

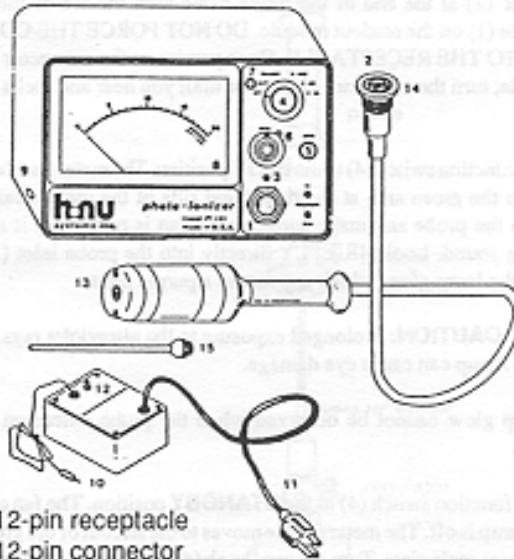


MODEL PI-101
Quick-Start
Manual



MODEL PI-101

readout module



1. 12-pin receptacle
2. 12-pin connector
3. high voltage switch
4. function switch
5. zero knob
6. span control
7. low battery indicator, LED
8. meter
9. charger minijack
10. charger miniplug
11. charger power cord
12. charger, LED
13. probe sample inlet
14. connector adapter ring
15. probe extension

Figure 1

PREPARING FOR FIELD USE

Attach the probe to the readout module. Align the slot on the 12-pin connector (2) at the end of the probe cable with the tab in the 12-pin receptacle (1) on the readout module. **DO NOT FORCE THE CONNECTOR INTO THE RECEPTACLE.** Once you insert the connector into the receptacle, turn the connector clockwise until you hear and feel a distinct click.

Turn the function switch (4) to the **BATT** position. The meter needle should deflect to the green area at the right-hand side of the meter scale plate. Listen to the probe and make sure that the fan is operating; it makes a humming sound. Look **BRIEFLY** directly into the probe inlet (13) and observe the lamp glow, which appears as a purple light.

CAUTION: Prolonged exposure to the ultraviolet rays of the lamp can cause eye damage.

The lamp glow cannot be observed when the probe extension (15) is attached.

Turn the function switch (4) to the **STANDBY** position. The fan operates and the lamp is off. The meter needle moves to the left out of the green area on the meter scale plate. Turn the zero knob (4) until the meter needle rests at 0. (The PI-101 can be electronically zeroed only while the function switch is in the **STANDBY** position).

Check the span setting (1.0 for 9.5 eV lamps, 9.8 for 10.2 eV lamps, 5.0 for 11.7 eV lamps) and adjust as necessary using the span control (6). Connect the regulator to the calibration gas canister (see figure 2). Using flexible tubing (three inches long is sufficient, one quarter inch diameter), connect the calibration gas to the probe inlet (13, Figure 1), and open the valve on the regulator. Use of the probe extension (15, Figure 1) is optional during this procedure. Recheck the electronic zero and adjust as necessary.

Once the PI-101 is electronically zeroed, turn the function switch (3, Figure 1) to the **0-2000** range position (X100).

CALIBRATION

HNU calibration gas consists of approximately 100 ppm isobutylene in an air matrix; it is referenced to benzene. The meter reading that should be obtained during calibration is marked on the gas canister label.² With the function switch (4, Figure 1) at the **0-2000** range position, the meter needle should move slightly to the right.

NOTE: Any calibration gas used must have the same matrix gas as the atmosphere in which the PI-101 is used. Use of any other gas significantly affects the readings obtained. Readings may appear to be far higher or lower than they actually are. If the monitor is used in air, never use N_2 or any gas other than air, as the matrix gas in calibration standards.

Turn the function switch to the **0-200** range position (X10). The meter should read very close to the ppm number on the calibration gas canister. Adjust the span pot (6, Figure 1) until an exact reading is obtained. The span setting used to obtain an accurate reading in this procedure is the reference point from which all other readings are determined.

Turn the function switch (4, Figure 1) to the **0-20** range position (X1). The meter needle should deflect fully to the right.

Turn the function switch back to the **0-200** range position and recheck the meter reading to ensure that an accurate reading has held. Make any needed adjustments to the span control (6, Figure 1), and if necessary, recheck the accuracy by turning the function switch to the **0-20** range position and then back to the **0-200** range position.

Turn the function switch to the **OFF** position. Close the valve on the calibration gas regulator and disconnect it from the probe inlet (13, Figure 1). The PI-101 is now ready for field use.

NOTE: High humidity (90% and above) affects sensitivity. This should be taken into account when calibrating. Readings may appear to be lower than actual, but use of a humid air matrix in the calibration standard minimizes this effect.

CHARGING THE PI-101

Turn the function switch (4, Figure 1) to the OFF position.

KEEP THE PROBE ATTACHED TO THE READOUT MODULE DURING THE CHARGING PROCESS.

IF THE PROBE IS NOT ATTACHED, THE CHARGING PROCESS IS UNSUCCESSFUL.

Plug the charger miniplug (10, Figure 1) into the charger minijack on the PI-101 readout module (9, Figure 1). Connect the charger power cord (11, Figure 1) to an AC power supply.

Observe the LED on the charger (12, Figure 1). It should be on when the power cord is connected to an AC power supply.

Charge for the PI-101 for eight to ten hours.

CHARGING, (CONT.)

NOTE: If the particular PI-101 unit is a **GP PI-101** (General Purpose), it is not necessary that the probe be attached during the charging process. This is **ONLY** true for GP PI-101 units. All other types of PI-101 units **MUST** have the probe attached during the charging process.

The PI-101 can be left on charge whenever it is not in use. It cannot overcharge. The PI-101 can be operated when attached to the charger, however, charging time is longer than eight to ten hours.

QUICK CHECKS

Charge did not "take". Is the probe attached? Is the high voltage switch completely depressed? Is the charger LED on? Is the charger output -15 VDC?

To check the charger output, use a voltmeter. The charger must be connected to an AC power supply during this process. Place the black (common) lead on the miniplug on the sleeve. Place the red (positive) lead on the tip of the miniplug. The correct voltage is +/- 15 VDC. If a positive voltage is read at this point, check the position of the voltmeter leads.

For more detailed information on the PI-101, consult the complete PI-101 manual, or contact HNU Systems, Inc.

¹ The probe extension may become contaminated during normal use and must be cleaned periodically. Use the same procedure as for ion chamber cleaning, which is described in Service Note 86-01 (included in this booklet). If the probe extension is used during calibration, it should be free of any contaminants to ensure an accurate calibration.

² Most calibration gas canisters supplied by HNU Systems, Inc., have a label stating a particular ppm to be read with a span setting of 9.8. This is the recommended span setting for the 10.2 eV lamp **ONLY**, which is the most commonly used lamp. Be sure to use the span setting recommended for the particular lamp that is used during the calibration; 1.0 for 9.5 eV lamps, 9.8 for 10.2 eV lamps, and 5.0 for 11.7 eV lamps.

CLEANING PROCEDURE

FOR PI-101 (and ISPI-101)

LAMP AND ION CHAMBER LAMP REMOVAL

Remove the probe from the unit. Hold the probe upright, cable down. Remove the two cross-headed screws that hold the black end cap. Carefully remove the end cap. If the white ion chamber remains in the cap, remove it. The light source remains in the probe body. Place your hand over the top of the probe and carefully tilt. The lamp falls into your hand. Note the eV number etched on the lamp.

LAMP CLEANING 10.2 and 9.5 eV

- a. Put a small drop of HNU cleaning compound (part#81-101-500) on the lens of the lamp (small glass circle on the metal end).
- b. Using a nonlinting tissue, rub in a circular motion until all residue is removed.
- c. Rinse with hot, clean tap water, and dry with nonlinting tissue.
- d. If the lens is still not clean, repeat steps a, b, and c.

LAMP CLEANING 11.7 eV

- a. Clean the lens only (small glass circle on the metal end) with freon or any chlorinated organic solvent to remove deposits. Use a nonlinting tissue.
- b. DO NOT use HNU cleaning compound or any water miscible solvent on these lamps.
- c. If still dirty, repeat step a.

ION CHAMBER CLEANING

1. Remove the O-ring from the side opposite the wire mesh and save.
2. Agitate the whole assembly in a beaker of methanol or acetone, or place the beaker and contents in an ultrasonic bath for ten minutes.
3. Remove the beaker and shake out surplus solvent. Dry oven at room temperature or bake for two hours in a drying oven at 100 C. Allow chamber to cool completely before reinstalling.
4. In an emergency, careful use of a hairdryer is permissible.

REASSEMBLY

1. Hold the probe upright, cable down, and replace the lamp with the lens uppermost.
2. Replace the O-ring in the groove in the ion chamber (side opposite the wire mesh).
3. Place the ion chamber over the lamp with the wire mesh side uppermost. Make sure all connection pins, and the vent hole in the ion chamber are correctly aligned. (The small vent hole in the ion chamber lines up with the vent hole in the probe, which has a small black O-ring around it).
4. Replace the probe cap noting the alignment of the screw holes. Replace the two screws and tighten evenly. The unit is now ready to be used.

FAN CLEANING

NEEDED:

Flat Screwdriver
Cotton Swabs
Clean Water

DISASSEMBLY

Hold the probe with the cable up. With one hand supporting the end of the probe, remove the exhaust screw, located next to the cable. Gently slide the lamp housing out of the probe shell. Set the shell aside. Working on a flat surface, place the probe end down with the small printed circuit board upwards and facing you. Unplug the signal cable (#5) from the connector on the board. Remove the small screw holding the board in place (#4). Remove the board and set aside. Turn the housing around so that the flat side of the semicircular retainer (#1), is facing away. Remove the two standoff screws (#2). Gently grasp the copper-clad fan motor (#3) and retainer. Tilt the top away and the bottom towards you so that the fan blades are exposed.

CLEANING

Blow into the fan blades to remove any debris that may prevent their movement. If this does not free the blades, remove about 2/3 of the cotton from a swab, dampen it with clean water, and gently dab at and between the fan blades. Repeat as necessary. Allow a few minutes for the water to dry off.

REASSEMBLY

Replace the fan with the blades face down in the circular output on the lamp housing. Replace the retainer and the two standoff screws. Tighten the screws enough to retain the fan cylinder, but loose enough to allow very slight rotation. Turn the housing around so that the flat side of the retainer is facing you. Replace the printed circuit board and secure with the small screw. Plug the signal cable onto the board. Slide the housing into the shell. DO NOT FORCE IT IN. The housing fan fits into the shell only one way. The hole on the retainer must line up with the hole on the shell next to the cable. Replace the exhaust screw. Except for two small standoff screws, all other screws should be hand tight.

PROBE ASSEMBLY

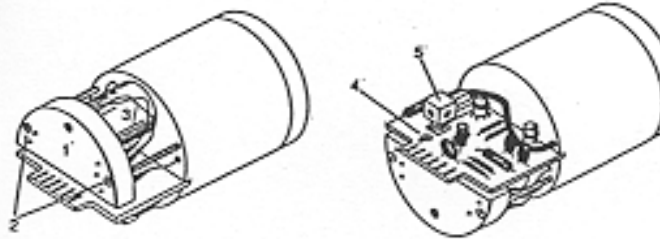
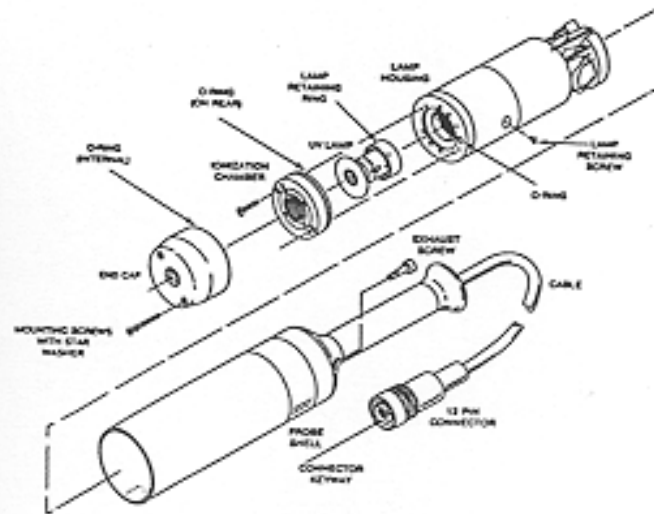


Figure 3