

hilmar®

Infrared Refrigerant Leak Detector

Operation and Maintenance Instructions



Model

LDIR150

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INTRODUCTION

The hilmor Infrared Refrigerant Leak Detector is a hand-held leak detector that uses the infrared detection method. Compared with the traditional leak detector, its sensor has a longer life, higher detection accuracy, greater ease of use, and detects a wider range of refrigerants. The LDIR150 is equipped with a large, easy to read TFT LCD screen.

WARNING

It is important to read the entire instruction manual carefully for a complete understanding of the hilmor Infrared Refrigerant Leak Detector features, limitations and specifications before use. hilmor products are designed and manufactured to be used by trained and licensed technicians. Incorrect use may result in accidents, injuries or death. Refer to page 5-6 for safety warnings.

KEY FEATURES



EXTRA CONFIDENCE

- Built to last with a 10-year sensor life.



EASY TO READ

- The TFT LCD screen provides a clear visual confirmation of the leak location.



ADDED CONVENIENCE

- Audible and visual notification for leak detection.



ADDED VERSATILITY

- Works on all halogenated refrigerants.

SAFETY

SAFETY PRECAUTIONS

To prevent personal injury, please read the operating manual carefully and operate only as instructed by following the guidelines listed below.

1. Wear safety glasses, gloves and all other recommended safety gear when working with refrigerants. Contact with refrigerants may cause injury. Please see any warnings associated with refrigerants.
2. Avoid the inhalation of refrigerant. High concentrations of refrigerants are harmful to humans and can cause serious injury.
3. Do not allow probe to come in contact with electrically charged objects or high voltage.
4. Before each use, make sure the filter is clean. Do not allow any liquids to enter the probe tip; doing so will damage the unit.

SAFETY HAZARD WARNINGS FOR LITHIUM ION BATTERIES

Rechargeable Lithium Ion batteries are potentially hazardous and can present a serious FIRE HAZARD if damaged, defective or improperly used. Larger Lithium batteries and those used for industrial use involving high discharge current and frequent full discharge cycles require special precautions.

The LDIR150 has a built in rechargeable lithium battery, which is NOT user replaceable, and should be charged ONLY with the provided LDIR150 charger.

A FIRE IS MOST LIKELY TO OCCUR DURING THE CHARGING PROCESS UNDER THE FOLLOWING CIRCUMSTANCES:

- THE BATTERY HAS BEEN FULLY DISCHARGED AND IS NOT RECHARGED SHORTLY AFTERWARD. This potential is aggravated if batteries are damaged, contain an undetected factory defect, are used or stored at temperature extremes, or are approaching the end of their useful life. Ideally, batteries should be recharged within 24 hours of a full discharge.
- CHARGING IS ATTEMPTED AT TEMPERATURES BELOW 40°F (4°C) Charging below 40°F (4°C), causes a chemical reaction in the battery cells that can cause permanent damage and the possibility of fire or explosion during charging.

SAFETY (CONT.)

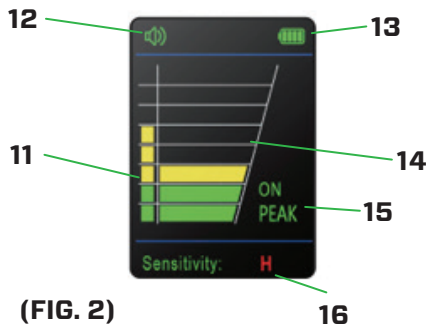
- THE BATTERY HAS BEEN EXPOSED TO LIQUIDS, ESPECIALLY SALTWATER. Exposure to liquids can cause internal corrosion or damage to the cells or to the Battery Management System (BMS). The BMS protects the battery from overcharging, high self- discharge or imbalanced charging of the cells, any of which can present the possibility of fire during recharging.
- OPERATING OR CHARGING A BATTERY THAT HAS BEEN DAMAGED FROM DROPPING OR FROM SHIPPING DAMAGE.
- USING A CHARGER OTHER THAN SPECIFICALLY DESIGNATED FOR THE PARTICULAR BATTERY. Lithium Ion battery chargers provide a specific charging voltage and microprocessor current and voltage control. They are fundamentally different than chargers for SLA, NiCd, NiMH, or other rechargeable batteries. Chargers for LiNiMnCoO₂ (NMC) batteries (VML) and LiFePO₄ batteries (VLX) are not interchangeable, and require different charging voltages.

LEAK DETECTOR COMPONENTS

1	Flexible Probe
2	SENS (L, M, H) Button
3	RESET Button
4	Charging Port
5	Alarm Headphone Jack
6	Status Display Zone
7	PEAK Button
8	ON/OFF Button
9	MUTE Button
10	Charging Indicator Battery



(FIG. 1)



(FIG. 2)

11	Maximum Leak Record	14	Real Time Detection Indicator
12	Audio MUTE Indicator	15	Peak Function Status: When displayed as ON above the PEAK on the display, it is active
13	Battery Voltage Indicator	16	Sensitivity Level Indicator

FEATURES

FUNCTIONS AND FEATURES

Please refer to FIG. 1 and FIG. 2 to familiarize yourself with the indicators and keypad controls as you proceed through this section.

BATTERY VOLTAGE INDICATOR

The Battery Voltage Indicator shows battery level. 4 bars in the battery icon indicate full battery; one bar indicates low battery.

SENSITIVITY ADJUSTMENT

The unit provides three levels of sensitivity adjustment. When the unit is switched on, it is set to the lowest sensitivity position. To change the sensitivity, press the SENS button; The LED screen will display the corresponding sensitivity level: L for Low, M for Medium and H for High.

SENSOR STATUS INDICATOR

The unit automatically diagnoses and indicates the sensor's status. When switched on, the circuit automatically senses the condition of the sensor, indicating a failed or missing sensor.

FAILED SENSOR INDICATION

If the circuit detects a failed or missing sensor, (FIG. 3) is displayed and the leak detector will stop working.

(FIG. 3)



AUDIBLE / VISUAL ALARMS - MUTE FEATURE

The unit features two indications - an internal speaker audible alarm, and TFT LCD display visual notification. When refrigerant is detected, the detectors shows leakage level in bar chart form. Green indicates "no refrigerant detected / no leak", and Red indicates detection of refrigerant in high concentration. When the unit is switched on, the audible alarm is activated by default. The audible alarm may be disabled by pressing the MUTE button. Press the MUTE button again to allow audio as well as visual notification. The audio notification may also be heard via headphones plugged into the 3.5mm headphone jack.

FEATURES (CONT.)

BUTTON OPERATION	
ON/OFF	Press and hold for 2 seconds to turn the device “on” and “off”.
RESET	Reset sensitivity benchmark to improve stability and sensitivity.
MUTE	Press to toggle the audible alarm “on” and “off”.
SENS	Press button to cycle through three levels of sensitivity, low, medium, and high.
PEAK	Press to turn peak function “on” and “off”. The maximum value is cleared when turned off.

BATTERY CHARGING INSTRUCTIONS

1. Avoid completely discharging the battery to maximize its useful life.
2. The battery is partially charged when packaged. Fully charge the battery before first use.
3. Only use the supplied charger and cable.
4. Never replace the battery and with proper care it will last the life of the device (10 years).
5. Battery Charging Indicator displays red while charging, blue when charging is complete.

BATTERY CARE

1. Do not expose the unit to temperatures higher than 140°F (60°C).
2. Do not charge the battery in or nearby heated places, such as fire, hot vehicles, or direct sunlight.
3. Stop using the unit immediately if it emits an odor or shows signs of damage or other abnormality.
4. Storage
 - a. The battery should have a 40%-50% charge during prolonged storage of a month or longer.
 - b. Battery life is dramatically reduced if the battery is stored fully charged and/or at high temperatures.
5. Charging parameters: 5 VDC 1A

FILTER REPLACEMENT:

Warning: Turn the power off before replacing filter.

1. Unscrew probe tip.
2. Remove and discard old filter.
3. Insert new filter
4. Replace probe tip.
5. Replace filter whenever it becomes visibly dirty or every two to three months depending on use.

OPERATING INSTRUCTIONS

This unit detects relative concentrations of refrigerant, the sensor tip must always be in motion. Keep the unit away from moisture and high voltages.

To detect leakage in a refrigeration system, the system must operate at a minimum of 50 PSI. Environmental temperatures lower than 59°F (15°C) may further reduce a system's operating pressure, causing a leak to become more difficult to detect. In such cases, "No Leak" may be falsely indicated, requiring an alternate diagnostic means.

1. Turn on the unit by pressing and holding for 2 seconds and releasing the ON/OFF button.
2. Ensure battery is sufficiently charged for operation by looking at the Battery Voltage Indicator. If not, please see Battery Charging Instructions.
3. The unit takes approximately 30 seconds to warm up and calibrate after the ON/OFF button has been pressed. Keep the LDIR150 away from any areas of potential refrigerant leakage until the warm-up and calibration period is over. If there is an error, replace the filter. See Filter Replacement on page 9 for instructions. To avoid false indications, allow the LDIR150 to fully warm-up before using. The unit is actively reading when the bar chart is displayed.
4. Press MUTE button to disable audible indication if desired, when audio indication is enabled, a paced beep will be emitted.
5. After the unit has warmed up, select desired sensitivity by pressing the SENS button.
6. Slowly move the probe (approximately 3"/sec or 75 mm/sec) at a distance of 0.25" (0.63 mm) from the suspected leak area. A closer probe position and slower "sweep" will usually raise the probability of finding leaks. Once the device indicates a change in concentration, note the location and keep the tip moving past the potential leak to refresh the air as this device measures changes in concentration and moving to "cleaner" air will help detect leaks.
7. Return the tip back to, and past, the first location. When the device indicates a second change, note that location. The source of the leak will be near the midpoint between the two noted locations.

TECHNICAL SPECIFICATIONS

Sensor Type:	Infrared Spectrum Absorbtion
Sensor Life:	10 Years (Typical)
Maximum Sensitivity:	4 grams/year
Response Time:	~3 seconds
Warm-Up Time:	~30 seconds
Operating Environment:	32°F (0°C) ~ 104°F (40°C) at < 75% RH (non-condensing)
Display Method:	TFT LCD display
Notification Mode:	TFT LCD display and audio
Battery:	Built in rechargeable lithium battery: 3.7V, 3000mAh
Battery Saver:	Automatic shutdown after 10 minutes of inactivity
Working Time:	~ 6 hours
Charging Time:	~ 4 hours
Certifications:	SAE J1627, SAE J2791, SAE J2913, EN14624: 2012
Refrigerants Detected:	It will detect all halogenated (including Chlorine or Fluorine) refrigerants. This includes, but is not limited to: CFC: R12, R11, R500, R503 HCFC: R22, R123, R124, R502 HFC: R134A, R404A, R410A, R407C CH R600A
Weight:	14.6 oz. (415g)
Size:	7.9" x 3.3" x 1.5" (201 mm x 86 mm x 38 mm)

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