

# PHD-4 Portable Helium Detector

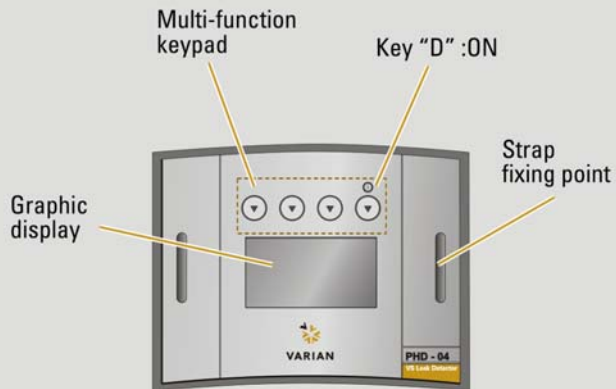
## Quick Reference Card



**Alpine Components**

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### FRONT PANEL DISPLAY

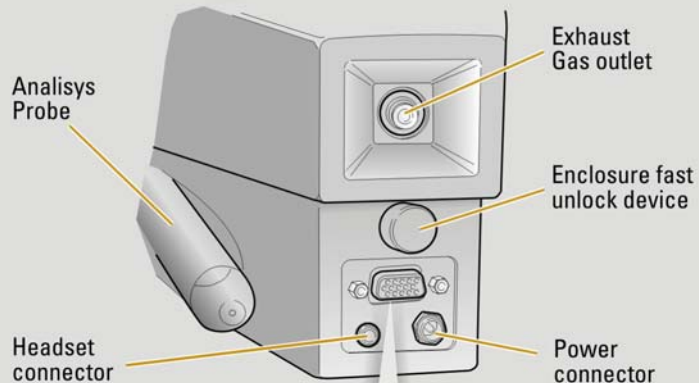


Use only Varian-provided power supply with a ground connection.  
(90 - 240 Vac 50/60 Hz)

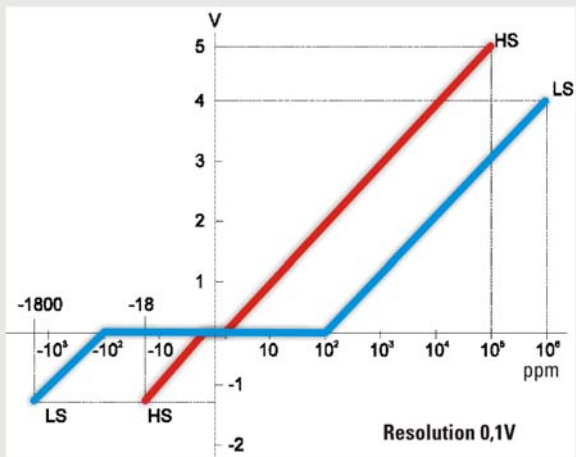
### START UP

- Press (and hold down 3 sec) the "D" key.
- Self test will start giving following results:
  - V: Test OK.
  - !: Test fail.
  - R: Test must be repeated.
  - PS: No battery or battery fail.

### I/O - RS232 INTERFACE



| Pin number | Signal         |
|------------|----------------|
| 1          | Analog out (+) |
| 2          | RS232 TX       |
| 3          | Rs232 RX       |
| 4          | Remote IN      |
| 5          | RS232 GND      |
| 6          | Analog out (-) |
| 11         | Relay 1 N.O.   |
| 12         | Relay 2 N.O.   |
| 13         | Relay 3 N.O.   |
| 14         | Relay 4 N.O.   |
| 15         | Relay common   |



PIN 1-6 ANALOG VOLTAGE

**TECHNICAL DATA**

|   |   |            |
|---|---|------------|
| Minimum detectable He concentration                 | 2 PPM   |            |
| Minimum detectable He leak rate                     | 5x10 <sup>-6</sup> mbar l/s                                 |            |
| Operating conditions<br>- temperature<br>- humidity | +5°C to +35 °C<br>90% RH (non cond.)                        |            |
| Battery operative range                             | 4 h   |            |
| Battery auto discharging                            | 0.1% max. / day +20 °C                                      |            |
| Battery life  | > 500 charge/discharge cycles (IEC standards)               |            |
| Relay contacts data:                                | 24 Vac/cc<br>1 A (resistive load)<br>0,3 A (inductive load) |            |
| Protection set-point levels                         | Low sens.   | High sens. |
| MINIMUM VALUE                                       | 200 PPM   | 2 PPM      |
| DEFAULT VALUE                                       | 400 PPM   | 100 PPM    |
| MAXIMUM VALUE                                       | 600 PPM   | 250 PPM    |

### Battery Pack: Removal and Replacement



Click and rotate. The enclosure will be released



Release discharged battery



Unplug discharged battery connector



Connect new battery connector and fasten it

### Internal Filter: Removal and Replacement



Holding Filter cartridge turn fitting on the top by 1/4 of turn

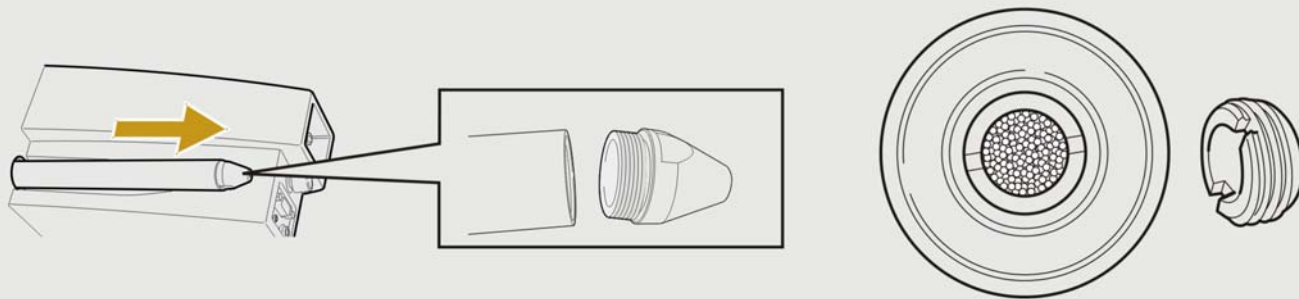


Remove saturated filter



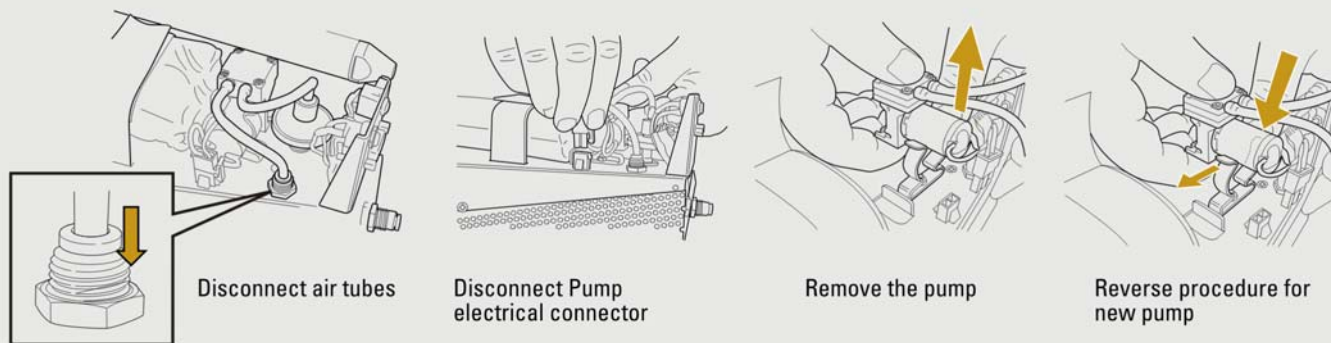
Position new filter and lock sampling line fitting

### Sintered Filter: Maintenance



Clean filter with grease remover and dry with compressed air

### Sampling Pump: Removal and Replacement



Disconnect air tubes

Disconnect Pump electrical connector

Remove the pump

Reverse procedure for new pump

## USER INTERFACE

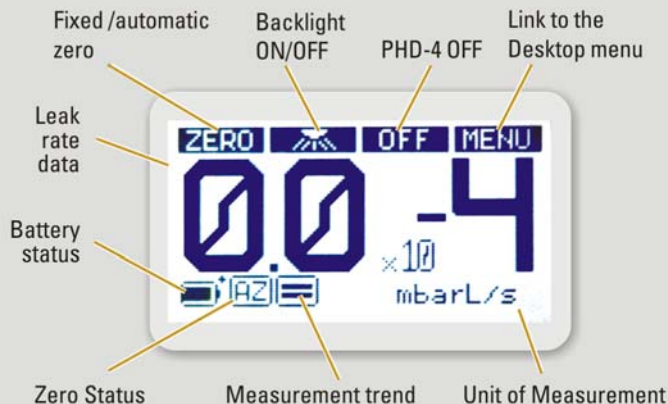
### Large Size Measurement screen Page

**ENABLING:** Menù SETUP/☐ LARGE SCREEN ON

**ACTIVATION:** Automatic (5 sec delay)

**DEACTIVATION:** Temporary (Button "OFF" or "MENU")

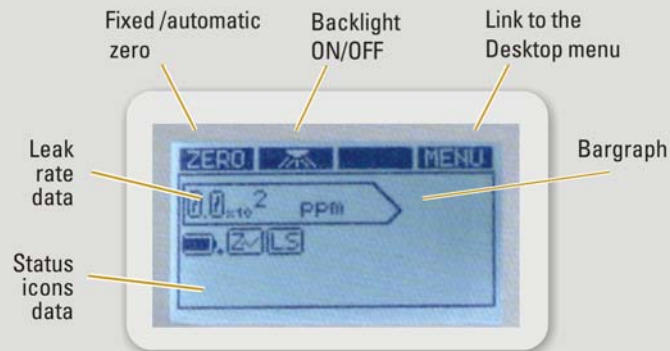
**INFORMATION:**



### Complete measurement screen page

**ACTIVATION:** Default at startup

**INFORMATION:**



### Status icons

| Icon | Function                   | Icon | Function                  |
|------|----------------------------|------|---------------------------|
|      | High sensitivity activated |      | Automatic zero activated  |
|      | Set-point activated        |      | Fixed zero activated      |
|      | Back-flow valve enabled    |      | Low sensitivity activated |

**Options**

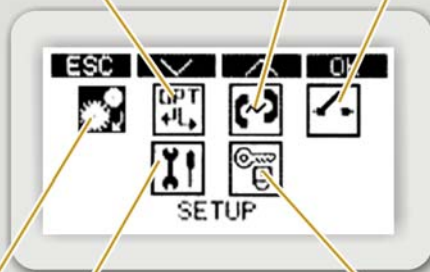
- **Language**
  - English
  - Italiano
  - French
  - Deutsch
- **Unit of Measure**
  - PPM
  - mbarL/sec
  - cm3/sec
  - cm3/min
  - TorrL/sec
  - PaL/sec
  - Pam3/sec
  - SCF/year
  - Kg/h R12
  - g/year R12
- **Helium**
  - Mix value displaying
  - Auto setting

**Set-up**

- High Sensitivity On
- Pump On
- Audio On
- BackLight On
- Large screen On
- Switch-off!

**Communications**

- **Remote control**
  - Analog control
  - RS232 control
- **Baud rate**
  - 1200
  - 2400
  - 4800
  - 9600
  - 19200

**Maintenance**

- **Sensor Clean-up**<sup>1</sup>
- **Battery**
  - Battery maintenance<sup>2</sup>
  - Charge level
- **Reading adjustment**
- **PHD-4 Info**<sup>3</sup>
  - Part number
  - Serial number
  - Firmware release
  - Working time

**Set-point**

- **Set-point 1**
  - Threshold
  - Enable Sp1
- **Set-point 2**
  - Threshold
  - Enable Sp2
- **Set-point 3**
  - Threshold
  - Enable Sp3
- **Set-point 4**
  - Threshold
  - Enable Sp4
- **Safety Set-point**
  - Threshold
  - Enable Safety SP
  - Safety actions
    - Backflow valve
    - Heater OFF

**Locking**

- Enable protection
- Change User password

1 Sensor routine maintenance: sensor cleaning

2 Battery routine maintenance: memory effect resetting

3 To access your unit data

**NOTE****Operative suggestions to get SHORT RECOVERY TIME and LONG PHD-4 LIFETIME:****PHD-4 SETTING:**

- Begin Leak Checking with LOW SENS
- Always use SAFETY SET-POINT

**CHECKING METHOD:**

- Use low *He* concentr. in tracer gas (e.i. 5%*He*/*N*<sub>2</sub>)
- Use low tracer gas pressure (e.i. 0.5 Bar)
- Avoid overflow of *He*
- Avoid sniffing oil, dust or water

**GENERAL:**

- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

**NOTE****Operative suggestions to perform a GOOD LEAK CHECK:**

- Limit background of *He*
- Sweep slowly on suspected areas starting from lower parts
- If *He* background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision



The PHD-4 is complete with a rechargeable battery and related Power Supply. Always recharge the battery in a safe area.



Do not use the PHD-4 in environments containing potentially flammable gases or vapors. If the PHD-4 is used in combination with sampling safety devices (only if marked EEX ia IIAT4), the PHD-4 must be positioned outside the area with a risk of explosion.



Do not cover or obstruct the ventilation slots on the top part of the PHD-4 and the rear discharge duct.