



Leak Detector LD239 Instruction Manual



Thank you for purchasing the Leak Detector LD239.
To maintain the optimum performance, read this manual before using it.
Before operating the LD239, please read this operation manual carefully to ensure proper use. We recommend that you keep this operation manual on hand near the product for future reference.

Introduction



The Leak Detector LD239 indicates leaks through a dual system that consists of an indicating LCD and an audible alarm.
LD239 is a highly sensitive instrument especially to detect helium gas and hydrogen gas leaks, and that helps identify gas-leakage spot.

Safety Notices

This manual indicates safety notices as follows,

 Warning	Improper use contrary to the warning may result in the operator' s death or serious injury.
 Caution	Improper use contrary to the [caution] may result in injury to the operator or property damage.
<Caution>	Improper use contrary to the caution may lead to deterioration in system performance or damage to the system.

1. Attention

 Warning	LD239 is not an explosion-proof equipment. Therefore, do not use the detector in areas at risk of fire, explosion or large flammable gas leaks.
 Caution	<ul style="list-style-type: none">·LD239 is not a safety guard against hazardous or flammable gases.·Do not open the detector's body except replacing a battery.
<Caution>	<ul style="list-style-type: none">·Do not use the attached recharge micro USB cable for other equipments.·When removing or attaching the recharger to the detector, make sure that the power of the detector is OFF.

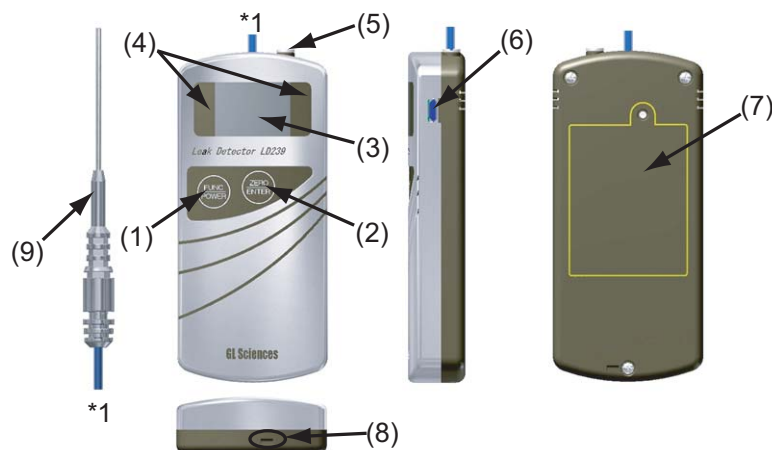
2. Operational Notices

- 1) When using LD239 for flammable gases leakage, make sure the sufficient ventilation in the room.
- 2) The sensitivity of the detector comes to be extremely worse when the surrounding contains the leaking gas.
- 3) Sensitivity of LD239 can be affected by wind. Please be careful for outdoor use.
- 4) Do not use the detector to detect corrosive gases.
- 5) LD239 is not a quantitative device, rather it is designed to detect leaks in gas line connections commonly associated with laboratory equipment.
- 6) Do not use the detector in environments that are contaminated with dust or combustible fumes.
- 7) Do not use the detector outside of its specified temperature range (10 - 40 °C).
- 8) Do not use the detector in a wet environment or come into contact with any solvents.
- 9) Do not expose the detector to shock.
- 10) Ensure the device is in a stable condition during operation.
- 11) LD239 has sample gas line and reference gas line. Both lines are attached filters but they are not effective for liquid samples. Do not aspirate liquid samples.
- 12) Decrease of sensitivity can be caused by filter clogging. Please replace a filter at sample line or reference line.
(Refer to "7. Replacement of service parts")
- 13) Do not block the tip of the Sample Probe and Reference Port. Especially please be careful not to press the Sample Probe against the object.
- 14) The detector gives a positive response to water vapor in the air. Such as skin vapor or soapy water can be detected as gas leakage.
- 15) Please wait for several seconds before re-closing power.
- 16) LD239 may become warm during charging. This is normal and does not indicate a malfunction.
- 17) Do not turn on the power of the detector while its battery is being recharged.
- 18) Do not use the detector for 30 minutes to stabilize it's temperature after recharging.
- 19) Attach a charging terminal cap except charging.
- 20) Please use LED in addition to LCD display only when needed to save the drain on battery power.

3. Battery

- LD239 has a rechargeable lithium-ion battery. Before using the product for the first time, or before using the product following an extended period of disuse, recharge the battery with an attached micro USB cable connecting to PC. (**Charging micro USB cable : Cat.No.2702-19331**)
If PC is not available, use a commercial AC-USB exchange adaptor.
- When the LCD is not shown or "Low Battery Error" is indicated, the batteries are low and must be recharged with the attached recharger. When starting recharge, one LED on left down is indicated. After fully charging, the LED is disappear It takes approximately 2.5 hours to fully recharge the battery; when fully charged, they will provide approximately 5 hours of continuous service. (Std. Range, LED OFF, Buzzer OFF)
- When the battery is fully charged, disconnect the micro USB charging cable. In case the micro USB charging cable is connected for a long time, and the detection may get unstable because of heat-generating of the battery. Do not connect the USB cable except for charging not to reduce the battery life.
- A marked drop in the time a fully-charged battery retains its charge indicates that the battery needs to be replaced. Purchase a new battery. The battery lifetime depends on usage and battery degradation. If it appears to be unusually short, it is need to be replaced.
(Refer to "7. Replacement of service parts")

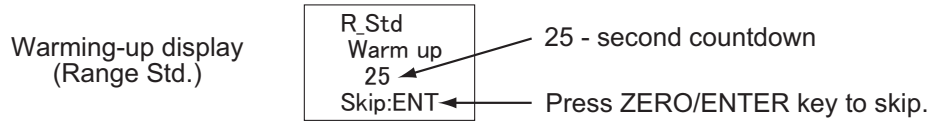
4. Part names and functions



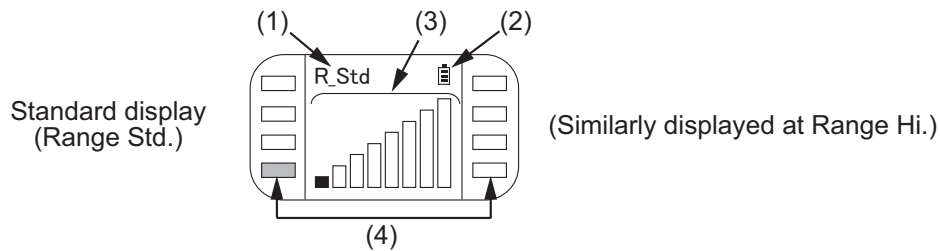
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| <p>(1) FUNC/POWER key
Turning power ON/OFF and selecting setting contents.</p> <p>(2) ZERO/ENTER key
Adjusting zero balance and entering setting contents.</p> <p>(3) LCD display
Showing Standard Display and Setting Display.</p> <p>(4) LED indicators
Indicating leak level and battery level.</p> | <p>(5) Reference Port (with internal filter)
Inlet to aspirate ambient air.</p> <p>(6) Charging Terminal
Connecting the Charging Terminal to PC with supplied micro USB charging cable to charge.</p> <p>(7) Battery Cover</p> <p>(8) Strap Eyelet
Attaching a supplied commercial strap.</p> <p>(9) Sample Probe (with internal filter)
Aspirating sample gas.</p> |
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5. Operating Procedure

- 1) Press FUNC/POWER key for about 1 second and then the power is turned on. Then, the LCD shows warming-up display. Warming-up takes 25seconds at standard range (Std), 90seconds at high range (Hi). Press the ZERO/ENTER key to skip it.



- 2) After the warm-up or skipping the warm-up, standard display is shown.



- (1) Range

R_Std: Standard Sensitivity Range

R_Hi : High Sensitivity Range (10 times more sensitive than Range Std.)

- (2) Battery indicator

Battery Indicator shows the battery charge level in 3 levels.

Battery level 3: Full charge(more than 50% is left)

Battery level 2: Low charge Battery charge still remains to use.
(Battery charge: about 20 - 30%)

Battery level 1: Very low Battery charging is required.
(Battery survival time is about 10 min.)

- (3) Leak indicator (LCD display)

When leak gas is detected, bar graphs are displayed. The number of bar graphs indicates level of gas leak. (Max. 8 high intensity of bar graphs)

ZERO point display: Blinking 1st bar from the left end.

Leak display: ■ (Indicates the gas leak, which has higher thermal conductivity than air.)

□ (Indicates the gas leak which has lower thermal conductivity than air.)

- (4) Leak indicator (LED indicator)

When leak gas is detected, LED lights from the bottom left to the top and then from the bottom right to the top. (Max. 8 lamps)

LED can be used in addition to LCD display. Combination of LCD and LED can be set on setting display.

(Refer to "6. Setting Parameters")

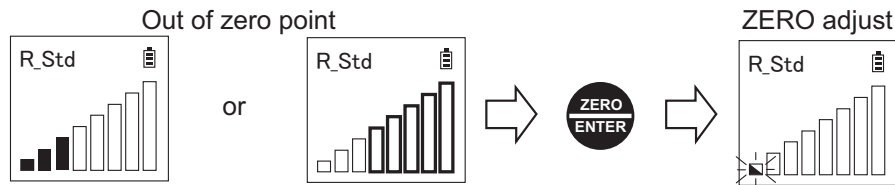
ZERO point display: The green or the red blinks when the detector becomes stable at near Zero point.

Leak display: red light (Indicates the gas leak, which has higher thermal conductivity than air.)

green light (Indicates the gas leak, which has lower thermal conductivity than air.)

3) First, check the stability at zero point.

■ & □ on the left will be blinking alternately when the detector becomes stable. When the leak indicator is displayed without leakage, press ZERO / ENTER key to adjust the zero balance. Under conditions such as fluctuation of temperature or humidity, the detector needs zero point adjustment. LED display as well as LCD display.



4) Place the sample probe tip near the gas connection to leak check.

One Gas Leak Mark indicates there may or may not be gas leaks especially on a High range. Two or more Gas Leak Marks indicate there is a gas leak. More than 3 Gas Leak Marks are indicated, and the audible alarm sounds when the buzzer function ON is selected.

(Refer to “6. Setting Parameters”)

5) Turn off the detector after use.

LD239 can be turned off in either automatic or manual mode Refer to [6. Setting Parameters.

- Set Auto Power Off function to ‘ON’
This function turns the detector off automatically 10min. after use. It will be helpful to prevent leaving the detector turning off.
- Set Auto Power Off function to ‘OFF’
Hold down the FUNC/POWER key for 3 seconds to turn the power OFF.

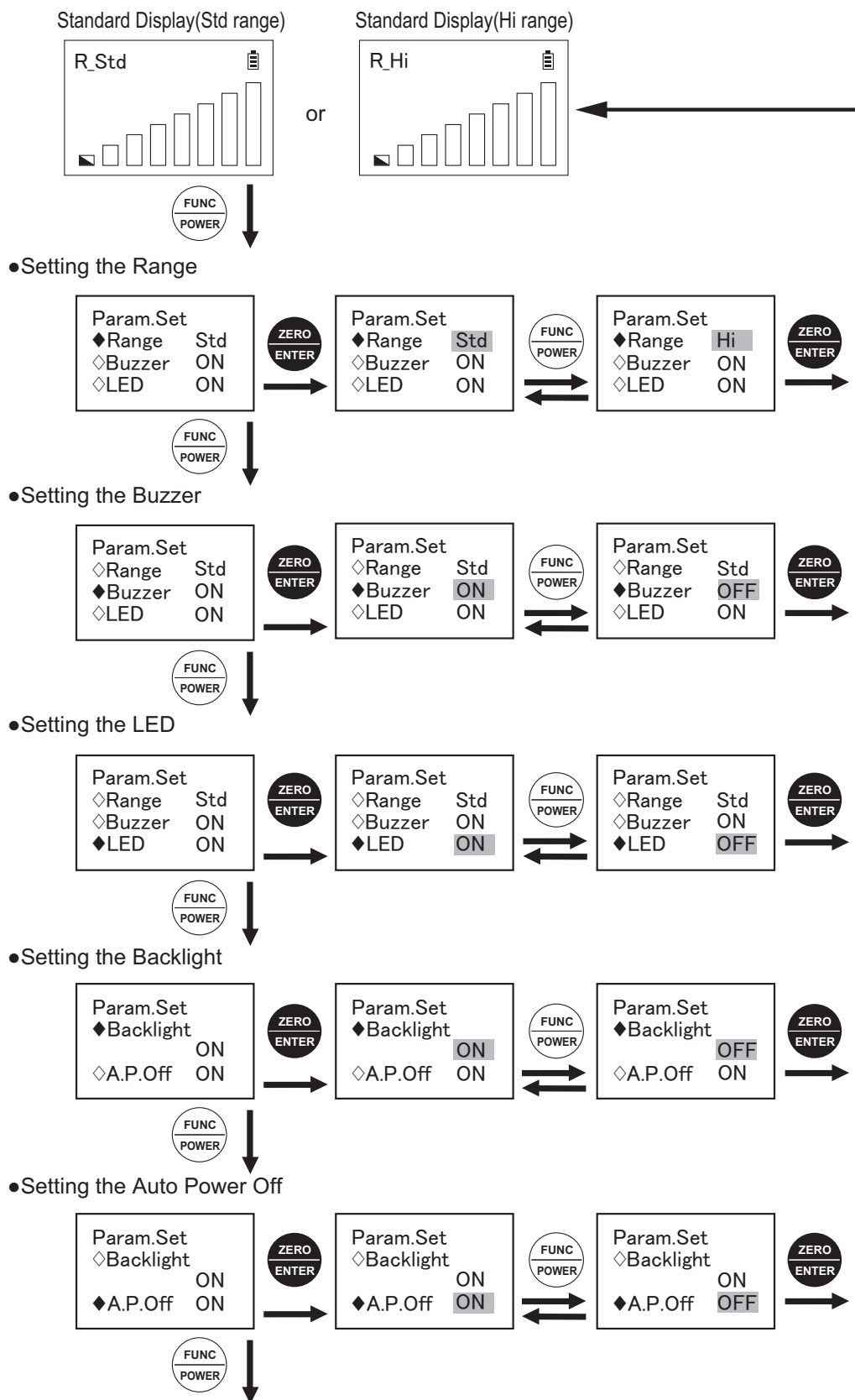
6. Setting Parameters

1) Parameter Setting items and contents

Parameter Setting item	Content
Range	Sets Range Std: Standard Sensitivity Range Hi : High Sensitivity Range
Buzzer	Sets the buzzer to alarm ON : Use(More than 3 Gas Leak Marks.) OFF: Not Use
LED	Sets LED in combination with LCD display ON: Use, OFF: Not Use
Backlight	Sets LCD backlight ON: Use, OFF: Not Use
A.P.Off	Sets Auto Power Off ON: Use, OFF: Not Use

2) Flow diagram of parameter settings

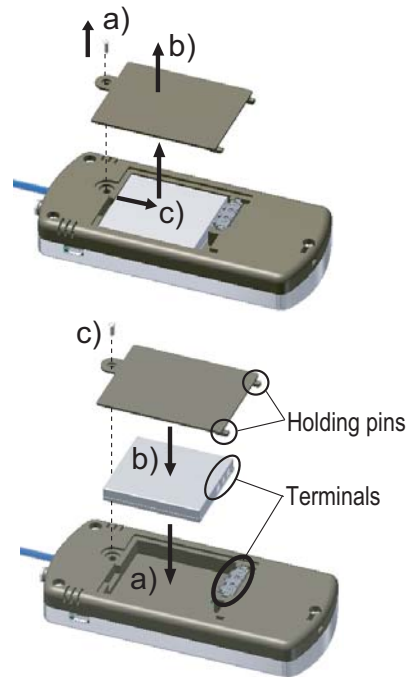
■ :At blinking (Selecting) condition



7. Replacement of service parts

●Battery Replacement

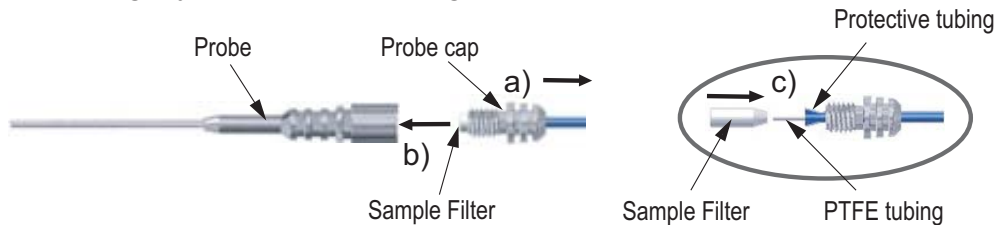
- 1) How to remove the old battery
 - a) Remove a screw with a small Phillips-head screw driver.
 - b) Remove the battery cover.
 - c) Remove the battery by pushing in the direction an arrow.
- 2) How to install a new battery
 - a) Install a new battery pushing.
 - b) Fasten the battery cover properly.
 - c) Attach the cover with a small Phillips-head screw driver.



LD239 Battery : Cat.No.2702-19341

●Replacement of Sample Probe Filter

- a) Unscrew the probe cap counterclockwise, and disjoin the probe and probe cap. The Sample Filter is attached to the probe cap.
- b) Remove the old Sample Filter from the probe cap.
When the Sample filter is stuck to the probe cap, use long-nose pliers.
- c) Insert the PTFE tubing into a new Sample Filter to attach the Sample Filter tightly to Protective tubing.

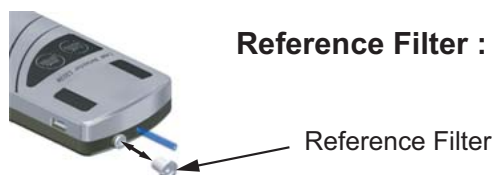


Sample Filter : Cat.No.2702-19333

- d) Finally, attach the probe to the probe cap tightly.

●Replacement of Reference Port Filter

Pick the old Reference Filter out, and replace a new Reference Filter.



Reference Filter : Cat.No.2702-19334

8. Specifications

Detector:

Thermistor-actuated thermal conductivity cell

Thermal conductivity of gases:

He, CO₂, Ar, Ne, etc. (not available under flammable or corrosive atmosphere)

Sensitivity:

Selectable from 2 ranges: Standard(Std.) Range and High(Hi.) Range

[Std Range] Helium 0.005mL/min in atmosphere

[Hi Range] Helium 0.0005mL/min in atmosphere

Display:

[Leakage display] LCD display(Max. 8 bar graphs), LED(Max. 8 lamps)

[Parameter setting display] LCD display

Parameter setting:

Range(Std./Hi.), Buzzer(ON/OFF), LED(ON/OFF), LCD backlight(ON/OFF), Auto Power Off(ON/OFF)

Power supply:

Rechargeable battery-powered equipment(built-in dedicated lithium-ion battery)

[Charging time] Max. 2.5 hours

[Continuous operation] Approximately 5 hours (with new, fully charged batteries)

(Std. Range, Buzzer OFF, LED OFF, LCD Backlight OFF)

Operating temperature range:

10 - 40 °C(non condensing)

Overall size:

50(W) × 19.5(D) × 111(H) mm (excluding projection)

Net weight:

Approximately 95g

Accessories:

Charging micro USB cable(1m), Instruction Manual,

LD239 Battery(built-in), Sample Filter(built-in), Reference Filter(built-in)


Notice: The sensitivity should be dependent on the difference between the thermal conductivities of gas and air (24.1(mW / m·k) at 0 °C, 1atm); a large difference results in a high sensitivity. Also, the kinds of gas and humidity should influence the sensitivity.

Thermal conductivity of some common gases [(mW / m·k) at 0°C, 1atm]

Gas	thermal conductivity	Gas	thermal conductivity	Gas	thermal conductivity
Hydrogen *	168.2	Air	24.1	Argon	16.3
Helium *	142.2	Nitrogen	24.0	Carbon dioxide	14.5
Neon *	46.5	Ethane	18.0	Krypton	8.7
Methane *	30.2	Ethylene	16.4	Xenon	5.2

* : Gases which have higher thermal conductivity than air. ■ : Undetectable gases

- The lithium-ion battery inside the LD239 does not apply battery regulations in Russia or Australia. Do not bring the LD239 these countries.
- Action for Environment (WEEE)

	<p>To users of GL Sciences equipment in the European Union:</p> <p>The WEEE (Waste Electrical and Electronic Equipment) symbol on the product indicates that it should be disposed of as agreed between the end user and the distributor in a manner consistent with required WEEE Directives. It should not be disposed of with general household waste.</p>
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