

1. Scope





These instructions describe how to replace the main printed circuit board (PCB) in the following gas monitors.

- Single-Zone
- Multi-Zone
- Portable Area Gas Monitor (PAGM)
- H25-IR

Refer to the appropriate section for replacement details. It is assumed that the user is familiar with the operation of the instrument. If necessary, please refer to the appropriate instruction manual (see table below) for detailed instruction.



IMPORTANT: PCB Replacement should be performed in an ESD protected environment.

Monitor Type	Sample	Name	Model Part Number(s)	PCB Replacement Kit	Instruction Manual
Single-Zone		HGM-SZ	3015-4200	3015-5478	3015-4256
		AGM-SZ	3015-4280		
Multi-Zone		HGM-MZ	3015-5043 3015-5044 3015-5045 3015-5046	3015-5483	3015-5074
		AGM-MZ	3015-5047 3015-5048 3015-5049 3015-5050		
		CO ₂ -MZ	3015-5356 3015-5357 3015-5358 3015-5359		
PAGM		Refrigerants PAGM	3015-4484	3015-4409	3015-4584
		N ₂ O PAGM	3015-4790	3015-5480	3015-4787
		SF ₆ PAGM	3015-5148		3015-5150
		PAGM (No Bag)	3015-5420	3015-5481	3015-5466
H25-IR		H25-IR 5xxx Series	3015-5xxx	3015-5479	3015-5286
		H25-IR 4xxx Series	3015-4xxx		3015-4342

Items Required:

- Replacement PCB
- Cable Ties (Qty. 2) 3015-2835 (with Single-Zone Monitor or H25-IR only)
- Instruction Sheet 3015-5484
- Medium Phillips-Head Screwdriver
- Small Flat-Blade Screwdriver
- Wire Cutters (for removing cable ties)

2. Single Zone Monitors

2.1. Replacing the PCB in the Single Zone Monitor

1. Locate the AC power source for the monitor and switch OFF the AC circuit breaker. Ensure that the monitor's front panel green MONITOR ON indicator is OFF.
2. Use a Phillips screwdriver to remove the monitor's two door screws, and then open the door.
3. Take time to familiarize yourself with the internal components displayed on this page. Figure 1 is a diagram of the Single Zone Monitor interior.
4. Use wire cutters to remove cable ties from the IR bench. Remove the bench.



NOTE: Recognize the orientation of the IR bench. The red wire of the ribbon cable is located at the top of each connector. *This is important in reconnection.* If done improperly, unnecessary faults may result.

5. Remove all connections to the PCB. There are nine total. These include the following:
 - detector cable
 - three tubing connections to the solenoid
 - tubing to the pressure sensor
 - main power connector
 - pump connector
 - emitter cable
 - front panel PCB cable.

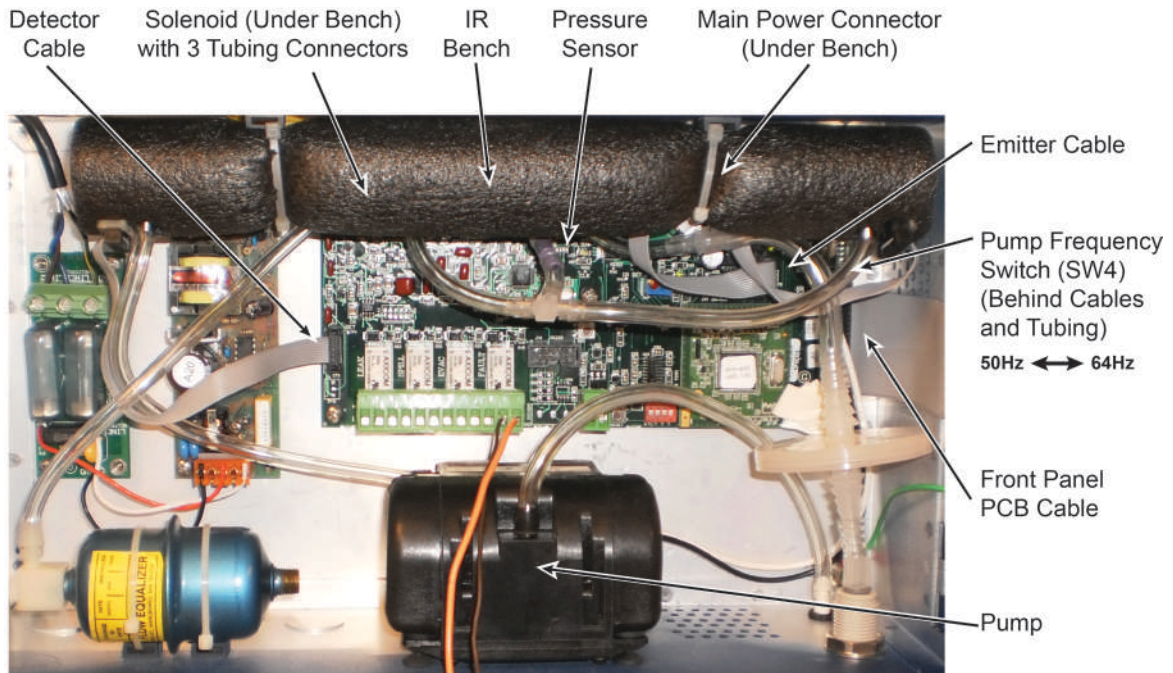


Figure 1. Single Zone Components

6. Remove the screws securing the PCB. There are five: four in the corners and one in the center.
7. Take out the old board and install the new PCB in the same position.



IMPORTANT: Locate switch SW4 on the new PCB. This switch sets the pump frequency (50 Hz or 64 Hz). For the Single-Zone monitors, you must set this switch to 64 Hz before applying power to the unit, otherwise, you could damage the pump.

- Secure the new board into place with five screws from Step 6.
- Connect the cables and tubing to the appropriate locations as indicated in Step 5. **Ensure that the red wire of the ribbon cable is located at the top of the connectors.** Also, place tubing into the enclosure so that no crimping exists. Crimped tubing will prevent proper air flow.
- Secure IR bench to its original position with new cable ties.
- Close door and tighten screws into appropriate locations.

2.2. Configuring the PCB in the Single Zone Monitor

After the new PCB is installed properly, use the instrument interface to configure the PCB as follows.

- Power the instrument on, and enter the Main Menu.
- Place the selection arrow on CAL.
- Press the right arrow and ENTER keys simultaneously.
- A status screen is displayed. Press QUIT once to enter the factory menu.
- Navigate to MODEL and press ENT. Use the UP / DOWN arrow keys to select the appropriate model, then press ENT (e.g., 3015-4200).
- Use the UP / DOWN arrow keys to select the appropriate pump (e.g., Medo-VC100). If unsure, this can be located on the pump itself. Press ENT to select.
- Navigate to IR and press ENT. Use the UP / DOWN arrow keys until IR volt reads the rated power of the installed IR sensor. This will be either 320-450 mW or 700 mW depending on particular model. Refer to the instruction manual for appropriate value. Press QUIT when the desired value is set.
- Navigate to DIGIPOT and press ENT. Use the UP / DOWN arrow keys to set the IR voltage to 4.2 Volts. Press QUIT when value is set.
- Press QUIT twice. The unit will automatically go through a purge cycle and will then enter the measurement mode.

The unit is now configured properly.

3. Multi-Zone Monitors

3.1. Replacing the PCB in the Multi-Zone Monitor

- Locate the AC power source for the monitor and switch OFF the AC circuit breaker. Ensure that the monitor's front panel green MONITOR ON indicator is OFF.
- Use a Phillips screwdriver to remove the monitor's two door screws, and then open the door.
- Take time to familiarize yourself with the internal components displayed in Figure 2.



NOTE: Recognize the orientation of the IR bench. The red wire of the ribbon cable is located at the top of each connector. *This is important in reconnection.* If done improperly, unnecessary faults may result.

- Remove all connections to the PCB. There are eight total. These include the following:
 - detector cable
 - pressure sensor
 - main power connector
 - pump connector
 - solenoid control PCB cable
 - emitter cable
 - front panel PCB cable
 - serial port cable.

5. Remove the screws securing the PCB. There are five: four in the corners and one in the center.
6. Take out the old board and install the new PCB in the same position.
7. Secure the new board into place with the five screws indicated in Step 6.

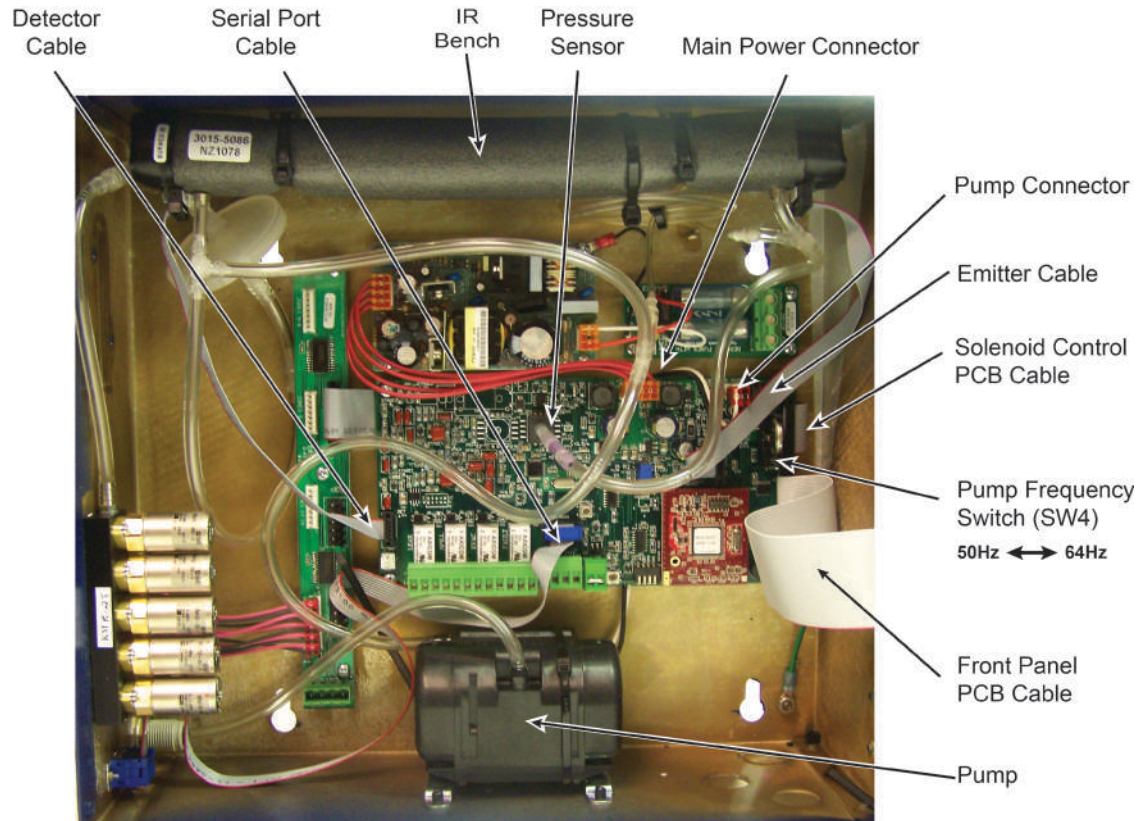


Figure 2. Multi-Zone Components



IMPORTANT: Locate switch SW4 on the new PCB. This switch sets the pump frequency (50 Hz or 64 Hz). For the Multi-Zone monitors, you must set this switch to 64 Hz before applying power to the unit, otherwise, you could damage the pump.

8. Connect cables and tubing to the appropriate locations as indicated in Step 5. **Ensure that the red wire of the ribbon cable is located at the top of the connectors.** Also, place tubing into the enclosure so that no crimping exists. Crimped tubing will prevent proper air flow.
9. Close door and tighten screws into appropriate locations.

3.2. Configuring the PCB in the Multi-Zone Monitor

After the new PCB is installed properly, use the instrument interface to configure the PCB as follows.

1. Power the instrument on and enter the Main Menu.
2. Navigate to SERVICE MODE from the SYSTEM MENU. Press ENT twice to enter service mode.
3. Navigate to the SYSTEM MENU and select MORE by pressing ENT. Navigate to MODEL and press ENT.
4. Use UP / DOWN arrow keys to select the appropriate model (e.g., 3015-5043). Press ENT when correct model is selected.
5. Navigate to IR and press ENT. Use the UP / DOWN arrow keys to set the IR voltage to read the rate of power of the installed IR sensor. This will be either 320-450 mW or 700 mW depending on particular model. Refer to the instruction manual for appropriate value. Press QUIT when the desired value is set.

6. Navigate to DIGIPOT and press ENT. Use the UP / DOWN arrow keys to set the IR voltage to 4.2 volts.
7. Press ESC twice. Exit Service Mode by selecting SERVICE MODE and pressing ENT twice. The unit will go through a purge cycle and will then enter the measurement mode.

The unit is now configured properly.

4. Portable Area Gas Monitors (PAGMs)

4.1. Replacing the PCB in the PAGM

1. Turn the monitor off. Ensure that the monitor's front panel green MONITOR ON indicator is OFF.
2. Position monitor on its left side. Using a Phillips screwdriver, remove ten screws (as shown in Figure 3). Remove panel.

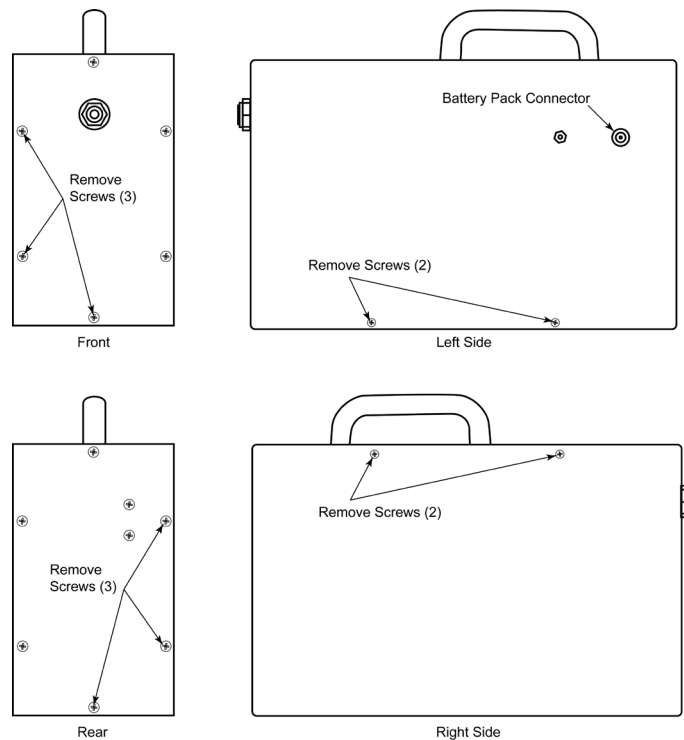


Figure 3. Screw Locations on Portable Monitor

3. Take time to familiarize yourself with the internal components displayed in Figure 4.



IMPORTANT: Recognize the orientation of the IR bench. The red wire of the ribbon cable is located at the top of each connector. *This is important in reconnection.* If done improperly, unnecessary faults may result.

4. Remove all connections to the PCB. There are ten total. These connections include the following:
 - detector cable
 - solenoid tubing connections (3)
 - pressure sensors (2)
 - main power connector
 - top panel PCB cable
 - emitter cable
 - serial port cable.

Main PCB Replacement

5. Remove the sample pump shown in Figure 3 by removing the two screws securing the part in place.
6. Remove the screws securing the PCB. There are five: four in the corners and one in the center.
7. Take out the old board and install the new PCB in the same position.



IMPORTANT: Locate switch SW4 on the new PCB. This switch sets the pump frequency (50 Hz or 64 Hz). For the Portable Area Gas Monitors (PAGMs), you must set this switch to 50 Hz before applying power to the unit, otherwise, you could damage the pump.

8. Secure the new board into place with five screws from Step 6.
9. Connect cables and tubing to the appropriate locations as indicated in Step 4. **Ensure that the red wire of the ribbon cable is located at the top of the connectors.** Also, place tubing into the enclosure so that no crimping exists. Crimped tubing will prevent proper air flow.
10. Secure the pump back into place with the two screws removed in Step 6.
11. Secure side panel back into place with the 10 screws removed in Step 2.

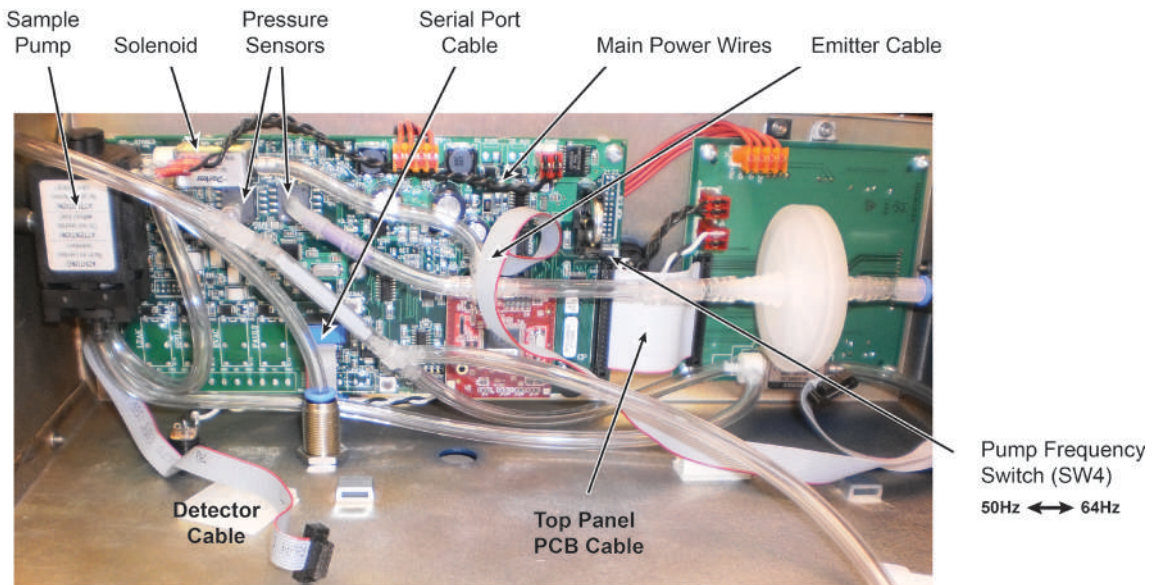


Figure 4. Portable Monitor Components

4.2. Configuring the PCB in the PAGM

After the new PCB is installed properly, use the instrument interface to configure the PCB as follows.

1. Power the instrument on and enter the Main Menu.
2. Navigate to DIAG and press the right arrow and enter keys at the same time to display the Status Screen.
3. Press ESC once to enter factory menu.
4. Navigate to MODEL and press ENT. Use the UP / DOWN arrow keys to select the appropriate model then press ENT (e.g., 3015-4785).
5. Navigate to IR and press ENT. Use the UP / DOWN arrow keys until the IR volt reads the rated power of the installed IR sensor. Refer to the instruction manual for appropriate value. Press ESC when the desired value is set.
6. Navigate to DIGIPOT and press ENT. Use the UP / DOWN arrow keys to set the IR voltage to 4.2 volts. Press ESC when value is set.

- Press ESC twice. The unit will go through a purge cycle and will then enter the measurement mode.

The unit is now configured properly.

5. H25-IR

5.1. Replacing the PCB in the H25-IR

- Locate unit's power switch on back panel and turn off. If using, locate the AC power source for the monitor and switch OFF the AC circuit breaker. Ensure that the monitor's front panel green MONITOR ON indicator is OFF. Remove black plastic bezels from front and back of the unit.
- Use a Phillips screwdriver to remove the four screws securing top cover of the unit (two front and two back). Use a small flat head screwdriver to pry top panel off.
- Take time to familiarize yourself with the internal components. Figure 5 is a diagram of the H25-IR interior.



IMPORTANT: Recognize the orientation of the IR bench. The red wire of the ribbon cable is located at the top of each connector. *This is important in reconnection.* If done improperly, unnecessary faults may result.

- Use wire cutters to remove cable ties from IR bench. Remove bench.
- Remove all connections to the PCB. These connections include the following:
 - main power connector
 - pump connector
 - emitter cable
 - front panel PCB cable
 - serial port cable
 - detector cable
 - pressure sensor
 - solenoid control PCB cable.

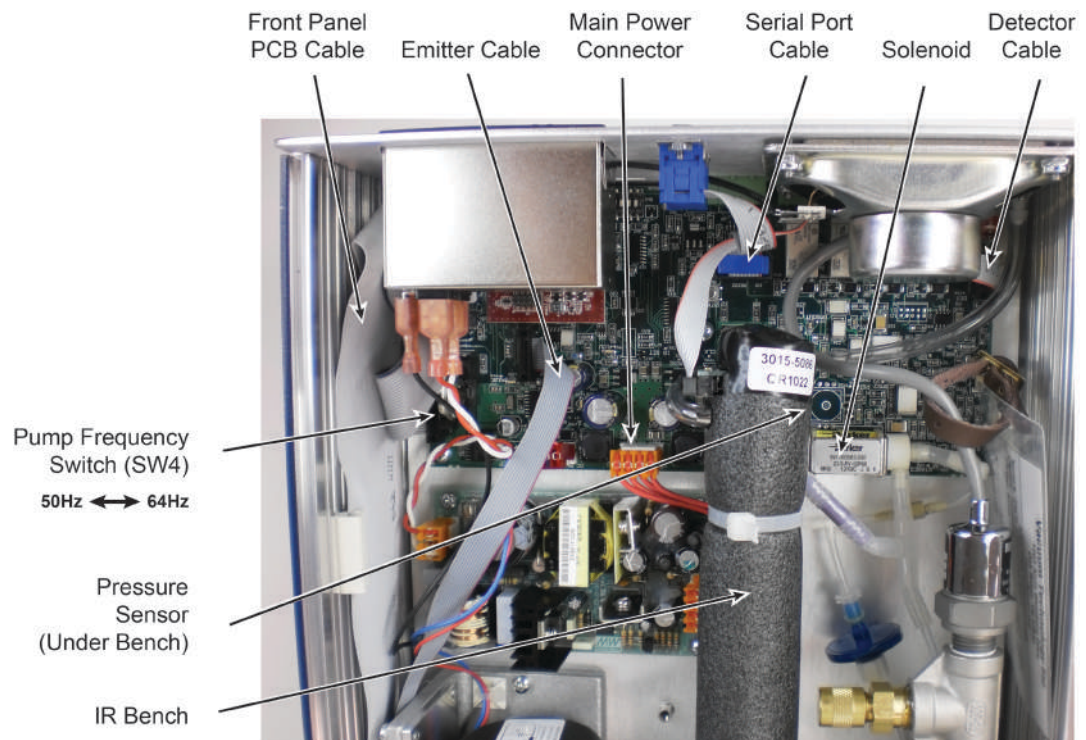


Figure 5. H25-IR Components

6. Loosen the 2 bottom screws securing back panel. This makes removing the PCB simpler.
7. Remove the screws securing the PCB. There are five: four in the corners and one in the center.
8. Take out the old board and install the new PCB in the same position.



IMPORTANT: Locate switch SW4 on the new PCB. This switch sets the pump frequency (50 Hz or 64 Hz). For the H25-IR monitors, you must set this switch to 64 Hz before applying power to the unit, otherwise, you could damage the pump.

9. Secure the new board into place with the five screws from Step 8.
10. Connect the cables and tubing to the appropriate locations as indicated in Step 6. **Ensure that the red wire of the ribbon cable is located at the top of the connectors.** Also, place tubing into the enclosure so that no crimping exists. Crimped tubing will prevent proper air flow.
11. Tighten the two bottom screws.
12. Secure IR bench to its original position with new cable ties.
13. Replace cover and tighten screws into appropriate locations. Replace bezels at both ends.

5.2. Configuring the PCB in the H25-IR

After the new PCB is installed properly, use the instrument interface to configure the PCB as follows.

1. Enter the Factory Menu by pressing and holding ENT while simultaneously turning power back on.
2. Navigate to IR EMITTER in the DIAGNOSTIC Menu. Use the UP / DOWN arrow keys until IR volt reads the rated power of the installed IR sensor. Press ESC when desired value is set.
3. Navigate to DIGIPOT and press ENT. Use the UP / DOWN arrow keys to set the IR voltage to 4.2 volts. Press ESC when desired value is set.
4. Navigate to FACTORY and press ENT.
5. Navigate to MODEL and press ENT. Use the UP / DOWN arrow keys to select the appropriate model, then press ENT (e.g., 3015-4348).
6. Navigate to PROBE TYPE and press ENT. Select appropriate probe type and press ENT.
7. Press ESC twice.
8. Calibrate leak source (refer to the H25-IR instruction manual).

The unit is now configured properly.