

Leak Detector LD249

Instruction manual

1 Introduction

Thank you very much for purchasing this product. Leak detector LD249 detects gas leaks in connections including gas pipes, and notifies you with an on-screen gauge and a buzzer sound. LD249 is designed to identify leaks in gas chromatography systems, etc. To ensure safe and proper use of this product, be sure to read this instruction manual before use.

2 Safety Precautions

2-1 For Safe Use

The following alert symbols and signal words provide information for the safe and correct use of the product. In order to prevent accidents or problems before they occur, be sure to clearly understand the following precautions before using the product.

| | | |
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| | Caution | Denotes the possibility of injury to the user or property damage. |
| | Attention | Provides important or necessary information to maintain performance. |

2-2 Safety Precautions

| | | |
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| | Caution | LD249 is not explosion-proof. |
| | | Do not use LD249 in environments subject to ignition or explosion. |
| | | Do not use LD249 for the detection of large amounts of flammable gases. |
| | | Do not disassemble or modify LD249. |
| | | LD249 is not designed as a safety instrument to measure environmentally safe concentrations of harmful or flammable gases. |
| | | Be careful not to injure your eyes, hands, or other parts of your body with the probe tip. |

2-3 Precautions for Handling Batteries

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| | Caution | Install batteries in the correct orientation. |
| | | Do not mix old and new batteries, or batteries from different manufacturers or types. |
| | | When replacing batteries, replace all batteries with new ones. |
| | | When disposing of batteries, comply with local regulations. |
| | | Do not put metal objects in the battery box. |
| | | Do not short-circuit batteries. |
| | | Do not use damaged batteries. |
| | | To prevent battery leakage, remove batteries from the battery box when not used for an extended period. |
| | | Do not use rechargeable batteries. |
| | | When supplying power via USB with an AC adaptor, use one certified to safety standards. |

2-4 Precautions for Use

Attention

- If LD249 is used in an atmosphere containing a large amount of the target gas, the sensitivity may be significantly reduced.
- If LD249 is used outdoors or in windy locations, the sensitivity may be reduced.
- Do not use LD249 for the detection of corrosive gases.
- LD249 is designed to detect gas leakage; thus, it cannot qualify or quantify gases.
- Do not use LD249 in dusty/ dirty environments.
- Do not use LD249 in an environment that exceeds the operating temperature/ humidity range.
- Do not splash liquid on or draw liquid with LD249. This may cause a malfunction.
- Do not apply excessive force to LD249.
- When operating the power switch repeatedly, wait a few seconds between operations.
- Do not remove the probe tube except for maintenance.
- Do not touch the probe tube tip when replacing it.
- Do not block the probe tip or the reference filter.
- LD249 reacts to differences in gas temperature and differences in the amount of water vapor in the gas. LD249 may react when you place your hand on the tip of the probe or when used in combination with soapy water for leak checking.

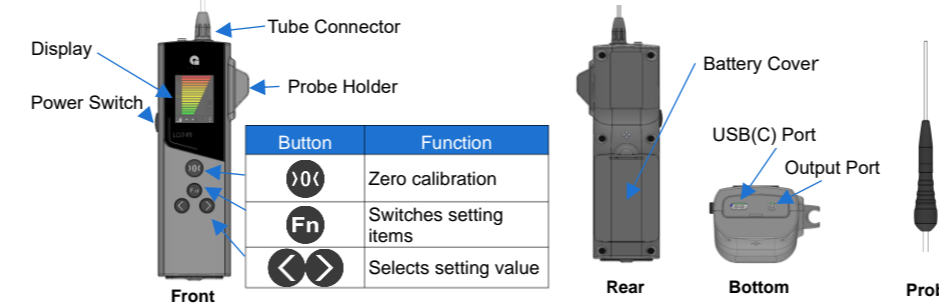
3 Inspection of Accessories

Upon arrival of the product, please check the contents. If any item is missing, damaged, or malfunctioning, please contact our branch office, sales office, or local distributor.

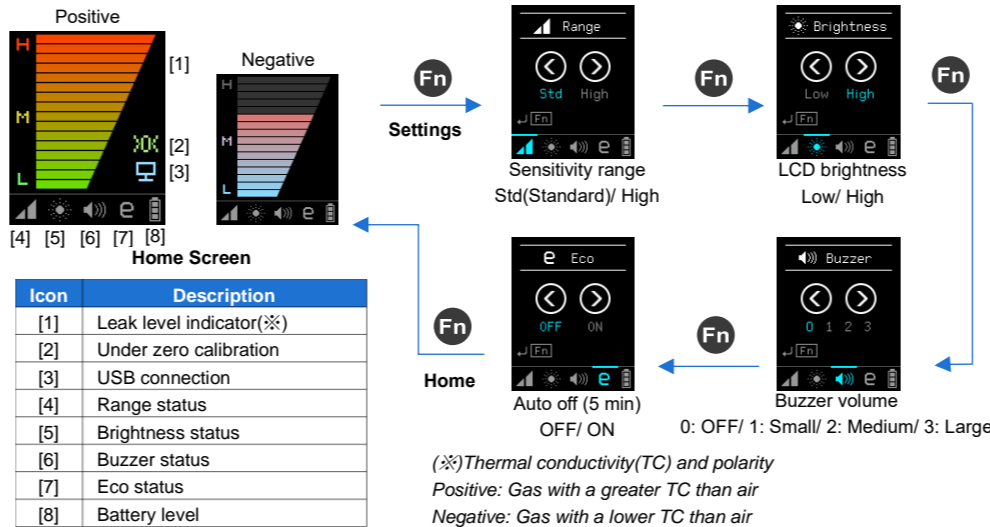
| Name | Qty. | Comment |
|-------------------------|------|--------------------|
| 3 AA alkaline batteries | 3 | for operation test |
| Instruction manual | 1 | |

4 Product Composition

4-1 Names and Functions



4-2 Screen Description



4-3 Detection Principle

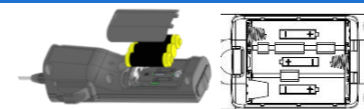
LD249 detects leaks by utilizing the difference in TC between ambient air and target gas. A greater gas difference in TC with air will generate greater sensitivities. See the table below for the TC of each gas.

| Thermal conductivity (at 0°C [W/m-k-10-3]) | | | | | |
|---|----------------------|----------|----------------------|----------------|----------------------|
| 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 with a greater TC than air: detected with positive polarity

5 Installation and Replacement of Batteries

Open the battery cover and remove all batteries, then insert new batteries in the correct orientation and close the battery cover.



6 How to Use

- How to use
 - 1) Gently slide the power switch upward to turn on LD249. LD249 will warm up.
 - 2) Warming up takes about 25 seconds for the standard range (Std) and about 90 seconds for the high sensitivity range (High). To skip warming up, press the **(Fn)** button.
 - 3) After warming up, the home screen will be displayed.
 - 4) Press the **(0)** button to set LD249 to zero. Make sure that the gas leak level is stable.
 - 5) Place the probe tip near the potential leak source (connection of a column/ piping) and check the gas leak level with the on-screen gauge.
 - 6) To turn off the power, gently slide the power switch upward and wait until the screen goes blank.

- Probe storage method
Insert the probe from the bottom of the holder until it is fixed in place.

- How to select various setting values
While on the home screen, press the **(Fn)** button to display the desired settings screen. Select setting value with the **(←)** **(→)** button and confirm by pressing the **(Fn)** button. The setting status will be indicated by the icons.

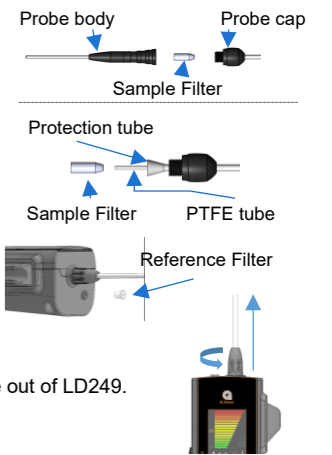
- Power supply via the USB port
You can use the device while it is being powered by connecting the USB port on the bottom to a PC (USB 3.0)/AC adapter with a USB cable (type-C, 1.5 m or less). USB cable and power supply source are not supplied with LD249, so please prepare them separately.

- Analog signal output
When an optional analog cable is connected to the output port on the bottom, you can output the analog signal from LD249 to a data recorder or other device. Connect the orange cable to the + connection port of a recording device, and the white cable to the - connection port.

7 Maintenance

If the sensitivity or response speed decreases, replace the filters. If the problem persists, replace the probe.

- Replacing the filters
 - [Sample line]
 - 1) Turn the probe cap counterclockwise and remove it from the probe body.
 - 2) Remove the sample filter with tweezers, etc.
 - 3) Pass a new sample filter through the PTFE tubing and stick the tip to the protection tube.
 - 4) Turn the probe cap clockwise and secure it.
 - [Reference line]
 - 1) Pull out the Reference Filter out of LD249 and insert a new one all the way in.



- Replacing the Probe
 - 1) Turn the tube connector counterclockwise and pull the probe tube out of LD249.
 - 2) Insert the tip of a new probe tube until it hits the body.
 - 3) Turn the tube connector clockwise and secure it.

8 Replacement Parts/Option

| Classification | Cat. No. | Name |
|-------------------|------------|------------------|
| Replacement Parts | 2702-19370 | Spare Probe |
| | 2702-19371 | Sample Filter |
| | 2702-19372 | Reference Filter |
| Option | 2702-19373 | Analog Cable |

9 Specifications

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|-------------------------------|--|---------------------------------------|
| Detection Method | Comparison of the thermal conductivity (TC) between the sample gas and the reference gas (ambient air) | |
| Target Gases | Helium, hydrogen, carbon dioxide, argon, neon, nitrogen, etc. | |
| Sensitivity (min. det. value) | Std Range | Helium gas 0.005 mL/min |
| | High Range | Helium gas 0.0005 mL/min |
| Display | Color LCD | |
| Settings | Detection range / LCD brightness / Buzzer volume / Auto-off | |
| Power Rating | DC 5 V / 700 mA (USB power supply) | |
| Power Supply | 3 AA alkaline batteries / USB Type-C | |
| Environmental Requirements | Location | indoor |
| | Ambient Temperature / Humidity | 10 to 40°C / 10-80% (no condensation) |
| | Altitude | 2,000 m or less |
| | Environmental Pollution Level | 2 |
| Dimensions / Weight | 52(W) x 48(D) x 170(H) mm (excluding projections) / approx. 250 g (excluding batteries) | |

10 Action for Environment

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| | To users of GL Sciences equipment in the European Union: 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. |
| | Disposal of waste batteries Applicable in the European Union and other European countries with separate collection systems. This symbol shown on the battery or on the package indicates that the battery that is integrated in the product should not be handled as waste when disposing of the product. When disposing of the product, the internal battery should be removed for recycling. |

※We reserve the right to modify and improve the Instruction Manual without advance warning.