LINSTRUMENT

LT-300-PRO2

Premium electronic leak detector

User guide

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1. INTRODUCTION

Thank you for purchasing our LT-300-PRO2 leak detector. Please read this manual carefully before operating the device. Keep this manual for future reference.

1.1. FUNCTIONS

- LED light at the tip of the probe
- Mute mode
- USB charger
- Charging indicator
- Battery level indicator
- Robust flexible probe
- Sensor fault indicator
- 3 sensitivity levels
- Rechargeable 3.7 V lithium battery
- High-sensitivity semiconductor sensor
- Color display
- Detects all HFC, HFO, HC gases and hydrogen-nitrogen mixtures
- AUTO mode with automatic sensitivity adjustment based on ambient concentration

Microcontroller for improved accuracy and reliability

1.2. APPLICATIONS

- Refrigeration
- Air conditioning and heat pumps
- Laboratory use
- Automotive air conditioning
- Industrial applications

2. SAFETY INFORMATION

Read the following information carefully before operating or servicing the device. Repairs must only be carried out by qualified technicians.

2.1. SAFETY SYMBOLS

CE

This detector complies with the following standards :
EN61326-1:2021 – Electrical equipment for measurement, control and laboratory use – EMC requirements

IEC61000-4-2 – ESD immunity test
IEC61000-4-3 – Radiated electromagnetic field immunity test
IEC61000-4-8 – Power frequency magnetic field immunity test

RoHS

The device does NOT contain substances harmful to health or the environment.

This device must not be disposed of with standard industrial waste. It must be recycled in accordance with WEEE regulations. Contact your distributor for further recycling information.

2.2 WARNING

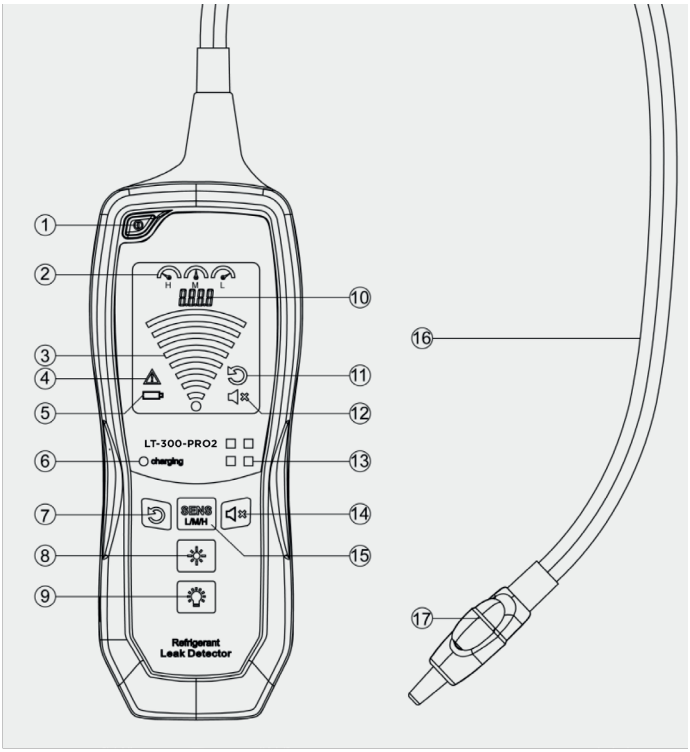
Read this manual carefully to ensure safe and correct use of this detector before operation.
Be aware of the following to avoid injury:
- The device is not waterproof
- Do not replace the sensor or LED yourself; only a qualified technician may do so
- Do not bend the probe beyond its flexibility limits
- Do not use the detector in areas contaminated with flammable or explosive gases (ATEX zones) or near open flames
- Do not use the device outside the temperature range [0°C – 50°C]
- Do not use organic solvents (benzene, acetone, thinner, etc.) to clean the device

3. SPECIFICATIONS

Model	LT-300-PRO2
Sensor	Semiconductor
Refrigerants	R22, R32, R134a, R404A, R407C, R410A, R1234yf, R290, and all HFC, HFO, HC gases and hydrogen-nitrogen (N2H2)
Sensitivity levels	High : 4 g/year Medium : 7 g/year Low : 14g/year
Accuracy	Complies with SAE J2791 and EN 14624-2020
Calibration	Manual (based on ambient concentration)
	AUTO (automatic ambient compensation)
Response time	< 0,5s
Warm-up time	1 min
Battery	3,7V, 1960 mAh, Lithium
Sensor fault indicator	Yes
Audible alarm	Yes
Auto shut-off	After 10 minutes of inactivity
Battery level indicator	Yes
LED light	Yes
Probe length	450 mm
Operating temperature / %RH	0 - 50°C, <80%
Storage temperature	-10° - 60°C, <70%
Dimensions	184 x 70 x 40 mm
Weight:	340 g

4. GENERAL DESCRIPTION

4.1. PRODUCT OVERVIEW



1. Power button
2. Sensivity indicator
3. Leak level indicator
4. Sensor fault indicator
5. Battery level indicator
6. Charging indicator
7. RESET button
5. Probe LED ON/OFF button
9. Backlight ON/OFF
10. RESET/ backlight indicator
11. RESET indicator
12. MUTE mode indicator
13. Alarm output
14. MUTE mode button
10. Sensivity button (High, Medium, Low)
16. Flexible probe
17. Probe LED

4.2. LITHIUM BATTERY STORAGE & MAINTENANCE

Operating temperature and humidity:

Discharge	0° - 50°C, <80%
Charging	0° - 45°C, <80%

Storage:

Humidity	<70%
Temp.	Ideally between 6°C and 15°C
Charge level	Between 40% and 80% of maximum capacity

WARNING :

- If the battery shows rust, emits odor, or appears abnormal at first use, do not operate it and contact your distributor
- Store the battery according to the temperature and humidity conditions specified in this manual
- Do not disassemble or attempt to repair the battery
- Do not subject the battery to impact
- Do not immerse in water or seawater
- Use only the charger specified in this manual
- Do not charge beyond the specified duration
- Do not charge near fire, excessive heat, or direct sunlight
- Charging temperature must be between 0–45°C
- Charging outside this range may cause serious damage and reduce battery life
- Do not fully discharge the battery, as this may reduce performance

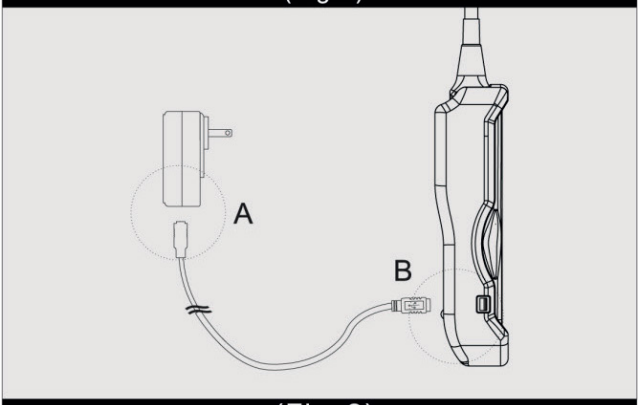
4.3. LITHIUM BATTERY CHARGING

The detector automatically switches off when battery power is too low. Recharge the battery when the low-battery symbol appears. It is strongly recommended not to use the detector while charging. During charging, the LED indicator is red and turns green when fully charged.

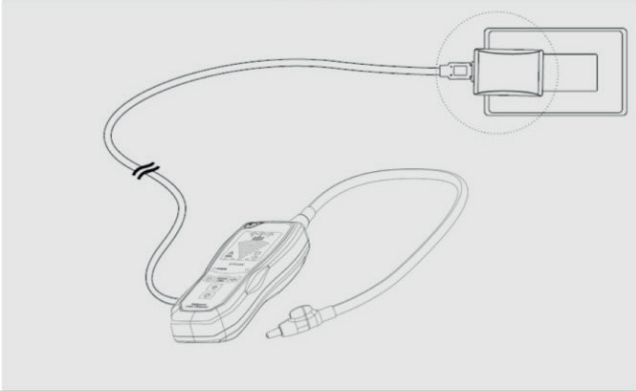
The lithium battery can be recharged using a power adapter and a USB cable :

1. Use the adapter and insert the male mini-USB plug into the device's mini-USB port (Fig. 1).
2. Plug the adapter into a mains power outlet (Fig. 2).
3. Alternatively, connect the device to a PC using the mini-USB cable (Fig. 3).

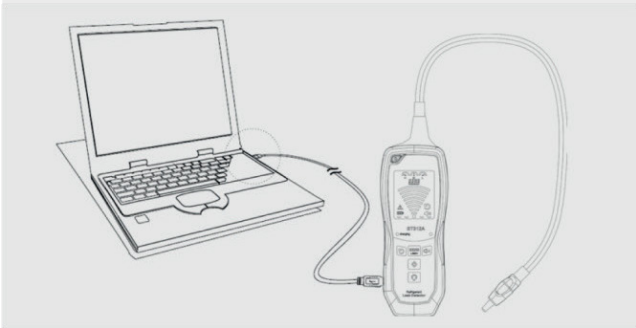
(Fig.1)



(Fig. 2)



(Fig. 3)



5. INSTRUCTIONS

5.1. MAIN FUNCTIONS

5.1.1. ON/OFF power button

Press and hold for 2 seconds to turn the device ON or OFF. When powered on, the LCD screen lights up and a beep sounds (except in MUTE mode).

The detector automatically starts sensor warm-up. During warm-up, the central bar graph flashes. After warm-up, the leak level returns to minimum and the buzzer beeps every 2 seconds (except in Mute mode). The detector is now ready for leak detection.

Sensivity button

Press the button to switch the device sensivity between High H, Medium M and Low L.

The detector restarts at the previously selected sensitivity level.

RESET button

The device can operate according to two modes: AUTO mode and MANUAL mode. From factory the device is set in AUTO mode. Press and hold for 2s to switch from AUTO mode to MANUAL mode.

- **MANUAL mode :**
- The RESET indicator disappears from the screen and the message Ar 0 appears for 2s.

Press the RESET button once to recalibrate the sensor according to the ambient concentration. The RESET indicator then flashes for 1s.

- **AUTO mode :**
- The RESET indicator appears on the screen and the message Ar 1 appears for 2s.

In this mode, pressing the RESET button has no effect since the sensor recalibrates automatically.

MUTE mode button

Press this button in order to turn the audible alarm on or off.

- When the alarm is off, the MUTE symbol appears
- When the alarm is on, the MUTE symbol disappears

By default the detector restarts with the last selected mode.

Probe LED button

The LED is always off at start-up of the device. Press this button to turn the LED on/off.

Backlight button

The backlight operates according to two modes: AUTO and Manual. From factory the device is in AUTO mode.
In this mode the screen lighting turns off after 30s of inactivity. To turn it back on, simply press any button once.

Press and hold for 2s to switch from AUTO mode to Manual:

- When  appears, this means the device is in Manual mode
- When  appears, this means the device is in AUTO mode.

5.1.2. Battery level indicator

When the indicator starts flashing  , this means that the battery charge is too low. The detector will automatically stop in order to protect the lithium battery and the electronic board. It is recommended to recharge the battery as soon as possible.

5.1.2. Sensor fault indicator

The symbol  flashes and emits a slow alarm beep when the sensor is incorrectly installed or presents a fault.

5.2. START-UP WITH SENSITIVITY IN AUTO OR MANUAL MODE

5.2.1. Manual Mode

Manually calibrate the device in open air (outdoors) before inspecting the area where the leak is potentially located. The audible beep will accelerate as you get closer to the leak.
In Manual mode, press the RESET button  at any time to recalibrate the detector according to the ambient concentration.

5.2.2. AUTO Mode

1. Turn on the device and wait until the warm-up is finished. After warm-up switch the device to high sensitivity (High).
2. Open the cap of the test vial and present it in front of the detector probe. If the detector reacts this means that the sensor is operational.
3. Slowly pass the detector probe in front of all potential leak points at a max. speed of 2.5 cm per second. It is important to always keep the probe moving. Indeed if the probe is kept fixed in front of the leak, the device will automatically recalibrate according to the ambient concentration at the risk of no longer detecting the leak again!

4. When the detector reacts to a leak, the screen will display the leak level and trigger an audible alarm.
5. Move the probe away from the leak for at least 2s, then place it again in front of the leak. Repeat this operation several times to clearly identify the source of the leak.
6. In general, to search for a leak effectively, start with AUTO mode to identify the area where the leak is located. Then switch to Manual mode, recalibrate the device in open air, then return to the area in order to inspect in more detail each point likely to be the source of the leak. If the leak is significant, choosing a lower sensitivity will allow finding the source of the leak.

>> Manual mode allows finding the leak more precisely, but is also likely to generate more false alarms.

>> AUTO mode allows fast and simple detection of the leak area, but must not be used in the following conditions:

1. **Detecting a micro-leak in an area contaminated by a higher gas concentration.**
2. **Detecting a leak on a fixed point. For example, for the annual control of the device with the calibrated 5g/year leak, it is imperative to perform this test in Manual mode and not in AUTO mode.**

WARNING :

- Keep the detector away from solvents and alcohols which may interfere and damage the sensor.

6. Maintenance

6.1. TEST VIAL

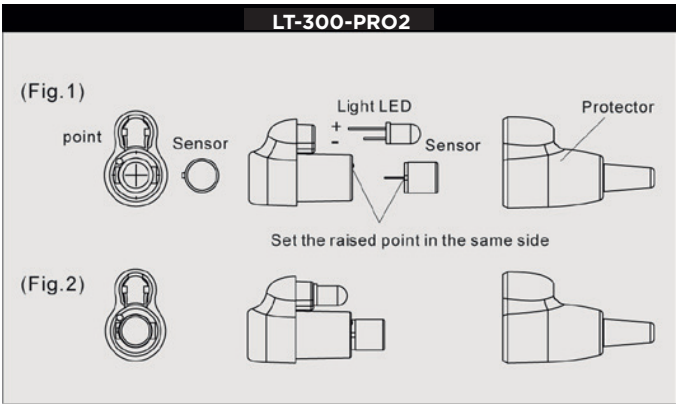
Always make sure to properly close the vial cap between two uses in order to avoid total evaporation of the solution.

6.2. PROBE AND SENSOR

Replacement of the probe or the LED must be carried out by a qualified technician according to the diagram below.

Make sure to position the sensor in the correct direction on its receptacle. The device must be turned off at the time of sensor replacement.

1. The sensor lifetime (normal use) is 1 year. If the sensor is exposed to a concentration higher than 100 PPM of gas, the detection function may be permanently affected.
2. Make sure not to contaminate the sensor surface with water or dust which may damage the sensor.



6.3. CLEANING

For the device housing do not use solvents such as benzene or acetone which could damage the device.

WARNING : Organic solvents may permanently damage the sensors. Imperatively keep these substances away from the sensor.

6.4. SPARE PARTS

The following spare parts are available upon request :

- Sensors
- 3.7 V rechargeable lithium batteries

N.B. LINSTRUMENT reserves the right to make changes without prior notice.

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