

Owner's Manual

Refrigerant Leakage Sensor

CE-N8RS-02 (K-N8RS-02)



Original manual.

Thank you very much for purchasing our product.

Before using your unit, please read this manual carefully and keep it for future reference.

- This manual gives detailed description of the precautions that should be brought to your attention during operation.
- In order to ensure correct service of the Refrigerant Leakage Alarmplease read this manual carefully before using the unit.
- For convenience of future reference, keep this manual after reading it.

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1 GENERAL SAFETY PRECAUTIONS

1.1 About the documentation

- The original documentation is written in English. All other languages are translations.
- The precautions described in this document cover very important topics, follow them carefully.
- All activities described in the installation manual must be performed by an authorized installer.
- 1.1.1 Meaning of warnings and symbols

! DANGER

Indicates a situation that results in serious injury.

⚠ DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.

! DANGER: RISK OF BURNING

Indicates a situation that could result in burning because of extreme hot or cold temperatures.

⚠ WARNING

Indicates a situation that could result in serious injury.

! CAUTION

Indicates a situation that could result in minor or moderate injury.

\bigcirc NOTE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

1.2 For the user

 If you are not sure how to operate the unit, contact your installer. The appliance is not intended for use by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children must be supervised to ensure that they do not play with the product.

A CAUTION

Do NOT rinse the unit. This may cause electric shocks or fire.

◯ NOTE

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

Units are marked with the following symbol:



This means that electrical and electronic products may not be mixed with unsorted household waste. Do not try to dismantle the system yourself: the dismantling of the system, treatment of the refrigerant, of oil and of other parts must be done by an authorized installer and must comply with applicable legislation. Units must be treated at a specialized treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

2 ACCESSORY

No.	Description	Quantity	Remarks
1	Refrigerant leakage alarm control box	1	Producing alarm and outputting signals
2	Sensor	1	Detecting refrigerant
3	Sensor connecting wire	1	Connecting the sensor
4	Installation Manual		and sensor control board
5	Cross recessed head self- tapping screw (ST3.9*25)	1	Providing installation instructions
6	White plastic expansion pipe	4	Fixing the base
7	Wire clamp	4	Fixing the base
8	Cross recessed head self-	4	Fixing wires
ľ	tapping screw (ST3.9*10)	8	Fixing wire clamps
9	Cross recessed head self- tapping screw (ST2.9*8)	2	Fixing the installation box cover and base

3 OPERATION INSTRUCTIONS

3.1 Safety Warning

This section describes important safety information which can help to prevent injury or property damage to the user or other people.

To ensure safe use and to avoid injury and property damage to you and others, please be sure to observe the following safety precautions. Failure to comply with safety precautions may result in accidents.

⚠ WARNING

This unit can be used only to test the leakage of R32 refrigerant, and is not designed to test the leakage of other combustible gases. Otherwise, it may cause a fire. Be sure to shut off the power supply before installation or maintenance. Otherwise, electric shock may occur. Do not touch a live part with your finger or another conductive object. Otherwise, electric shock may occur.

The sensor needs to be reliably installed according to the installation instructions and be firmly fixed in a position that is easy to maintain. Otherwise, electric shock or a fire may occur.

The sensor must be installed by professionals according to local regulations and installation instructions.

An RCD needs to be installed. Failure to install it may result in electric shock.

The main power switch of the refrigerant leakage alarm should be put in a position that is out of the reach of children. It should not be obstructed by objects such as curtains.

In no circumstances can the refrigerant leakage alarm be disassembled or modified. Only parts designated by the device provider can be used for replacement. Otherwise, the alarm cannot work normally.

After the refrigerant leakage alarm is installed, it must always remain powered on unless it is maintained. Otherwise, the alarm will not work.

Do not block the refrigerant leakage alarm. Otherwise, it cannot detect refrigerant leakage, and a fire may occur. Beeping of the buzzer indicates refrigerant leakage or a unit error. If the refrigerant leaks, a fire may occur. Therefore, ventilate the area and dissipate the refrigerant as soon as possible.

To check for refrigerant leakage, never use a spray gun detector (or any other open flame detector). Otherwise, a fire may occur.

In the event of suspicious refrigerant leakage, clear and extinguish all open flames.

↑ CAUTION

The sensor must be replaced once leakage occurs or the service life ends. Only professionals can replace the sensor.

During the installation and debugging of the air conditioner, avoid refrigerant leakage or discharge. Otherwise, the refrigerant leakage alarm may produce an alarm.

This unit is a semiconductor sensor. If it is exposed to gases other than the refrigerant, it may reflect or fail. Therefore, be sure to avoid the following circumstances during installation:

Volatile silicon compound vapour

The sensor needs to be away from places with silicon bonding agent, hair gels, silicon rubber, putty, or other volatile silicon compounds. If the surface of the sensor absorbs a silicon compound vapour, the sensitive material of the sensor will be wrapped by silicon dioxide which is formed by decomposed silicon compound. In this way, the sensor sensitivity is suppressed and unrecoverable.

- Organic solvents/chlorine-containing gases
 Volatile organic compounds, alcohol, and chlorine containing gases may cause the sensor to
 give false alarms. When a structure is built or
 reconstructed, paint and wax will produce a large
 amount of organic solvents. Therefore, before
 sensor installation, ensure that the area is dry and
 ventilated.
- Highly corrosive environment
 When the sensor is over-exposed to high-concentration corrosive substances, such as hydrogen sulphide, oxysulfide, chlorine, and hydrogen chloride, the wire or heating wire may become corroded or damaged.
- Pollution caused by alkali metals
 When the sensor is polluted by alkali metals, especially salt spray, the performance may drift.

Do not use the sensor in the locations listed below. Otherwise, the performance may be seriously impacted or the parts may become damaged.

- Locations where dust accumulates easily or which are full of dust
- Locations where fuel gas or other combustible gases are used, such as a kitchen
- Environments lacking oxygen
- Locations with water, oil, or condensation, such as a bathroom
- Locations with great voltage fluctuations
- Locations with excessive vibration where resonance may occur

Do not install the refrigerant leakage alarm in a place exposed to direct sunlight or with an ambient temperature higher than 55°C or lower than -20°C.

Do not place any objects on the refrigerant leakage alarm.

Do not knock or hit against the refrigerant leakage alarm.

Do not operate the unit with wet hands.

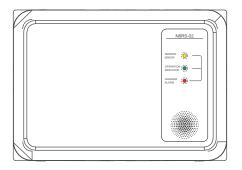
Avoid splashing liquid onto the refrigerant leakage alarm.

\bigcirc NOTE

Clean the external surface of the refrigerant leakage alarm once every month to prevent dirt from blocking the air inlet. In dusty installation sites, appropriately shorten the cleaning period. Use a piece of dry cloth to softly wipe the surface. Do not use water, spray, or chemicals.

If you are uncertain on how to use the unit, please contact professionals.

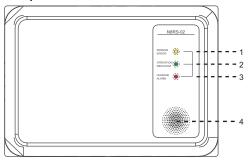
3.2 Product Overview



Function of the R32 refrigerant leakage sensor:

In the installation space of an Hydraulic module, if the refrigerant (R32) leaks to a certain concentration, the sensor produces an alarm to avoid fire or explosion hazard.

3.3 Descriptions on Indicators



No	Item	Description		
1	Yellow LED	Sensor error indicator. This LED is on/off or blinks according to the sensor status. When the sensor is faulty, this LED blinks or remains on. (For details, see Attachment I Error Description on page 28.)		
2	Green LED	Operation indicator. This LED is on or off according to the sensor status. It is on when the sensor preheats and automatically turns off when the preheating completes.		
3	Red LED	Leakage alarm. This LED blinks or is off according to the sensor status. It blinks in the event of refrigerant leakage.		
4	Gas detector	The holes detect refrigerant. Do not block them or place any object in front of them. Otherwise, the sensor will fail.		

4 INSTALLATION

4.1 Precautions

! WARNING

The unit must be installed by a professional technician.

Do not install the unit when it is powered on. Otherwise, electric shock will occur.

Use power cables and communication wires of appropriate specifications, and do not apply any external force on the wiring terminals.

Do not install the unit in an environment which exposes the unit to corrosive, flammable or explosive materials or oil mist (such as a kitchen).

Do not install the refrigerant leakage alarm outdoors or in a wet place, and avoid direct sunlight.

Do not knock, throw, or randomly disassemble the unit.

Please install the refrigerant leakage alarm after completing painting of walls to prevent water, lime and sand from entering the alarm.

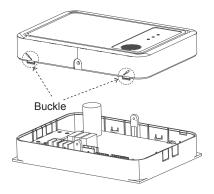
⚠ CAUTION

To ensure correct installation, read the "Installation" section of this manual.

All the warnings provided here are important safety precautions and must be followed.

4.2 Structure Installation

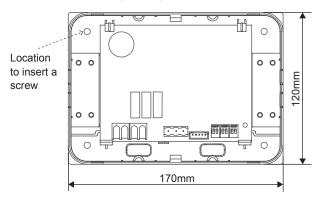
 Press the buckles with a screwdriver icon to separate the base and open the upper cover.

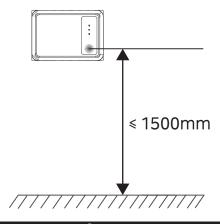


! CAUTION

Do not use excessive force when raising the upper cover to avoid damaging the cover or the circuit board.

Use appropriate tools and screws provided with the unit to fix the base in the specified position.





\bigcirc NOTE

The refrigerant leakage alarm needs to be installed in the installation space of the Hydraulic module, no more than 1.5 m above the ground.

4.3 Electrical Installation

⚠ WARNING

This unit will preheat for three minutes after it is powered on and then work normally. In a normal working state, no indicators are on. Never perform any installation, maintenance or any other operation when the unit is powered on in preheating or normal working state. Be sure to shut off the power supply before proceeding with installation or maintenance work.

Disconnect all power supplies before opening the refrigerant leakage alarm control box.

Installation, inspection or maintenance operations must be completed by professionals. All parts and materials must comply with the relevant regulations of the local country/region.

The core of the power cable must be made of copper, and the wire cross-sectional area cannot be less than 1 mm2.

The power cable should be secured reliably to avoid stress on the terminals. Do not pull the power cable forcibly; otherwise, the wiring may become loosened or the terminal blocks may be damaged.

Strong current wires such as power cables cannot be connected to weak current wires such as communication lines; otherwise, the product may become seriously damaged.

Do not bond and connect the power cable. Bonding and connecting the power cable may cause it to heat up, resulting in a fire.

⚠ CAUTION

Do not bond and connect the communication line. The communication copper wire cannot be openly exposed. Otherwise, communication may be abnormal.

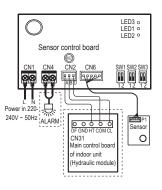
Connecting cables between the sensor control board and Hydraulic module control board must be connected by matching the letters. DO NOT cross connections.

Use the wire provided with the unit as the communication cable between the sensor control board and sensor.

All cables need to be fixed properly.

Before powering on the unit, ensure that cables are connected reliably.

4.3.1 Connection Diagram



\bigcirc NOTE

Devices in the dotted line boxes in the wiring diagram are not parts of this unit. Use cables with proper diameters to connect them according to the installation instructions.

The wiring diagram is for reference purposes only and can vary with the actual product.

⚠ WARNING

Adjusting switches SW1, SW2, and SW3 is forbidden. Otherwise, the buzzer and indicators of the refrigerant leakage sensor cannot generate an alarm, which could lead to an accident.

No.	Port	Attribute	Description
1	CN1	Input	Power supply input 220–240V~ 50Hz
2	CN4	Output	Output voltage 220–240V~, maximum output current 1 A. Connecting to an air discharge fan or additional alarm, which can be linked when refrigerant leakage is detected
3	CN2-D	Output	Communication with the hydro module, connected to the CN31-COM terminal
	CN2-B	Output	Communication with the hydro module, connected to the CN31-CL terminal, output in case of R32 refrigerant leakage sensor failure
	CN2-A	Output	Communication with the hydro module, connected to the CN31-HT terminal, output in case of R32 refrigerant leakage
4	CN6	Input	Communicating with the sensor and receiving sensor signals
5	S1	Button	Manual reset after the refrigerant leakage sensor produces an alarm

4.3.2 Power Cable Connection

⚠ WARNING

The refrigerant leakage sensor needs to be powered all the time to operate normally. Please use an uninterruptible power supply.

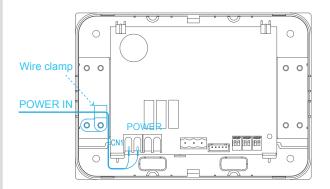
The core of the power cable must be made of copper, and the wire cross-sectional area cannot be less than 1 mm²

The copper wire cannot be exposed, as this could cause a short circuit to occur. Ensure that the power cable is correctly connected.

Do not connect the power cable to CN4 port.

4.3.3 Power Cable Wiring Guide

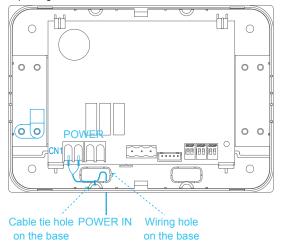
Wiring method 1: Use round-type terminals of the correct specifications to connect the power terminal CN1. Lay the power cable through the hole on the left of the refrigerant leakage alarm, and fix the cable with the wire clamp to avoid placing stress on the terminals.



⚠ WARNING

The cable cannot contact any component on the main board.

Wiring method 2: Use round-type terminals of the correct specifications to connect the power terminal CN1. Lay the power cable through the hole on the base of the refrigerant leakage alarm, and fix the cable to the base with a cable tie to avoid placing stress on the terminals.



4.3.4 CN4 Port Wiring (Optional)

The CN4 port is used to connect a ventilation device or additional alarm device, which can be triggered to activate when refrigerant leakage is detected. This function is optional and the user can install the device based on their actual needs.

It is recommended that the buzzer sound of the refrigerant leakage alarm be at least 15 dB(A) higher than the background noise. If the background noise in the room is high, an additional alarm device is recommended and can be connected to the CN4 port.

MARNING

The rated output voltage of the CN4 port is 220–240 V, and the maximum output current is 1 A. Overload is not allowed

Do not connect the power input cable to this port. Otherwise, the device cannot work normally.

Use a proper round-type terminal to connect to this alarm port. The core of the connecting cable must be made of copper, and the wire cross-sectional area cannot be less than 1 mm².

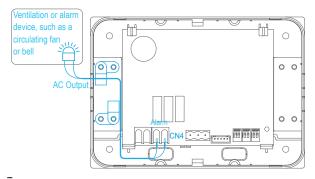
A CAUTION

If no additional alarm device is installed, do not connect any cable to this port.

CN4 port has no output in its normal working state, and provides a strong current in the event of a leakage alarm

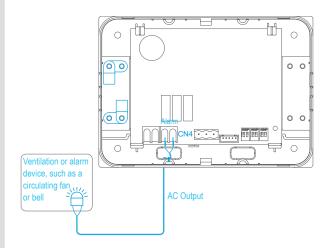
4.3.5 Wiring Guide of a Ventilation or Alarm Device

Wiring method 1: Lay the cable through the hole on the left of the refrigerant leakage alarm to the terminals of CN4, and fix the cable with the wire clamp to avoid placing stress on the terminals. Connect the other end of the cable to the power input end of a ventilation or alarm device.



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Wiring method 2: Lay the cable through the hole on the base of the refrigerant leakage alarm to the terminals of CN4, and fix the cable to the base with a cable tie to avoid stress on the terminals. Connect the other end of the cable to the power input end of a ventilation or alarm device.



4.3.6 Communication Wire Connection

⚠ WARNING

Do not connect the communication wire when the power is on. Otherwise, the circuit board will be damaged.

Do not connect the power cable (high voltage) to the communication (low voltage) terminal. Otherwise, the circuit board will be damaged.

Communication wire terminals of CN2 must be connected to the terminals with corresponding letters of the Hydraulic module control board. Crossed connection is forbidden. Otherwise, communication will fail.

A sensor control board can be connected with only one control board. Connecting a sensor control board with multiple communication adapter boards will cause overload and damage the circuit board.

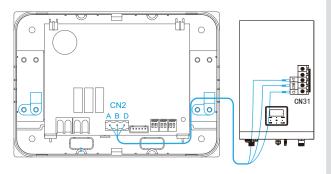
A CAUTION

A communication wire is not included and needs to be configured by the user.

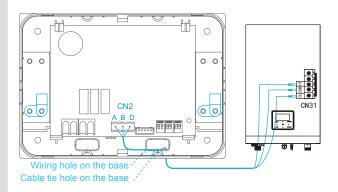
It is recommended that an ordinary PVC-sheathed flexible cable be used as the communication wire with a cross-sectional area not less than 0.75 mm².

Wiring Guide of a Communication Wire

Wiring method 1: Connect a communication wire to terminals A, B, and D of CN2 of the refrigerant leakage alarm, lay the wire through the hole on the right of the base, along the internal edge of the sensor, and to wiring terminals HT, Com, and CL of CN31 on the control board. Fix the wire with the wire clamp to avoid placing stress on the terminals.



Wiring method 2: Lay the communication wire through the hole on the base of the refrigerant leakage alarm to terminals HT , Com ,and CL of CN31 on the Hydraulic module control board. Fix the wire to the base with a cable tie to avoid placing stress on the terminals.



4.4 Sensor Installation

↑ WARNING

Do not connect the cable of the sensor when the power is on

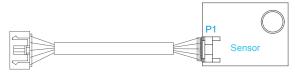
⚠ CAUTION

Use the wire provided with the unit as the connecting cable of the sensor

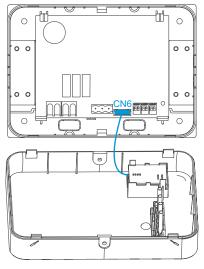
Make sure that the cable is not clamped when buckling the upper cover and bottom cap.

4.4.1 Sensor Wiring Guide

Step 1: Take out the sensor from the package, connect the smaller end of the connecting cable to sensor terminal P1.



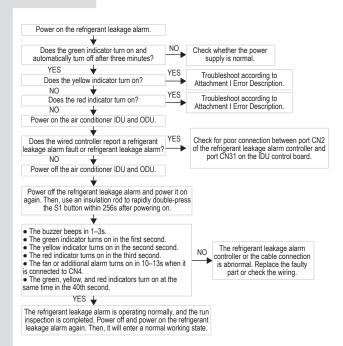
Step 2: Install the sensor to the slot on the upper cover with the sensor detector aligning with the cover air inlet. Connect the other end of the connecting cable to CN6 on the sensor control board, and close the cover.



4.5 Debugging

4.5.1 Debugging Precautions

- The installation and debugging personnel must operate in line with the relevant regulations of the local country/region.
- Debugging must be performed by professionals. Do not debug the unit by yourself.
- Conduct a test run of the refrigerant leakage alarm after the air-conditioning system and the alarm are installed and can be powered on.
- Perform the debugging steps below to confirm that the refrigerant leakage alarm is working properly.



4.6 Attachment I Error Description

⚠ WARNING

In the event of a leakage alarm, immediately ventilate the area, dissipate the refrigerant, and put out all open flames. Then, contact professional after-sales maintenance personnel to confirm and rectify the fault. For any exceptions that occur, contact professional after-sales maintenance personnel for troubleshooting. Ask professionals to maintain the unit and replace parts. Only Frigicoll designated parts can be used for replacement.

After the refrigerant leakage alarm is installed, it must be always powered on unless it is maintained. Otherwise, the alarm cannot work.

4.6.1 Status or Fault Diagnosis of the Refrigerant Leakage Alarm

No.		Re	efrigerant L	eakage Al	larm Statu	IS		IDU Error Code	Status Description	Solution
	Green LED	Yellow LED	Red LED	Buzzer	CN2-A	CN2-B	CN4			
1	Off	Off	Blinking 1s every 1s	On	Output	No Output	Output	A1	Leskage alarm: The refingerant leskage or other high-concentration interference gases cause the alarm to generate a leakage alarm.	1. Immediately ventilate the room and put out all open filmers. Contra professional personnel to confilm and redify the fault. 2. After confirmation and maintenance, essure that the enfigerant and high-concentration interference gises in the room are completally discharged, and regisers the session. 3. Power on the enfigerant leakings dams, and use an installation of the press the SI button for 15s to reset the runt, as described in Allachment II. aft the indicates two not for 2s and burr off at the same time, the runt has been accessfully read. 4. Ensure that the fUU (but its reset (see the UU) with the refigerant leakings dams is properly functioning.
2	Off	Blinking 1s every 6s	Off	On	No Output	Output	No Output	A2	Fault alarm: Sensor communication failure are communication failure. The connection between the sensor control locard port CNB and sensor communication or citout between the sensor control based and sensor has failed.	1. Context a professional for confirmation and maintenance. 2. After the fault cause is confirmed: 4. For poor connections, connect the cable properly. Then, the error will be automatically cleared. Do not perform steps 3 and 4 any more. 4. For a sensor fault, install a new sensor and performs steps 3 and 4. For a sensor control board fault, replace both the sensor control board and sensor, and perform steps 3 and 4. 5. For sensor control board and sensor, and perform steps 3 and 1. If all the indication of to press the S1 button for 15s to reset the unit, as described in Albachment I. If all the indication not for 2s and burn off at the same time, the unit has been accessfully reset. 4. Ensure that the IDU fault is reset (see he IDU manual), and perform debugging steps to confirm that the refigerant leakage alam is properly functioning.

3	Off	Blinking 1s every 3s	Off	On	No Output	Output	No Output	A2	Fault alarm: end of the sensor service life	Ask a professional to replace the sensor: Power on the effigient leakage alam, and use an insulation of to press the ST butto for 15s to reset the unit, as described in Attachment 11st all the inclusions tum on for 2s and thorse of at the same time, the unit has been successfully reset. Simure that the IDU dut it is reset (see the IDU manual), and perform debugging staps to confirm that the refigerant leakage alam is properly functioning.
4	Off	Blinking 1s every 1s	Off	On	No Output	Output	No Output	A2	Fault alarm: sensor fault	1. Ask a professional to replace the sensor. 2 Power on the refigerant leakage aim, and use an insulation rod to press the S1 button for 150 to treat the unit as described in Alternation. II. If all the indicators turn on for 2s and turn off at the same time, the unit has been successfully reset. 3. Ensure that the IDU fault is reset (see the IDU manual), and perform debugging steps to confirm that the refigerant leakage aiam is properly functioning.
5	Off	Steady on	Off	On	No Output	Output	No Output	A2	Fault alarm: sensor control board EEPROM fault	1. Ask a professional to replace both the sensor control board and the sensor. 2 Power on the refrigerant leakage alarm, and to leave an insulation of to press the 51 button for the sensor that the sensor of the sensor that the sensor that the sensor that the sensor that the sensor time, the unit has been successfully reset. 3. Ensure that the IDU fault is reset (see the IDU manual), and perform debugging steps to manual) and perform that the refrigerant leakage alarm is properly functioning.

6	Off	Off	Off	Off	No Output	No Output	No Output	A2	Refrigerant leakage alarm power-off or poor connection: When the IDU is connected to a power supply, this error may be caused by refrigerant leakage alarm power-off or poor connection between port CNZ-B or CNZ-D on the sensor control board and port CNX31-COM or CNX	Ask a professional to check the power supply and wiring and rectify the fault.
7	Off	Off	Off	Off	No Output	No Output	No Output	A1	Poor connection: When the IDU is connected to a power supply, this error may be caused by the poor connection between port CN2-A on the refrigerant leakage alarm controller and port CN31-HT on the IDU Control board.	Ask a professional to check the power supply and writing and rectify the fault.
8	On	Off	Off	Off	No Output	No Output	No Output	Normal	Power-on preheating or normal monitoring: The green indicator remains lit for 3 minutes in the preheating period after the unit is powered on. Alternatively, it remains lit for 2 minutes during normal monitoring.	The unit is in normal status and no processing is required.
9	Off	Off	Off	Off	No Output	No Output	No Output	Normal	Normal monitoring: When the IDU is connected to a power supply, and the wired controller does not report an A1 or A2 error, the refrigerant leakage alarm is in a normal monitoring state.	тединой.

↑ CAUTION

When the refrigerant leakage alarm produces an alarm, it is exposed to a high-concentration responding gas, which will deteriorate the sensor sensitivity. Therefore, it should be replaced with a new sensor.

When the S1 button is pressed for 10s and the sensor is reset, the sensor service life counting data is cleared. To ensure accurate service life data, reset a new sensor.

When the buzzer beeps, use an insulation rod to press the S1 button for 3s to mute it (be sure not to press the button for 10s). If the alarm signal persists, the buzzer will beep again an hour later.

If all safety precautions are followed, the maximum recommended service life of the sensor is 10 years. When the buzzer beeps and the yellow and red indicators blink alternately, the sensor has reached the end of its service life. Please contact the distributor or after-sales personnel to install a new sensor.

4.7 Attachment II Reset Instructions

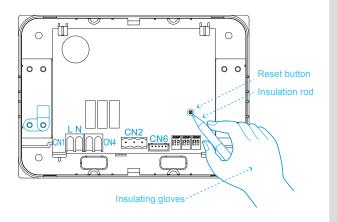
↑ WARNING

Do not directly use your hand or use a conductive object to contact the S1 button. Otherwise, electric shock may

Only professionals can press the S1 button.

Failure Reset

- Step 1: Open the upper cover of the refrigerant leakage alarm control box according to the installation instructions. Do not forcefully pull the upper cover, as the sensor is installed on the cover. Otherwise, the connecting port may become damaged.
- Step 2: The maintenance personnel wear insulating gloves and use an insulation rod to press and hold the button for 10s. Then, the green, yellow, and red indicators all turn on for 2s and turn off, indicating reset has been successful.



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