driving equipment (pumps, fans, gearboxes)	

Table 2. Vibration sensor communication parameters

Figure 6. Flat-Bottom Mounting Diagram

Figure 7. Intelligent Temperature Vibration Sensor Flat Bottom Fixing Diagram

Note: 1, Figure 6 of the flat bottom before installation need to clean the surface of the dust and rust, hit the fixing adhesive.2、Figure 7 Before tightening the fixing screws, ensure that the axial direction of the sensor is in the horizontal position.3、This mounting method is mainly used for vibration monitoring of non-driven equipment.

Bolt and mounting holes can be appropriately coated with screw adhesive, thread locking agent type loctite 271 can be used. bolt size: pitch 1mm, diameter M6.

Note: The above two mounting methods can be reused according to the site usage. The diameter of the bolt at the bottom of the sensor is M6.Adhesive is not an accessory of the sensor, customers can choose to buy and use structural adhesive: Loctite AA326, accelerator: Loctite SF7649 or other brands and models of the same type of replaceable adhesive.

3、Installation instructions for use

Description of Touch Keys

The touch button

Figure 2. Side view of intelligent temperature vibration sensor

Touch key description:

Button	Mode	Function
Touch keys	Click	Awakening
	Double click	Turn on BLE
	Long press (more than 5 seconds)	Report data once

Table 3. Introduction to Vibration Sensing Keys

Indicator light	Status	Function	Trigger
Red Light	Rapid flashing	Connect to Wifi	Turn on Wireless
	Fast flashing	Synchronous Time Sync	
Green Light	Rapid flashing	Connect to Wifi	
	Fast flashing	Connecting to MQTT	
	Faint flicker	Sending MQTT	
	Blinking	Free	
Yellow light	Rapid flashing	Turn on SPP	
	Fast flashing	Turn on BLE	
	Blinking	Turn on the radio	

Table 4. Vibration Sensor Indicator Presentation

The indicator light

Figure 6. Front view of sensor

3.3 Distribution Network Commissioning

You need to download the APP - KPM Config (scan the QR code below with your browser to download or search in the app market) and follow the steps below to configure the relevant parameters.

Android QR Code iSO QR Code

Fig. 8. QR Code for Smart Temperature and Vibration Sensor Distribution App

Step one:

Enter username: **wzcgq** Password: **g@4000371828** . (If the login is abnormal, you need to contact the administrator to reset.)

Modify the server address (the following is an example, connection abnormality, please contact the administrator)： Server domain address: http://cloud.pumg.com.cn:**31000**

(Note: If you use cloud platform service, you don't need to set it, the corresponding IP address and port number are already built-in in the downloaded APP; if locally deployed, you need to set it according to the IP and port number of the server)

Figure 9. Configuring the APP Login Screen

Step 2: Double-click the touch key on the right side of the sensor, the sensor's indicator light turns orange and flashes rapidly, click on the temperature vibration device, enter the list

Figure 10. Configuration Selection Screen

Step 3: Refresh the device automatically, open the Bluetooth, enter the list, the history shows the connected sensors. (Bluetooth can't connect, maybe there is a difference in the performance of mobile phones, you need to turn off WiFi, Bluetooth to connect to the sensor)

Figure 11. Warming Device List and History

Step 4: Click on the sensor that needs to be configured, click on "Connect" in the upper right corner to display the content that needs to be configured:

Figure 16. Upload Frequency Configuration Screen

Step 9: NTP server configuration, local deployment set the local server, with other manufacturers' platforms, customers need to configure their own local clock server. (It is important that the clock is accurate, involving the logical calculation of time by the device)

Figure 17. Wizard Mode Network Time Server Configuration Screen

Step 10: alarm configuration, used to set the alarm limit value, divided into ISO standard and customised two ways, ISO standard is based on the parameters of the motor and the standard match, customised is based on their own experience, rotating equipment to set a reasonable alarm limit value. As there are many models of rotating equipment with different installation methods, the customised method requires extensive experience in the operation of rotating equipment.

Figure 12. The Sensor Configuration Interface

Step 5: Click Wizard Mode for WiFi Configuration, configure the local WiFi name, password for WiFi connection. (Note that the sensor is using 2.4G WiFi.)

Figure 13. Wizard Mode Wifi Configuration Screen

Step 6: MQTT configuration, you need to configure the address and port number for connecting to the platform, and the username and password are the same as the platform login for APP security login. Client ID and theme is the sensor Bluetooth transmission, you can manually modify. (If the platform transmitted by the sensor is not our matching system, you need to develop and test in advance, and only after the test is successful, you can carry out MQTT configuration.)

Figure 18. Wizard Mode Alarm Configuration Screen

Step 11: Debug mode. (Configure individual parameters, refer to the wizard mode setup method)

Figure 20. Configuration screen for debug mode

Step 12: Log in to the device health management system to add the object model device and view the collected data.

4. Common fault diagnosis and troubleshooting

4.1 Sensor does not work

4.1.1 The device is not powered on or the battery power is insufficient

Step 1: Check whether the battery interface seat is disengaged and whether the switch is on;

Figure 14. Wizard Mode MQTT Configuration Interface

Step 7: Upload data item configuration, set the data items to be collected and uploaded according to the customer's own needs.

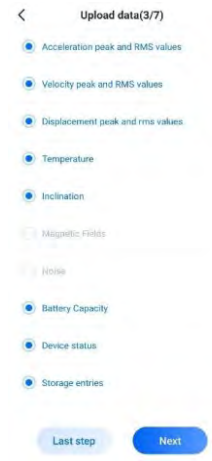

Figure 15. Upload Data Item Configuration Screen for Wizard Mode

Step 8: Capture and upload frequency configuration, set the frequency of capture and upload according to customer needs. (The setting of measurement and sending interval has a direct impact on the service life of the battery, you need to pay attention to it when setting. (The default measurement is 5 minutes, sending 24 hours, sending time is too frequent to affect the battery life of the device)

The second step: check the battery voltage, the battery voltage is lower than 3V, the sensor can not work properly.

4.1.2 Sensor has been dormant for a long time

The sensor is factory set to deep hibernation, click the touch key more than 10 times or through the serial line settings to wake up. Because the dormant time is too long, mistakenly think that the sensor does not work, click the touch key, and then press the key for more than 5 seconds to observe whether the LED communication light will blink.

Note: Sensor in the dormant state to view the data transfer shortcut: click the touch key can wake up the sensor, long press the touch key for more than 5 seconds, the sensor will be actively uploaded once the data.

4.2 Sensor and platform can not communicate

Parameter configuration mismatch between sensor and gateway;The router data line contact is unreliable or has been damaged.

4.3 Unsatisfactory communication distance

The router network is not good, which affects the sensor networking.

5.Contact

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Tel: 0086-371-67890039
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The final interpretation of this product manual belongs to Henan Compere Smart Technology Co. Ltd.