# CENTER® 384




Instruction Manual

## Hydrogen ($H_2$) Gas Leak Detector

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# 1. GENERAL INFORMATION

Thank you for purchasing Hydrogen (H2) Leakage Detector. Read though the instruction manual before operation for correct and safe usage. Please store and retain this instruction manual for future reference.

## 1.1 ⚠ SAFETY USE AND WORKING ENVIRONMENT

Hydrogen (H2) Leakage Detector only is used by persons who have necessary knowledge, skill and know-how for Hydrogen Leakage.

It is designed to detect the leakage for a mixture consisting of 95% nitrogen and 5% hydrogen.

Please keep the working environment in the moving fresh air. Don't work the detector in the confined space or in closed room.

## 1.2 HYDROGEN INFORMATION

Hydrogen is the lightest element. Therefore, it spreads and volatilizes very quickly. At standard temperature and pressure, hydrogen is a colorless, odorless, tasteless, non-toxic, nonmetallic.

⚠ But over 5% Hydrogen is highly combustible and explosive. The lower explosion limit for 100% Hydrogen is < 4% and for Forming Gas (a mixture of hydrogen and nitrogen) is 5.6% at room temperature.

A mixture consisting of 95% nitrogen and 5% hydrogen is not inflammable (see ISO 10156), non

toxic and with on environmental issues. And when it exposes to the ambient air, it quickly rises.

## 2. FEATURES

This Hydrogen (H2) Leakage Detector can quickly detect the hydrogen leakage. And its sensitivity is less than 5 ppm.

A new Forming Gas mixture 5% Hydrogen (H2)+ 95% Nitrogen(N) is used in the refrigerant or air-conditioning systems. Therefore, a good leakage detector can help the maintenance service to trace the leakage and improve the cooling efficiency.

- Microprocessor Control with advanced digital signal processing.
- Multi color visual display.
- High-median-Low leak sensitivity selector.
- Low battery indication.
- Semiconductor gas sensor.
- Detection of mixture 5% Hydrogen (H2) + 95% Nitrogen(N).
- Carrying case included.
- 15.5” (40 CM) flexible stainless probe.
- Ambient concentration reset.
- Long-life, DC brushless fan.
  Automatic zero and background compensation.

## 3. SPECIFICATION

**Detectable Gases:**

mixture 5% Hydrogen (H2) + 95% Nitrogen(N).

**Sensitivity:**

Less than 5 ppm

| | H | M | L |
|---|---|---|---|
| 95%N2,5%H2 | 2g/year | 15g/year | 30g/year |

**Alarm Method:**

Buzzer, Tricolor LED bar Indicator.

**Power Usage:**

4 AA size (6V DC) Alkaline Batteries

**Snake Tube length:** 40cm ( 15.5" )

**Dimension / Weight:**

173 x 66 x 56 mm ( approximately 400g )

**Accessories:**

Alkaline batteries ( AA) X 4 pcs

User manual, carry case.

**Battery Life:**

Approximately 7 hours normal use.

**Auto power OFF:** 10 minutes

**Disable Auto Power Off:**

Press and Hold "Hi" button then power on the meter.

**Warm-Up Time:** Approximately 45 seconds

**Operating Temperature & Humidity:**

0 ~40 °C, < 80% RH

**Storage Temperature & Humidity:**
-10 ~60 °C, < 70% RH
**Altitude:** < 2000M (6500')

## 4. OPERATION GUIDE

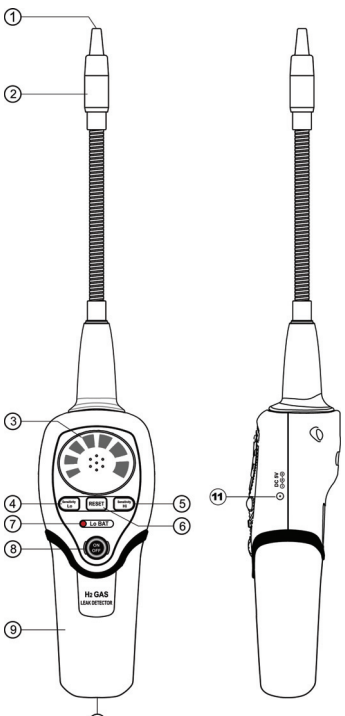
(1) The Hydrogen detector unit is not equipped with anti-explosive designs and measures. Do not use this unit in the environment with the burnable gases.

(2) There are some environmental conditions that might cause error reading:

- Pollutant places.
- Large temperature variation.
- Places with high wind velocity.
- Organic solvent, adhesive vapor, fuel gas and vesicant will cause abnormal response from the sensor. Try to avoid the environment involved with this substance.
- Places fill with too much to Hydrogen Gas.

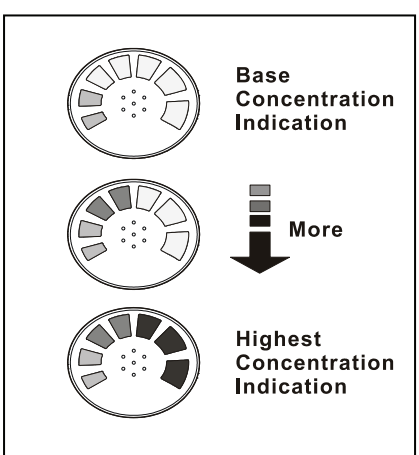
## 5. PARTS & CONTROL

### 5-1 Panel Description



| | |
|---|---|
| ① Sensor | ② Sensor Protector |
| ③ LED Leak Indicators | ④ Sensitivity Lo Button |
| ⑤ Sensitivity Hi Button | ⑥ Reset Button |
| ⑦ Low Battery Indicator | ⑧ Power On/Off |
| ⑨ Battery Cover | ⑩ Battery Cover Screw |

## 5-2 LED Leak Indicator Definition:



## 6. GETTING STARTED

### 6-1 Installing Batteries

- Loose the screw and remove the battery compartment door located on the bottom of the instrument as show below (Fig.1).
- Install 4 “AA” size alkaline batteries.
- Reinstall the battery cover by aligning it with the handle.

When the batteries are nearing the end of their useful life, the Red LED Low Battery indicator illuminates. The batteries should be replaced as quickly as possible.

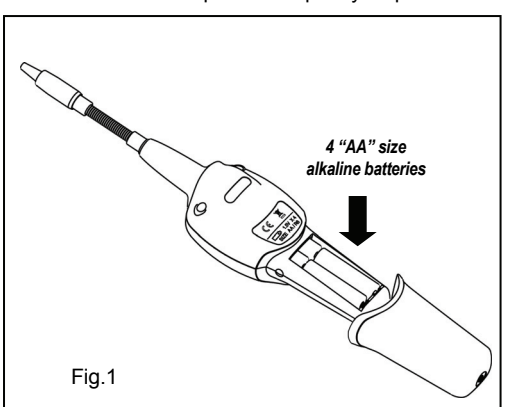



Fig.1

## 6-2 Automatic Ambient Reset Feature

This Hydrogen leak detector features an Automatic Ambient Reset function that sets the unit to ignore ambient concentrations of hydrogen.

- **Automatic Ambient Setup** - Upon initial power on, the unit automatically sets itself to ignore the level of Hydrogen present at the tip. Only a level, or concentration, greater than this will cause an alarm.

  **CAUTION!**

  Be aware that this feature will cause the unit to ignore any hydrogen present at turn on. In other words, with the unit off if you place the tip up to a known leak and switch the unit on, no leak will be indicated!
- **Ambient Reset Feature** - Resetting the unit during operation performs a similar function, it programs the circuit to ignore the level of hydrogen concentration present at the tip. This allows the user to 'home-in' on the source of the leak (higher concentration). Similarly, the unit can be moved to fresh air and reset for maximum sensitivity. Resetting the unit with no Hydrogen present (fresh air) causes any level above zero to be detected.
- After the unit is warmed up, the default sensitivity level is set at “Medium” and Auto Reset function is “ON”
- Auto Reset function is best used initially when user

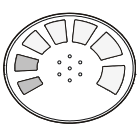
is moving around trying to identify leakage source. Once the leak source is determined, cancel the Auto Detect function to proceed with leakage measurement.

- Auto Reset function should be turned OFF when use in fixed position leakage detection.

## 6-3 Feature Sensitivity Adjustment

The Instrument provides three levels of sensitivity. When the unit is switched on, it is set to the medium sensitivity level.

- To change the sensitivity, press the Sensitivity Lo key. When the key is pressed, the visual display will momentarily show the two left LED's (green) indicating Low Sensitivity level is selected.
- To switch back to High Sensitivity, press the Sensitivity Hi key. The two right LED's (red) will light momentarily indicating high Sensitivity level is selected.



**Low Sensitivity level (Green LED)**



**Medium Sensitivity level (Orange LED)**



**High Sensitivity level (Red LED)**

## 7. OPERATING PROCEDURE

> ⚠ ***WARNING*!**
> ***Do not operate this instrument in the presence of gasoline, natural gas, propane, or in other combustible atmospheres.***

### ● How To Find Leaks?

**NOTE:** A sudden whipping of the leak detector probe or "blowing" into the sensor tip will affect the air flow over the sensor and cause the instrument to alarm.

**(1) Power-Up key:**

The  key turns the Hydrogen Leak Detector instrument ON or OFF function.

Press it once to turn on the Hydrogen Leak Detector, the display will illuminate with flash, for 45 seconds to heat up the sensor.

Press and hold this button for 5 second to turn OFF the power.

**(2) Auto reset & Reset function key**

When the Auto Reset function is turned ON, the meter will monitor background status and fine tune itself. When Reset LED light is on, it indicates it is in ON mode. Press Reset button and hold for 2 seconds the Reset light will turn off and Auto Reset function is in OFF mode.

When the Reset light is off, it indicates the Reset function is in manual mode. Press the Reset button once to enable manual Reset function.

**(3) Enter the measuring mode**

- Place the tip of the leak-detector probe as close as possible to the site of the suspected leak. Try to position the probe within 1/4 inch (6 mm) of the possible leak source.
- Slowly move the probe past each possible leakage point.
- When the instrument detects a leak source, the audible tone will alarm. Additionally, the visual indicators will light from left to right, Green LED then Orange LED then Red LED (highest concentration) as increasing of level indicate that the location is close to the source.
- When the Instrument signals a leakage, pull the probe away from the leak for a moment, and then bring it back to pinpoint the location. If the hydrogen leak is large, setting the sensitivity switch to LOW will make it easier to find the exact site of the leak.
- Return the sensitivity switch to HIGH before searching for additional leaks.
- When you've finished leak-testing, turn OFF the instrument and store it in a clean place, protect the leak detector from possible damage.

## 8. REPLACING NEW SENSOR

The sensor has a limited operative period. Under normal operation, the sensor should work more than one year. Expose the sensor under high density of coolant (>30000ppm) will shorten its life cycle rapidly. It is important to ensure that sensor surface is free from water droplets, vapor, oil, grease, dust and any or all other forms of contaminant. Furthermore, to ensure good working condition of the unit, sensors must be replacement periodically when its operative life is over.

> ⚠ ***WARNING! When replacing new sensor, the worn-out sensor may be HOT!!***

(1) Remove cone cap cover from the tip of snake tube.
(2) Pull out old sensor and insert the new sensor into the plug ( see below fig.2).
(3) Seal the cap cover over the plug.

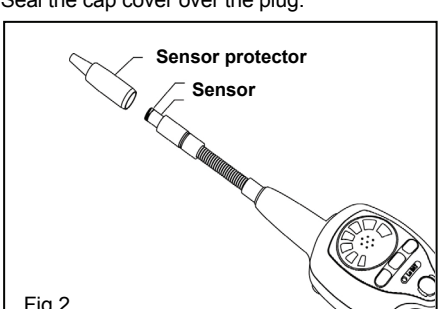


Fig.2

## 9. CLEANING:

The Instrument plastic housing can be cleaned with standard household detergent or isopropyl alcohol. Care should be taken to prevent the cleaner from entering the instrument. Gasoline and other solvents may damage the plastic and should be avoided.

> ⚠ ***WARNING!***
> ***The detergent or isopropyl alcohol might damage the sensor, please keep then from the sensor through the process.***

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