AIC8641-03 Wireless Temperature-vibration Intelligent Sensor Instruction Manual

Aerospace Intelligent Control (Beijing) Monitoring technology Co., Ltd

Statement

During the Warranty Period, AIC will repair, at no charge, products or parts of a product that proves defective because of improper material or workmanship for our wireless intelligent temperature-vibration sensor in one year after the date of delivery. The recognized distributors can only provide replacement or repair services to returned devices or parts with normal use and maintenance, the returned devices or parts must be without any neglection or improper installation, repaired or replaced, and involved in any accidents. Distributors disclaim warranty or liability for damages. This statement will supersede any other statement, representation, implication or provision; any derivative or modified terms proposed by distributors will not be recognized unless confirmed by a formal written signature of our personnel.

Acceptance

All sensors produced by Aerospace Intelligent Control (Beijing) Monitoring Technology Co., Ltd. have undergone complete procedures and strict inspections before leaving the factory, and purchasers should inspect them immediately after receiving the products. If the product is damaged or dysfunctional, a statement should be made to the shipping company immediately.

Service

If users of Aerospace Intelligence Control (Beijing) Monitoring Technology Co., Ltd. need service, they should first contact the company's local representative office. They can usually solve the problem without returning to the factory. If it is confirmed that the problem must be solved by the factory, call the local customer service office to get a return code before returning the product.

Replacement

All products need a return code to be accepted by the factory. Contact local customer service to get the code, and provide the following information: product model, quantity, serial number, problem description, and purchase order number.

Consultation

For any operational and application questions, please consult with your nearest sales representative or application support.

Warning:

This product or its electronic components are vulnerable to ESD events. Please take necessary anti-static or electrostatic discharge actions when unpacking or replacing batteries.

1. Description

AIC8641-03 wireless temperature-vibration intelligent sensor is a low-power measuring instrument integrating data acquisition and data transmission. The temperature-vibration sensor is integrated with the data acquisition and data transmission module, which can measure the three-axis vibration and one channel of temperature. Compared to the split-type smart sensor, the number of connecting cables has reduced, while significantly improving the installation procedure and saving installation time. AIC8641-03 realizes the measurement of both steady-state equipment and unsteady-state equipment while transmitting of original data and spectrum data. The device adopted ZigBee wireless communication technology, designed with low energy consumption which can be operated continuously for 3 years at most. It is simple, reliable, stable and safe, which can provide wireless online measurement methods for key equipment, especially suitable for scenarios where wiring in industrial sites is complex and wiring costs are high.

2. Features:

2.1 Environment features

1) Working temperature: -40℃～85℃
2) Working Humidity: 10%～90%（RH）(No condensing)
3) Storage temperature: -40℃～90℃
4) Storage humidity: 10%～95%（RH）(No condensing)

2.2 Intrinsically safe parameters:

1) Safety level： Ex ia IIC T4, Ex ia I Ma ；
2) Environment temperature：-40℃～70℃
3) Application area and standard requirements;
4) This product is used in the environment with explosive gas in Zone 0,1,2
5) Design standard:
   GB3836.1-2010 Explosive Atmospheres part 1: general requirements for equipment
   GB3836.4-2010 Explosive atmosphere part 4: equipment protected by intrinsic safety type “i”

2.3 Vibration measurement parameter:

1) Frequency response (±3dB):
   Z axis: 1Hz～8000Hz（±10%）；0.5Hz～10000Hz(±3dB)

X/Y axis: 0.1Hz～1600Hz(±3dB)

2) Measuring range:
   Z axis：±50G；
   X/Y axis：±19G
3) Sensor natural frequency:
   Z axis：≥25000Hz
   X/Y axis：4200Hz4）Linearity: <=1%
4) Sampling frequency（adjustable）：256Hz～25.6KHz
5) Data collection length（adjustable）： 256、512、1024、2048、4096、8192、16384、32768

2.4 temperature measurement parameter:

1) Temperature range： -40℃～125℃
2) Accuracy： ±1℃

2.5 Electrical parameter:

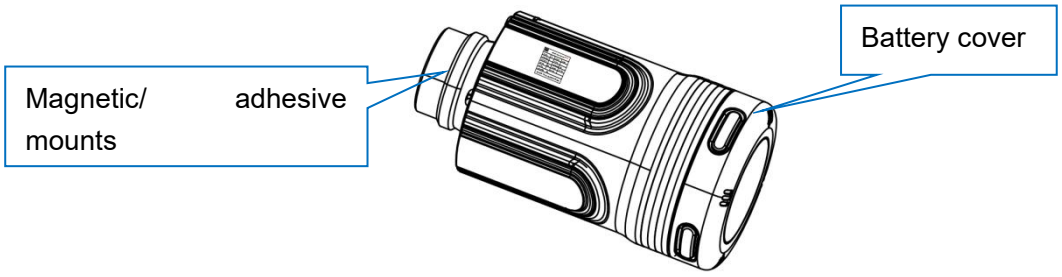
1) Power: lithium-thionyl chloride battery
2) Battery capacity: 8500mAh
3) Nominal voltage：3.6V
4) Static power consumption：20uA
5) Communication method：2.4GHz IEEE802.15.4
6) Transmission distance： About 1000 meters without obstacles and interference, and a relay station can be added if the distance is greater

3. Equipment installation

3.1 AIC8641-03 wireless temperature-vibration intelligent sensor is designed to be installed by adsorption at the bottom. If the surface is unable to allow this installation method, it can also be installed on the installation adapter board first, and then the installation adapter board can be further installed on the test surface.

3.2 This equipment is designed with a built-in antenna. The installation location needs to be considered before commencing. This equipment must be installed in an unobstructed position or a position where occlusion does not affect the wireless communication. If there is an occlusion, the communication distance of this equipment will be affected, and the equipment may even be dysfunctional. If the installation location cannot be changed, please consider AIC-8640-04 and other split equipment from AIC.

3.3 This wireless temperature-vibration intelligent sensor is powered by built-in batteries.



4. Parameter configuration

AIC8641-03A-21 wireless temperature-vibration intelligent sensor has its default parameters when produced. If the costumer wants to change factory defaults, including channel number, PAN ID, sampling frequency, sampling points, sampling interval and other parameters for configuration, please use the VNC Viewer software that we provided. Please refer to the video tutorial for specific process methods, or contact us for remote support.

4.1 Communication parameter configuration

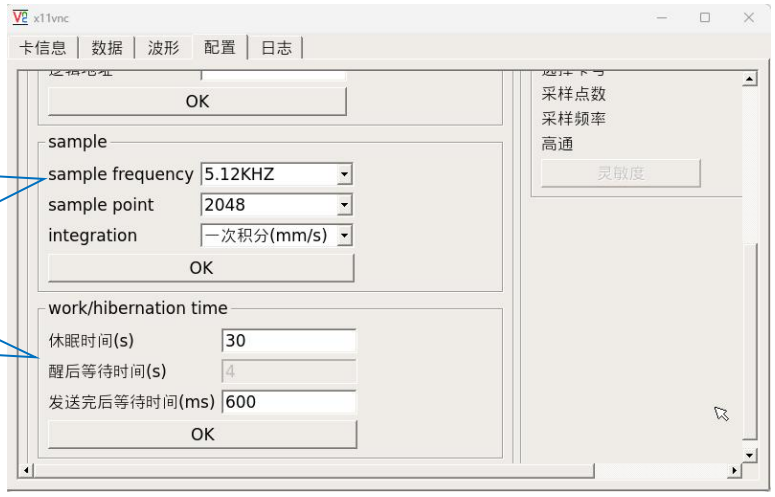
1. First, set the channel number and PAN ID of the "coordinator/ intelligent gateway" product to be the same as those of the wireless sensor, so that the two pieces of equipment can establish a wireless connection.

2. After the connection is established, set the "New channel number" of the sensor to the parameter value in the actual working environment.

4.2 Collection parameter configuration

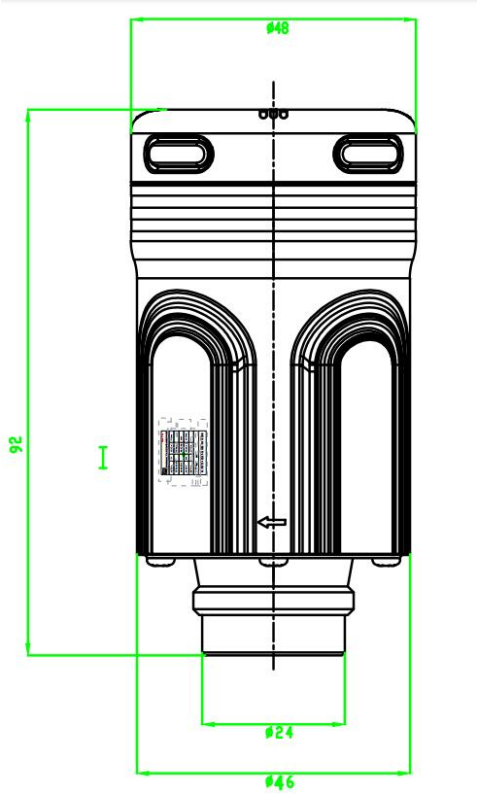
sampling parameter setting

working mode setting



5. Mechanical parameters:

5.1 Appearance Dimensions



5.2 Vibration limit: 500Gpk
5.3 Shocking limit: 3000Gpk
5.4 Size：
48mmx92mm (stuck by glue）
48mm x 103mm (stuck by magnetic force）
5.5 Weight： about270g
5.6 Installation method: Magnetic adsorption type, adhesive type

6. Tips for utilization (handling of common problems)

6.1 Precautions:

1) The product does not need any external cables. During installation, avoid the wireless smart sensor system from being close to high-voltage cables to reduce interference caused by magnetic fields.
2) The product uses a non-rechargeable lithium battery, please do not try to charge the battery to avoid possible personal and property losses;
3) Please hand over the used battery to a special organization/institution for disposal, and do not discard it randomly to avoid environmental pollution;

6.2 Solutions for common problems

Problem 1: The wireless sensor cannot transmit data with the coordinator/wireless smart gateway

Reasons and solutions:

1) The battery is low or exhausted, take out the battery and make sure the battery voltage is not lower than 2.8V, if it is lower than 2.8V, please contact us to buy a new battery。

2) The configuration of the wireless connection parameters is incorrect. Set the wireless channel number and PAN ID of the wireless sensor to the actual working environment parameters again.

Problem 2: There is a large deviation between the collected temperature value and the actual temperature value of the measured object.

Reasons and solutions:

The sensor adopts adsorption installation and measures the temperature through solid conduction. The thermal resistance generated by the installation position and the installation method between the tested part will affect the accuracy of the temperature measurement of the sensor. The measurement accuracy will be improved by optimizing the installation position and grinding the measuring points of the tested part.

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

•Reorient or relocate the receiving antenna.
•Increase the separation between the equipment and receiver.
•Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
•Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.