AVAC

Making Your Job More Enjoyable

Leak Detector

NML1

User Manual

Failure to follow warnings could result in death or serious injury.

SAVE THIS MANUAL FOR FUTURE REFERENCE

PREFACE

Dear customers:

Congratulations, and thank you for purchasing the brand-new "Above Value" products.

For proper use of the product, please read carefully the operation manual before operation.

When you have read the entire operation manual, we suggest that you should appropriately keep it with the leak detector or in a place easy to access for future consultation in the course of operation.

The leak detector design comforms to SAE J1627 and EN14624 leak detection standards.

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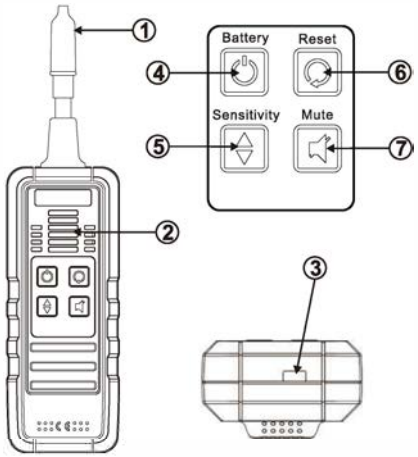
1. Introduction

The leak detector uses heated semiconductor gas sensor and is applicable to all the halogen-type refrigerants. The product is featured with high sensitivity, fast response time, long sensor service time and other advantages, as well as stable performance and complete functions.

Note: Since heated semiconductor gas sensor is employed, please do not use the leak detector in highly-concentrated, inflammable and explosive mixed gas environment.

1.1 Buttons and Indicator lamps

1. Sensor group.
2. Leak concentration indicator lamp.
3. Battery charge interface.
4. "ON/OFF" button; Battery Level indicator lamp.
5. "Sensitivity" button; Sensitivity indicator lamp.
6. "Environment Zero" button, Environment Zero indicator lamp.
7. "Mute" button, Mute sound alarm.



1.2 Product parameters

Applicable refrigerant	CFC, HCFC and HFC types refrigerants	Battery charging time	≤4.5h
Min. detectable leakage	≤0.1oz / year(R134a)	System pressure range to be measured	≥50 psi
Working temperature range	32~104℉	Weight	0.77 lbs
Working humidity range	≤95%	Probe length	15.7 in
Response time	≤3s(depends on size of leaking source and distance)	Dimensions	7.5"×2.6"×1.6"
Battery usage between charge	≥8h	Calibration	Auto

2. Functions

2.1 "3-Color" Battery Level Indicator Lamp

Battery level indicator lamp has three kinds of colors, green, yellow and red, which represents respectively "High, Medium and Low" battery level. When the lamp turns red, the leak detector will shut off itself in two minutes. The user shall turn it off and charge it in time or connect it with external power supply.

⚠ Note: When the battery level indicator lamp turns red, the detecting result may not be so accurate.

2.2 Leakage indication

There are two types of leakage alarm indication, that is, audible alarm and visible alarm. When the leak detector senses a leakage, the internal beeper and LED lamp will alert audible and visible alarm to indicate the leakage. Variation of beeping frequency and the number of LED lit from bottom to upward represent the leakage rate.

The end user can select audible and visible alarm or just select visible alarm. Defaulted setting of the device is audible and visible alarm. When the device starts and completes its warming-up process, press down button "Mute" ( ) to turn off leakage sound alarm.

2.3 Three-level sensitivity settings (three colors)

The leak detector provides three levels of sensitivity settings and the sensitivity indicator lamp makes corresponding indications. "Green, Yellow and Red" colors of the sensitivity indicator lamp represent respectively "Low, Medium and High" sensitivity.

The defaulted sensitivity setting level of the device is high sensitivity.

⚠ Note: In high sensitivity status, the leak detector is rather sensitive. A little variation of surrounding temperature, pressure and other factors can trigger an alarm.

2.4 Auto/manual "Environment Zero" function, "Environment Zero" indicator lamp

"Environment Zero" function means that the leak detector will neglect the refrigerant concentration in surrounding environment so that refrigerant of a certain concentration existing in the environment will not always trigger audible and visible alarm or interference the detection.

When the leak detector is started, automatic "Environment Zero" function is started by default. The device will automatically neglect the refrigerant concentration surrounding the probe.

⚠ Note: The function can help the probe to neglect the refrigerant concentration in surrounding environment when the leak detector completes its warming up process. Therefore, the device shall be started and warmed up in clear air.

2.5 Probe state indication

The leak detector has the functions of diagnosis and probe state indication. It can check probe missing and probe problem and gives audible alarm.

The beeper of the leak detector will sound continuously if the sensor is damaged or improper connected. It is necessary to turn off the device and replace the sensor or re-install the sensor.

⚠ Note: The attached standard leakage cylinder can be used to check the probe when the leak detector is warmed up.

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2.6 Auto power-off the device

Default setting of the leak detector is that it will shut off automatically by itself in 30 minutes from the time it is turned on. In any status, if the button is pressed, the detector will re-start timing unless there is no button pressing operation in 30 minutes; otherwise the detector turns itself off.

3. Operation procedures

3.1 Connect with the external power supply to charge it

The device has lithium battery in it. For the first use, please charge it with the device power off. When the battery is fully charged, the device can be used.

Charging indication:

(1) When the device is powered off:

① The red battery level indicator lamp flashes, the leak detector is being charged;

② The green battery level indicator lamp is constantly on, device charging process completes.

(2) When the device is turned on:

① The green battery level indicator lamp flashes, the leak detector is being charged;

② The green battery level indicator lamp is constantly on, the leak detector charging process completes.

⚠ Note:

① Usually the charging time shall be less than 4.5 hours. Please charge the device in 32~104°F environmental temperature to prevent the device from being damaged while charging.

② Interface for the leak detector is Micro-USB. We recommend that power supply above 5V 1A should be used. USB interface of a computer can also be used for battery charging. Power supply of lower power will prolong the charging time.

③ If the device is supplied by external power supply, its auto power-off function is invalid.

⚠ Warning:

① Do not disassemble or re-install the battery;

② Do not charge when the environmental temperature is higher than 140°F, otherwise the battery may be damaged;

③ Do not charge in or near heating position or in direct sunshine;

④ While charging, the lower part (at the three bars) under the leak detector buttons will be hot, it is normal.

3.2 Startup and warming up of the leak detector

Press button "Power ON/OFF" ( ) to start the device. The beeper sounds one "BEEP" and the leak detector enters warming up time; and meanwhile, the concentration indicator lamp flashes circularly. In about 46seconds, the beeper gives continuously two "BEEPS" and the concentration indicator lamp turns off. Warming up time ends and the device can be used for test.

⚠ Note: The leak detector shall be started and warmed up in clear air.

3.3 Sensitivity level settings

Sensitivity level can be set as required by the end user. If it is necessary to change the sensitivity level, please press "Sensitivity Adjust Button" ( ). Three sensitivity levels can be circularly adjusted.

3.4 Setting of Environment Zero function

Automatic environment zeroing function is started by default.
Long press button "Environment Zero" ( ) (for more than 3seconds) and the beeper gives one "BEEP" sound and the auto "Environment Zero" function is cancelled and system enters manual "Environment Zero" state. Under the state, short press the button "Environment Zero" ( ) and the beeper gives one "BEEP" sound and manually zero one time the current environment concentration. Long press the button "Environment Zero" ( ) (for more than 3seconds) and the beeper gives one "BEEP" sound, the system is transferred to auto "Environment Zero" function.

3.5 Leakage detection and positioning

Move slowly the probe through the location area where leaks may occur (for a flexible probe, just bend it to a desired shape to extend it to the required area). If a leakage is detected, the leak detector alarms. With refrigerant concentration increases, the alarming frequency of leak detector speeds up and the number of LED leakage indicator lamps increase. While the device alarms, it means that you are close to the leaking source. Re-check the neighbored area and make sure if it alarms again. If the leaking source is determined, move slowly from different directions of the non-alarming area towards the leaking source to position accurately the leaking source. Additionally, with the help of "Environment Zero" function and sensitivity adjustment, accurately position the leaking point (first use high sensitivity to find the leaking area, then reduce the sensitivity level and repeat the above procedures to determine the leaking source.). Once the leaking source is determined, make corresponding marks near the leaking source and then check the entire refrigerating system till all the leaking points are found.

⚠ Note:

① At detecting, there shall be some pressure (≥50 psi) in the system and the operation shall be performed in relatively static air condition. If there is wind, leaked refrigerant gas can be quickly diluted or be blown away from the leaking source, thus affect the accuracy of detection. Additionally, before detection, use a fan to blow off the suspected leaked refrigerant gas in the system in case it may affect the accuracy of detection.

② "Auto Environment Zero" function is started by default. If the leak detector alarms before positioning the leaking source, the device will automatically shield the environmental refrigerant concentration. If the "Auto Environment Zero" function is off, the "Environment Zero button" ( ) has to be used to shield the environmental refrigerant concentration.

③ Leaking source usually occurs at the greasy dirt, dust position, node valve or pipe connection positions. Detection shall focus on these areas.

④ While detecting, the probe of the leak detector shall be 1/8"-1/4" away from the suspected leaking point to prevent greasy oil and others from contaminating the probe and affecting the detection accuracy. The probe shall move at a speed of around 1 inch/second.

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4. Maintenance

4.1 Proper maintenance can prolong the service time and maintain the performance of the leak detector. Keep the protective cover of the sensor clean and make sure there is no water drop, oil, grease, dust or other contaminants on the surface of the sensor. Clean the sensor with cotton cloth or dry gas.

4.2 The sensor has its working time. Under normal condition, its service time is more than a year. Long-time working in high-concentration refrigerant environment will rapidly consume the life time of the sensor. When the sensor is out of service, replace it in time.

4.3 First remove the sensor protective cover; then take out the old sensor; align the pins and insert the new sensor along the same position where the old one was taken out. Reinstall the sensor protective cover. Refer to the following illustrations.

Compositions of leak detector head: installation seat, sensor, sensor protective cover

Direction of sensor bump

Sensor installation seat

The protective cover is removed

5. Accessory list

Leak detector	1pcs
Micro-USB Power cable	1pcs
Standard leakage cylinder	1pcs
Operation manual	1pcs
Outer case	1pcs