
BENRICH SERVICE COMPANY TRAINING PROGRAM©

BOILER: RAYPAK PIM & VERSA

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PIM Dip Switches

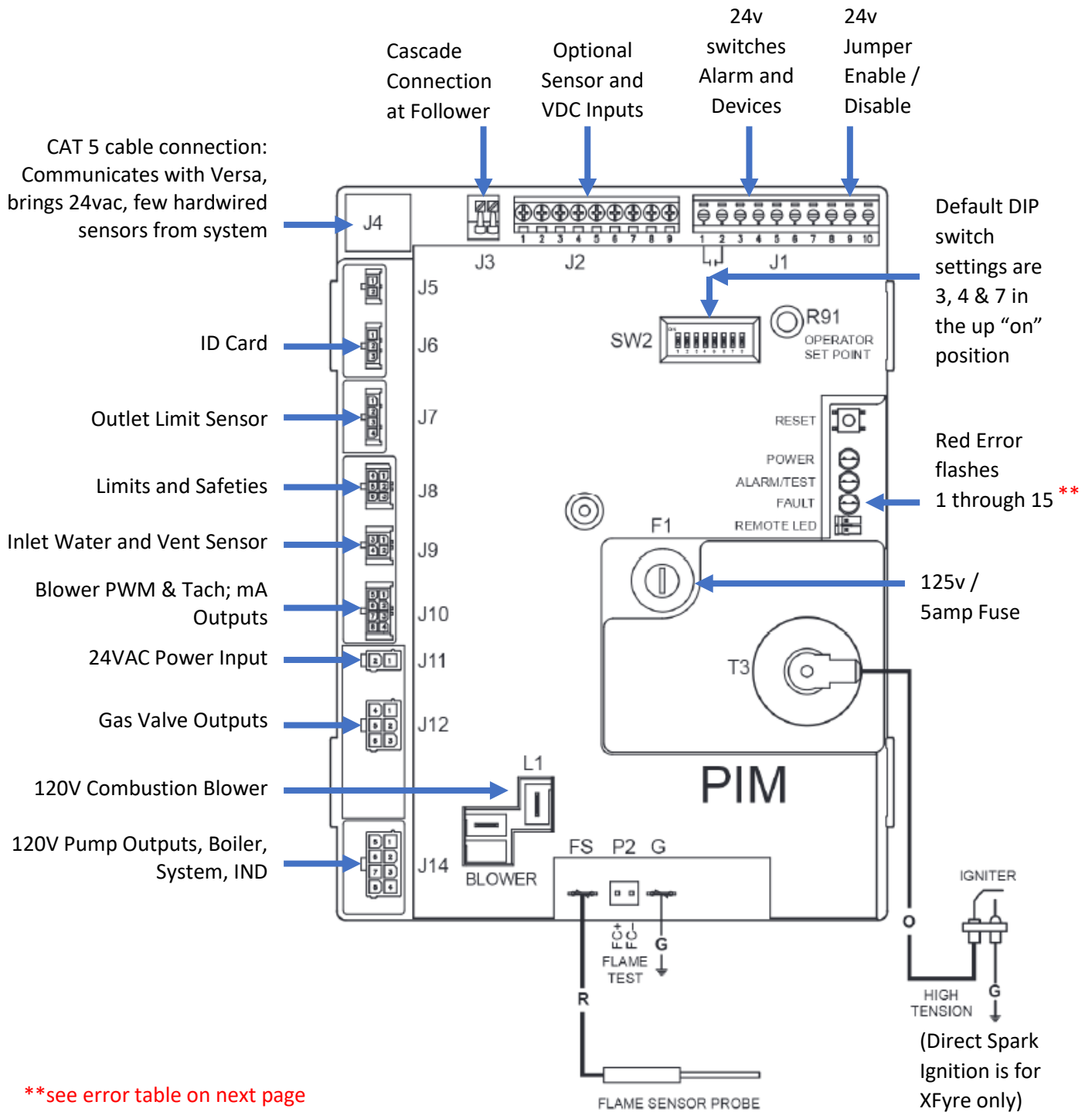
There is an 8-position DIP switch on the PIM that can be field configurable during commissioning. The UP position is "ON" and the DOWN position of each DIP switch is "OFF".

The PIM factory default DIP Switch Settings are 3, 4 & 7

1. DIP Switch #1 -Operator Differential
 - a. ON = Manual Differential
 - b. OFF = Auto Differential
2. DIP Switch #2 -Analog Input Type
 - a. ON = Direct Drive
 - b. OFF = Target Temperature
3. DIP Switch #3 -Pipe Configuration
 - a. ON = Primary/Secondary (XVers and XVersL only)
 - i. Post Purge ON (all others)
 - b. OFF = Primary Only (XVers and XVersL only)
 - i. Post Purge OFF (all others)
4. DIP Switch #4 -Pump/Valve Exercise Enable
 - a. ON = Exercise Active
 - b. OFF = Exercise Inactive
5. DIP Switch #5-EMS/Demands
 - a. ON = EMS Analog Input Only
 - b. OFF = VERSA IC Demands Only
6. DIP Switch #6 -EMS Signal Type
 - a. ON= 4-20mA
 - i. Note: 4-20mA operation requires the use of an external 5000, 1/2W resistor.
 - b. OFF= 0-10 VDC
7. DIP Switch #7 -Freeze Protection
 - a. ON = Freeze Protection Active
 - b. OFF = Freeze Protection Inactive
8. DIP Switch #8 -Commission Test
 - a. ON = Commission Test Active
 - b. OFF = Commission Test Inactive

PIM: Platform Ignition Module

Direct Spark Ignition (DSI) Modulating PIM (XFyre only)



PIM Error Table

If you have the option, it is better to troubleshoot using the PIM flash codes rather than VERSA board as it is more reliable.

**	Error Mode	LED Flash Code on PIM	Recommended Troubleshooting
	Normal Operation	Red LED OFF	
	ID Card Fault	Red LED Steady ON, Green Power LED OFF	Check that the proper ID Card is securely connected. Perform a power and system reset
	Internal Control Fault	Red LED Steady ON	Perform a power and system reset. If the fault remains, replace the PIM
	Airflow Fault	Red LED – 1 Flash	Check blower operation and air flow switch
	False Flame Error	Red LED – 2 Flashes	Check for proper gas valve closure. Clean burner and electrodes
	Ignition Lockout Fault	Red LED – 3 Flashes	Check the gas supply. Check transformer. Check igniters. Check wiring. Press reset button on PIM/membrane switch. Recycle power
	Ignition Proving Current Fault	Red LED – 4 Flashes	Check HSI element (for those models equipped with a hot surface igniter). Replace as necessary
	Low Voltage Fault	Red LED – 5 Flashes	Check the 24VAC input voltage – the voltage must be above 18.0VAC for proper operation. Replace transformer as necessary
	Vent Temperature Fault	Red LED – 6 Flashes	(If equipped with Vent sensor)Check for a blocked flue. Check the vent sensor and wiring. Check vent connections and vent system. If damage is observed, contact a qualified installer to have the vent system properly inspected and repaired as necessary
	Hi-Limit Fault	Red LED – 7 Flashes	Check for proper water flow. Check hi-limit setting and outlet sensor
	Sensor Fault	Red LED – 8 Flashes	Check the VERSA IC for fault identification. Check sensor and wiring
	N/A	Red LED – 9 Flashes	Check wiring at J8, pins 1 & 3 for loose or missing jumper
	Water Pressure Fault	Red LED – 10 Flashes	Check system piping for leaks. Check water pressure switch (if equipped) and connections. Check wiring on PIM at J1, pins 6 & 7 for loose or missing jumper
	Blower Speed Fault	Red LED – 11 Flashes	Verify the tachometer signal and the connections at terminals J10 on the PIM. Confirm power to boiler is at or above minimum required
	N/A	Red LED – 12 Flashes	Check wiring on PIM at J1, pins 3 and 4 for loose or missing jumper
	Hi-Temperature Delta Fault	Red LED – 13 Flashes	Check pump operation. Confirm proper water flow across heat exchanger (Delta-T)
	Fl_bus Communications Fault	Red LED – 14 Flashes	Verify that the VERSA IC is connected and operating properly. Check the cable between the PIM and the VERSA IC
	General Limit Circuit Fault	Red LED – 15 Flashes	Check the VERSA IC for fault indication and troubleshooting information →

→ OPEN safety – check all safeties

Direct Spark Ignition (DSI) Modulating PIM

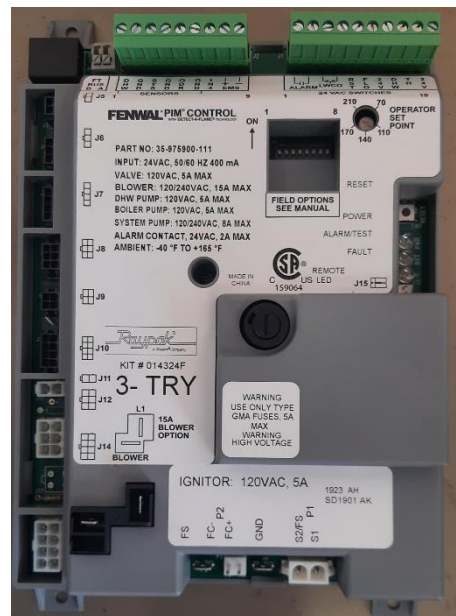
Used on Raypak XFire boilers with a Direct Spark Igniter



Direct Spark Igniter (DSI) connection

Modulating PIM

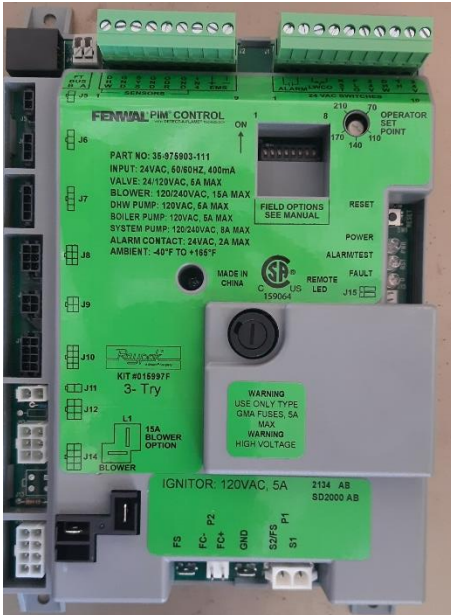
Used on Raypak MVB and XTherm boilers with a Hot Surface Igniter



Hot Surface Igniter Connection

Staging PIM

Used on Raypak Hi Delta boilers with a Hot Surface Igniter



Hot Surface Igniter Connection

Resetting the PIM

1. Turn ALL power OFF to the unit
2. Turn ALL DIP switches to OFF
3. Disconnect J6 and J4 on PIM
4. Remove Sensors & 24volt switches located on top of the PIM
5. Hold down PIM reset button and reapply power at the same time
6. Release reset button after 5-7 flashes. Turn power off after 3-5 seconds.
7. Connect the J6 plug to the PIM, reapply power
8. Turn OFF power again after 5 seconds.
9. Reinstall J4 cable
10. Turn on appropriate DIP switches
11. Reapply power to unit
12. If green LED is on steady, the reset was successful

If you get a steady red light after all steps are completed, repeat the process. If you are still getting a steady red light, check the part number as you may be using the wrong PIM.

Running the boiler off the PIM – Limp Along Mode

If VERSA board is bad, you can have the boiler operate in limp along mode and run it off the PIM temporarily until you can repair/replace the VERSA board. To do this, you first need to make sure it will operate at a safe temperature.

1. Go to the digital boiler menu screen and scroll down until you see operator to see the operator setpoint. Do not rely on the numbers shown on the PIM, use the numbers shown on the digital screen.
2. Slowly turn down the operator set point temperature on the PIM while watching the numbers on the digital screen. For example, it might be set to 180 degrees, and you turn it down to 130 degrees.
3. Once it is set to the desired temperature, turn the power off, unplug the CAT 5 wire and then turn power back on. The PIM will now take over control of the boiler in limp along mode. When in limp along mode, you won't have any lights, faults or a VERSA screen and will have to watch how the boiler operates manually.

Tankstat Connection

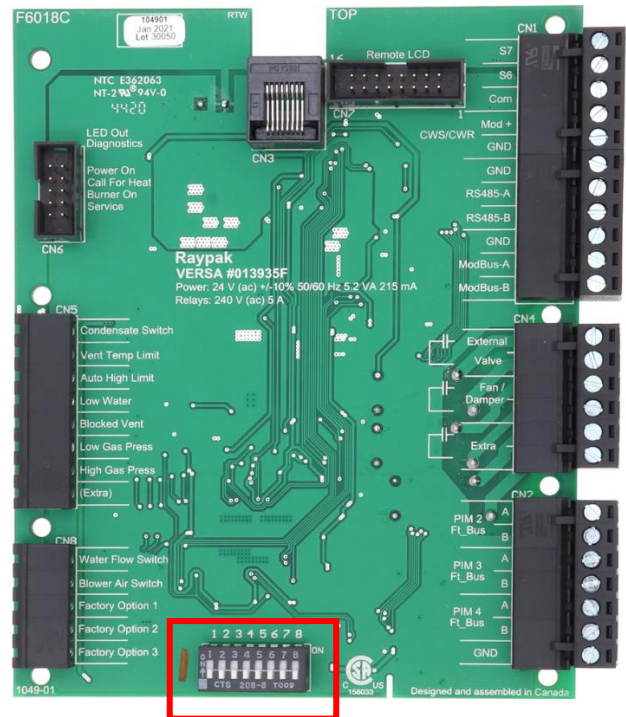
The Master boiler should have the tankstat sensor on #6 and #7 system sensor

VERSA Control Board DIP Switches



The UP position is "ON" and the DOWN position of each DIP switch is "OFF".

1. #1 - Access Level
 - a. OFF – Installer
 - b. ON – Advanced
2. #2 - Cascading
 - a. OFF - Follower/Slave
 - b. ON -Master
3. #3 - Cold Water Protection (CWP)
 - a. OFF- None
 - b. ON -CWS/CWR
4. #4 - Proportional Output Selection
 - a. OFF - 0-10 VDC
 - b. ON -0-20mA (requires 500 ohm resistor)
5. #5 N/A
6. #6 - Heater Rotation
 - a. OFF - No Rotation
 - b. ON -Enable Rotation
7. #7 - Indirect Pool Products Only
8. #8 - N/A



Dipswitch Default Settings for VERSA Master

In order for the Versa to be the master, turn on dipswitch 1, 2 and 6. Dipswitch 6 only needs to be turned on for the Master as it changes the setting from Follower to Master

- Dipswitch 1 is the program mode
- Dipswitch 2 means its controlling itself
- Dipswitch 6 changes it from follower to master

Dipswitch Settings for VERSA Follower – Turn on dipswitch 1

Dipswitch Settings for Standalone Boiler – Turn on dipswitch 1 & 2

Replacing a VERSA Master

New boards cannot talk to old boards. If you have to replace the Master VERSA, be sure to look at the year on the top left. New replacement boards cannot talk to older boards. For example, lets say the master boiler and followers have Versa boards dated 2021. The Master board is bad and needs to be replaced. Your replacement board is dated 2022 and therefore it cannot communicate as a Master with the old boards. So you will need to take a 2021 follower board and make it the new Master and use the 2022 board to replace the follower.



Connection to PIM

Connection to display screen

24 Volt troubleshooting strip

Connection to PIM

Connect followers at PIM 2, PIM 3 AND PIM 4. Polarity sensitive – A must go to A, B must go to B

***(Extra) error: This is a sensor on the backside of the heat engine**

Raypak
VERSA #013935F
Power: 24 V (ac) +/-10% 50/60 Hz 5.2 VA 215 mA
relays: 240 V (ac) 5 A

1049-01

CT5 208-8 1009

158039

Designed and assembled in Canada