

**Elitech<sup>®</sup>**

*Innovation Preceding All*



**HLD-100+**  
**Refrigerant Leak Detector**  
**User Manual**

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# Introduction

The HLD-100+ is the most reliable negative corona halogen leak detector at present. We integrate all our experience and customers' feedback into this product, in hope that it could provide our customer the best price, performance and reliability.

The sensitive elements adopt the advanced and reliable corona refrigerant sensor which has great sensitivity and excellent repeatability; the test program is controlled by the artificial intelligent microcomputer, with reasonable work procedure, easy and convenient to operate, complete functions and multiple self-adaptive capabilities; dual-color LED indicator light, with visual and clear display; smart and portable design is convenient for your mobile operation. When there is excessive refrigerant in the leak gas, this unit will automatically audio alarmed to effectively test the refrigerant leak.



Figure 1

## Technical features

- ◆ Adopt advanced, low power consumed, eight-bit microprocessor controller
- ◆ Dual-color LED indicator light with progressive and real time display
- ◆ Sensitivity adjustable, seven level alarming indicated by LED display
- ◆ Modular sensor, convenient for maintenance
- ◆ Seven levels audible and visual alarm
- ◆ Auto reset testing when the detector is turned on
- ◆ Battery level indication

# Technical parameters

◆ **Sensor type:** negative corona sensor

◆ **Ultimate sensitivity:** 3 g/yr

◆ **Warm-Up Time:** 3

◆ **Application:**

Detect leaks in other systems and filling vessels. It will respond to all halogenated (including Chlorine and Fluorine) refrigerants. This includes, but is not limited to:

CFCs e.g.R12,R11,R500,R503 etc...

HCFCs e.g.R22,R123,R124,R502 etc...

HFCs e.g.R134a,R404a,R125 etc...

Mixtures such as AZ-50.HP62.MP39 etc...

Detect Ethylene Oxide gas leaks in hospital sterilizing equipment

Detect SF-6 in high voltage circuit breakers

Detect most gases that contain chlorine, Fluorine and Bromine (halogen gases)

Detect cleaning agents used in dry cleaning applications such as perchloroethylene.

◆ **Operating Environment:** Temperature: 0°C ~50 °C

Humidity: <95% RH (non-condensing)

◆ **Power supply:** two 2# Alkaline Batteries

◆ **Sensor tip life under continuous operation:** more than 50 hours in normal detecting status

◆ **Specification:** 230 x 60 x 55 (mm)

◆ **Probe length:**36mm

## Operation and installation

**Operation instruction:**

◆ **Power key:** long press ON/OFF to turn on/off the detector.

◆ **Sensitivity adjustment key:** Adjust the sensitivity level according to the detection demands. (Long press this key could adjust the sensitivity quickly.)

◆ **Reset key:** Reset the background halogen level at the tip to "zero", any level higher than this "zero" is considered to be a leak and trigger the alarm.

- ◆ **Mouse key:** Set the buzzer sounds or not during the detection process.
- ◆ **Battery test key:** Check the battery level.

The interface and keys of halogen leak detector pls refer to Figure 2:

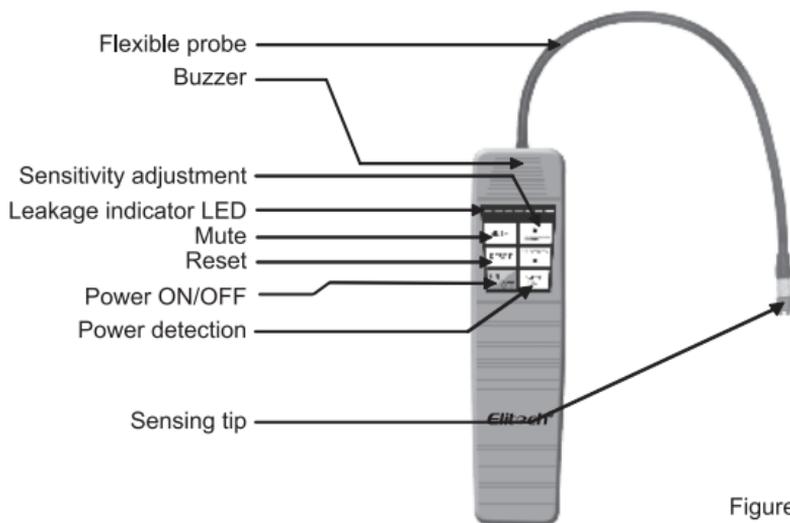


Figure 2

#### ◆ **Battery Installation:**

**WARNING!** To reduce the risk of igniting flammable gases in a closed atmosphere, batteries must only be replaced in an open area or closed space without flammable gas.

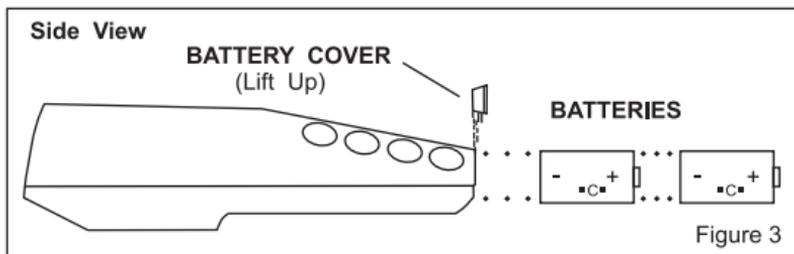


Figure 3

1. See Figure 3. Using a thumb to push open the battery door located at the bottom of the detector; then to remove the door.
2. Install two "C" alkaline batteries into the detector, observing the polarity markings on the side of the case and then place the battery door back.

# Detecting method

## Halogen leak detector operation method:

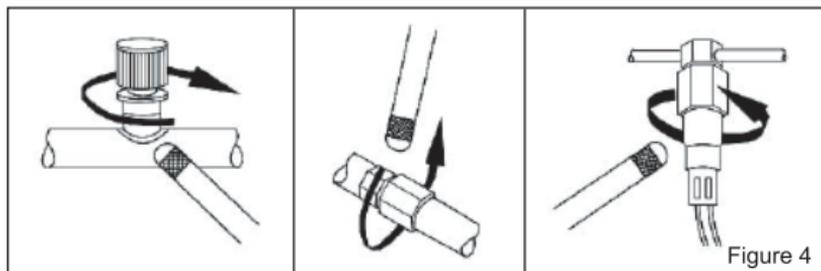
When the detector is turned on or off by long pressing POWER key, all LED indicator lights are on for three seconds, and the detector will automatically reset. After auto-reset, only the first LED indicator light on the left will be on. (Green, batteries fine, orange, batteries getting weak, replace as soon as possible; red indicates the batteries need to be replaced before normal detecting). At this time, the beeping sounds regularly and the detector sets the atmosphere halogen level to "zero", ready for detection.

## Operation Instruction:

1. Check the battery level by observing the constant power indicator light.
2. Once turn on the detector, the default sensitivity level is level 4. You will hear rapid, but steady beep sound. The sensitivity can be adjusted by pressing SENSITIVITY "↑" or SENSITIVITY "↓" according to your requirement.
3. Begin searching for leaks. When refrigerant is detected, a siren will be sounded, with a rate quite different from previous beep sound. And the indicator lights will progressively turn on.
4. Sensitivity can be adjusted at any time during operation by pressing "↑" and "↓" key. This adjustment will not interrupt detection.
5. If alarm occurs before the sensing tip touches with the leakage source, press "Reset" key to reset the current to 0 until there is no alarm, then you could detect again.
6. Press "Mute" key to close the alarm sound; press it again to activate alarm sound, loop operation.
7. Press the "BATTERY TEST" key to check the battery level.

## Halogen leak detector detecting method:

See Figure 4



1. Visually exam the refrigeration system. The oily and dirty spots, node valves, coils, connectors, or pipelines are the areas most likely to leak gases.
2. Start leak detecting at the joint at a speed of 1cm per second and the distance between sensor tip and the joint should be 1-3cm.
3. When an alarm is triggered, it may indicate a leak is close by. Detect around that area again and see if the alarm is repeatable. If a leak is confirmed, pinpoint the leak source by moving slowly from no-leaking (no-alarm) area to the leaking area from different directions. Besides, you could also pinpoint the leak by moving the detector away from the leaking area and reset the unit, adjusting the sensitivity lower and repeating the above process. Once confirmed, mark around the leak and continue detecting the whole line of the system.
4. Additional work may be needed to eliminate possible ambiguity, like other contaminants at the spot may make the detector alarm, Clean the leaking area with dry cloth and blow clean dry air to the leaking area and repeat step 3 above to confirm the leak.
5. Leak on evaporator coil is more difficult to detect than other areas because it is difficult for sensor tip to access to the whole evaporator coil. Most evaporator coils are composed of modules and are installed in a closed space with fan for heat exchange. The system with the fan should be turned on for 10 seconds and then turn off the fan, wait 10-15 minutes at the evaporator, then use detector to detect the outlet of the condensate (make sure the sensor tip doesn't touch with the condensate), or detect the air inside the evaporator chamber. Most halogens are lighter than the air and likely to accumulate at the highest spot in the closed space. An alarm may indicate a leak at the evaporator coil, but it is hard to repair evaporator by pinpointing the precise leak location. In most cases, the whole coil has to be replaced.

**Notes before leak detecting:**

1. In order to detect leak in a refrigeration system, the system must have normal operating pressure, or at least partially reaches to minimum 50 PSI. Low environmental temperature (lower than 59°F or 15 °C) may lower the system required pressure and may make the leak less likely to be detected. No leak detected does not mean the system does not have gas leak. Check the pressure before making the conclusion.
2. Leaking areas are usually covered with contaminants such as compressor oil or dirt, be careful not to let the sensor tip in contact with these contaminants.
3. The detector's function is to detect halogen's relative change at the sensor tip. Pinpointing the leak source needs to manually adjust the

sensitivity and reset the detector by the technician. You could follow recommendations below:

- (1) In areas where the atmosphere is contaminated with halogen refrigerant, press reset key to "ignore" the leak in the background. Make sure not move the sensor tip away from the contaminated background while resetting the detector.
- (2) In windy area, the leaked halogen refrigerant may be quickly diluted or removed from the leak source. The technician may use a wind shield to isolate the leak area or temporarily turn off the fan.
- (3) To avoid false alarm, prevent the sensor tip against touching any moisture or other solvent.

## Maintenance

Proper maintenance is important and may extend the service life and improve the performance of your detector.

**Warning:** Turn the power off before replacing the sensor tip. Voltage across the tip may pose an electrical hazard.

**Keep the sensor tip clean:** Use cotton cloth or dry air to clean the shield on the sensor tip if it gets contaminated. If the sensor tip itself is contaminated, soak the tip in absolute alcohol for a few minutes, and then use compressed air to blow it dry, or dry it with cloth.

**Note:** Never use strong solvents such as Gasoline, mineral oil, turpentine, these solvents may coat the sensor with a thin film and reduce the sensitivity of the detector and make the detector slow to respond to a leak.

Put the detector and the tip in a dry and clean place; remove the batteries if the detector is not used for a long time.

# Trouble shooting

## ◆ The detector could not turn on

Possible reasons:

A. The energy of batteries is too low to turn on.

Solution: Please replace new batteries.

B. The pole piece of battery connector has been oxidized.

Solution: please scrape the oxidization layer.

## ◆ The detector could not respond to a confirmed leak

Possible reason: Sensor tip is aged.

Solution: please change a new sensor as soon as possible.

## ◆ The detector gives false alarm when there is no halogen present

Possible reason: Atmospheric composition has changed.

Solution: please press RESET key to set the background to "zero" level, try to avoid the change of air temperature or humidity.