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LD-100+ Heated Diode Refrigerant Leak Detector User Manual

Made in China V1.0

Overview

LD-100+ hand-held refrigerant leak detector has a heated diode gas sensor and precise control circuits, which enable it to detect all halogen refrigerants; it has high sensitivity, fast response speed, stable performance and multiple functions; its ergonomic design makes the operation easier and more comfortable.

Product Structure and Components

1. Flexible Probe	8. Three-Color Sensitivity Icon
2. Sensor	9. Auto Reset Button
3. Display Screen	10. On/Off Button
4. Three-Color Battery Level Icon	11. Mute Button
5. Buzzer Icon	12. Sensitivity Button
6. Alarm Icon	13. Battery Base
7. Auto Reset Icon	

Parameters

Sensor type	Heated diode gas sensor
Minimum detectable leakage	≤ 3g/year
Reaction time	≤3 seconds
Warm-up time	30 seconds
Reset time	≤10 seconds
Working temperature range	0-50°C
Working humidity range	<80%RH (non-condensing)

Applicable refrigerant	CFCs, HCFCs, HFCs, HCs and HFOs
Sensor lifetime	≥1 year
Reset	Automatic/manual
Probe length	420mm（16.5 in）
Package size	430mm*245mm*70mm
Battery life	7 hours
Weight	340g

Note: Applicable to all halogen refrigerants, including but not limited to:

CFCs: Such as R12, R11, R500, R503

HCFCs: Such as R22, R123, R124, R502

HFCs: Such as R134a, R404a, R410a, R407C, R32

HCs: Such as R600a, R290

HFOs: Such as R1234YF

Function Introduction

4.1 Battery Level Indication

Battery level icon	Battery level
Green	High
Orange	Medium
Red and flashing	Low

Note: 1) When the battery power is insufficient, the test result may be inaccurate.

2) When the battery power is "low", the leak detector will automatically shut down after working for 10 minutes, and the battery should be replaced in time.

4.2 Sensitivity Indication

Sensitivity icon	Sensitivity grade
Red	High
Orange	Medium
Green	Low

Note: After warming up the leak detector, press the sensitivity button to adjust the sensitivity.

4.3 Leak Alarm/Mute Function

The leak detector has audible and visual leak alarms. When the leakage is detected, the screen will show the leakage level (1-7). The higher the gas concentration is, the larger the value is and the higher the alarm frequency is.

You can choose to turn on both audible and visual alarms at the same time or only select visual alarms. When the device completes warming up and starts working, it will automatically turn on the sound alarm function, at this time, you can press the mute button to turn off/on the sound alarm.

4.4 Automatic/Manual Reset

In order to avoid the influence on the detection caused by the refrigerant in the environment, the leak detector has the function to zero the environment refrigerant.

Automatic reset: It is a default option. The leak detector will automatically zero the refrigerant concentration around the probe, and only when it detects higher refrigerant concentration around the probe, it will alarm.

Manual reset: The sensitivity can be re-adjusted by short-pressing the zeroing button. When the screen shows "8" for 3 seconds, it means that the zeroing process is completed. At this time, you can use it to detect the refrigerant concentration higher than that in the aforesaid environment.

Note: If the refrigerant concentration in the environment is very low, Reset function will increase the device's sensitivity, and oppositely, if the refrigerant concentration in the environment is very high, it will decrease the sensitivity.

4.5 Automatic Shutdown Function

The leak detector will automatically power off if there is no button operation for 30 minutes. When there is any effective button operation, the system will reset the 30-minute countdown.

4.6 Fault Alarm Function

Alarm code	Alarm reason
1^E	Probe power failure
2^E	Probe missing or faulty
3^E	Fan shutdown

Note: 1) The warm-up failure of the probe is detected, and it needs professional technicians to repair it.

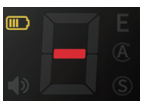
2) After the problem of the probe missing or failure is solved, the detector needs to be re-warmed up.

3) When there are more than one faults simultaneously, the fault priority is $1^E > 2^E > 3^E$.

Operation Instructions

5.1 Operation

① Press the "on/off" button, the leak detector will turn on and starts to warm-up;



Warming-up state icon

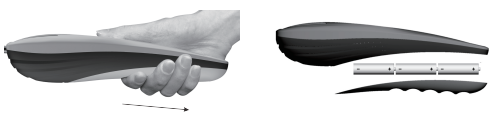
② In the process of warming up, the LED in the middle of the screen will flash; the warm-up time is 30 seconds;
③ After warming up, the screen will show a flashing "0", indicating that the detector is ready now, at this time, the buzzer icon will be on, and the buzzer will be started (beeps once per second). You can press the mute button to turn on/off the audible alarm.
④ By default, after warming-up, the device will automatically go through zeroing, and the automatic zeroing icon will be on. Long-pressing the zeroing button for 3s can turn off the automatic zeroing function, and now the detector will be switched to the manual zeroing. Short-pressing the zeroing button can zero the value. Long-pressing the zeroing button for 3s to turn on the automatic reset function.
⑤ After warming-up, the sensitivity icon will red, indicating that the device is at the highest sensitivity level. According to your requirement, you can press the sensitivity button to select the sensitivity level. Three sensitivity options are available by pressing the button.
⑥ Put the probe to detect the place where there may be leakage. The flexible probe can be bent into a needed shape to facilitate detecting the place difficult to reach.
⑦ If leakage is detected, the device will give audible and visual alarms. The screen will show an alarm value. The higher the leakage concentration is, the greater the alarm value is and the higher the alarm sound frequency is.
⑧ After a leakage is found out, it will alarm. It is recommended to move the detector out of the detected place for 10 seconds before the next detection
⑨ Press the "On/Off" button for 3 seconds to turn off it.

Notes: Please open the battery cover and remove the insulation sheet before first use.

5.2 Battery Installation

Batteries: Three AA alkaline batteries.

Open the battery compartment cover as showing in the picture. Then load the battery into the battery compartment. Please take note to the battery direction when installing.



Maintenance

Proper maintenance of the leak detector can prolong the service life of the sensor and improve its performance.

① Sensor service life: it can be used normally for ≥1 year. If the sensor frequently works in an environment with high-concentration refrigerant, the service life will be reduced quickly. When the service life is over, the sensor needs to be replaced.

② Replacing the sensor: As shown in the figure below, unscrew the probe shell and then replace the sensor. Attention: the sensor and the socket shall be in a good contact.

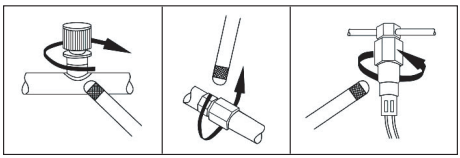
Note:

1. *Please turn off the detector before cleaning the probe shell.*
2. *Clean the sensor with a cotton cloth or dry gas to ensure that there are no water drops, oil, grease, dust or other pollutants on the sensor surface.*
3. *Put the leak detector and sensor in a dry and clean place. If it will not be used for a long time, please remove the battery.*

Safety and Detection

7.1 Detection Method

The method to use the device to detect is shown in the following figure:



1. Bend the flexible probe into the required shape and put the probe slowly in the area where leakage may occur.
2. When a leak is detected, the leak detector will give an audible and visual alarm. With the increase of refrigerant concentration, the alarm frequency will become higher, and the alarm value on the screen is larger. When the leak detector gives an alarm, it means that you are close to the leak source. Re-check the nearby area to confirm whether the alarm is repeated.
3. If you close to the leakage point, you can slowly move the detector to the suspected leakage source from the areas where the detector does not give alarms to find out the accurate location of the leakage source. In addition, properly using the "zeroing" function and adjusting the sensitivity can help find out the leakage point location (at first, you should use high sensitivity to roughly find the leakage area, then select a lower sensitivity and repeat the above steps to find out the leakage source point).
4. Once the leakage source location is determined, you can mark it, and then detect other places of the refrigeration system until all leakage points are found.

7.2 Precautions

1. During detecting, the refrigeration system pressure shall be ≥50psi, and the detected area should be nearly air-static. If there is a wind, the leaked refrigerant gas will be quickly diluted or blown away from the leakage source point, thus affecting the detection accuracy. In addition, before detecting, please use a fan to blow off the refrigerant gas emitted by a known source in the refrigeration system to avoid its influence on accuracy.
2. The "Automatic Reset" function is a default option, so when the detector is started and detects some refrigerant, it will automatically zero the value of the current ambient refrigerant concentration. If the "Automatic Zeroing" function is turned off, you have to short-press the "Reset" button to zero the value of current ambient refrigerant concentration.
3. Leakage sources usually occur in oil-polluted or dusty places, joint valve or pipeline connection. These places shall be detected with priority.
4. The probe of the leak detector should be 3 mm-5 mm (1/8 in-1/4 in) away from the suspected leak point during detection, so as to prevent it from being polluted by oil and other pollution and affecting the detection accuracy. The probe should move at a speed of about 25-50mm/s(1-2in/second) when detecting.
5. It is strictly forbidden to place the sensor directly in the refrigerant environment with a concentration exceeding 30000ppm, which may cause permanent damage to the sensor.

List

LD-100+ leak detector (excluding sensor)	x 1	Heated diode gas sensor	x 1
Manual	x 1	AA alkaline battery	x3
Packing box	x 1	LD-100+ performance report	x 1