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 IECX ‘E’ or IECX ‘I’), the PHD-4 must be positioned outside the areas with risk of explosion.

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

User Interface

Large Size Measurement screen Page

ENABLING: Mask SETUP/□ LARGE SCREEN ON
ACTIVATION: Automatic (5 sec delay)

DEACTIVATION: Temporary (Button “OFF” or “MENU”)

INFORMATION:
- Leak rate data
- Battery status
- Zero Status
- Measurement trend
- Unit of Measurement
- Backlight ON/OFF
- Link to the Desktop menu

Options
- Unit of Measure: PPM, mbar/sec, cmH2O, Bar, l/min
-汉语
- Deutsch

Communications
- Remote control
- Analog control
- RS232 control
- Read rate
- 1200
- 9600
- 19200

Maintenance
- Sensor Check-up
- Battery maintenance
- Charge level
- Reading adjustment

Leaking
- Enable protection
- Change user password

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

User Interface

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 IECX ‘E’ or IECX ‘I’), the PHD-4 must be positioned outside the areas with risk of explosion.

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

User Interface

Large Size Measurement screen Page

ENABLING: Mask SETUP/□ LARGE SCREEN ON
ACTIVATION: Automatic (5 sec delay)

DEACTIVATION: Temporary (Button “OFF” or “MENU”)

INFORMATION:
- Leak rate data
- Battery status
- Zero Status
- Measurement trend
- Unit of Measurement
- Backlight ON/OFF
- Link to the Desktop menu

Options
- Unit of Measure: PPM, mbar/sec, cmH2O, Bar, l/min
- 汉语
- 德语

Communications
- Remote control
- Analog control
- RS232 control
- Read rate
- 1200
- 9600
- 19200

Maintenance
- Sensor Check-up
- Battery maintenance
- Charge level
- Reading adjustment

Leaking
- Enable protection
- Change user password

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

User Interface

Large Size Measurement screen Page

ENABLING: Mask SETUP/□ LARGE SCREEN ON
ACTIVATION: Automatic (5 sec delay)

DEACTIVATION: Temporary (Button “OFF” or “MENU”)

INFORMATION:
- Leak rate data
- Battery status
- Zero Status
- Measurement trend
- Unit of Measurement
- Backlight ON/OFF
- Link to the Desktop menu

Options
- Unit of Measure: PPM, mbar/sec, cmH2O, Bar, l/min
- 汉语
- 德语

Communications
- Remote control
- Analog control
- RS232 control
- Read rate
- 1200
- 9600
- 19200

Maintenance
- Sensor Check-up
- Battery maintenance
- Charge level
- Reading adjustment

Leaking
- Enable protection
- Change user password

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

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

1. Begin Leak Checking with LOW SENS
2. Always use SAFETY SET-POINT
3. Use low tracer gas pressure (e.i. 0.5 Bar)
4. Avoid overflow of He
5. Avoid sniffing oil, dust or water

Generale:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE

Operative suggestions to perform a GOOD LEAK CHECK
- Leak background of He
- Sweep slowly on suspected areas starting from lower parts
- If background is variable use AZ mode
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

User Interface

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 IECX ‘E’ or IECX ‘I’), the PHD-4 must be positioned outside the areas with risk of explosion.

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

User Interface
Sampling Pump: Removal and Replacement

Clean filter with grease remover and dry with compressed air.

Sintered Filter: Maintenance

Disconnect air tubes Disconnect Pump electrical connector

Remove the pump Reverse procedure for new pump

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

Routine Maintenance

Click and rotate. The enclosure will be released

Battery Pack: Removal and Replacement

Click and rotate. The enclosure will be released

Release discharged battery

Sticking discharged battery connector Contact new battery connector and fasten it

Battery operative range 4 h

Battery auto discharging 0.1% max. / day +20 °C

Battery life 3 360 charge/discharge cycles (IEC standards)

TECHNICAL DATA

Minimum detectable He concentration 2 PPM

Minimum detectable He leak rate 5x10^-6 mbar l/s

Operating conditions temperature +5 °C to +35 °C

Humidity 90 % RH (non cond.)

Battery operative range 4 h

Battery auto discharging 0.1% max. / day +20 °C

Battery life 3 360 charge/discharge cycles (IEC standards)

Relay contacts data: 24 Vac/cc

1 A (resistive load)

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

Pin 1-6 ANALOG VOLTAGE

Resolution 0,1 V/ppm

Technical data base unit General Information - Electrical connection
Sampling Pump: Removal and Replacement

1. Clean filter with grease remover and dry with compressed air.

Sintered Filter: Maintenance

1. Disconnect air tubes.
2. Disconnect Pump electrical connector.
3. Remove the pump.
4. Reverse procedure for new pump.

Release discharged battery
Unplug discharged battery connector
Connect new battery connector and fasten it

Pin 1-6 ANALOG VOLTAGE

Minimum detectable He concentration: 5x10^(-19) mbar l/s

Operating conditions:
- Temperature: +5 °C to +35 °C
- Humidity: 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
- 1 A (resistive load)
- 0.3 A (inductive load)

Protection set-point levels:
- Low sens.: MINIMUM VALUE: 200 PPM
- High sens.: DEFAULT VALUE: 400 PPM
- Maximum value: 600 PPM

Pinout:
- Pin 1: Analog out (+)
- Pin 2: TX
- Pin 3: RX
- Pin 4: Remote IN
- Pin 5: Power connector
- Pin 6: RX
- Pin 7: Relay 1 N.O.
- Pin 8: Relay 2 N.O.
- Pin 9: Relay 3 N.O.
- Pin 10: Relay 4 N.O.
- Pin 11: RS232 GND
- Pin 12: Analog out (-)
- Pin 13: Remote OUT
- Pin 14: Relay 5 N.O.
- Pin 15: Relay common
- Pin 16: Remote OUT

Battery Pack: Removal and Replacement

Click and rotate. The enclosure will be released.

Internal Filter: Removal and Replacement

Holding filter and turn fitting on the top by 1/4 of turn
Remove saturated filter
Position new filter and lock sampling line fitting

Sintered Filter: Maintenance

Glass 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

General information - Electrical connection
**Sampling Pump: Removal and Replacement**

Clean filter with grease remover and dry with compressed air.

Disconnect air tubes. Disconnect Pump electrical connector.

Remove the pump. Reverse procedure for new pump.

**Sintered Filter: Maintenance**

Disconnect Pump electrical connector.

Remove the pump. Reverse procedure for new pump.

**Internal Filter: Removal and Replacement**

Release discharged battery. Unplug discharged battery connector.

Connect new battery connector and fasten it.

**Saturated Filter**

Position new filter and lock sampling line fitting.

**Routine Maintenance**

Click and rotate. The enclosure will be released.

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

**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.

**Routine Maintenance**

**Technological Data**

- Minimum detectable He concentration: 2 PPM
- Operating conditions: -8°C to +25°C, 90% RH (non cond.)
- Batteries auto discharging: 0.1% max. / day +20°C
- Battery life: 700 charge/discharge cycles (IEC standards)
- Relay contacts data: 3 A (max. load), 0.3 A (inductive load)
- Minimum value: 200 PPM
- Default value: 400 PPM
- Maximum value: 600 PPM

**Front Panel Display**

- I/O - RS232 Interface
- VS Leak Detector
- Use only Agilent-provided power supply with a grounded connection. (90 - 240 Vac / 50/60 Hz)

**START UP**

- Press (and hold down 3 sec) the “D” key.
- Test OK.
- Test fail.
- PS: No battery or battery fail.

**Technical Data**

- Minimum detectable He concentration: 2 PPM
- Battery life: 700 charge/discharge cycles (IEC standards)
- Relay contacts data: 3 A (max. load), 0.3 A (inductive load)
- Minimum value: 200 PPM
- Default value: 400 PPM
- Maximum value: 600 PPM

**TECHNICAL DATA**

- Minimum detectable He concentration: 2 PPM
- Battery life: 700 charge/discharge cycles (IEC standards)
- Relay contacts data: 3 A (max. load), 0.3 A (inductive load)
- Minimum value: 200 PPM
- Default value: 400 PPM
- Maximum value: 600 PPM
Sampling Pump: Removal and Replacement
- Clean filter with grease remover and dry with compressed air
- Disconnect air tubes and Pump electrical connector
- Remove the pump
- Reverse procedure for new pump

Sintered Filter: Maintenance
- Use Agilent-provided power supply with a grounded connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on the “D” key.
- Self test will start giving following results:
  - “R”: Test OK.
  - “!”: Test fail.
  - “PS”: No battery or battery fail.

Internal Filter: Removal and Replacement
- Remove saturated filter
- Position new filter and lock sampling line fitting

Battery Pack: Removal and Replacement
- Click and rotate. The enclosure will be released
- Holding Filter cartridge turn fitting on the top by 1/4 of turn

Front Panel Display
- I/O - RS232 INTERFACE
- VS Leak Detector
- Use only Agilent-provided power supply with a ground connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on 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.

Sintered Filter: Maintenance
- Use Agilent-provided power supply with a grounded connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on 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.

Battery Pack: Removal and Replacement
- Click and rotate. The enclosure will be released
- Holding Filter cartridge turn fitting on the top by 1/4 of turn

Internal Filter: Removal and Replacement
- Remove saturated filter
- Position new filter and lock sampling line fitting

Sintered Filter: Maintenance
- Use Agilent-provided power supply with a grounded connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on 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.

Battery Pack: Removal and Replacement
- Click and rotate. The enclosure will be released
- Holding Filter cartridge turn fitting on the top by 1/4 of turn

Front Panel Display
- I/O - RS232 INTERFACE
- VS Leak Detector
- Use only Agilent-provided power supply with a ground connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on 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.

Battery Pack: Removal and Replacement
- Click and rotate. The enclosure will be released
- Holding Filter cartridge turn fitting on the top by 1/4 of turn

Internal Filter: Removal and Replacement
- Remove saturated filter
- Position new filter and lock sampling line fitting

Sintered Filter: Maintenance
- Use Agilent-provided power supply with a grounded connection. (90 - 240 Vac, 50/60 Hz)
- Press and hold down 5 sec on 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.

Battery Pack: Removal and Replacement
- Click and rotate. The enclosure will be released
- Holding Filter cartridge turn fitting on the top by 1/4 of turn
**User Interface**

**Large Size Measurement screen Page**

- **ENABLEMENT:** Mask SETUP/□ LARGE SCREEN ON
- **ACTIVATION:** Automatic (5 sec delay)
- **DEACTIVATION:** Temporary (Button “OFF” or “MENU”)

**INFORMATION:**
- Leak rate data
- Battery status
- Zero Status
- Measurement trend

**Options**
- Language: English, Italian, French, Dutch
- Unit of Measure: ppm, ml/sec, emb/sec, l/sec
- Sensitive: fixed, automatic
- Fixed zero: on, off
- Battery: 50%, 100%
- Maintenance: sensor routine maintenance
- Alarm: fixed, auto
- Measurement trend: fixed, auto

**Setting**
- Leakage: minimum, maximum
- Measurement trend: fixed, auto

**Communications**
- Remote control
- Analog control
- RS232 control
- LCD
- Keypad
- Printer

**Maintenance**
- Sensor checks
- Battery
- Calibration
- Recharging
- Leakage

**Leaking**
- Detection
- Alarm

**Set-up**
- High Sensitivity On/Off
- Low Sensitivity On/Off
- Auto
- Background
- Switch-off

**User Interface**

**Complete measurement screen page**

- **ACTIVATION:** Default at startup
- **INFORMATION:**
  - Leak rate data
  - Battery status
  - Zero Status
  - Measurement trend

**Options**
- Language: English, Italian, French, Dutch
- Unit of Measure: ppm, ml/sec, emb/sec, l/sec
- Sensitive: fixed, automatic
- Fixed zero: on, off
- Battery: 50%, 100%
- Maintenance: sensor routine maintenance
- Alarm: fixed, auto
- Measurement trend: fixed, auto

**Setting**
- Leakage: minimum, maximum
- Measurement trend: fixed, auto

**Communications**
- Remote control
- Analog control
- RS232 control
- LCD
- Keypad
- Printer

**Maintenance**
- Sensor checks
- Battery
- Calibration
- Recharging
- Leakage

**Leaking**
- Detection
- Alarm

**Set-up**
- High Sensitivity On/Off
- Low Sensitivity On/Off
- Auto
- Background
- Switch-off
Operative suggestions to get SHORT RECOVERY TIME and LONG PHD-4 LIFETIME:

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

CHECKING METHOD:
- Use low the concent. in tracer gas (e.g. 5%/He/N2)
- Operate in environments with stable room temperature
- Periodically maintain filtering system
- Periodically check Reading precision

GENERAL:
- Periodically perform SAMPLING AUT/ADJ. and BATTERY CARE

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 areas 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.

PHD-4 Portable Helium Detector
Quick Reference Card

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 areas 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.

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 areas 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.
Operative suggestions to perform a GOOD LEAK CHECK:
- Limit background of the sensor to sensitive areas starting from the 1st measurement.
- If the background is variable use AZ mode.
- Operate in environments with stable room temperature.
- Periodically monitor filtering system.
- Periodically check Reading precision.

USER INTERFACE

Large Size Measurement screen Page

Options
- Language
- English
- Italian
- French
- Deutsch
- Unit of Measurement
- ppm
- mbar/sec
- mBar
- l/min
- Kpm
- Sccm
- %He
- Kg/h
- l/sec
- l/sec
- Mix valve display
- Auto setting

Communications
- Remote control
- Analog control
- RS232 control
- Serial Mode
- Kpm
- Sccm
- %He
- Kg/h
- l/sec
- l/sec

Set-up
- High sensitivity
- Low sensitivity
- Fixed Zero
- Automatic zero
- Battery maintenance
- Charge level
- Reading adjustment
- PHD-4 info
- Part number
- Serial number
- Firmware release
- Working time

Leaking
- Sensitivity
- Sensitive measurement
- Battery power
- Change user password

Safety info

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.

Operative suggestions to get SHORT RECOVERY TIME and LONG PHD-4 LIFETIME:
- Begin Leak Checking with LOW SENS;
- Always use SAFETY SET-POINT;
- Use low tracer gas pressure (e.i. 0.5 Bar);
- Avoid sniffing oil, dust or water.

GENERAL:
- Periodically perform SAMPLING AUTOADJ. and BATTERY CARE.

Operative info

User Interface

The PHD-4 Portable Helium Detector Quick Reference Card

Code: 87-900-126-01
(A) 05/2011