

INSTALLATION INSTRUCTIONS

FAILURE TO READ AND FOLLOW ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR OPERATING THIS CONTROL COULD CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

DESCRIPTION

The 50E47U-843 is a non-integrated single stage hot surface ignition module. This module is designed to replace 24V, 120V or 240V non-integrated Hot Surface Ignition (HSI) modules in a wide variety of heating applications.

The factory default settings and all other applicable timings can be shown in Table 1 on page 3. Configuration of the module can be completed through the White-Rodgers Connect Mobile App or On-Board digital display configuration.

Included in the box:

- 1 – 50E47U-843 Ignition Module
- 1 – 11 pin harness assembly
- 1 – Local Flame Sense Jumper Wire (installed on module)
- 4 – 1” Sheet Metal Mounting Screws

- 6 – 3/16” QC crimp on terminals
- 1 – ¼” 14-16 AWG QC and shrink wrap sleeve
- 1 – Installation Instructions



Installation Resources

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ELECTRICAL SPECIFICATIONS

Specification	Value	Unit
Input Voltage (control)	18-30	VAC
Input Voltage (Line – L1 & L2)	24*, 120 or 240*	VAC
Input Current	Max 800	mA
Line Frequency	50/60	Hz
Inducer Relay at 120V	3.0/6.0	FLA/LRA
Inducer Relay at 240V	1.5/3.0	FLA/LRA
Gas Valve Relay Max	4.0	Amp
Flame Current to indicate Flame Loss	< 0.50	µA DC
Flame Sense Test Pins	1VDC = 1 µA	

*24V or 240V input only applicable when replacing Fenwal modules. See Fenwal section on page 6 for more clarification

OPERATING TEMPERATURE RANGE:

-40° to 176°F (-40° to 80°C)

HUMIDITY RANGE:

5 to 95% relative humidity (non-condensing)

MOUNTING AND INSTALLING:

When installing module, leave at least ¼ in. clearance between sides of module and grounded metal.

TIMINGS:

See Table 1 on page 3.

GASES APPROVED:

Natural, Manufactured, Mixed, Liquid Petroleum, and LP Gas Air Mixtures.

WARNING

Failure to comply with the following warnings could result in personal injury or property damage.

- Installation should be done by a qualified heating and air conditioning contractor or licensed electrician.
- All wiring must conform to local and national electrical codes and ordinances.
- Following installation or replacement, follow manufacturer's recommended installation/service instructions to ensure proper operation.

FIRE HAZARD

- Do not exceed the specified voltage.
- Protect module from direct contact with water (dripping, spraying, rain, etc.).
- If the module has been in direct contact with water, replace the module.
- Label all wires before disconnection when servicing modules. Wiring errors can cause improper and dangerous operation.
- Route and secure wiring away from flame.

SHOCK HAZARD

- Disconnect electric power before servicing.
- Ensure proper earth grounding of appliance.
- Ensure proper connection of line neutral and line hot wires.
- Ensure module has ¼” clearance between all sides of module and grounded metal.

EXPLOSION HAZARD

- Shut off main gas to appliance until installation is complete.



MOBILE APP CONFIGURATION (PREFERRED)

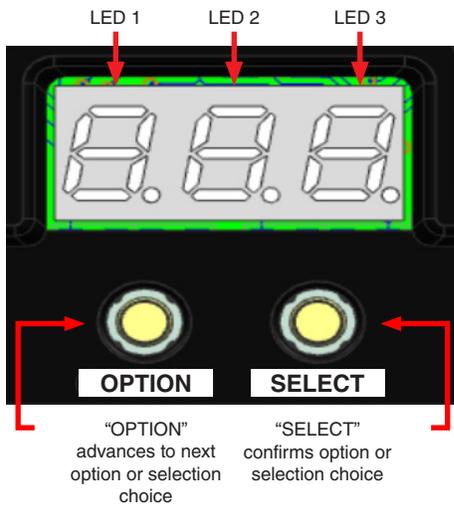
For fastest setup, use White-Rodgers Connect App:

1. Download from iOS App Store or Google Play Store
2. Open White-Rodgers Connect App
3. Touch "Connect to Control" on the home page
4. Place device on module, wait for check mark
5. Configure all settings in App
6. Touch "Update Control"
7. Place device on module, wait for check mark



- App tutorial available on homepage of White-Rodgers Connect
- Near-field communication (NFC) available on iOS 13 and greater (iPhone 7 and up) and all Android devices

ON BOARD CONFIGURATION (7-SEGMENT OPTION)



Condition	LED Display	Description
Module Power Up	888	During power up, LEDs remain steady
Integrated TSTAT = OFF	0n	Normal operation on 24V powered systems, no heat call is present
Integrated TSTAT = On	00F	Normal operation with no heat call; LED 1 and 2 displays the current temperature and LED 3 displays the unit

Standby is not present on systems that are powered only by TH-W wire

	Action	Module Status	Button Press	Duration
Powered by 24V	Enter Configuration Menu	In Standby (Integrated TSTAT = OFF)	OPTION	< 3 seconds
Powered by TH-W	Enter Configuration Menu	Unpowered	OPTION with 24V applied to TH-W terminal	< 3 seconds
Powered by 24V	Enter Configuration Menu	In Standby (Integrated TSTAT = ON)	OPTION	> 3 seconds
	Advance 1 Option Menu Item	In Configuration Menu	OPTION	< 2 seconds
	Enter Selections Menu Level	At Options Menu Level	SELECT	< 2 seconds
	Advance 1 Selection Item	At Selections Menu Level	OPTION	< 2 seconds
	Confirm Selection	On Chosen Selection	SELECT (first press ends flashing, second press exits selection menu)	< 2 seconds
Int. TSTAT = On	Exit Configuration Menu	On No. 1.9 in Configuration Menu	OPTION	< 2 seconds
Int. TSTAT = On	Exit Configuration Menu	On No. 2.3* in Configuration Menu	OPTION	< 2 seconds

Note: See Table 1 on page 3 for Configuration Menu Options and Selections

Table 1: Configuration Menu Options

					*Factory Default Setting
No.	Option Menu Item	Option Menu	Selections Menu	Unit	Description / Rule
1.0	Tries for Ignition	t r y	1*, 3	N/A	Number of tries module tries ignition before going to auto restart delay
1.1	Trial for Ignition Timing	t F I	7*, 4, 10, 15	Seconds	Duration module will attempt ignition (gas valve energized) Caution: 10 or 15 second Trial for Ignition period only to be used when matching the existing control
1.2	Ignitor Heat-Up Period	I H U	17*, 4, 6, 7, 20, 34, 40, 45	Seconds	Duration module will energize ignitor for heat-up (gas valve de-energized)
1.3	Pre-purge	P r E	32*, 0, 8, 13, 15, 17, 30, 34, 45	Seconds	Delay duration before ignition attempt
1.4	Inter-purge	I n t	96*, 0, 15, 17, 30, 45, 60, 64, 77, 90	Seconds	Delay duration in-between ignition attempts For 10 or 15 second TFI applications, Inter-purge selections will be limited to 60, 64, 77, 90 and 96 seconds
1.5	Post-purge	P S t	0*, 30, 45, 60, 120	Seconds	Delay after heat call has finished
1.6	Inducer / Pressure Switch Option	I n d	0 F F	N/A	NOR = normal speed DSD = dual speed (see below)
			n o r*		
			d S d		
1.7	Flame Sense Type	F L S	LCL*, rEt	N/A	Local (LCL) or Remote (rEt) sense
1.8	Reset to Default	[F d	no*, 4E5	N/A	Reset system selections back to default settings
1.9	Integrated Thermostat	t S t	OFF*, On	N/A	If ON, install AirTemp Sensor and see 2.0 for more selections
Integrated Thermostat Menu will follow if 1.9 is set to 'ON'					
2.0	Temperature Unit	S C L	aF*, aC	N/A	Fahrenheit or Celsius
2.1	Temperature Offset	0 F S	-9 - 0* - 9 (°F)	°F	Offsets temperature sensor reading. Most applicable when sensor is not able to reach desired heating area
			-5 - 0* - 5 (°C)	°C	
2.2	Cycle Rate	[Y [SLo, no*, FSt	N/A	Slow, normal, fast
2.3	Reset Integrated Thermostat to Default	t F d	no*, 4E5	N/A	Reset Integrated Thermostat Selections back to default settings
Temperature Set Point Range**			40-80 68*	°F	(Set Point – Offset) cannot be less than 40 °F (5 °C) or greater than 80 °F (27 °C)
			5-27 20*	°C	

**To view/change Set Point value, press OPTION after No. 2.3 (control exits menu and goes to standby); press OPTION again and the Set Point menu will be entered. For further configuration, see Integrated Thermostat section on page 8.

Dual Speed blower operation: After receiving a heat call and checking the pressure switch, the module energizes the IND / F1 terminal for the pre-purge period. After pre-purge and during ignitor heat-up, the output on the IND / F1 terminal causes the inducer to slow down to half normal speed and continues after ignition at low speed for 30 seconds. The output on the IND / F1 terminal then returns to full speed for the remainder of the heat call.

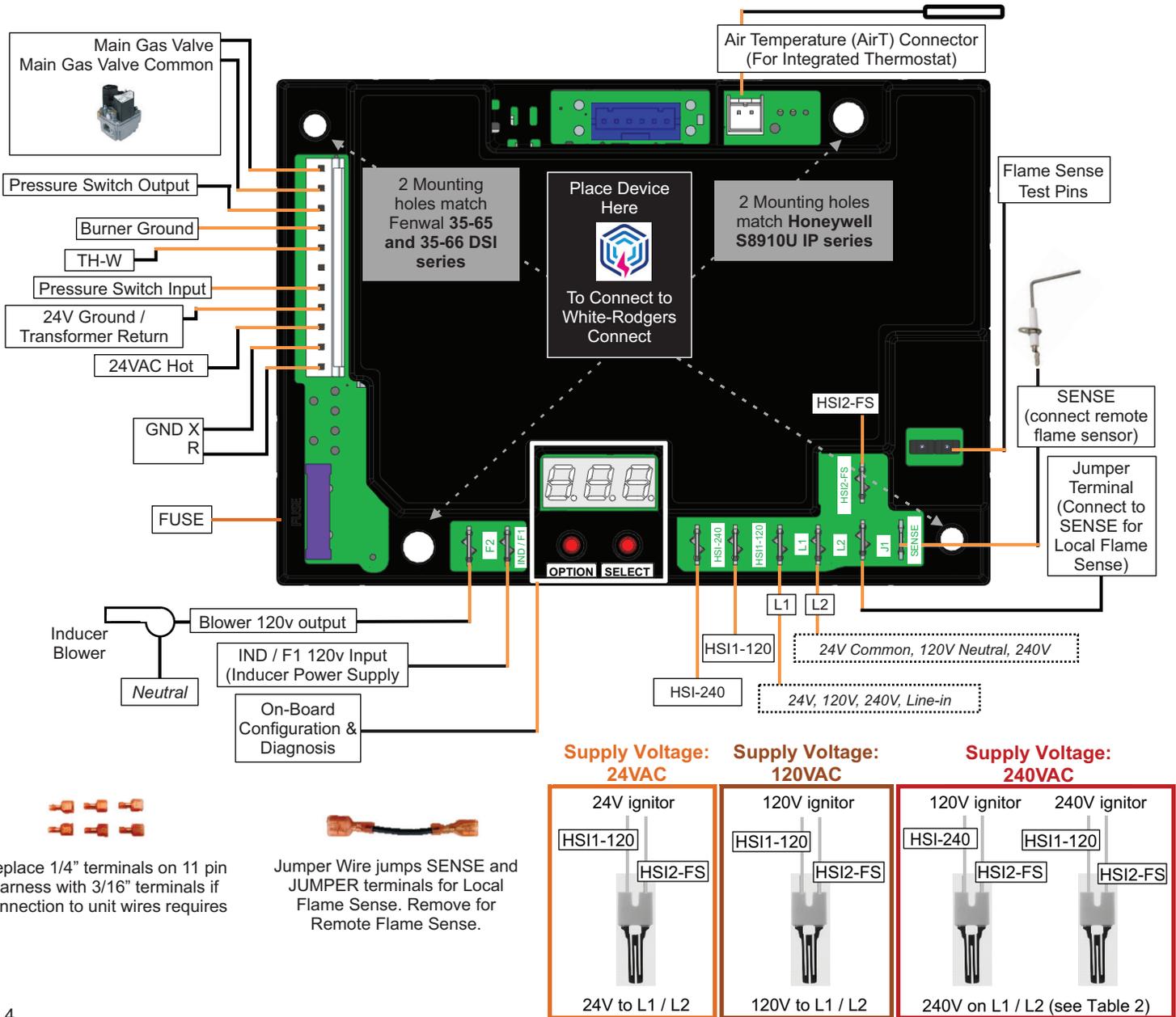
INSTALLATION

MOUNTING AND WIRING DIAGRAM

NOTE: All wiring should be installed according to local and national electrical codes and ordinances

1. Disconnect electrical power and gas supply to unit, then remove unit access panels.
2. Individually disconnect and transfer each wire from the existing module and connect to appropriate QC terminal on 50E47U-843 11-pin harness **or** dedicated spade terminals on 50E47U-843 module. Strip and re-wire 11-pin harness with provided 3/16" loose QC terminals if necessary. Once all wires have been transferred, remove existing module.
TIP: first take pictures of old setup for reference.
3. 50E47U-843 can be mounted in any orientation. Select a location that will not damage, obstruct or place any stress on the terminations or harness. Ensure a clearance of 1/4" between the sides of module and grounded metal.
4. Mount 50E47U-843 in the unit using mounting holes noted below. Be certain not to damage any components such as transformers, wire harness or blower wheels when drilling or installing screws.

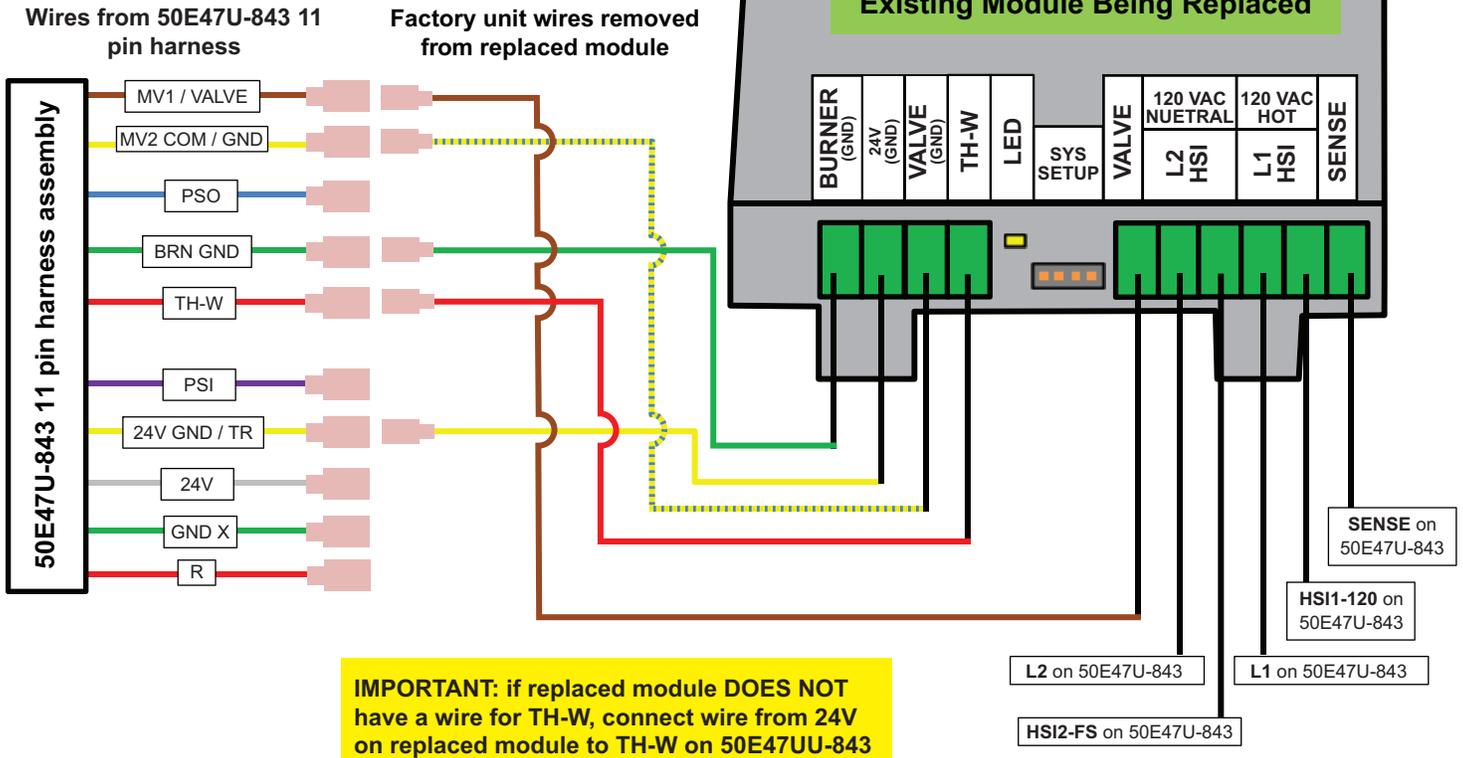
5. Take note and match old module's flame sense operation with the new 50E47U-843.
 - Example: If old module had remote flame sensor installed, remove jumper wire on 50E47U-843 for remote flame sense.
6. If using White-Rodgers Connect to configure, connect to app and configure settings. If **not** using app to configure, skip this step.
7. Plug 11-pin harness with wires transferred from old module to new 50E47U-843. Ensure all wires are secured to harness.
8. Reconnect electric power to unit.
9. If **not** using White-Rodgers Connect to configure, use 7-segment LED Display to change settings to match old module. See page 2 on how to enter and operate Configuration menu and page 3 for explanation of settings.
10. Reinstall unit access panels and reconnect gas supply to the unit.
11. Verify unit is operating correctly per the configuration selected.



When replacing Honeywell S8910U

To Configure Module:

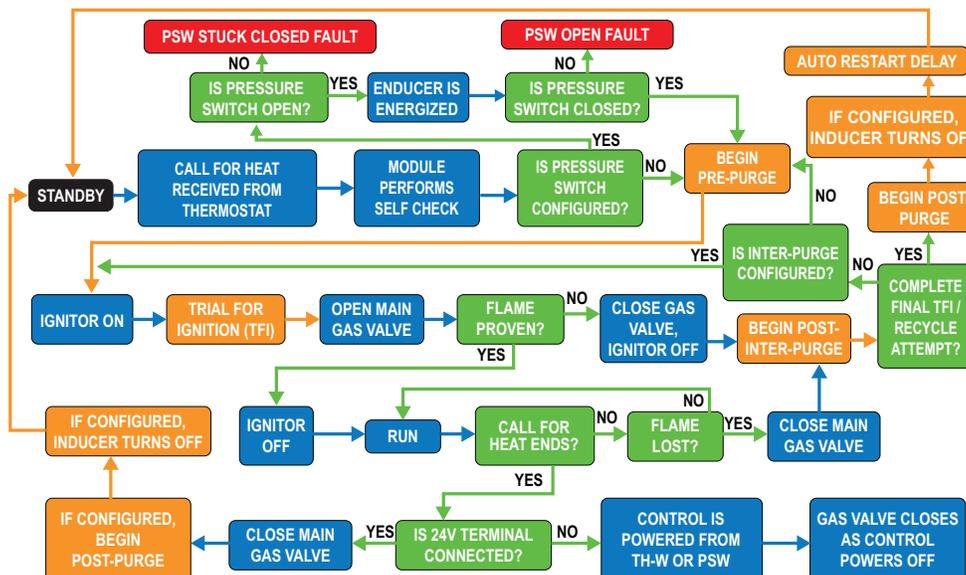
1. Determine the configuration and timings for the module being replaced. Can be found from manufacturer literature or label on module.
2. Use White-Rodgers Connect OR digital LED display and follow Table 1 to select proper settings.



Other Setup Notes:

- If there is no TH-W terminal on the old module being replaced, connect the wire from 24V, TH or 25V (2) on old module to TH-W on new 50E47U-843 and leave 24V on 50E47U-843 unconnected and insulated
- For systems with air proving switch (APS), connect output of APS to TH-W on 50E47U-843
- Follow all safety guidelines on page 1 and directions under MOUNTING AND WIRING DIAGRAM on page 4

Sequence of operation:

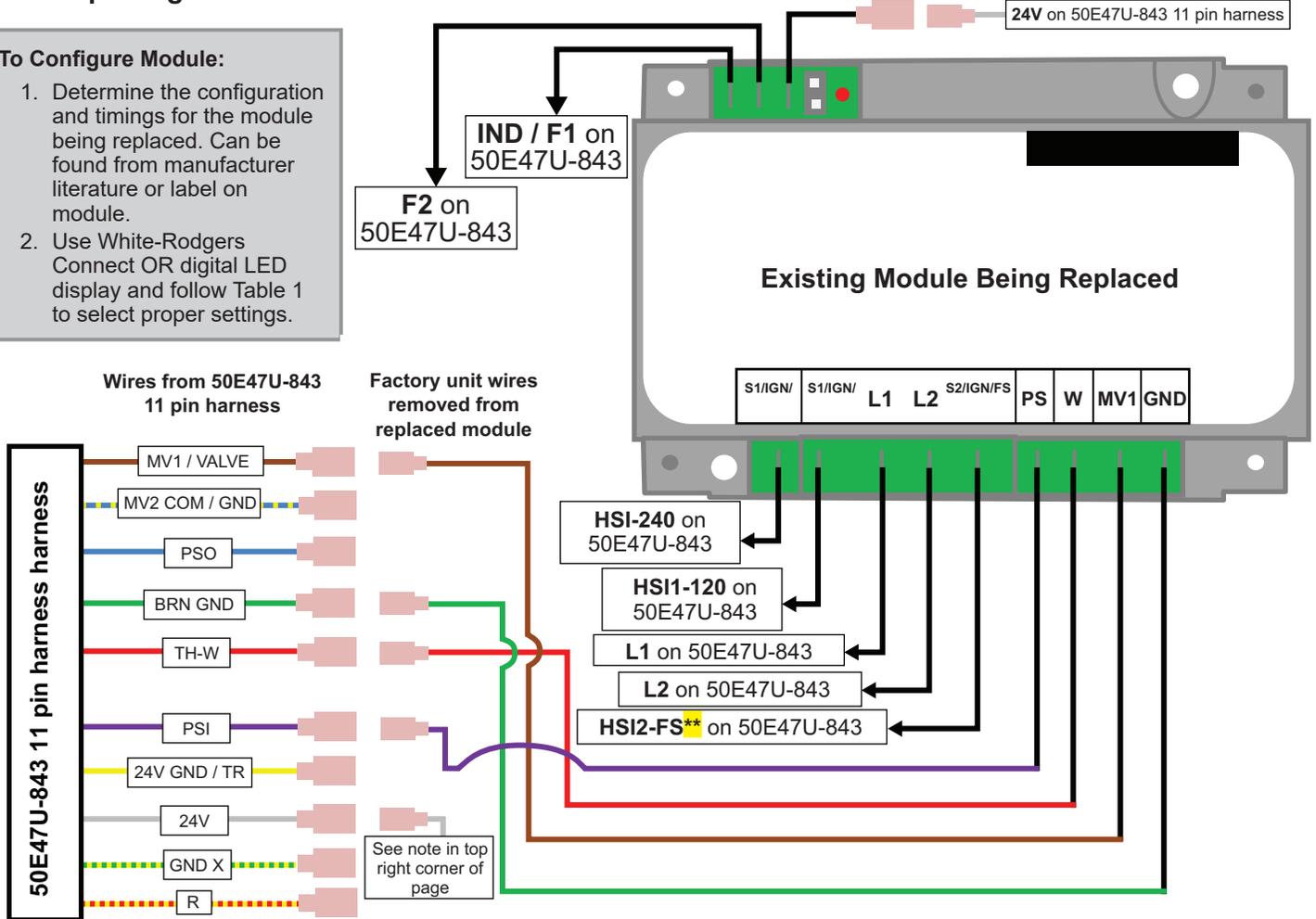


INSTALLATION

When replacing Fenwal 35-65 or 35-66

To Configure Module:

1. Determine the configuration and timings for the module being replaced. Can be found from manufacturer literature or label on module.
2. Use White-Rodgers Connect OR digital LED display and follow Table 1 to select proper settings.



** For remote sense applications, connect the neutral side of the ignitor to the transformer 120V neutral (off board) and connect the remote flame sensor from S2/FS to SENSE on 50E47U-843

Other Setup Notes:

- If module being replaced does not have a terminal shown in the diagram above, leave that wire in the 50E47U-843 11-pin harness unconnected and insulated to prevent possibility of a short-circuit
 - Some modules do not have a dedicated 24V/R pin, for these modules, leave the 24V wire on 50E47U-843 un-used when replacing it
- Follow all safety guidelines on page 1 and directions under MOUNTING AND WIRING DIAGRAM on page 4

Table 2: Dual Ignitor Voltage Output – Fenwal Modules ONLY

Overview: The 50E47U-843 has been designed to allow use for a 240V ignitor OR 120V ignitor when 240V is applied on L1 and L2 of the module. For 240V ignitors when 240V is applied to L1 and L2, attach the 240V ignitor to terminals HSI1-120 and HSI2-FS. For 120V ignitors when 240V is applied on L1 and L2, attach the 120V ignitor to HSI1-240 and HSI2-FS. HSI-240 is represented on Fenwal controls of where a 120V ignitor is attached when the supply voltage is 240V. This follows the same convention as the Fenwal 35-65 and 35-66 series. The table below summarizes this. See wiring diagram below and on page 4 for demonstration on wiring different ignitor voltages.

Voltage input on L1 to L2 (approx.)	Voltage output on HSI1-120 to HSI2-FS (approx.)	Voltage output on HSI-240 to HSI2-FS (approx.)
24V	24V	N/A
120V	120V	N/A
240V	240V	120V

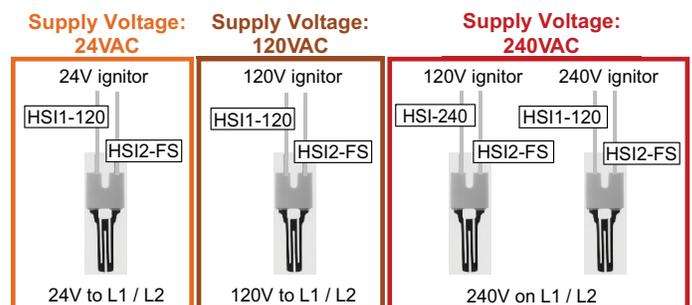


Table 3: On-Board Digital Display Codes

S T A T U S C O D E S F A U L T C O D E S	Condition	LED 1	LED 2	LED 3	Comment/Troubleshoot Step
		Call for Heat (W) with Pre-Purge Active	<i>h</i>	<i>P</i>	<i>r</i>
	Call for Heat (W) with Inter-Purge Active	<i>h</i>	<i>I</i>	<i>P</i>	The delay during a heat call in between ignition attempts
	Call for Heat (W) with Post-Purge Active	<i>h</i>	<i>P</i>	<i>o</i>	The delay immediately after a heat call has ended
	Call for Heat (W) Ignitor Warm-Up Period	<i>I</i>	<i>g</i>	<i>n</i>	Time period when module energizes ignitor for warm up
	Call for Heat (W) Trial for Ignition Period Active	<i>t</i>	<i>F</i>	<i>I</i>	Both ignitor and gas valve are energized
	Call for Heat (W) after flame is active	<i>h</i>	<i>t</i>		Appears when flame is active during normal heat call; Toggles with Weak Flame Signal (if applicable). When integrated thermostat is on, <i>h t</i> will toggle with temperature sensor reading
	Weak Flame Signal Sensed	<i>F</i>	<i>L</i>	<i>o</i>	Check flame probe, clean or replace probe if needed
	Loss of IRQ signal	<i>E</i>	<i>0</i>	<i>0</i>	Recycle power and replace module if problem persists
	Pressure Switch Open	<i>E</i>	<i>0</i>	<i>1</i>	Check Pressure Switch connection
	No Flame During TFI	<i>E</i>	<i>0</i>	<i>2</i>	Check ignition source, gas valve or flame probe
	Flame Out During Run	<i>E</i>	<i>0</i>	<i>3</i>	Check ignition source, gas valve or flame probe
	Flame Sensed Out of Sequence	<i>E</i>	<i>0</i>	<i>4</i>	Check ignition source, gas valve or flame probe
	Fuse Open	<i>E</i>	<i>0</i>	<i>5</i>	Replace 5-amp ATC fuse (F1)
	Wrong 24VAC Supply	<i>E</i>	<i>0</i>	<i>6</i>	Check supply voltage source. Must be >18VAC and <30VAC
	Pressure Switch Stuck Closed	<i>E</i>	<i>0</i>	<i>7</i>	Check Pressure Switch connection
	Air Temperature Sensor Error	<i>E</i>	<i>0</i>	<i>8</i>	Check Air Temperature Sensor and AirT connection
	Gas Valve On (GV) Error	<i>E</i>	<i>0</i>	<i>9</i>	GV is on when it shouldn't be, check GV
	Gas Valve Off Error	<i>E</i>	<i>1</i>	<i>0</i>	Gas Valve off when it shouldn't be, check GV
	Gas Valve Off Lockout	<i>E</i>	<i>1</i>	<i>1</i>	Excessive GV off error, module will go into auto-restart delay and then reset
	TH-W / Limit Open Error	<i>E</i>	<i>1</i>	<i>2</i>	Module is not receiving 24 V on TH-W terminal when using integrated thermostat mode. Check system wiring, safety switches and connection at R terminal
	PSW Mis-wire Error	<i>E</i>	<i>E</i>	<i>1</i>	Module has received 24 V on PSW terminal when it shouldn't. Check configuration and wiring at PSW.
	Connectivity Error	<i>E</i>	<i>C</i>	<i>1</i>	Recycle power, if problem persists, use on board configuration

Operation	Module Status	Action	Duration of Action	LED Display	Extra Notes
Fault Code Recall	Standby	Hold OPTION and SELECT together	2-5 seconds	<i>F L t</i> after 2 seconds	<ul style="list-style-type: none"> A maximum of 5 error codes are stored in the sequence they occur Press OPTION button < 1 second to advance to next fault code When OPTION button is pressed after last error code, LEDs return to current status of unit <i>E n o</i> will be displayed if there are no error codes stored
Fault Code Reset	Standby	Hold OPTION and SELECT together	5-10 seconds	Alternates between <i>C L r</i> and <i>F L t</i> after 5 seconds	<ul style="list-style-type: none"> Once both OPTION and SELECT are released after holding them together for 5-10 seconds, the LEDs will flash <i>C L r</i> 3 times to indicate the error codes have been erased, module will then return to current status Error codes are stored in the module's memory for up to 14 days (error codes stored in systems powered by TH-W will have no expiration)

TROUBLESHOOTING

Flame Current Display and Test Pins

The 50E47U-843 has an advanced flame current sense circuit that slows the control to digitally measure and report flame current on the 7-segment digital display with a 0.1 μA resolution. The flame current is automatically displayed in an alternating pattern with other status indications during a heat call.

Flame current can also be measured with a voltmeter using the test pins in the location noted in the wiring diagram on page 4. When using this method, set the meter to volts DC and place the meter leads on each test pin. If a negative reading is observed, simply reverse the polarity of the leads. The reading in volts is directly equivalent to the microamps of the flame current (1VDC = 1 μA).

INTEGRATED THERMOSTAT FEATURE

The integrated thermostat feature allows the module to create its own call for heat without an external thermostat in the system. Requires a dedicated 24V path wired to the 50E47U-843 ignition module (24V terminal on 11 pin harness). This feature is only designed for radiant, infrared and tube heat applications. Refer to diagram to properly wire all safety switches in the system. Steps to use integrated thermostat feature:

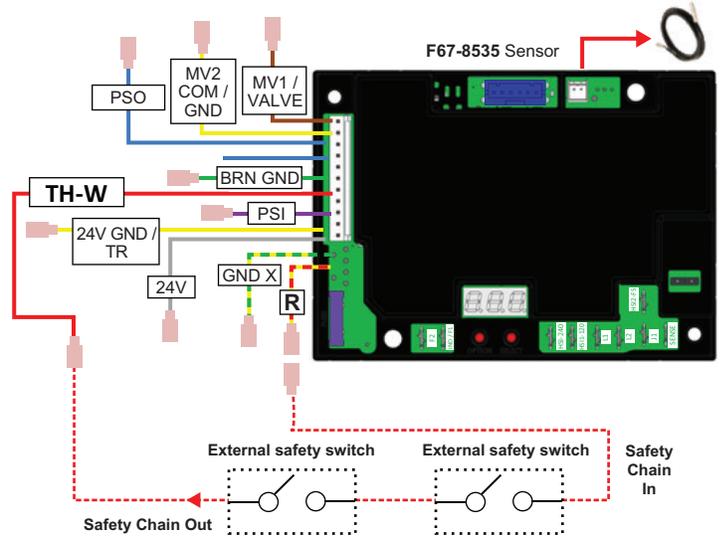
1. Purchase White-Rodgers Air Temperature Sensor kit F67-8535
2. Connect temperature sensor to AirT connector input
3. Secure temperature sensor in desired heating location of space
4. Configure Integrated Thermostat settings through White-Rodgers Connect App or 7-segment LED Display (see Table 1 on page 3)
5. **Connect R (output) on 11-pin harness to input of safety chain**
6. **Connect Safety chain output to TH-W on 11-pin harness**
7. Connect power to the ignition module
 - Note: if using 7-segment LED Display to configure, 24V power must first be connected to module. Follow all safety guidelines outlined on page 1 and wiring instructions explained under MOUNTING AND WIRING DIAGRAM on page 4
8. Connect gas and ensure unit is heating correctly

How to View, Set, and Change Temperature Set Point:

Temperature Range: 40 – 80 °F (68 °F is default) or 5 – 27 °C (20 °C is default) | (Set Point – Offset) can't be less than 40 °F (5 °C) or greater than 80 °F (27 °C)

Wiring Details:

For radiant, infrared and tube heater applications only



IMPORTANT: Connect R on 50E47U-843 module to input of safety switches (limit, rollout, etc.) and connect output of safety switches to TH-W on 50E47U-843

Integrated Thermostat Offset

- Offset is most applicable when Air Temperature sensor is unable to be placed in the desired heating location
- When sensor is in a location warmer than desired, use the negative offset (if sensor is in location colder than desired, use positive offset)
- Example: set point = 65 °F, actual temperature of desired location = 63 °F, sensor reading = 68 °F, use an offset of -5 °F

Action	Module Status	Button Press	Duration
Enter Temperature Set Point (TSP) Menu	Integrated T-STAT ON, Standby	OPTION	< 3 seconds
Advance set point one degree	TSP Menu	SELECT	< 3 seconds
Retreat set point by one degree for set point	TSP Menu	OPTION	< 3 seconds
Confirm set point selection	TSP Menu	SELECT	> 3 seconds
Enter Configuration Menu	Integrated T-STAT ON, Standby	OPTION	> 3 seconds

LnF will display after 3 seconds ←

TECHNICAL SUPPORT: 1-888-725-9797