COPELAND

White-Rodgers 50D50U-843 All-Spark Universal Intermittent Pilot/Direct Spark Ignition Module

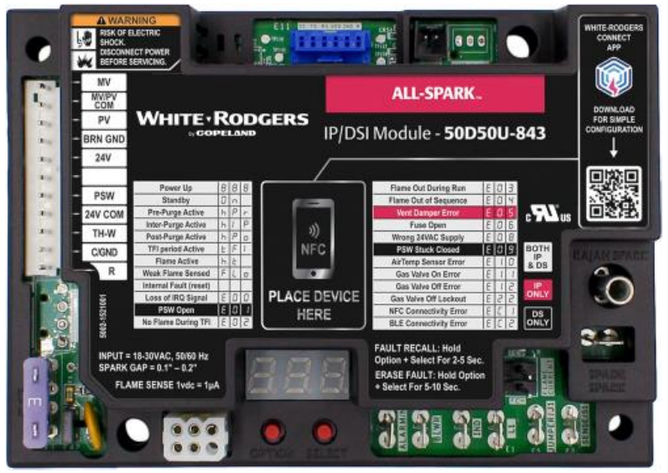
Including the White-Rodgers F67-8535 Integrated Thermostat Sensor

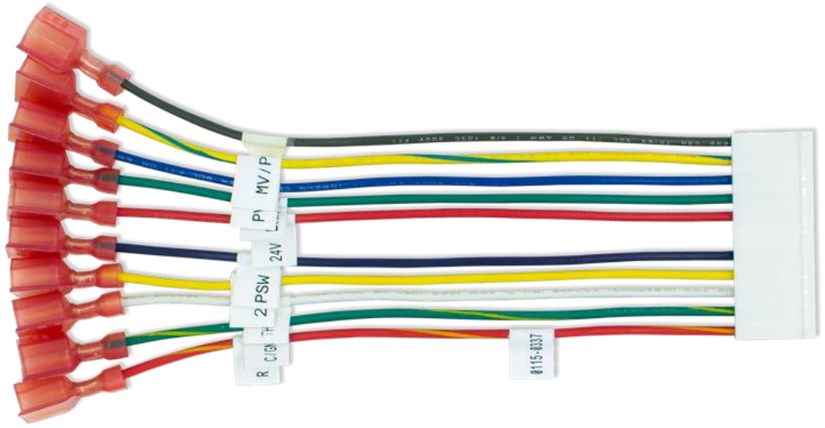
WHITE-RODGERS
by COPELAND

Business and Product Overview

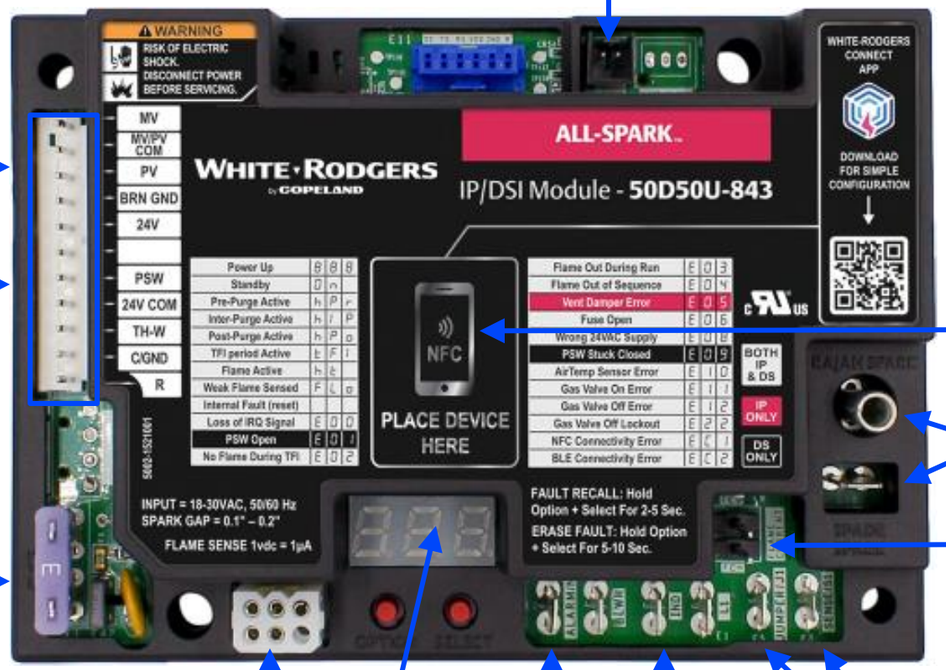
White-Rodgers All-Spark Ignition Module

- The 50D50U-843 is the first universal replacement for 24V intermittent pilot or direct spark ignition that utilizes a mobile app for configuration and diagnostics.
  - Replaces over 600 IP and 400 DSI part numbers.
- Various configuration and mounting options.
- Configurable on the control OR via near-field communication (NFC) and the White-Rodgers Connect app.





All-Spark Ignition Module Control Features



Integrated Thermostat Sensor Connector

11-pin In-line Connector

Pressure Switch Connection

Serviceable Fuse

Works with White-Rodgers connect

Near-field Communication (NFC)

Optional Rajah spark plug or ¼" Spade

Flame Sense Test Pins

Vent Damper Connector

Alarm Output Connection

3-Digit 7-Segment LED Display

Inducer Connection

Local/Remote Flame Sense Connections

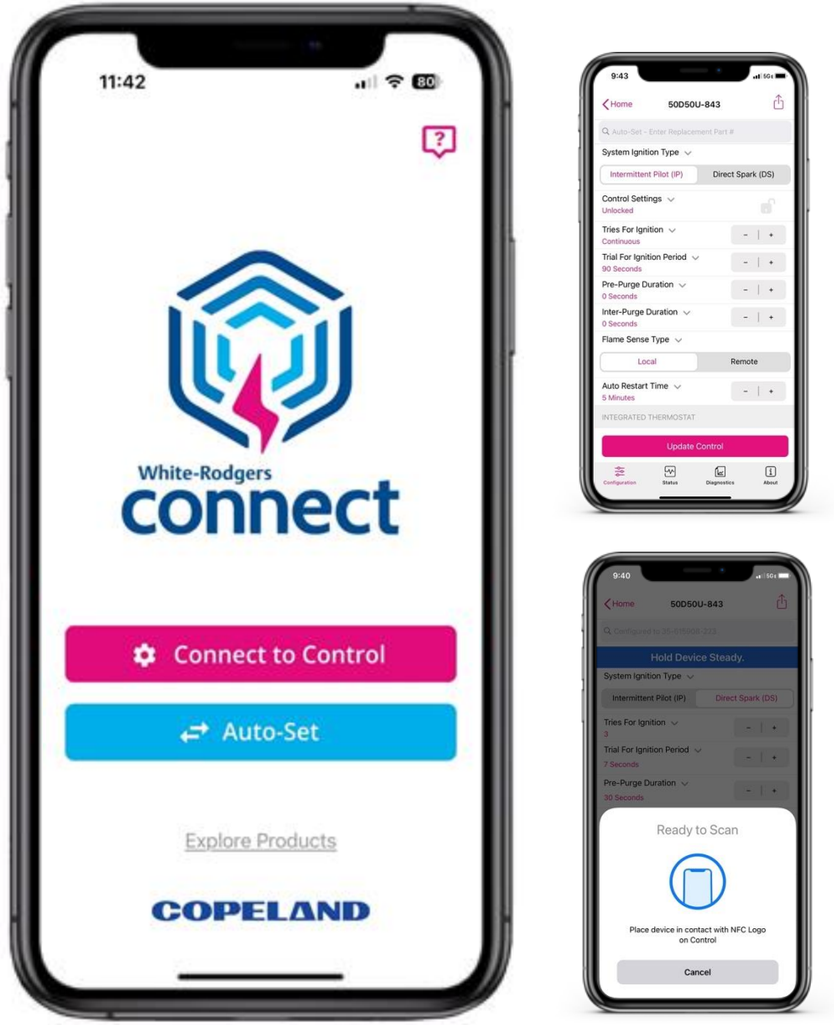
Introducing White-Rodgers Connect

INDUSTRY'S 1 FIRST

- App provides simple configuration without power prior to installation.
- No login or username required.
- Configure with preloaded OEM settings or customize module configurations.
- Diagnose fault codes and troubleshoot confidently.
- View status and details about the module.

Near-field Communication (NFC) creates an interface between the control and your mobile device with the White-Rodgers Connect app. Just place your mobile device on the control to enable a connection.

Once downloaded, the White-Rodgers Connect app does not require cellular/Wi-Fi service to use.



All-Spark Ignition Module Applications

Intermittent Pilot (IP or Proven Pilot)

- Systems with gas valves that have both a pilot valve & a main valve use these brands

Honeywell
S8610U

UTEC
1003

Robertshaw
780

ICM
290A

Johnson
G60/65/67/77

Fenwal
35-63

Direct Spark (DSI)

- Systems with gas valves that only have a main valve use these brands

BASO
C107U

UTEC
1016

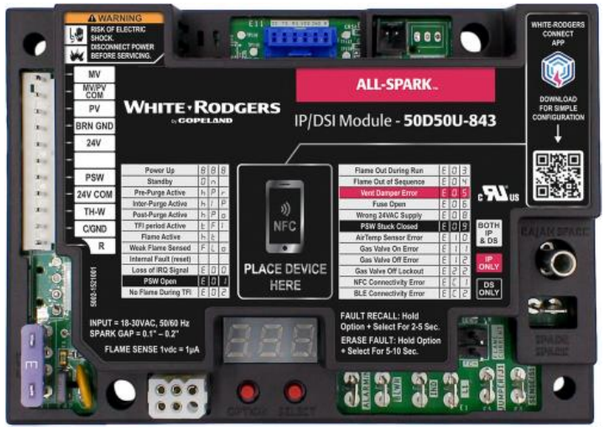
Fenwal
35-60/61

Honeywell
S87

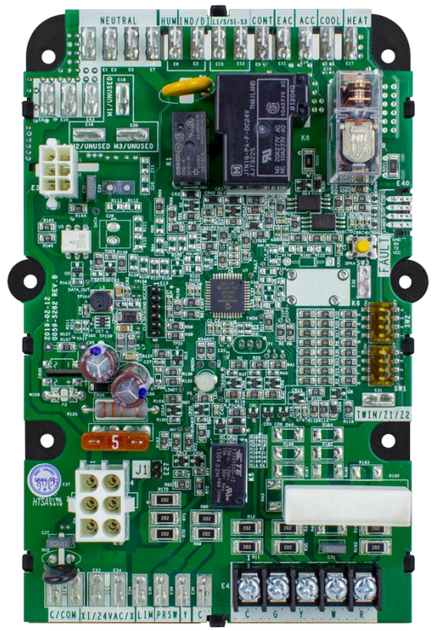
Non-Integrated Furnace Application

What is “Non-Integrated”?

- A Non-Integrated Control is a partial control that connects to another for complete operation. For Forced Air Units, the 50D50U-843 will integrate with a 50F06-843 Fan Timer module for complete Furnace operation.
  - Most common All-Spark Ignition Module Furnace application!
- All-Spark can be installed in a wide range of applications (continued on the next slide)

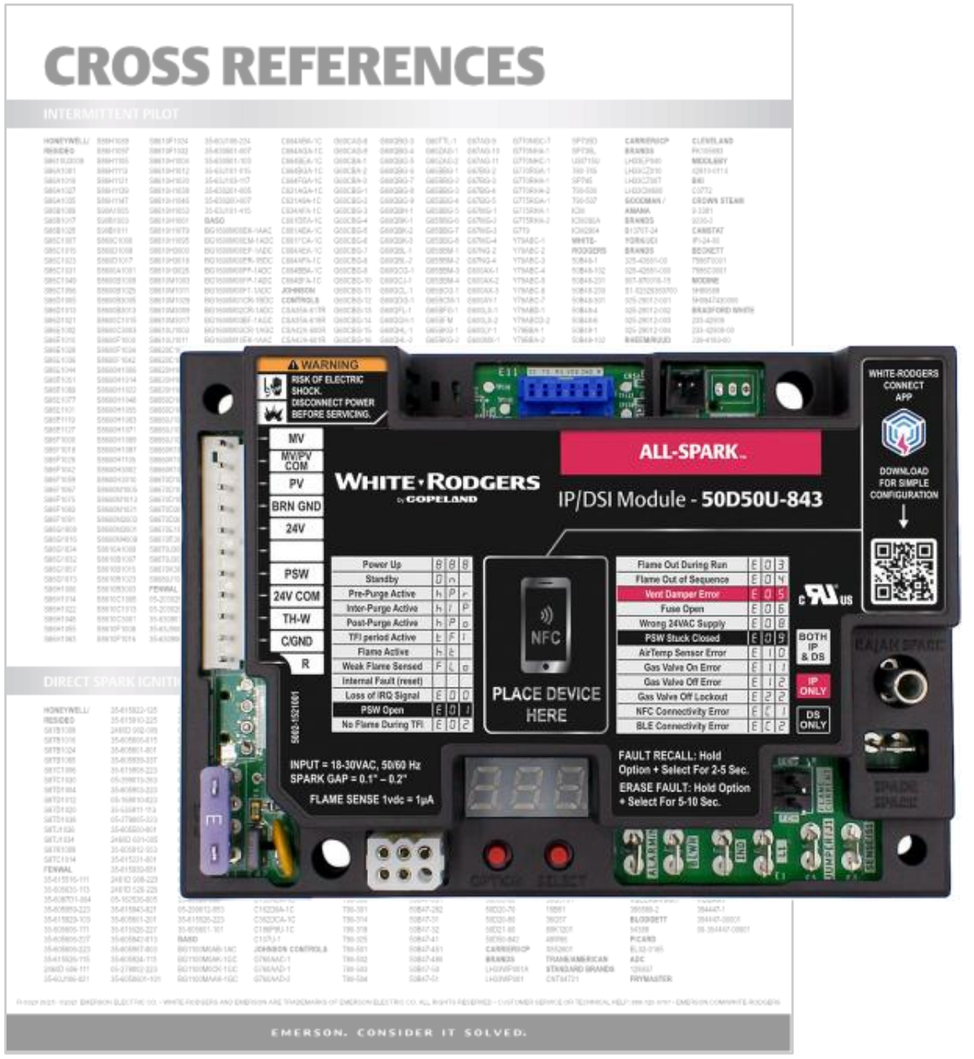


PLUS +



Cross References

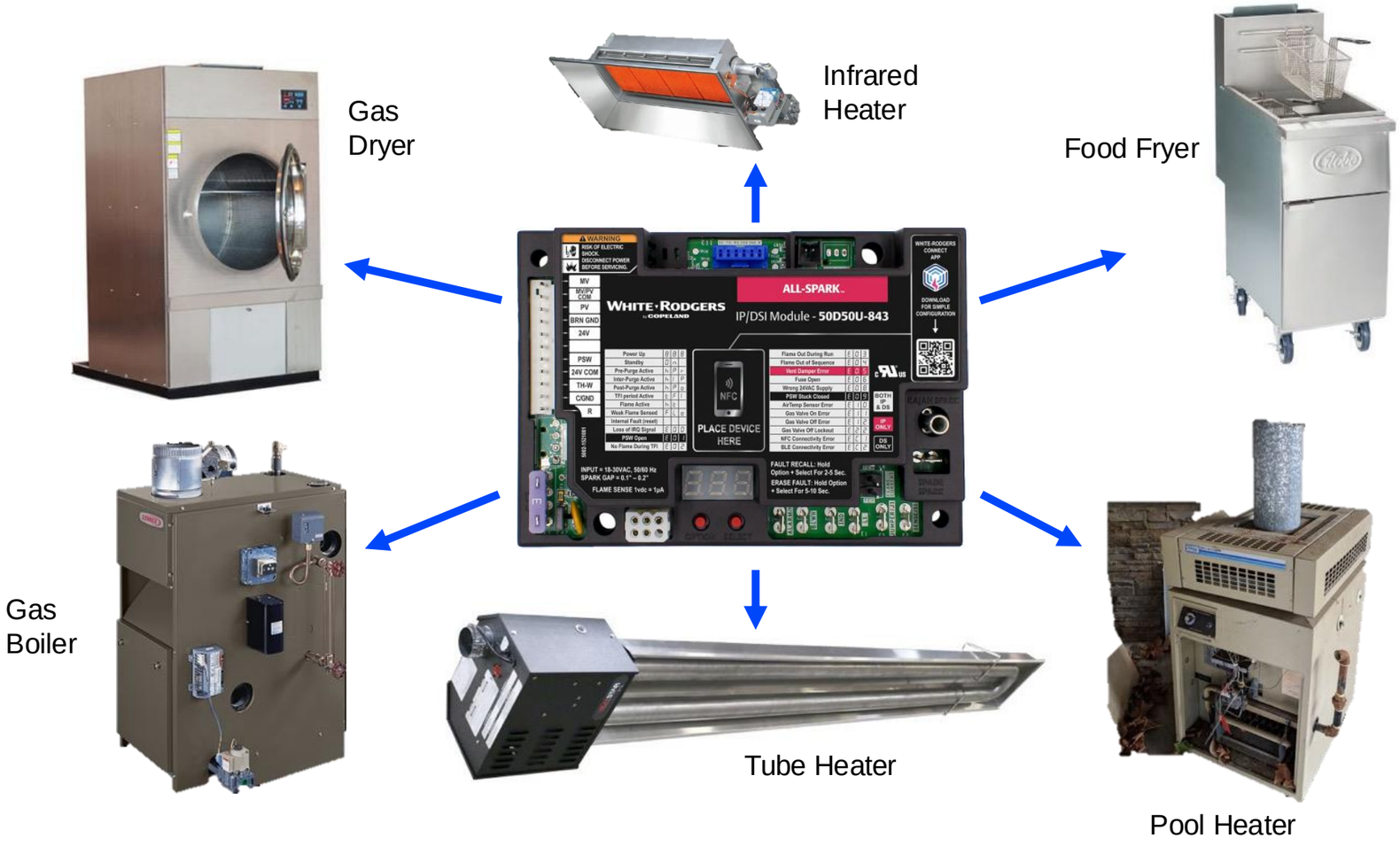
- All-Spark Ignition Module has 1,000+ cross references
- 600+ Intermittent Pilot controls and 400+ Direct Spark Ignition controls
- Annual market is estimated to be over 500K replacements



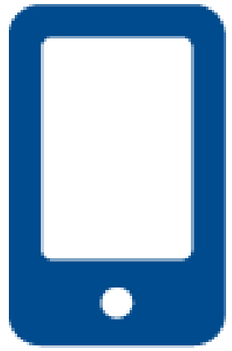
Additional Applications

Stand-alone Applications

All-Spark Ignition Module can also function as a stand-alone control where no blower is utilized.



All-Spark Ignition Module Benefits



2 Applications in 1

- Combines Intermittent Pilot & Direct Spark Ignition in one control.
- Full featured connections:
  - On-board Vent Damper
  - Alarm Output
  - Inducer & Pressure Switch Inputs

Easy Connections

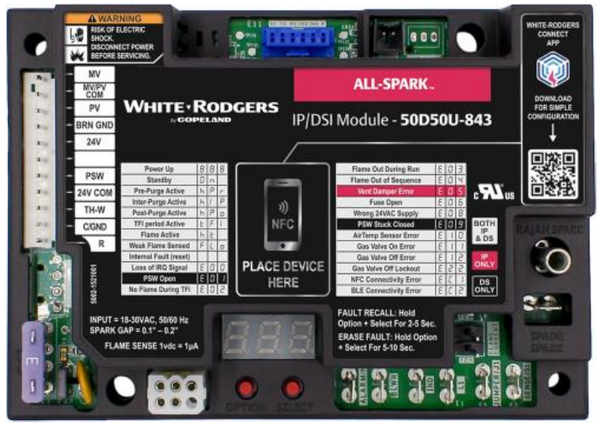
- With Rajah & ¼" spade, the All-Spark Ignition Module connects to the majority of spark wiring.
- 24v 11-pin harness has all configuration wires that are made active through personalized configuration.

Mobile Configuration

- Utilizes Near-field Communication for simple configuration.

What's in the Box: 50D50U-843

- 50D50U-843 module
- 11-pin 24v harness
- Vent damper plug
- Flame sense jumper
- 14-16 AWG ¼" female QC spade – nail/spike spark adapters with shrink-wrap sleeve
- 6 – 3/16" male QC spade terminals
- 4 – 1" mounting screws
- Fault code label
- Instruction sheet with QR code link to install video
- QR code for White-Rodgers Connect app



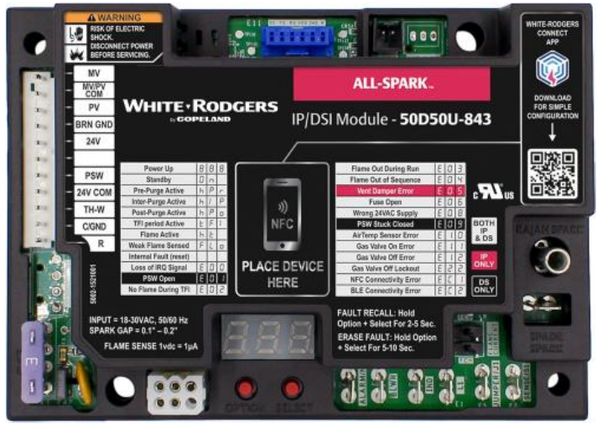
Introducing the All-Spark Integrated Thermostat Sensor

The White-Rodgers F67-8535 Plug-in Temperature Sensor

SOLD SEPERATELY

The White-Rodgers 50D50U-843 Non-Integrated Spark Ignition Module now can act as a thermostat and turn the module on and off. By connecting the F67-8535 Temperature Sensor to All-Spark, the digital display can be used to show a temperature setting is adjustable using the “Option” & “Select” buttons.

The Integrated Thermostat feature is designed for infrared & tube heaters that are installed in the area they heat. It can maintain a specific temperature without the system being manually turned on & off or having a separate thermostat installed.



F67-8535

Features include:

- Plug-in temperature sensor
- Function can be turned on/off in programming
- Easy temperature adjustment
- Display current Setpoint
- Display set temperature
- Adjustable from 40°F to 80°F

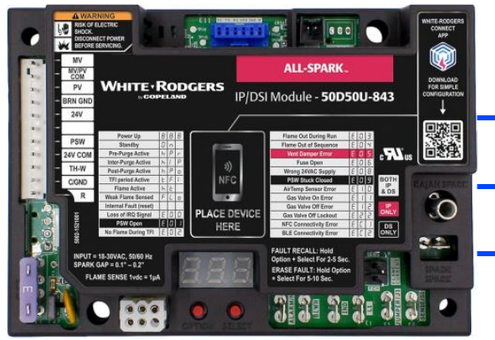
Easy to Install, Easy to Configure, Easy to Operate

Integrated Thermostat Applications

Fully Independent

- Applications that control the temperature of the space they are in can now be fully controlled at the Unit. By utilizing the All-Spark 50D50U-843 with a F67-8535 Temperature Sensor attached, the thermostat feature allows for a complete self-contained functioning system!
- NOT INTENDED FOR FURNACES.

Tube Heater



Space Heater

Infrared Heater

What's in the Box: F67-8535

SOLD SEPERATELY

- F67-8535 Integrated Thermostat Sensor
- Installation Instructions
- ¼" Female QC Spade Terminal

F67-8535
Integrated Thermostat Sensor
INSTALLATION INSTRUCTIONS

ONS CAREFULLY BEFORE INSTALLING OR
ONAL INJURY AND/OR PROPERTY DAMAGE.

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.

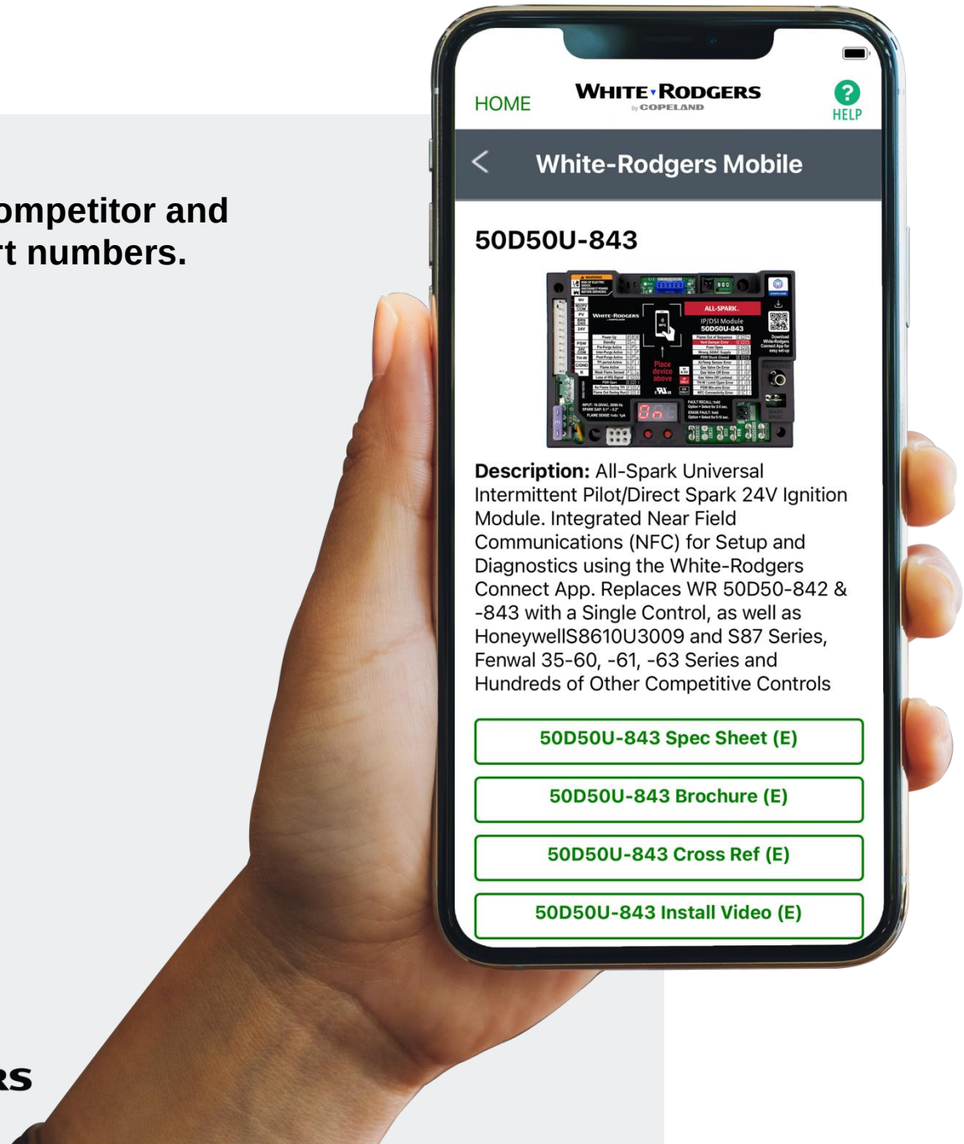
FIRE HAZARD

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

Comprehensive Cross Reference & Product Information

Find the right part while on the job.

Search by OEM, Competitor and White-Rodgers part numbers.



Your on-the-go resource for:

- Complete cross reference
- Product information and spec sheets
- Installation information and videos
- Wiring diagrams
- Select product by features
- Priority technical support

WR Mobile App

Search for “WR Mobile” in both Apple and Google Play Stores

Desktop Version

Access the online version HERE

WR MOBILE

Download on the App Store

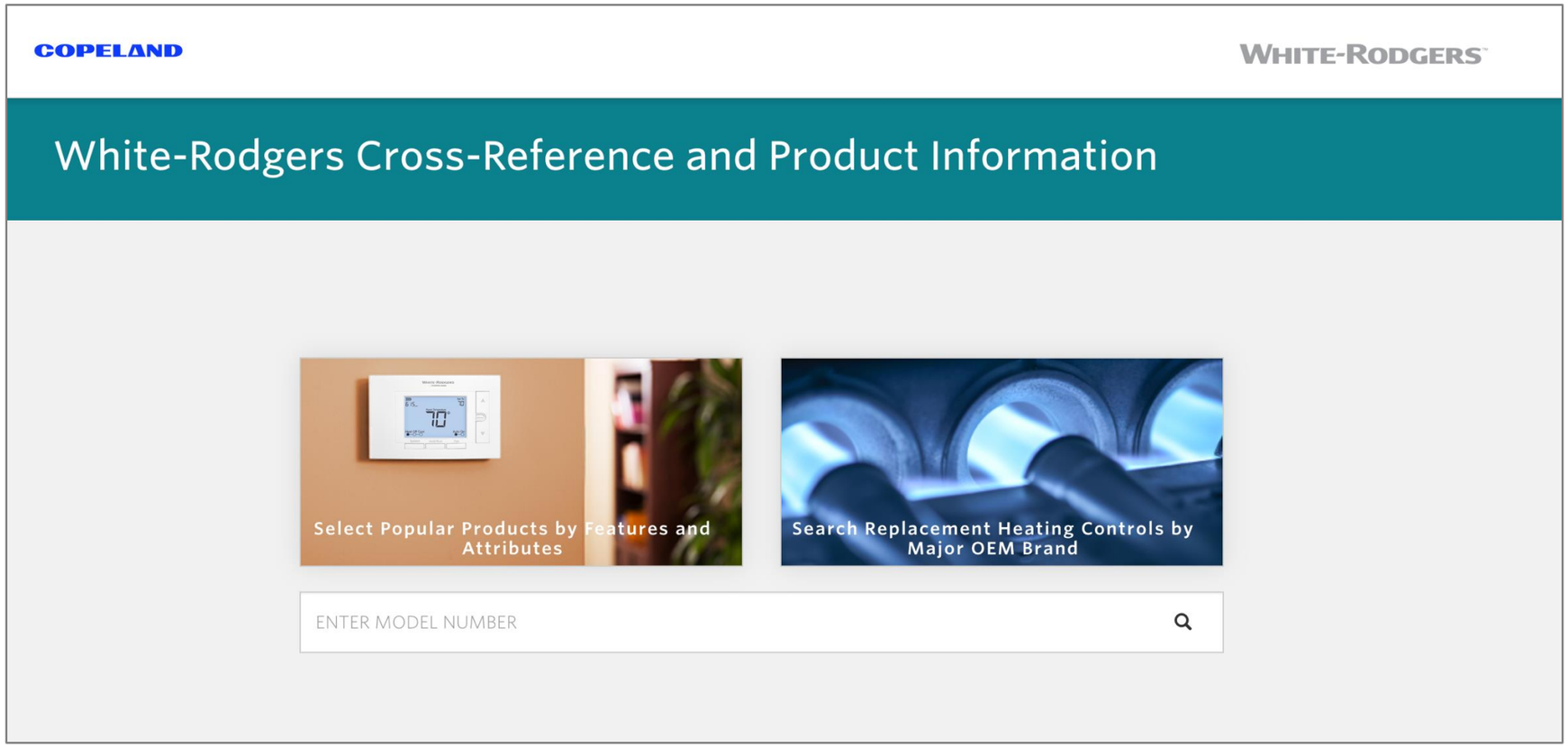
Download from Google Play

WHITE-RODGERS by COPELAND

White-Rodgers Cross Reference

Go to: https://webapps.copeland.com/wrproductselector/

- Enter the Model Number or click on: Search Replacement Heating Controls by Major OEM Brand



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Technical Overview

White-Rodgers All-Spark Ignition Module

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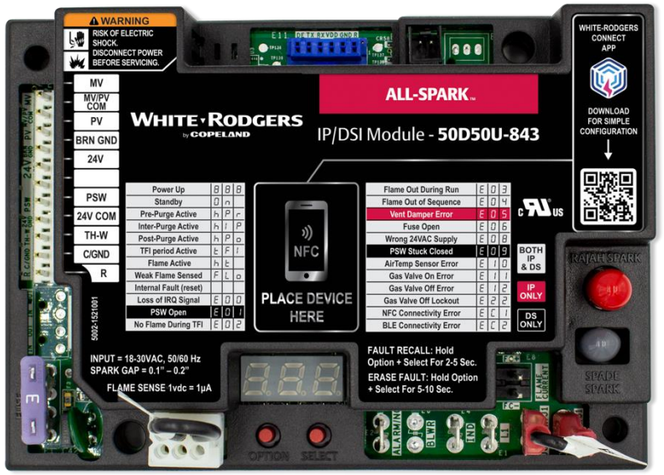
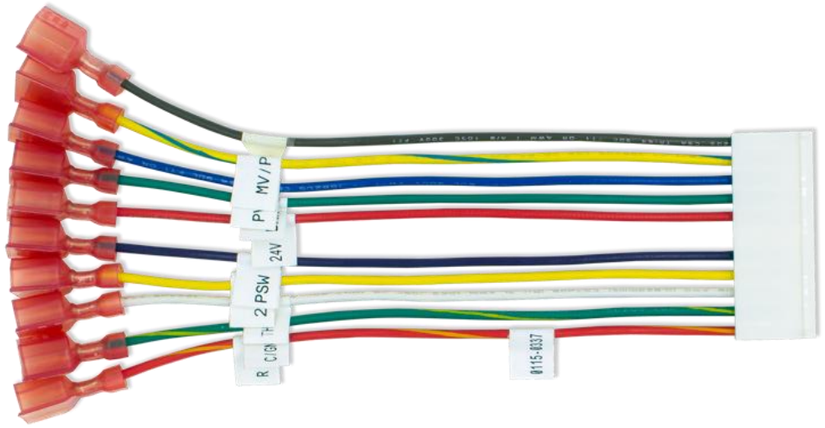




Understanding Near-field Communication

Powering

NFC does not require a cellular connection, simply hold the mobile device on the NFC icon until a check mark appears.

Connecting

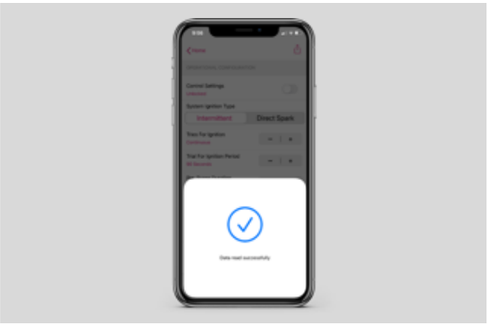
Once the control is read, you may move your phone away to configure in the app.

Configuring

Configuration settings can be uploaded to the All-Spark Ignition Module prior to powering up the control.

Configure from a service truck and even prior to installation.

Updating



After configuring, tap the “Update Control” button and hold the device on the NFC icon. **Make sure to wait for a check mark, to secure your settings!**

All-Spark Ignition Module Components

24v Components:

1. 11-pin In-line Wiring Connector
2. Low Voltage Fuse
3. Vent Damper Plug
4. Alarm Output Spade
5. Bluetooth Connector*
6. Remote Thermostat Sensor Connector

120v Components:

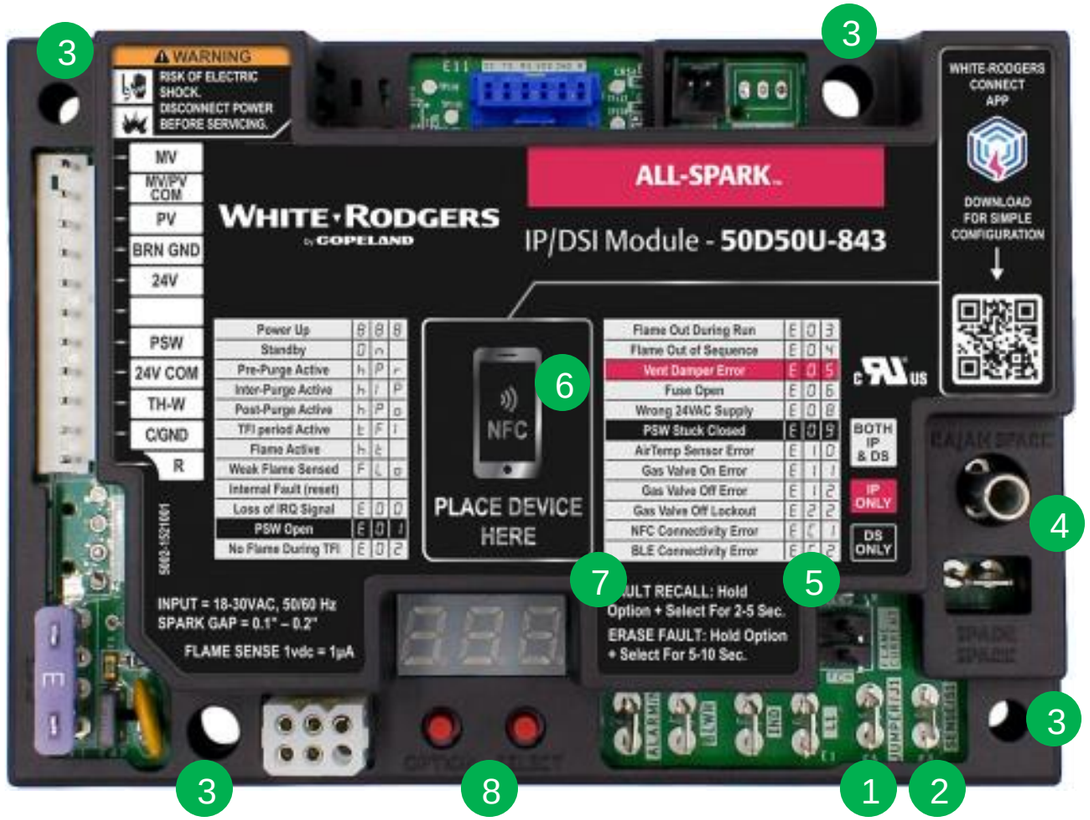
7. Line 120v Input Spade
8. 120v Inducer Output Spade

* Planned for release in 2022/2023

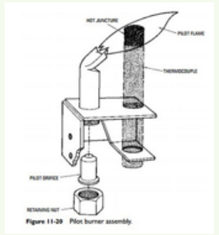
All-Spark Components

Other Components:

1. Flame Sense Jump Spade
2. Flame Sense Spade
3. Honeywell (S8600)
   or Fenwal (35-60) Mounting Options
4. Rajah or ¼" Spade Connectors
5. Flame Sense Test Pins
6. Near-field Communication Connect Area
7. 3–Seven Segment Status/Fault LEDs
8. Options/Select Buttons

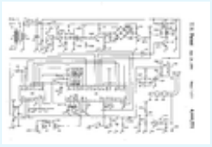


Spark Ignition in Residential Furnace Applications



Dante Raso of Brooklyn, NY, invents the Standing Pilot light system

An Intermittent Spark Ignition system is introduced to replace Standing Pilot systems



Emerson Electric Co. invents & patents the concept of Direct Spark Ignition at burners, eliminating the need for a pilot

The National Appliance Energy Conservation Act set a minimum of 78% Annual Fuel Utilization Efficiency (AFUE)

Manufactures stop building furnaces with Standing Pilot light ignition systems

Most* manufactures have switched from Spark ignition, Silicon Carbide & 80v Nitride to 120v Nitride

*Exception: Rheem still uses Direct Spark Ign.

1928 | 1968 | 1984 | 1987 | 2006

Era of Forced Air Furnace Spark Ignition Systems

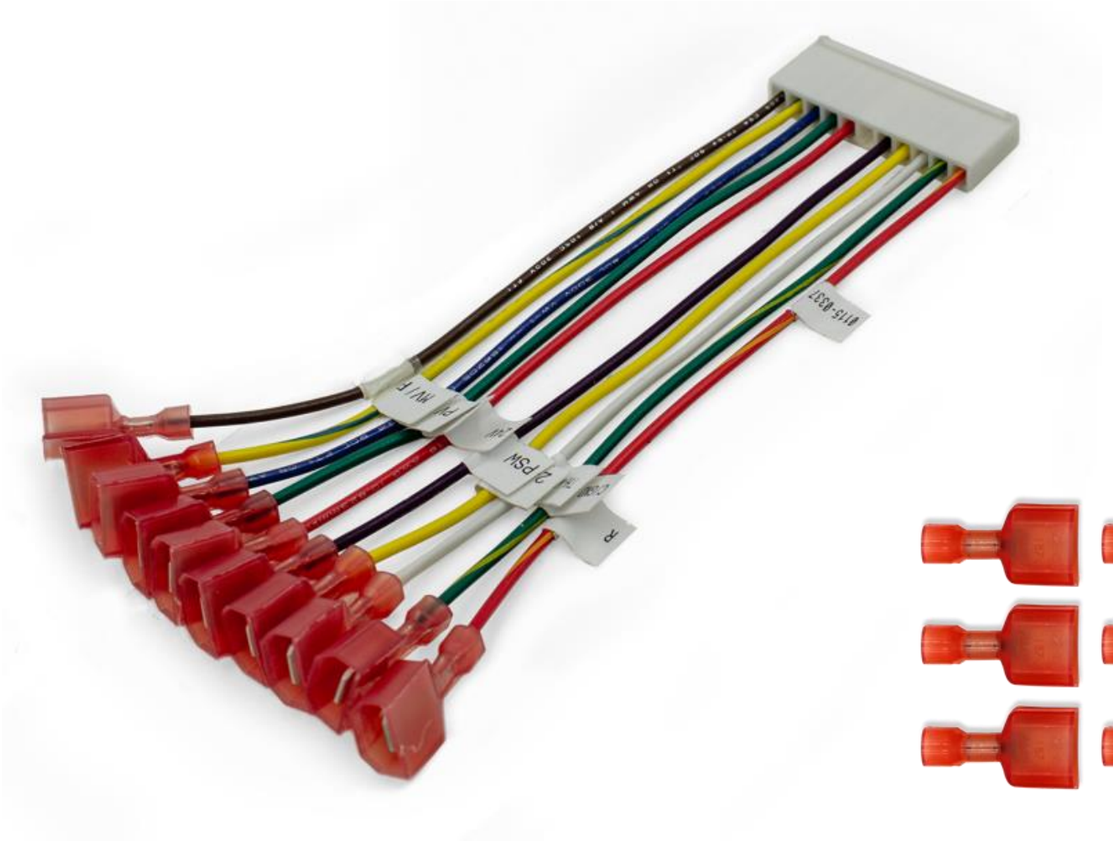
- Spark Ignition is the primary option for natural gas and propane furnaces.
- It requires a rapid release of high electrical voltage from an electrical coil.
  - Electric is transferred through an insulated wire to a metal rod placed close to a grounded object.
  - The electricity jumps the gap to create an electrical arc.
  - Gas is released over this arc and is ignited.

Many other applications using Spark Ignition are still being manufactured today

24v 11-Pin Harness

By providing a harness with ¼" spade connectors, all the wiring can be removed one at a time from the existing control and matched up with the harness labels prior to removing the existing control.

For some applications, six 3/16" spade connectors are provided.



11-pin Harness Assembly

6 - 3/16" Male QC Spade Terminals

All-Spark Ignition Module Features

Vent Damper with Jumper Plug

The vent damper connector is now built in and allows for easy connection to systems that utilize this feature.

Once attached, an internal fuse allows operation to begin.

Spark Terminal Options

Both Rajah & ¼" spade terminals are built-in.

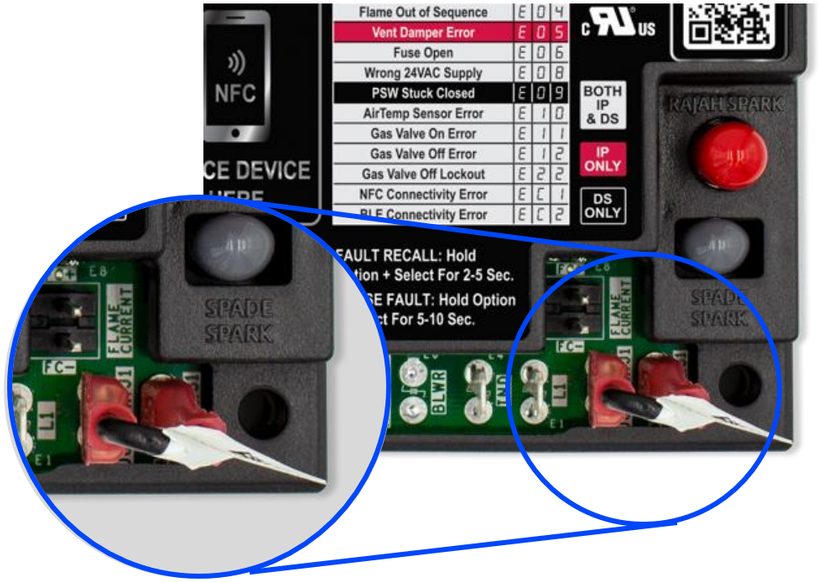
Terminals come capped. Remove only the cap being used.

A ¼” spade to spike/nail adapter with a shrink sleeve is also included.

Flame Sense Jumper Feature

Local vs Remote Sense

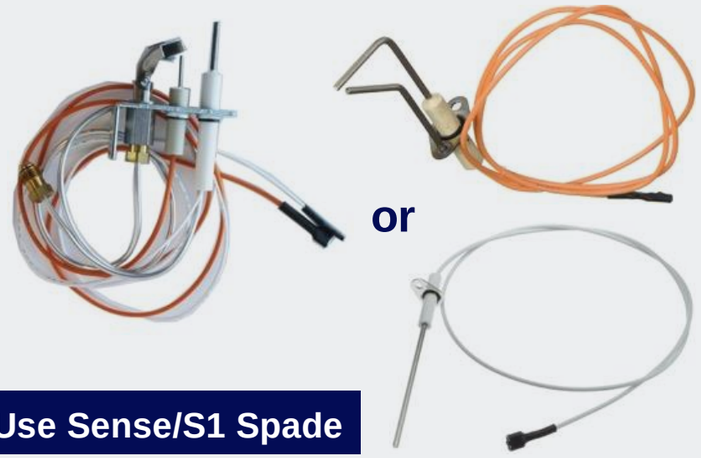
Flame sense can be configured to sense the flame through the “Local” spark rod or “Remote” through a separate flame sensor.



A Local Configuration refers to using a single rod by combining both spark and flame sense in one wire.

Use Jumper

A Remote Configuration refers to using 2 separate rods for the spark and flame sense circuits to operate independently.



or

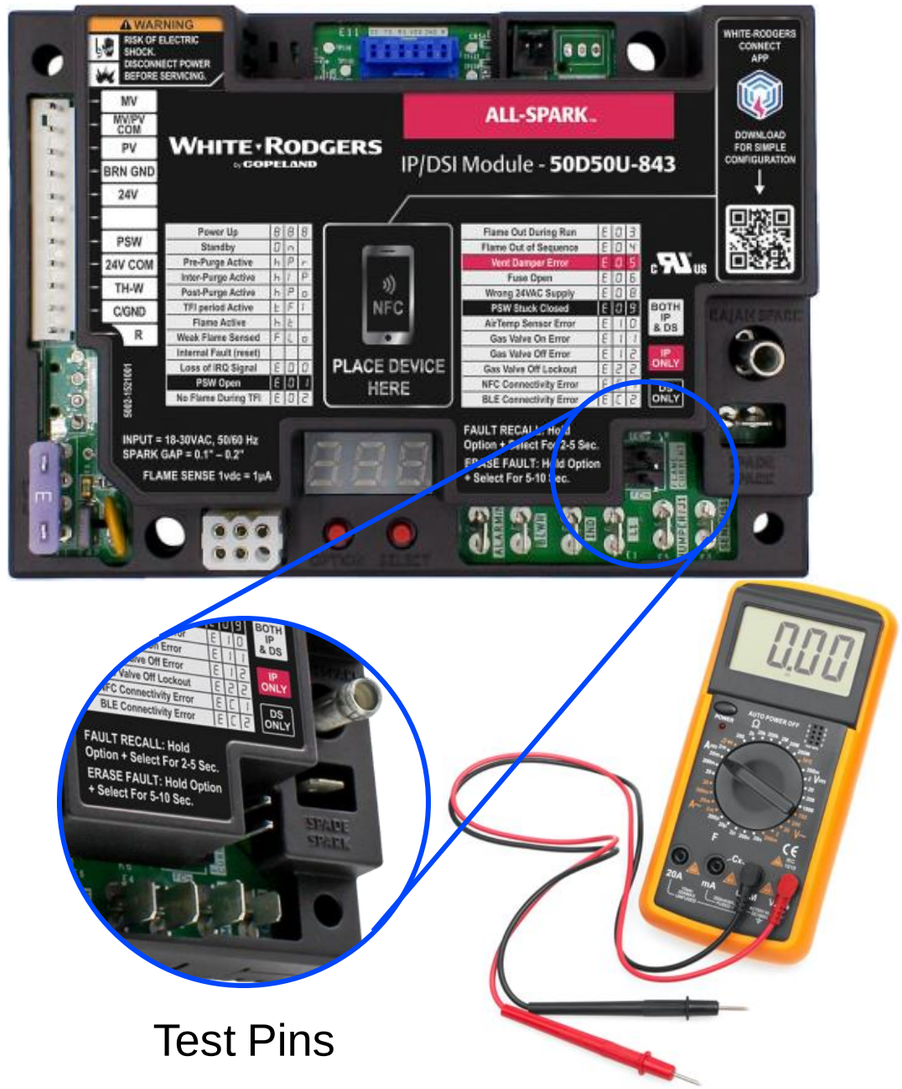
Use Sense/S1 Spade

Utilizing the Flame Test Pin Feature

- 2 pins extend from the control board to the surface of the cover.

To Test:

- The furnace must have a call for heat and the burners must be producing flame.
- Set a multimeter to vDC and place a meter probe on each pin.
- Convert vDc to MicroAmps using a 1:1 ratio.
- A good flame sense reading will be between 1.0–5.0 µA.



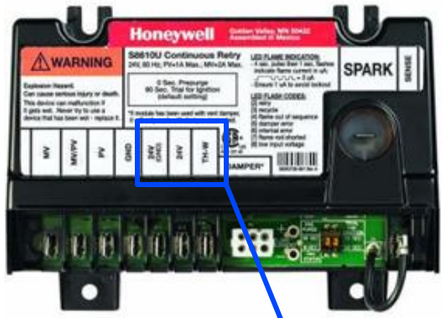
Intermittent Pilot–TH-W Wire Applications

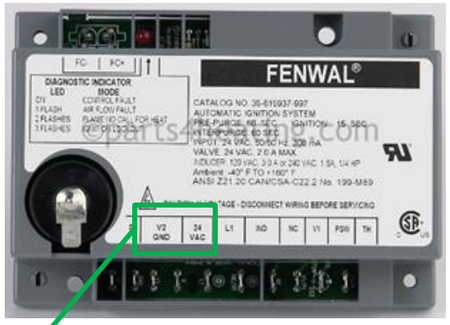
Some older IP Modules did not connect to TH-W.

If the module only connects to 24v & 24v ground, when installing All-Spark Ignition Module connect the wire that was going to 24v to the TH-W wire on the 11-pin harness.

The 50D50U-843 will power up each time there is a call for heat. No configuration settings are lost.

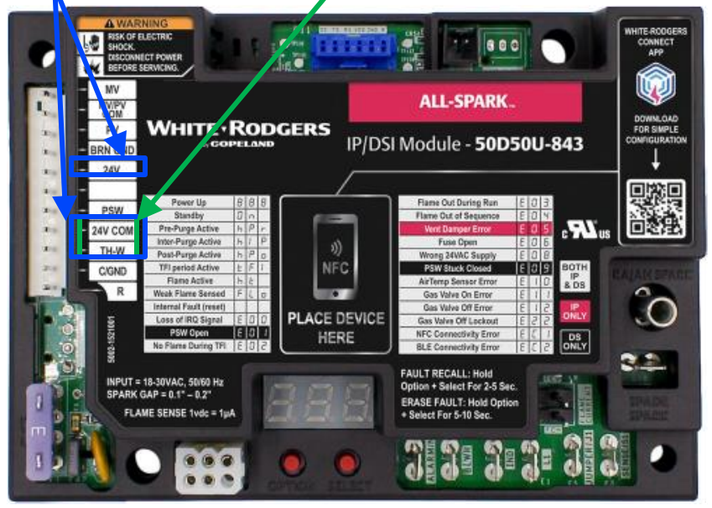
All-Spark does not need to be constantly powered



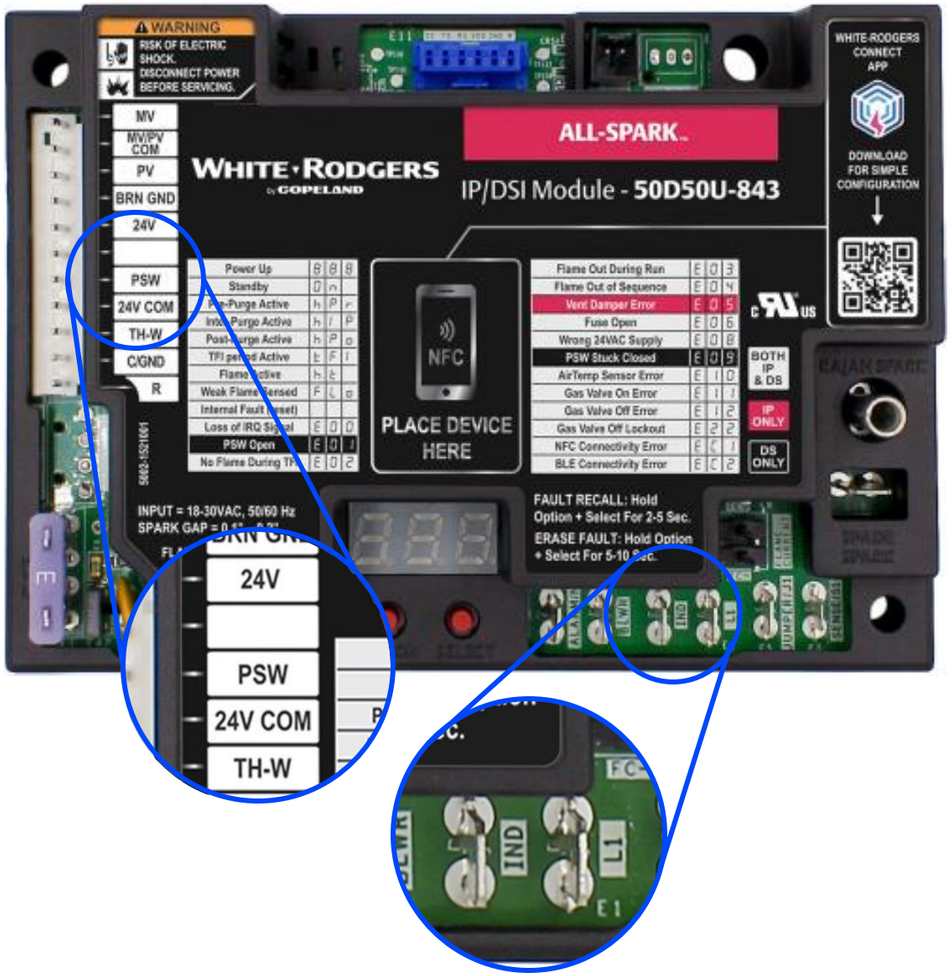


If 3 wires: connect all 3

If 2 wires: connect 24v(Gnd) & TH-W



DSI—Inducer & Pressure Switch Options



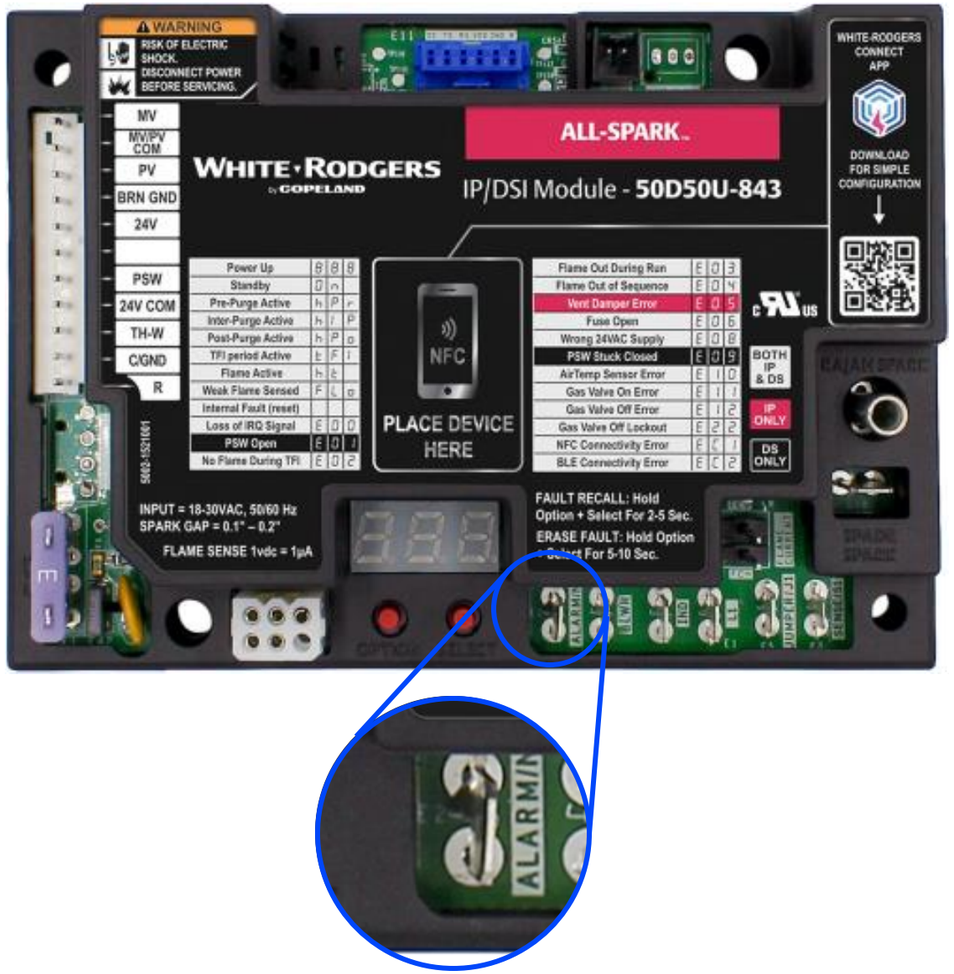
- When the module is set to Direct Spark Ignition, an option to power an inducer and monitor the system pressure switch is available.
- The module will not allow for system ignition until a signal is present on the pressure switch circuit indicating that the switch has closed.

Pressure switch monitoring & 120V inducer power is not available in IP applications

Optional Feature–Alarm Output Terminal

- For applications using an alarm, the ¼” spade labeled ALARM can be connected to the system.
- The alarm circuit normally has an open relay and when initiated will close and supply the alarm spade with 24 volts.

All-Spark can monitor system operation & send out a signal in the event of a lockout condition.



Additional New Features

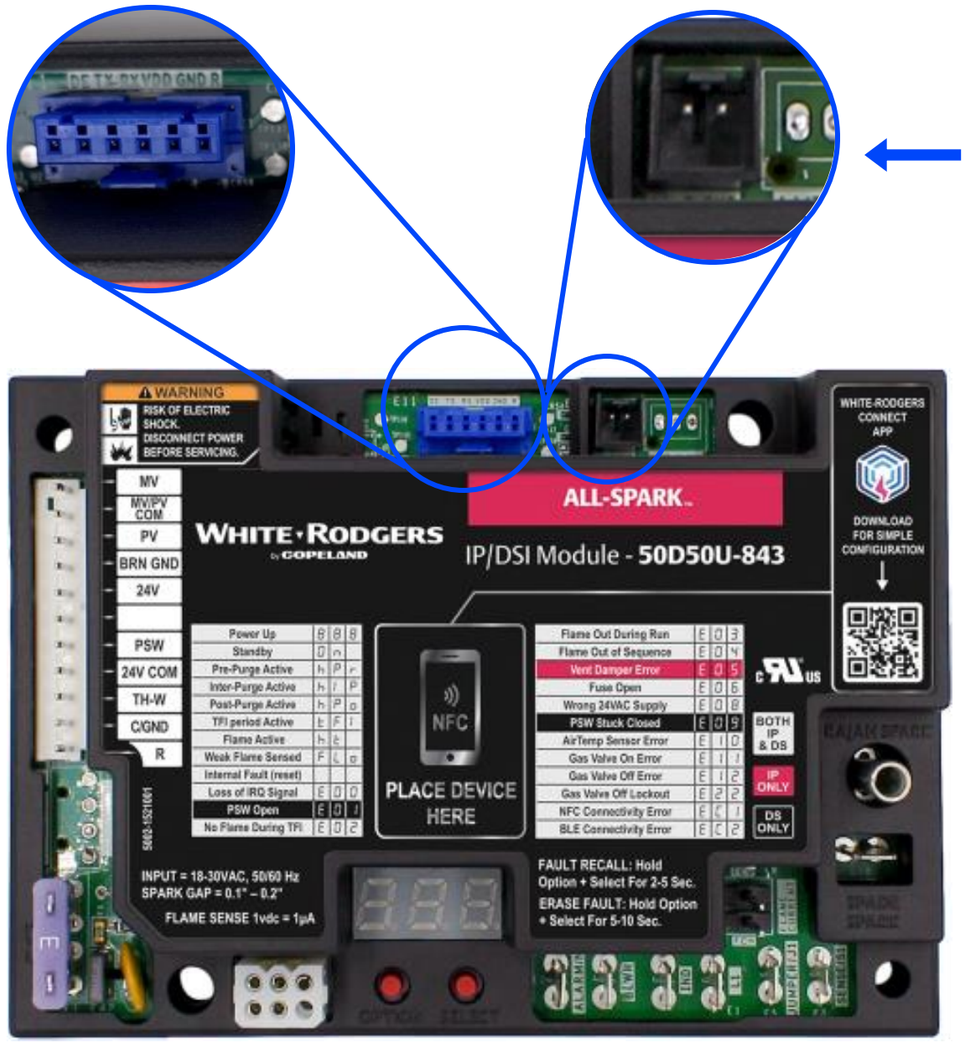
Bluetooth Capability

A plug-in module is planned for release in 2022/2023

Integrated Thermostat Sensor

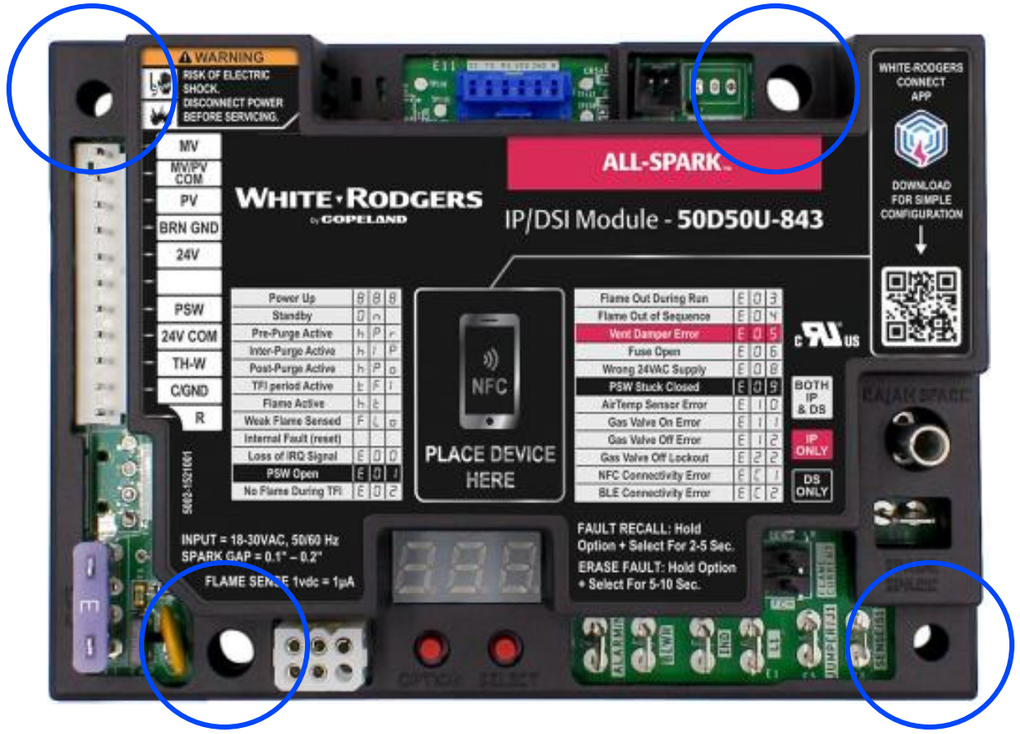
By connecting a F67-8535 Thermostat Sensor, the 50D50U-843 will be able to function as its own thermostat and maintain a temperature set on the seven-segment display.

SOLD SEPERATELY



White-Rodgers
F67-8535
Thermostat Sensor

Easy-to-Install Mounting Options



Matching Modules Being Replaced

- Four mounting holes are designed to match the board being replaced and give multiple options for alternate mounting.
- 4 – ¼" x 1" mounting screws are provided.

White-Rodgers matches mounting holes with competitors' modules.

Simple Operation of Integrated Thermostat

Integrated Thermostat Adjustable Options

- Set the temperature unit of measurement
  - Choose between °F or °C
- Adjust the Sensor reading to accommodate the difference between where the Sensor is located and the area 5–10ft off the floor.
  - Temp. Offset -9°F to +9° (-5°C to +5°C)
- The Cycle Rate is like a heat anticipator, adjusting how quickly the unit will cycle off based upon how close it is to the Setpoint temperature.
  - Slow (longer between cycles), Normal, Fast (shorter between cycles)

Note: Offset adjustment modifies Room Temperature but does not allow Temperature Setpoint to be manipulated to greater than 80°F (27°C) or below 40°F (5°C).

Table 1: Configuration Menu Options

No.	Menu Item	LED 1 (flash)	LEDs 2 & 3 Display	Unit	Description / Rule
1.0	System Ignition Type	SYS	IP*, dS	N/A	Intermittent Pilot (IP) or Direct Spark (DS)
2.10	Integrated Thermostat	tST	OFF*, On	N/A	If ON, Install Integrated Thermostat Temperature Sensor and see No. 3.1 for more selections
3. Integrated Thermostat selections will be available if No. 1.8 or 2.10 is set to 'ON'					
3.1	Temperature Unit	SCL	oF*, oC	N/A	Fahrenheit or Celsius
3.2	Temperature Offset	OFS	-9 - 0* - 9 (°F)	°F	This is the desired temperature for the space being heated
			-5 - 0* - 5 (°C)	°C	
3.3	Cycle Rate	CYC	SLo, nor*, FSt	N/A	Slow, Normal, Fast
3.4	Reset to Default	tFd	no*, YES	N/A	Reset Integrated Thermostat selections to default
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	

The 50D50U-843 Integrated Thermostat has a range of 40°–80°F

* Factory Default Setting

**To view/change Set Point value, press OPTION after NO. 3.4 (module exits menu and goes to standby), press OPTION again and the current Set Point will be shown. For further configuration, see Integrated Thermostat section on page 8.

Simple Operation

Integrated Thermostat Operations

1. After configuration, the module enters Standby mode. Room Temperature is then displayed.
2. To see the current Setpoint, press the Option button for less than three seconds. The Setpoint temperature will appear.
3. Adjust the Setpoint using the Options & Select buttons by pressing them for less than three seconds.
4. Save the new Setpoint by holding Select until the LED stops flashing.

On-Board Adjustments

Action	Module Status	Button Press	Duration
Show Setpoint	Integrated T-STAT **ON**, Standby	OPTION	< 3 seconds
Increase Setpoint	Setpoint Menu (flashing)	SELECT	< 3 seconds
Decrease Setpoint	Setpoint Menu (flashing)	OPTION	< 3 seconds
Save Setpoint	Setpoint Menu (to solid)	SELECT	> 3 seconds
Enter Configuration Menu	Integrated T-STAT **ON**, Standby	OPTION	> 3 seconds

CnF will display after 3 seconds

When powered on and in the Standby mode, the 50D50U-843 module LEDs will display the Room Temperature.

Flashes during adjustment

Decrease Setpoint

Increase Setpoint

Note: Offset adjustment modifies Room Temperature but does not allow Temperature Setpoint to be manipulated to greater than 80°F (27°C) or below 40°F (5°C)

Additional Thermostat Display Operations

Normal Operation

- When All-Spark is set up with the Integrated Thermostat enabled and 24v is present at the control:
  - Standby mode: The LEDs display the room temperature reading from the sensor.
  - Call for Heat: The LEDs will flash between the room temperature sensor reading and ‘ht.’

Active Errors

- During operation, if there are any active errors, the LED Display will flash between the room temperature reading and the active error.

Internal Module Error				LEDs will be blank, wait for module to reset; if problem persists, replace module
Gas Valve On (GV) Error	E	1	1	GV is on when it shouldn't be, check GV
Flame Sensed Out of Sequence	E	0	4	Check ignition source, gas valve or flame probe
Vent Damper Error	E	0	5	Check Vent Damper and Vent Damper connections
Loss of IRQ signal	E	0	0	Recycle power and replace module if problem persists
Fuse Open	E	0	6	Replace 5 amp ATC fuse (F1)
No Flame During TFI	E	0	2	Check ignition source, gas valve or flame probe
Flame Out During Run	E	0	3	Check ignition source, gas valve or flame probe
Gas Valve Off Error	E	1	2	Gas Valve off when it shouldn't be, check GV
Gas Valve Off Lockout	E	2	2	Excessive GV off error, module will enter auto-restart delay and reset
Air Temperature Sensor Error	E	1	0	Check Integrated Thermostat Sensor and AirT connection

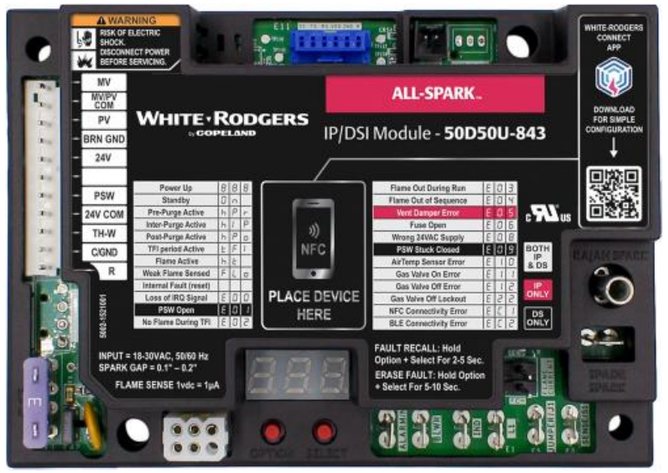
50D50U-843 Competitive Comparison

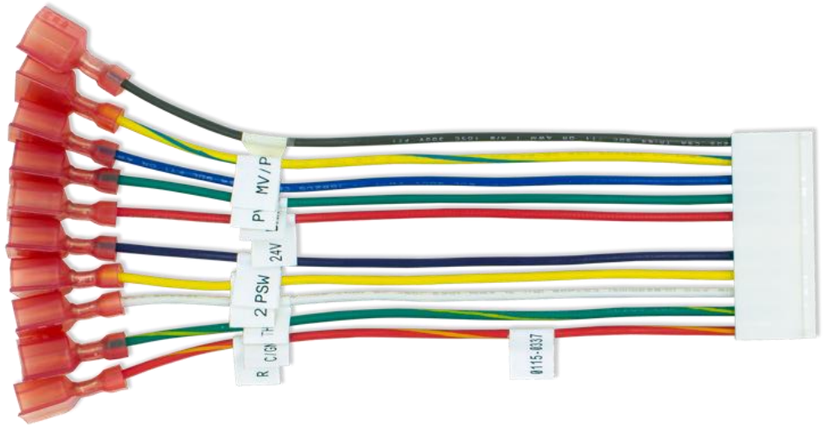
	Fenwal 35-60, -61	Honeywell S8610U	W-R All-Spark 50D50U-843
Cross Ref. #s	1 (individual SKUs)	425	1000+
Ignition Type	DSI	IP	Both in 1
User Configuration	✗	Dipswitch	White-Rodgers Connect App or Digital LEDs
Inducer/PSW	✓	✗	✓
Alarm Output	✓	✗	✓
On-board Spark Output	Rajah or Spade	Spade	Rajah and Spade
Flame Current	Test Pins	LED Flash + Test Pins	Test Pins
NFC + App	✗	✗	✓
Integrated Thermostat	✗	✗	✓

The White-Rodgers F67-8535 Integrated Thermostat Sensor now allows All-Spark to maintain a set temperature with-out an additional control!

White-Rodgers All-Spark Ignition Module

- The 50D50U-843 is the first universal replacement for 24V intermittent pilot or direct spark ignition that utilizes a mobile app for configuration and diagnostics.
  - Replaces over 600 IP and 400 DSI part numbers.
- Various configuration and mounting options.
- Configurable on the control OR via near-field communication (NFC) and the White-Rodgers Connect app.



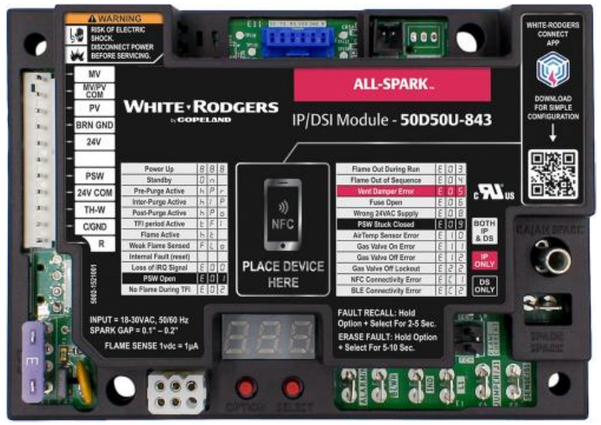


WHITE-RODGERS
by COPELAND

Installation Overview

What's in the Box: 50D50U-843

- 50D50U-843 module
- 11-pin 24v harness
- Vent damper plug
- Flame sense jumper
- 14-16 AWG ¼" female QC spade – nail/spike spark adapters with shrink-wrap sleeve
- 6 – 3/16" male QC spade terminals
- 4 – 1" mounting screws
- Fault code label
- Instruction sheet with QR code link to install video
- QR code for White-Rodgers Connect app



Disconnect Power and Gas

1. First, ensure the power and gas are disconnected prior to servicing the unit.

Verify Replacement

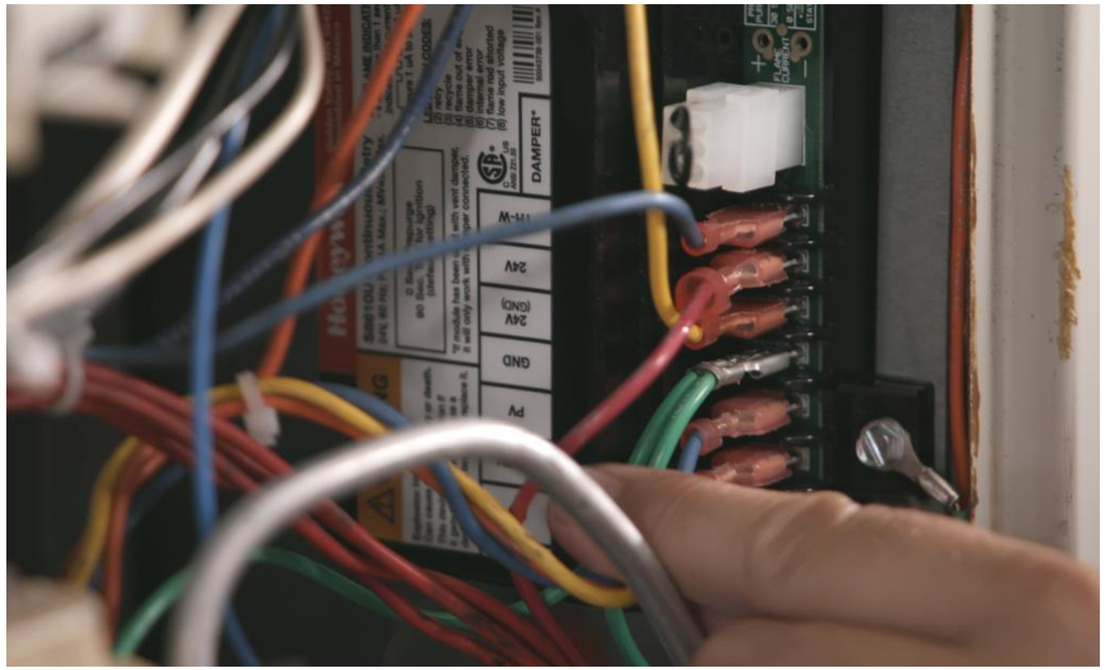
2. Check the part number on the existing control and verify it is one of the 1,000+ modules that can be replaced with the 50D50U-843. Use the cross-reference on the side of the carton or the White-Rodgers Mobile app.

Take a Picture

3 Take a picture of the existing module for reference before removing any wires.

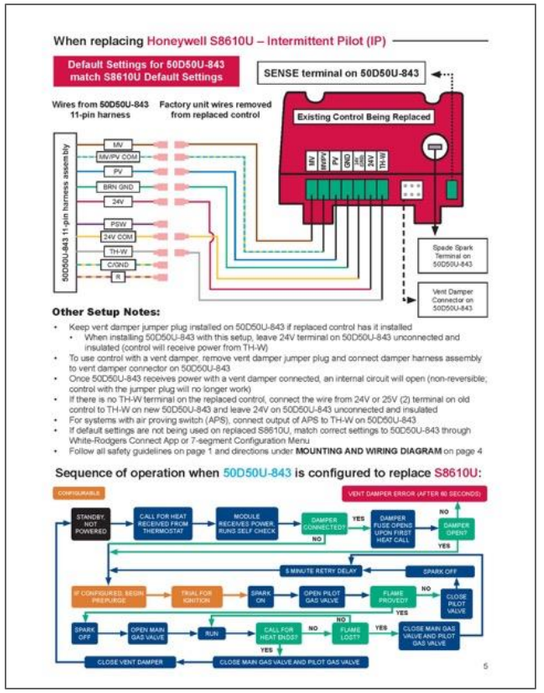
Note Existing Wiring

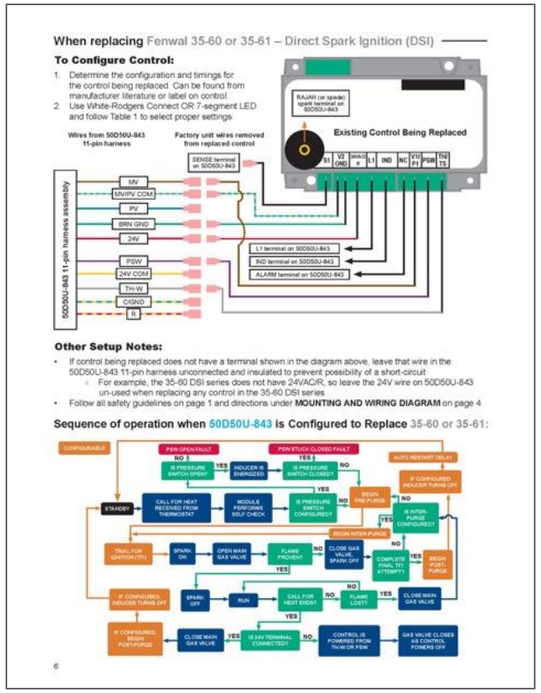
4 Identify the existing wiring and take note of the terminal identifiers on the existing module.



Reference Installation Instructions

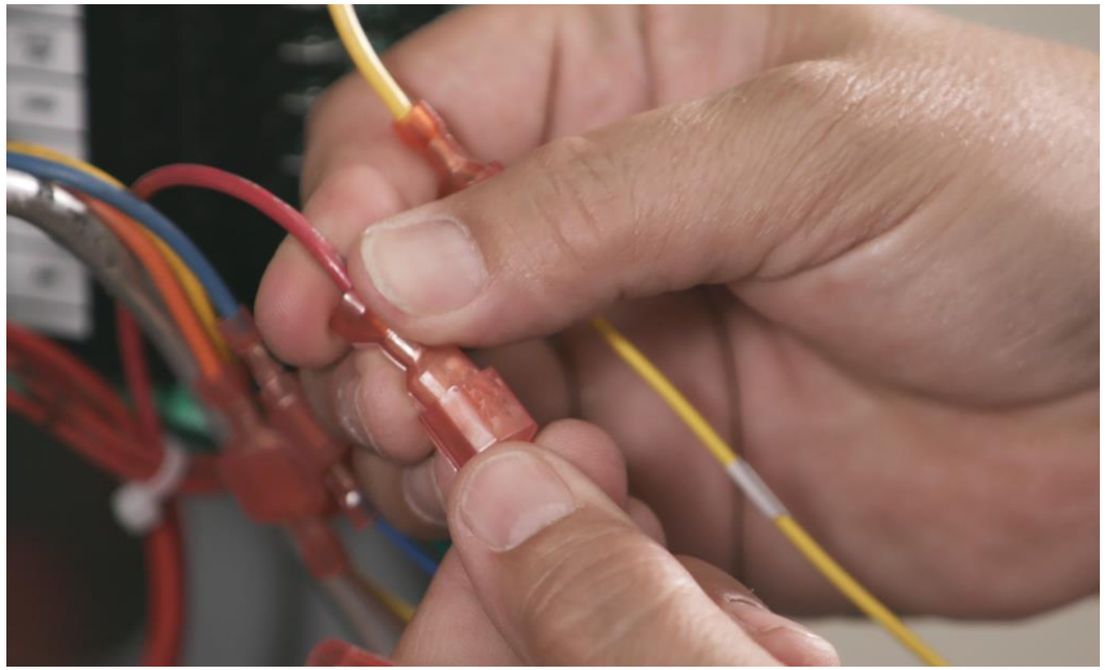
5 Remove the spark wire and locate the 11-pin harness assembly. The installation instructions come with a diagram showing wiring connections for both an Intermittent Pilot system and a Direct Spark system. For this application, the Intermittent Pilot diagram will be used.





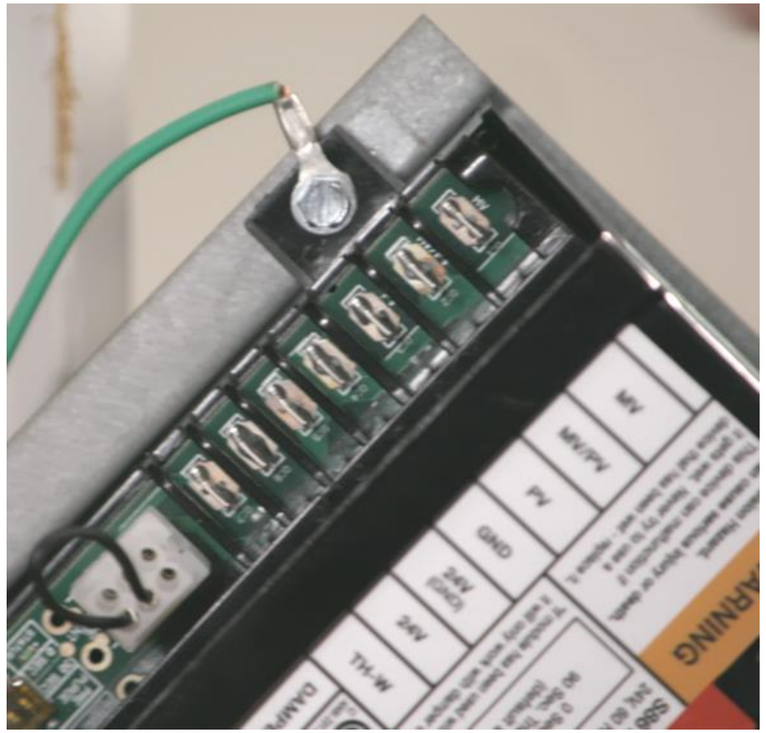
Disconnect/Connect Wiring

6 Individually disconnect each wire from the existing control and connect it to the appropriate Quick Connect terminal on the 50D50U-843 11-pin harness or dedicated spade terminal on the Printed Circuit Board.



Remove Existing Module

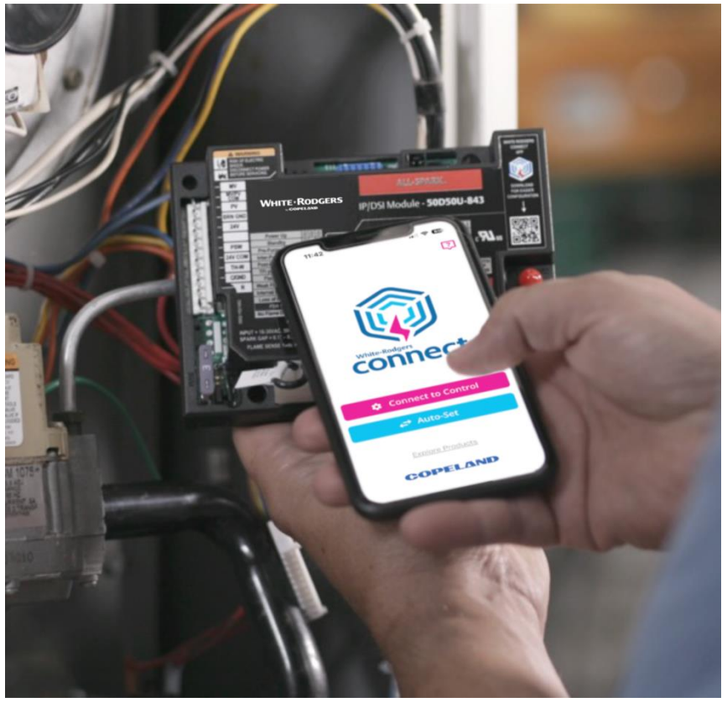
7 Once all of the wires have been transferred, remove the existing module. Take note if there is a ground wire attached to one of the mounting screws.



Configure

8 The module can be configured using 2 different methods. On-board configuration can be done after the module has been installed and powered up. Mobile app configuration is the preferred method, and can be done prior to installing the module.

- To configure using the mobile app method, go to your mobile device's app store, search for "White-Rodgers Connect" and download.
- Once downloaded, open the app. The home page has a "Connect to control" and "Watch tutorial video" button. Select the "connect to control" button. The screen will show "Ready to scan".

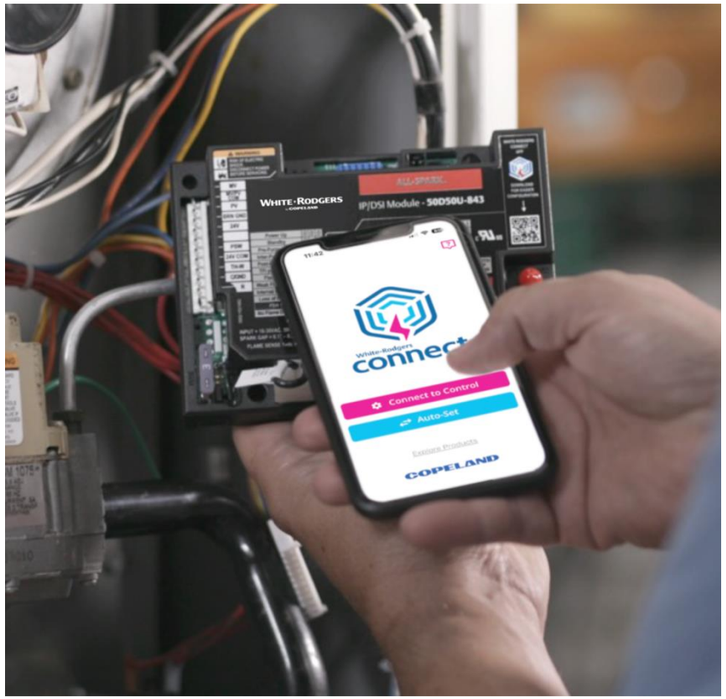


Configure on the App

8 Place the mobile device in contact with the NFC logo on the module. A check mark will appear showing that the connection was successful.

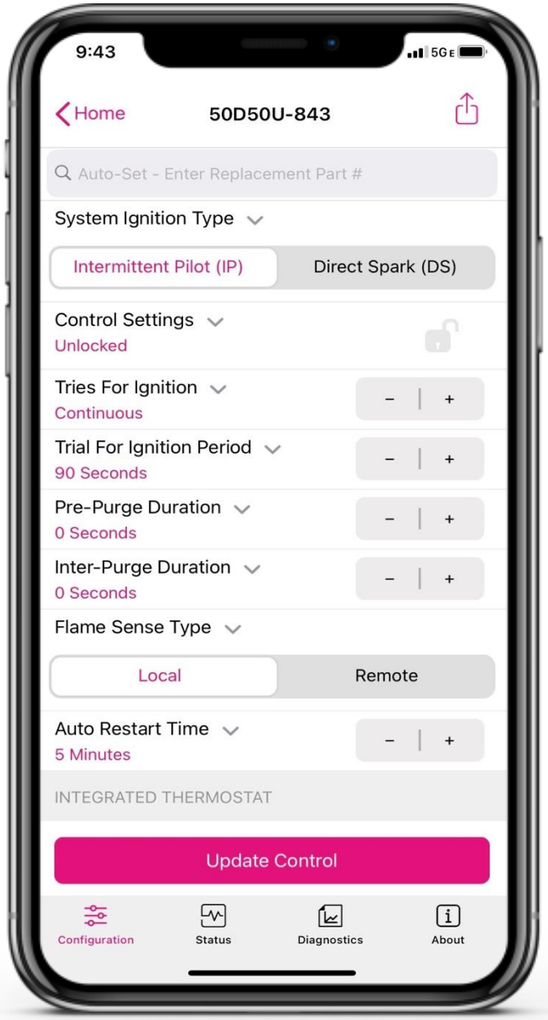
- The app will then display the 50D50U-843 settings configuration screen. First choose whether the module being replaced is an Intermittent Pilot or a Direct Spark ignition system.
- Table 1 on page 3 of the installation instructions show configuration options.
- The configuration options for utilizing the Integrated Thermostat are included in the Direct Spark section.

OR use the new Auto-set feature.



White-Rodgers Connect Auto-set Feature

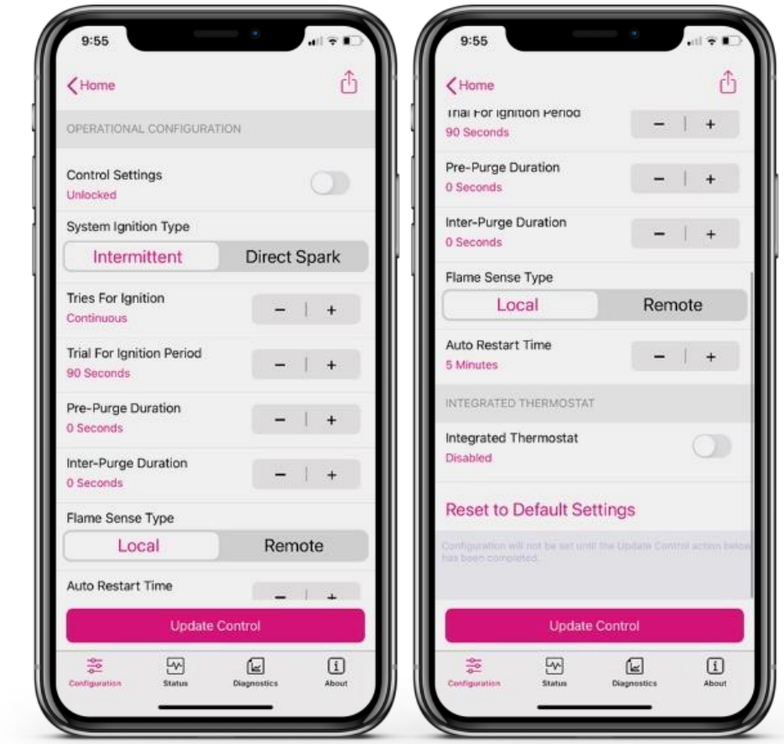
- The White-Rodgers Connect app simplifies configuration and diagnostics for the All-Spark ignition module.
- Type the replacement part number into the configuration tab of the White-Rodgers Connect app to automatically configure the All-Spark ignition module to the original default settings for the replacement part number.
- This can be completed without power to the control and before installation.



Enter replacement part number to automatically configure the All-Spark.

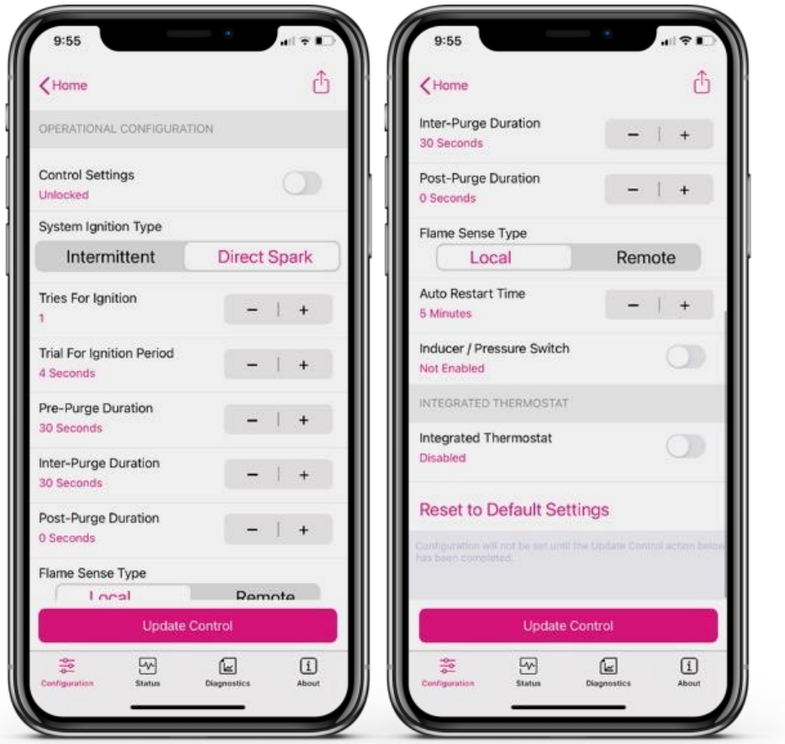
Fully Customizable App Programming

Intermittent Pilot Settings



Choosing a system ignition type of “Intermittent” will display only IP options

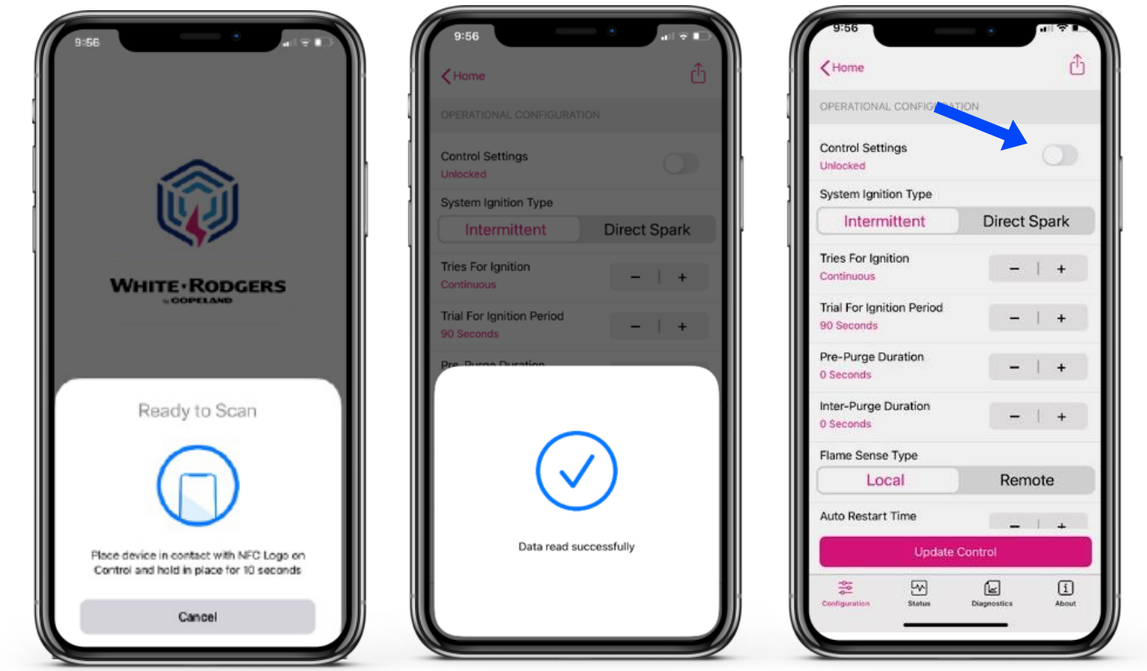
Direct Spark Ignition Settings



Choosing a system ignition type of “Direct Spark” will display only DSI options

Update Configuration Settings from the App

White-Rodgers Connect



Update Complete! Unlock

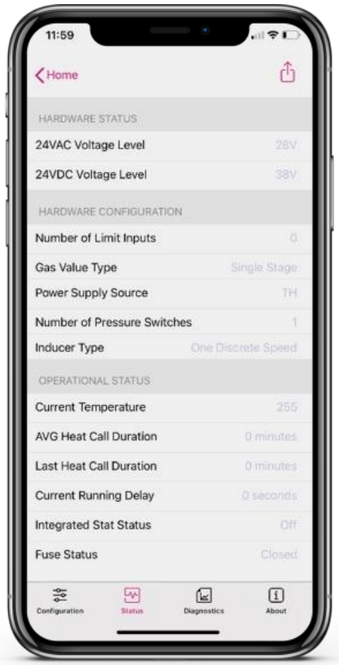
Easy Update

1. After making configuration changes, tap update control. Hold steady until check mark appears. This may take up to 10 seconds.
2. Once the new configuration is uploaded, a confirmation will display.
   – Once the control has cycled 10 times it will lock in the settings. To make changes afterward, toggle the control settings switch to unlock and reconfigure.

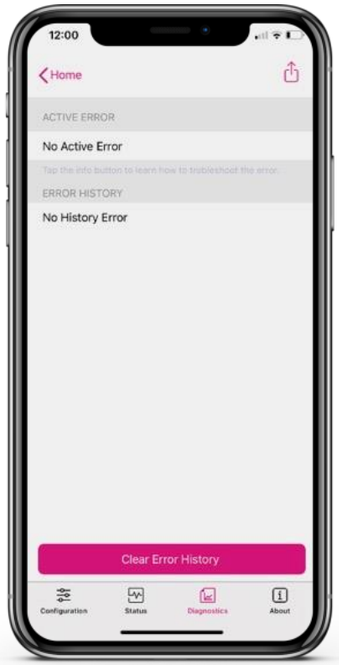
It can take up to 10 seconds to update when holding your phone steady over the module.

Update Configuration Settings from the App

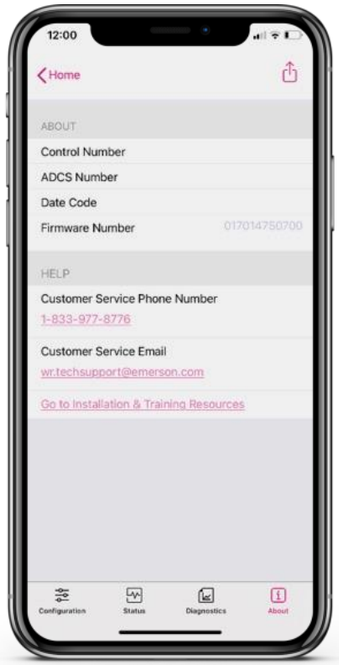
The app displays all the information shown on the seven-segment display and more!



Status



Diagnostics



About

Status

See what is going on with voltage, configuration and operation.

Diagnostics

- Look up current active errors as well as the last five errors occurring over the last 14 days.
- View troubleshooting tips.

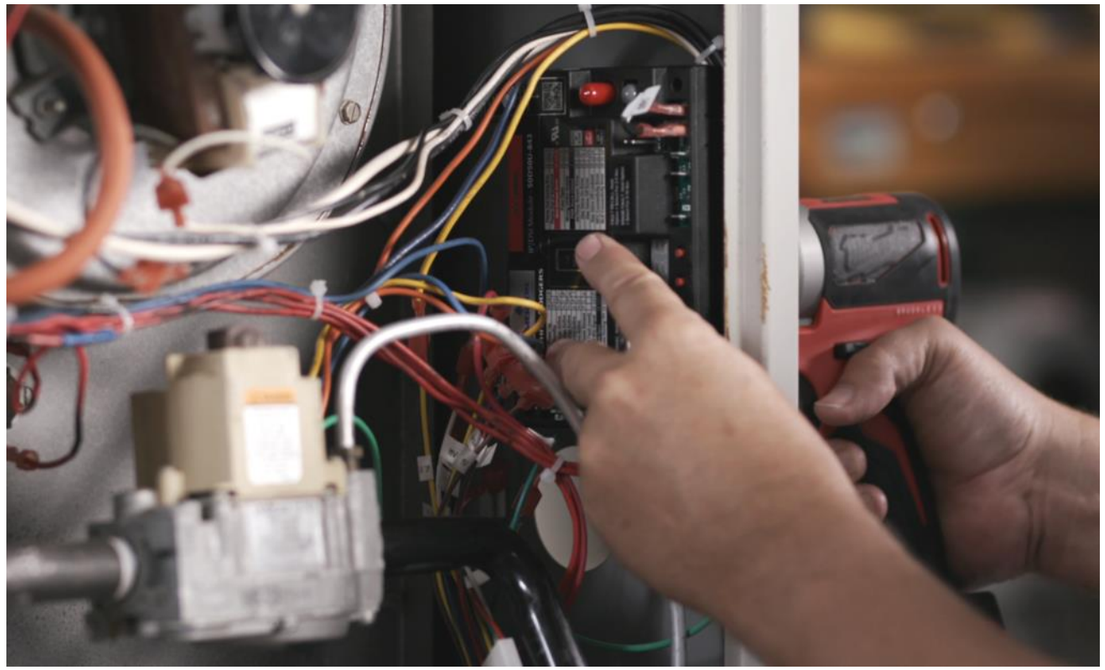
About

Get module-specific information including the date code and the operating firmware.

Only White-Rodgers gives you all this info on your smartphone!

Mount the All-Spark Ignition Module

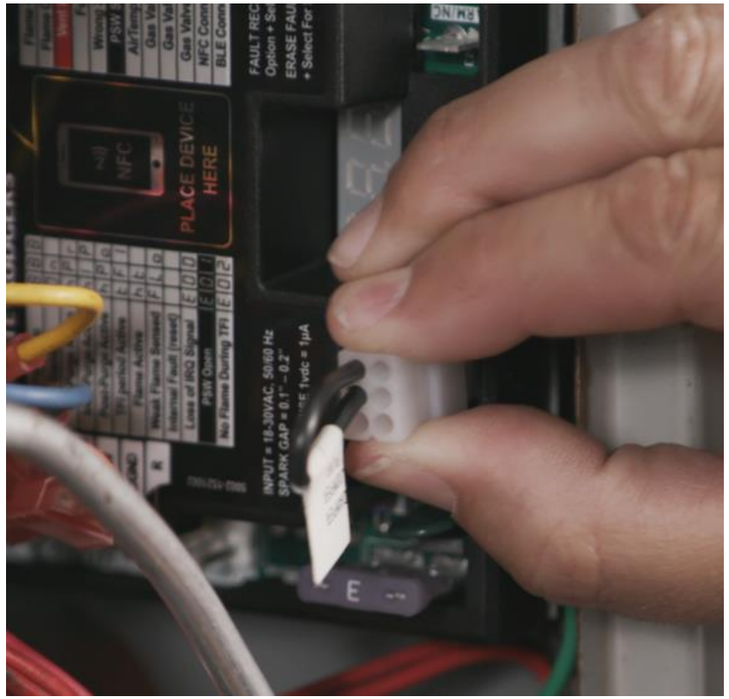
10 Mount the 50D50U-843 in the unit using the mounting holes and supplied screws.
NOTE: For this application, there is a ground wire that needs to be reinstalled.



Vent Damper

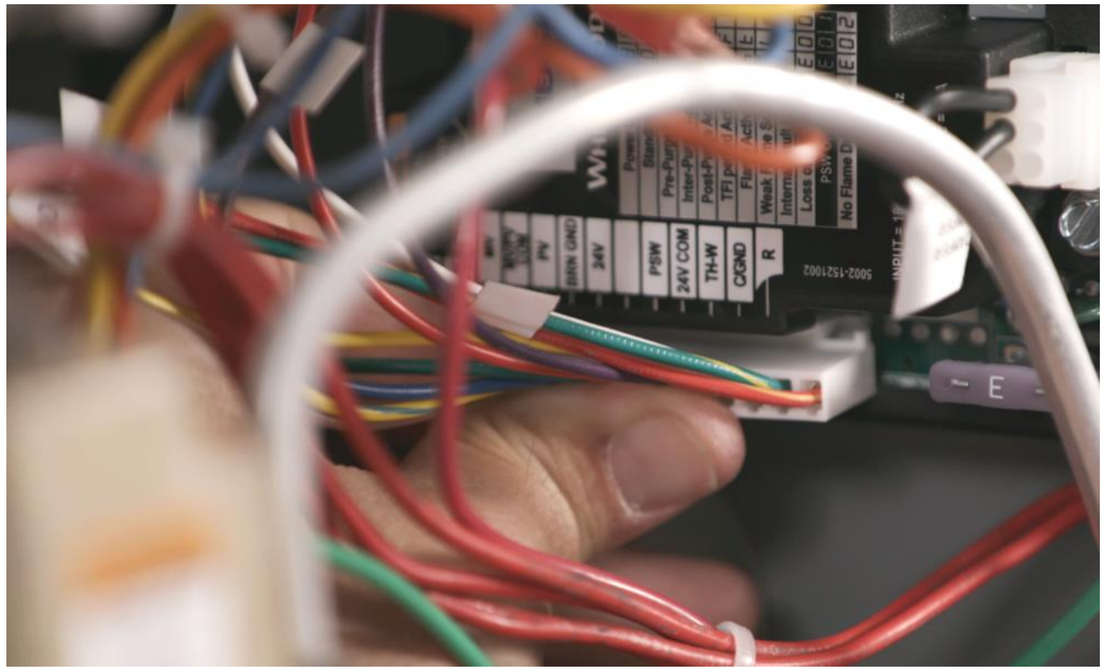
11 For applications using a vent damper, remove the vent damper jumper plug and install the unit connector.

- In applications using a remote flame sensor, remove the flame sense jumper and plug the flame sense wire into the SENSE terminal.
- For this application no damper or remote flame sense is used.



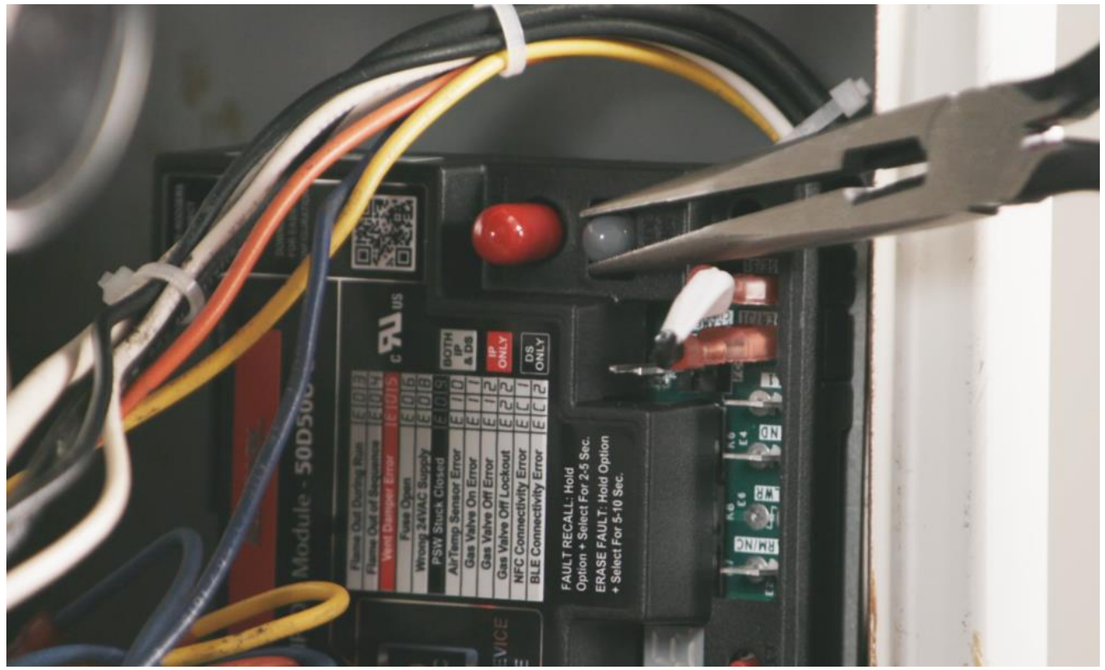
Connect 11-pin Harness

12 Plug the 11-pin harness into the module.



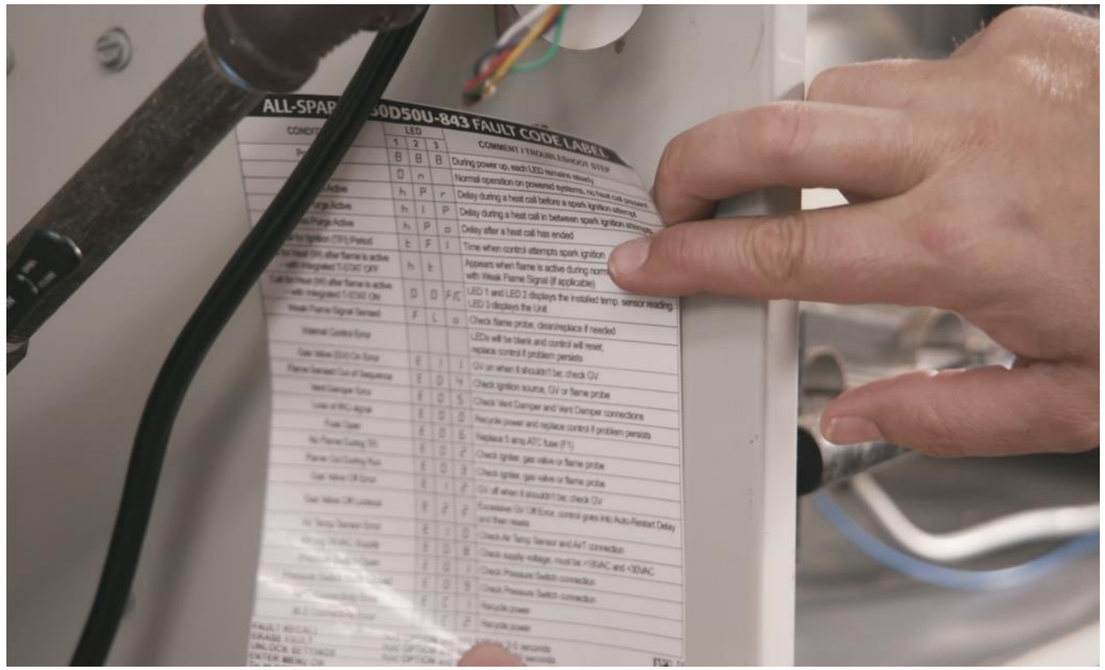
Attach Spark Wire

13 For this application, a ¼" spade is used. Remove the lower gray cap and plug in the spark wire.



Fault Code Label

14 Apply the fault code label to the unit for easy reference.



Reconnect Power and Gas

15 The system is now ready to be powered on. Reconnect the electric power and gas to the unit, and make sure the door switch is engaged.

- If configuration was not completed using the White-Rodgers Connect Mobile app, it can now be set-up using the “Option” and “select” buttons and the LED Display.
- To enter configuration, press the “Option” button while the unit is in standby.

OR Configure on the Control

Using Option & Select Buttons

16 If system is powered through 24v, the display will read ON when it is in standby mode. To enter setup, press the “Option” button.

If no 24v is present due to wiring TH-W & 24v Com, hold the “Option” button down when initiating a call for heat to enter setup.

Table 1: Configuration Menu Options

* Factory Default Setting

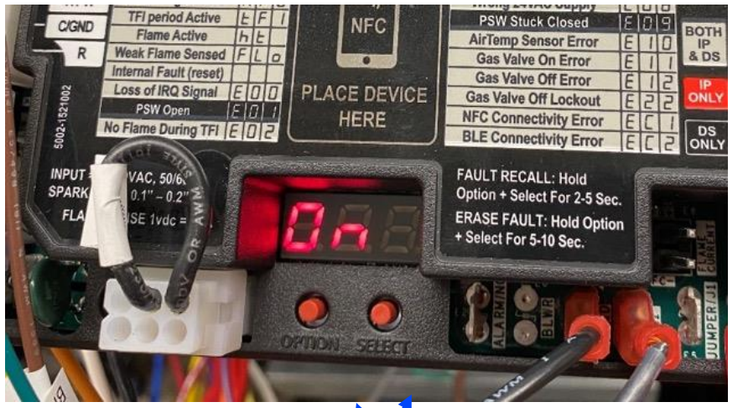
Menu Item	No.	LED 1 (flash)	LEDs 2 & 3 Display	Unit	Description / Rule
System Ignition Type	1.0	S-y-S	IP*, dS	N/A	Intermittent Pilot (IP) or Direct Spark (DS)
1. IP system menu will be displayed if System Ignition Type is selected as IP					
Tries for Ignition	1.1	t-r-y	C* (continuous), 1, 2, 3	N/A	Number of times the control will retry ignition before going to auto restart delay.
Trial for Ignition (TFI) Timing	1.2	1-9-n	90*, 4, 15, 30, 60	Seconds	The time the control will spark for each try
Pre-purge	1.3	P-r-E	0*, 15, 30, 45	Seconds	Delay time before spark ignition attempt
Inter-purge	1.4	1-n-t	0*, 15, 30, 45	Seconds	Delay time in-between spark attempts
Flame Sense Type	1.5	F-L-S	LL*, rE	N/A	Local (LL) or Remote (rE) flame sense.
Auto Restart Time	1.6	A-U-t	5*, 60	Minutes	Delay time after control reports Gas Valve Off Lockout or No Flame During TFI Error. Control resets and goes back to standby.
Reset to Default	1.7	C-F-d	no*, YS	N/A	Reset to factory default for IP system configuration choices
2. DS system menu will be displayed if System Ignition Type is selected as DS					
Tries for Ignition	2.1	t-r-y	1*, 2, 3	N/A	Number of times the control will retry ignition before going to auto restart delay.
Trial for Ignition Timing	2.2	1-9-n	4*, 7, 10, 11, 15, 21	Seconds	The time the control will spark for each try
Pre-purge	2.3	P-r-E	30*, 45, 0, 15	Seconds	Delay time before spark ignition attempt
Inter-purge	2.4	1-n-t	30*, 45, 90, 0, 15	Seconds	If 2 or 3 tries for ignition are selected, 0 seconds inter-purge will not be available
Post-purge	2.5	P-S-t	0*, 5, 15, 30	Seconds	Delay time after heat call has ended
Flame Sense Type	2.6	F-L-S	LL*, rE	N/A	Local (LL) or Remote (rE) flame sense
Auto Restart Time	2.7	A-U-t	5*, 60	Minutes	Delay time after control reports Gas Valve Off Lockout or No Flame During TFI Error. Control resets and goes back to standby.
Inducer/Pressure Switch Option Enable	2.8	I-n-d	OF*, On	N/A	If control being replaced has inducer/pressure switch option, enable this setting to ON
Reset to Default	2.9	C-F-d	no*, YS	N/A	Reset to factory default for DS system configuration choices

The 50D50U-843 is factory programmed to match the Intermittent Pilot S8610U Module

Troubleshooting

17

- The three-digit, seven-segment LED Display gives an on-board real-time status.
- Fault and status codes can be identified by the table on the cover of the module or by the Fault Code Label attached to the unit at the time of installation.



To recall a fault, press the Option & Select Button together for 2-5 seconds

Table 2: 7-Segment Display Codes

	Condition	LED 1	LED 2	LED 3	Comment/Troubleshoot Step
STATUS CODES	Call for Heat (W) with Pre-Purge Active	h	P	r	Pre-purge is the delay during a heat call before a spark ignition attempt
	Call for Heat (W) with Inter-Purge Active	h	I	P	Inter-purge is the delay during a heat call in between spark ignition attempts
	Call for Heat (W) with Post-Purge Active	h	P	o	Post-purge is the delay immediately after a heat call has ended
	Call for Heat (W) Trial for Ignition Period Active	t	F	I	TFI is the time period in which the control attempts to spark for ignition
	Call for Heat (W) after flame is active – with Integrated Thermostat OFF	h	t		Appears when flame is active during normal heat call; Toggles with Weak Flame Signal (if applicable)
	Call for Heat (W) after flame is active – with Integrated Thermostat ON	0	0	F/C	LED 1 and 2 displays the temp. sensor reading; LED 3 displays the unit; toggles with "h t" for normal flame and "F L o" for weak flame
	Weak Flame Signal Sensed	F	L	o	Check flame probe, clean or replace probe if needed
FAULT CODES	Internal Control Error				LEDs will be blank, wait for control to reset; if problem persists, replace control
	Gas Valve On (GV) Error	E	I	I	GV is on when it shouldn't be, check GV
	Flame Sensed Out of Sequence	E	0	4	Check ignition source, gas valve or flame probe
	Vent Damper Error	E	0	5	Check Vent Damper and Vent Damper connections
	Loss of IRQ signal	E	0	0	Recycle power and replace control if problem persists
	Fuse Open	E	0	6	Replace 5 amp ATC fuse (F1)
	No Flame During TFI	E	0	2	Check ignition source, gas valve or flame probe
	Flame Out During Run	E	0	3	Check ignition source, gas valve or flame probe
	Gas Valve Off Error	E	I	2	Gas Valve off when it shouldn't be, check GV
	Gas Valve Off Lockout	E	2	2	Excessive GV off error, control will go into auto-restart delay and then reset
	Air Temperature Sensor Error	E	I	0	Check Air Temperature Sensor and AirT connection
	Wrong 24VAC Supply	E	0	8	Check supply voltage source. Must be >18VAC and <30VAC
	Pressure Switch Open	E	0	I	Check Pressure Switch connection
	Pressure Switch Stuck Closed	E	0	9	Check Pressure Switch connection
	NFC Connectivity Error	E	C	I	Recycle power
	Bluetooth Connectivity Error	E	C	2	Recycle power

Operation	Control Status	Action	Duration of Action	LED Display	Extra Notes
Fault Code Recall	Standby	Hold OPTION and SELECT together	2-5 seconds	F L t after 2 seconds	• 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 • E n d will be displayed if there are no error codes stored
Fault Code Reset	Standby	Hold OPTION and SELECT together	5-10 seconds	Alternates between C L r and F L t after 5 seconds	• Once both OPTION and SELECT are released after holding them together for 5-10 seconds, the LEDs will flash C L r 3 times to indicate the error codes have been successfully erased, control will then return to current status • Error codes are stored in the control's memory for up to 14 days (error codes stored in systems powered by TH-W will have no expiration)
Unlock Settings	Standby	Hold OPTION and SELECT together	10-20 seconds	U n L after 10 seconds	• All settings on the control will lock after 10 consecutive calls for heat • Once both OPTION and SELECT are released after holding them together for 10-20 seconds, the LEDs will flash U n L 3 times to indicate the settings have been unlocked

Note: heat call is ignored when control is in Error Code Recall, Reset or Unlock Settings menu explained above

WHITE-RODGERS by COPELAND

All-Spark and Integrated Thermostat

Installation on infrared heaters and space heaters

The White-Rodgers F67-8535 Plug-in Temperature Sensor

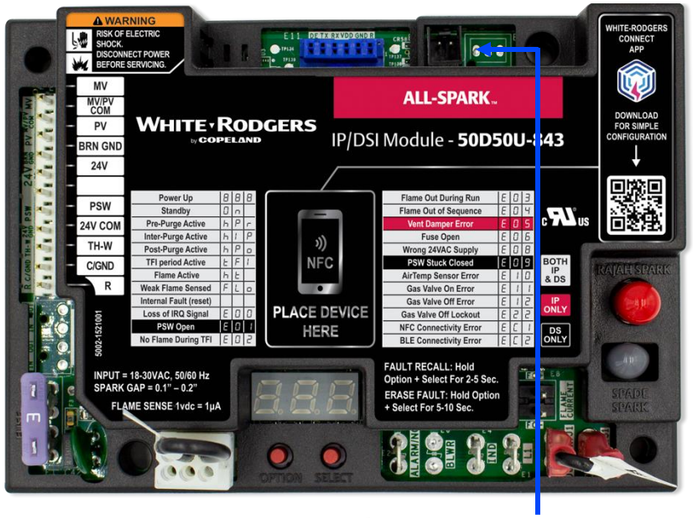
SOLD SEPERATELY

By connecting the F67-8535 Thermostat Sensor to All-Spark, the control can also act as a thermostat and turn the module on and off.

Ideal for heaters that are installed in the conditioned space, this eliminates the need for a separate thermostat.

Features include:

- Plug-in temperature sensor
- Function can be turned on/off in programming
- Easy Temperature Adjustment
- Display current Setpoint
- Display set temperature
- Adjustable from 40°F to 80°F



F67-8535

What’s in the Box: F67-8535

SOLD SEPERATELY

- F67-8535 Integrated Thermostat Sensor
- Installation instructions
- ¼" Female QC Spade Terminals

F67-8535
Integrated Thermostat Sensor
INSTALLATION INSTRUCTIONS

ONS CAREFULLY BEFORE INSTALLING OR
ONAL INJURY AND/OR PROPERTY DAMAGE.

WARNING

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

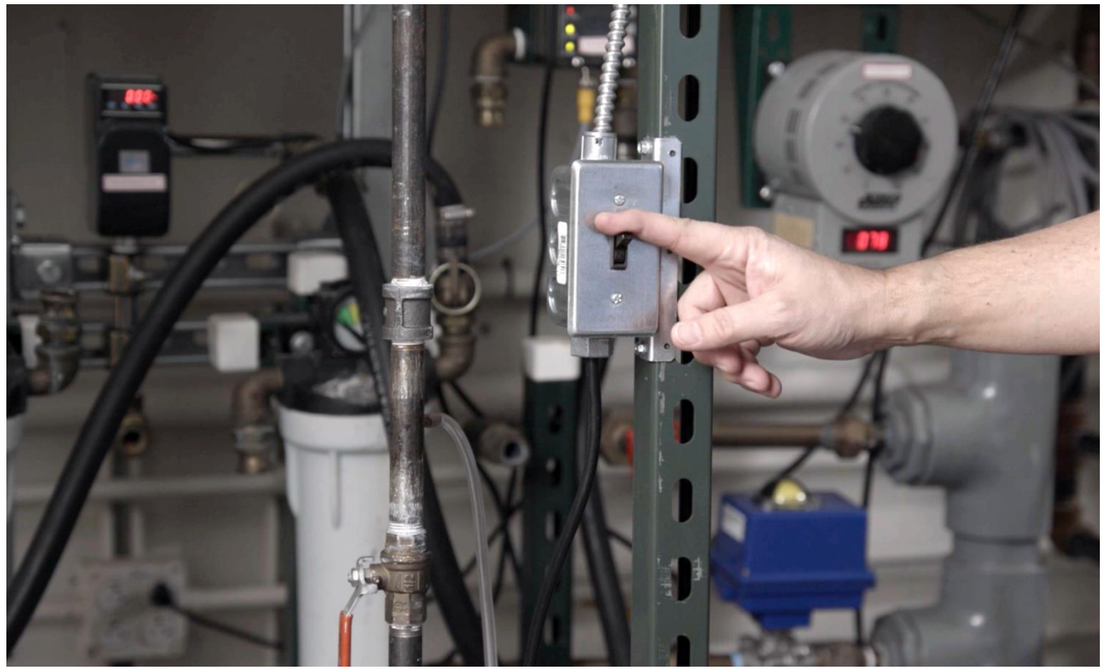
- Installation should be done by a qualified heating and air conditioning contractor or licensed electrician.
- All wiring must conform to local and national electrical codes and ordinances.
- Following installation or replacement, follow manufacturer's recommended installation/service instructions to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

FIRE HAZARD

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

Disconnect Power and Gas

1. First, ensure both the power and gas are disconnected prior to servicing the unit.

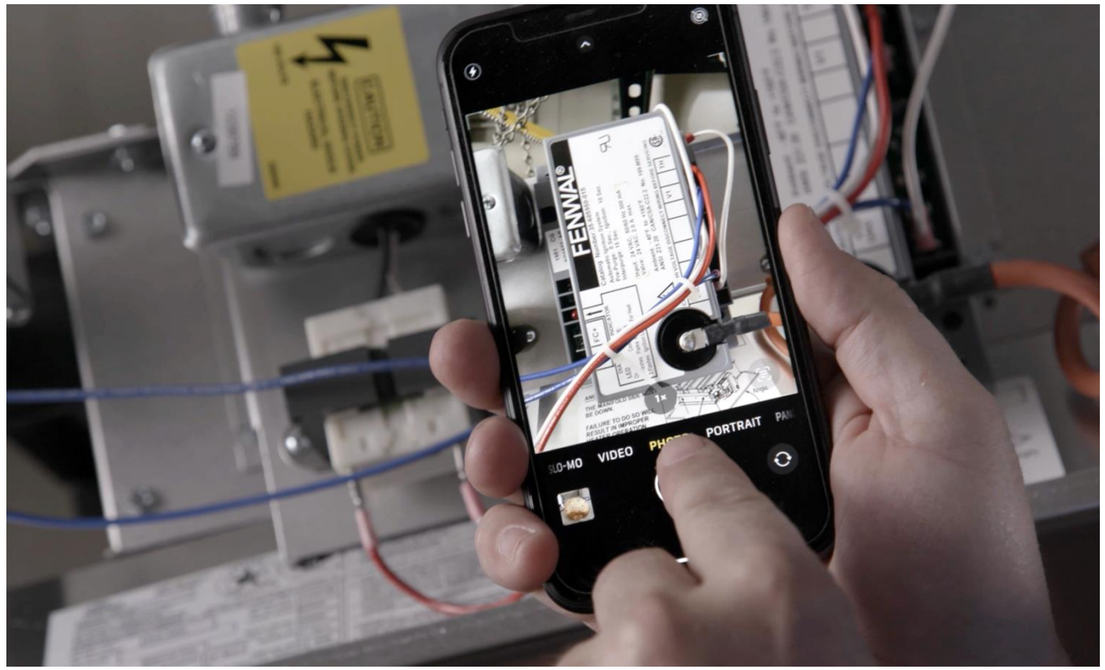


Verify Replacement

2. Check the part number on the existing control and verify it is one of the 1000+ modules that can be replaced with the 50D50U-843. Use the cross-reference on the side of the carton or the White-Rodgers Mobile app.

Take a Picture

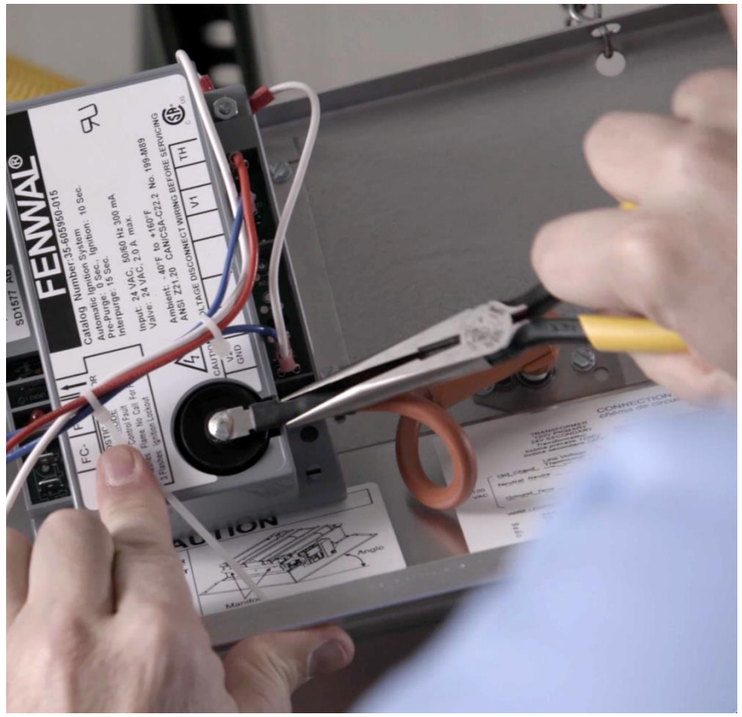
3 Take a picture of the existing module for reference before removing any wires. Identify the existing wiring and take note of the terminal identifiers on the existing module.

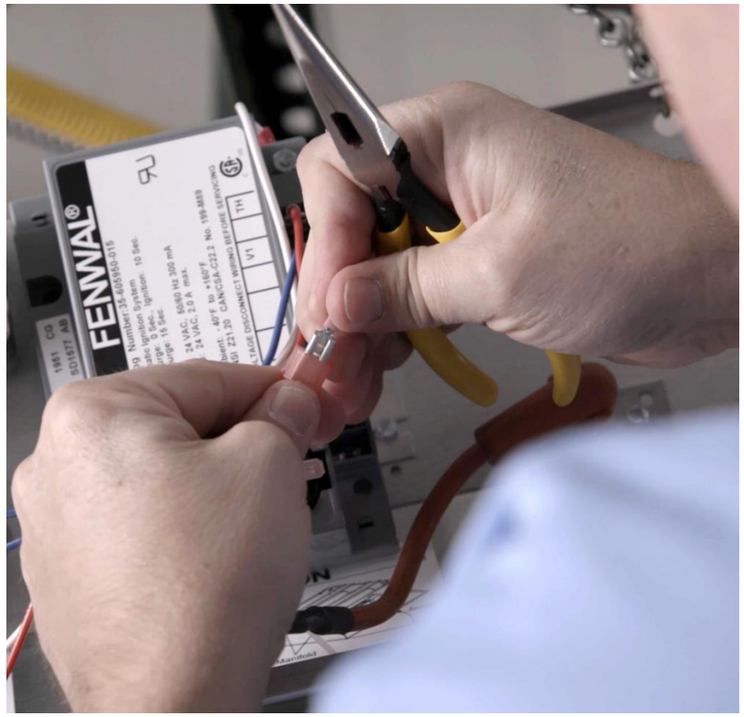


Transfer Wires

4

- Remove the spark wire.
- Locate the 11-pin harness assembly. Individually disconnect and transfer each wire from the existing control and connect it to the appropriate Quick Connect terminal on the 50D50U-843 11-pin harness.

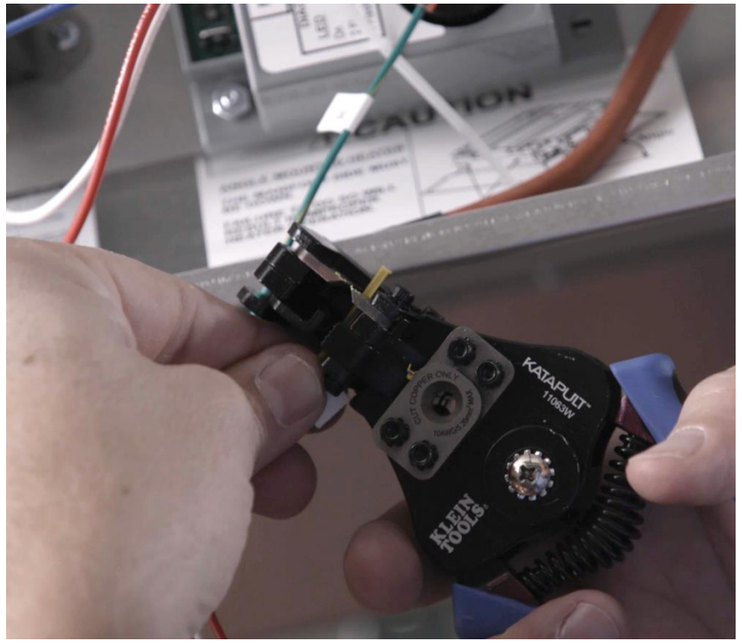


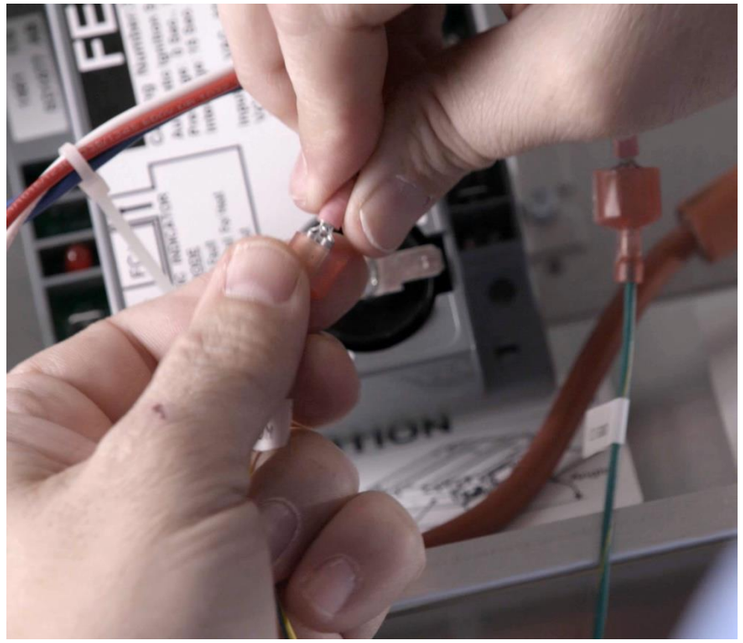


Transfer Wire Continued

5

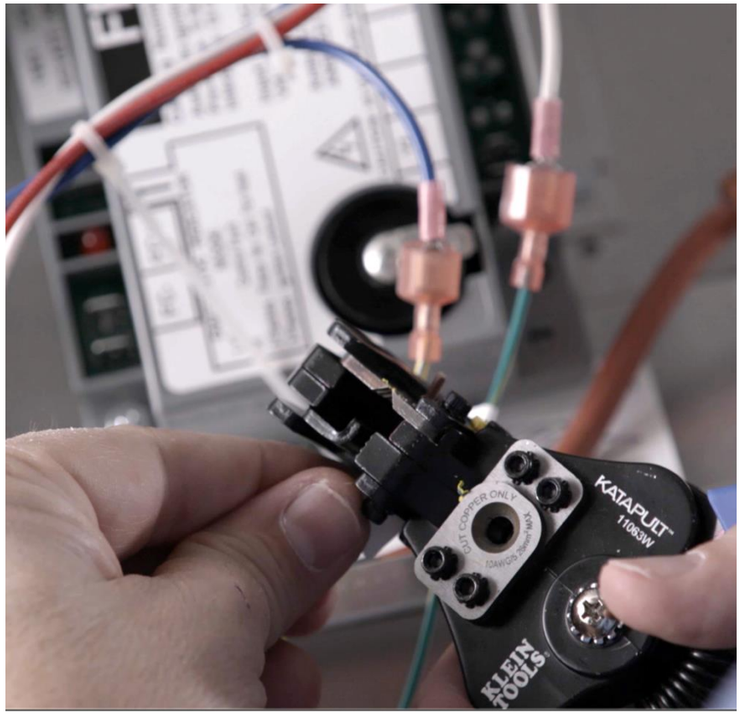
- Connect the white **V2GND** wire to **BRNGND**,
- Locate the **MVPVCOM** on the 11-pin harness and cut the ¼" male spade off. Strip back the wire and install one of the 3/16" male spade quick connector included in the installation accessories bag.
- Remove the blue **V2GND** wire and connect to **MVPVCOM**.

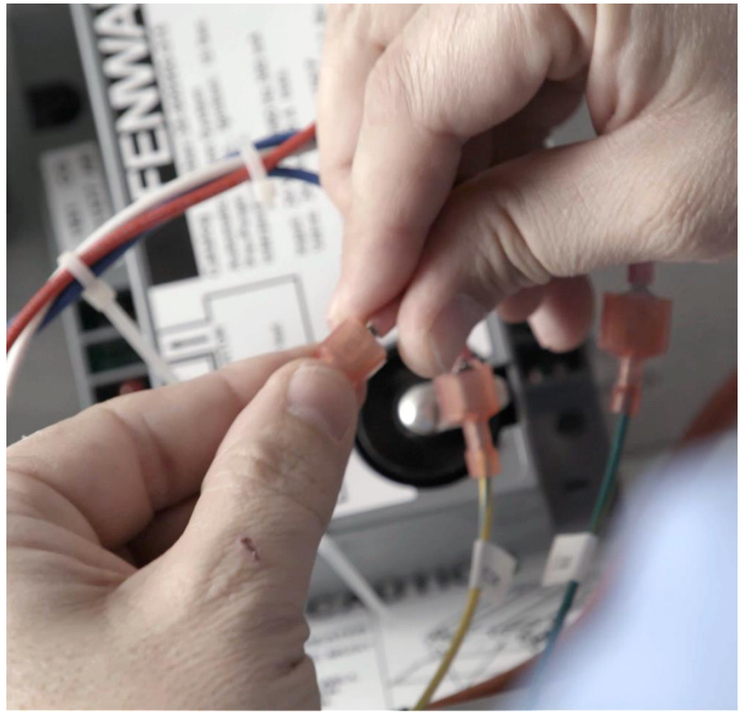




Strip MV Wire

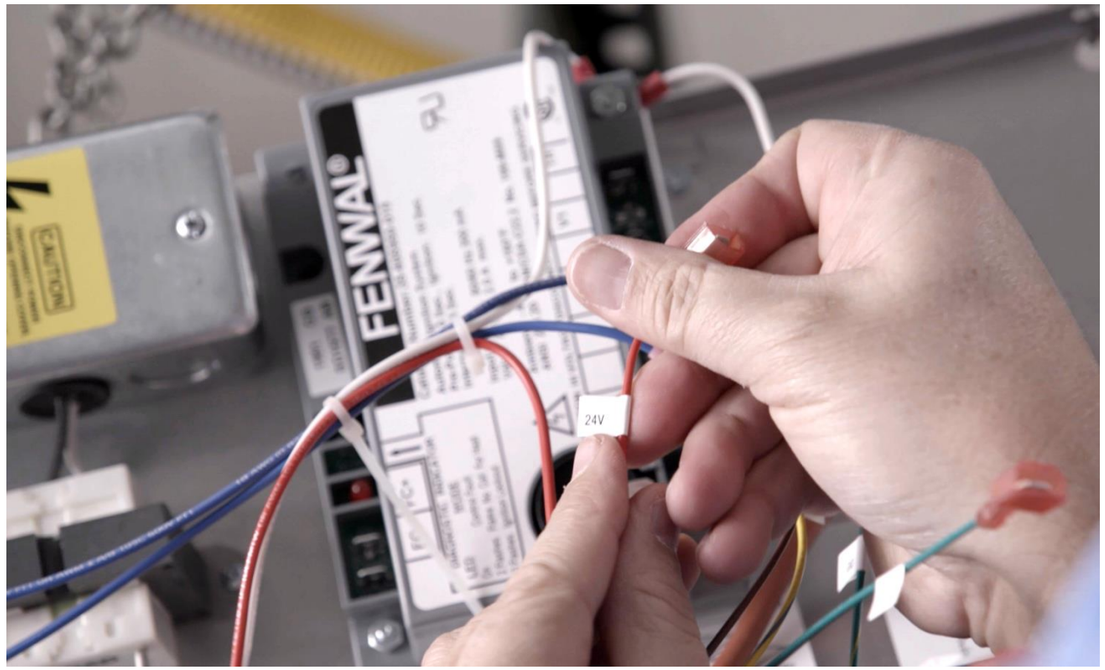
6 Locate the **MV** on the 11-pin harness and cut the ¼" male spade off. Strip back the wire and install one of the 3/16" male spade quick connector included in the installation accessories bag.





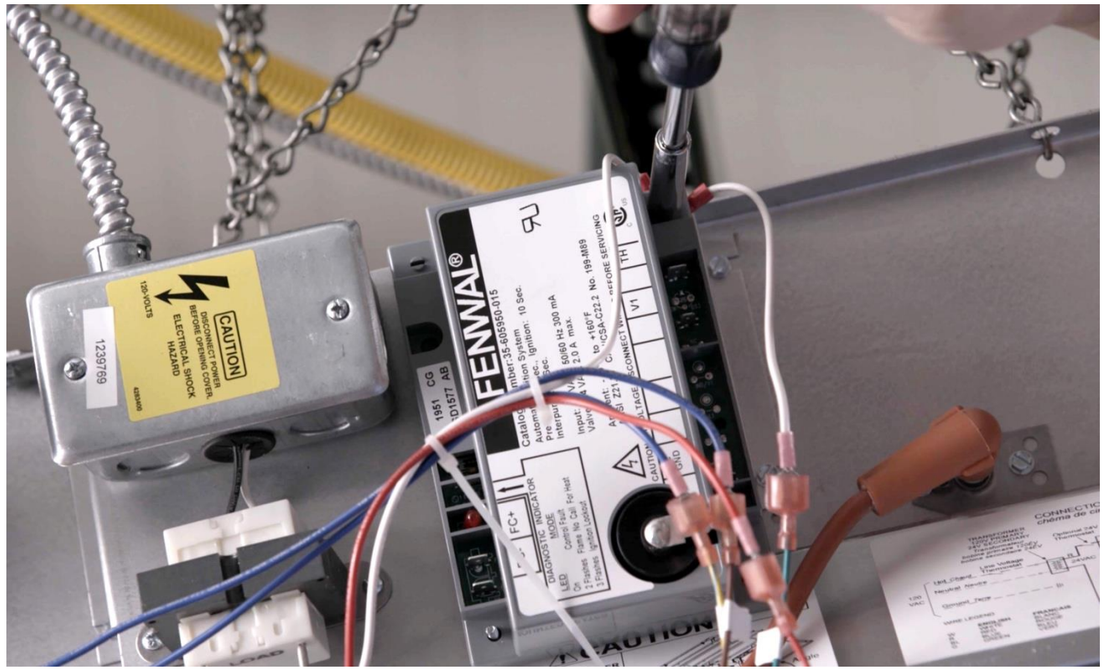
Transfer the Last Wires

7 Remove the blue **V1** wire and connect to **MV**, and, finally, remove the **TH** and connect to **24V**



Remove Existing Module

8 Once all of the wires have been transferred, remove the existing module. Take note if there is a ground wire attached to one of the mounting screws.



11-pin Harness

9

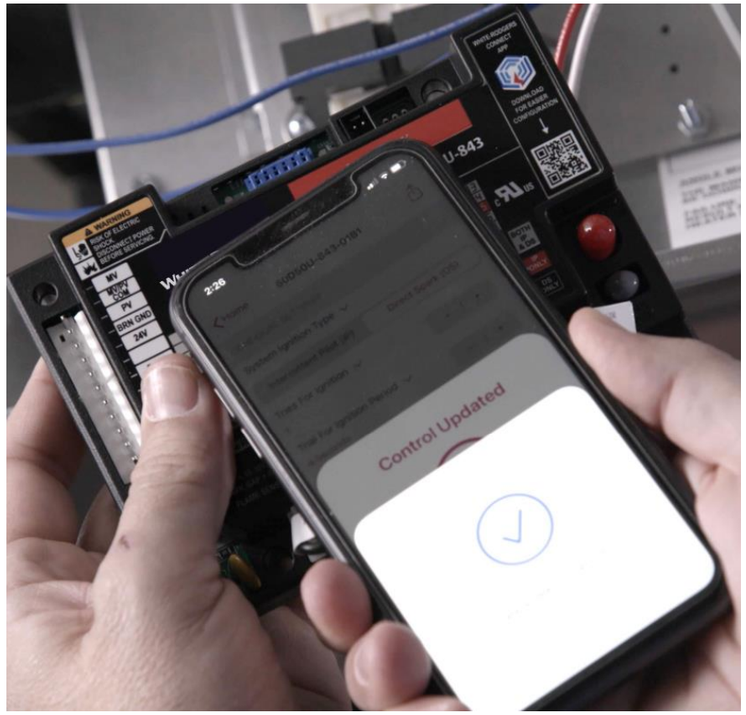
- The module can be configured using two different methods.
- On-board configuration can be done after the module has been installed and powered up. Mobile app configuration is the preferred method, and can be done prior to installing the module.
- For this application, the mobile app method will be used.

To get the free White-Rodgers Connect app, go to your mobile device's app store, search for "White-Rodgers Connect," and download.

Configure the Sensor

10

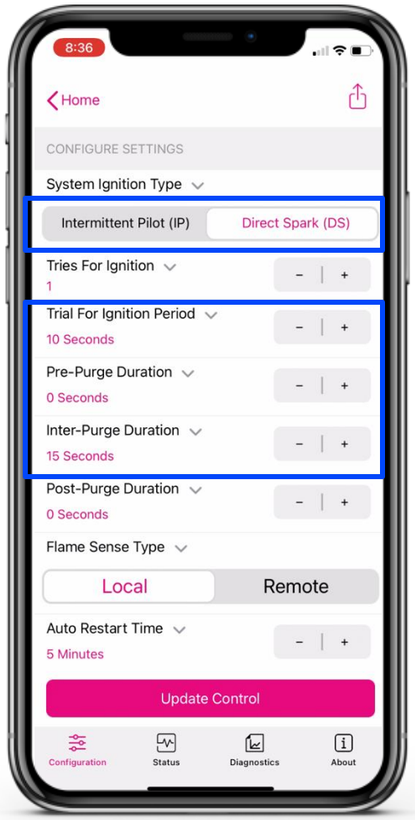
- Select the Connect to control button. The screen will show Ready to scan.
- Place the mobile device in contact with the NFC logo on the module. A check mark will appear to show that connection was successful.

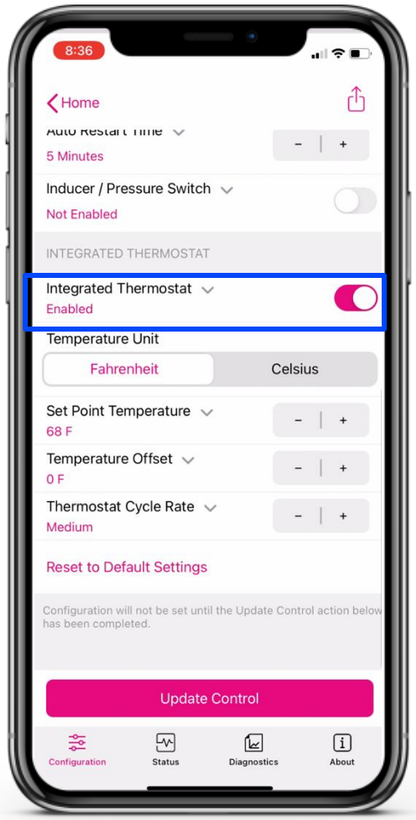


Configure the Sensor

11

- The app will then display the 50D50U-843 settings configuration screen.
- Choose **Direct Spark** under the **System Ignition Type**.
- Match the timings with the existing control.
- For this application, adjust the **Trial For Ignition Period** to **10 seconds,** the **Pre-Purge Duration** to **0 seconds** and the **Inter-Purge Duration** to **15 seconds.**
- Then switch the Integrated Thermostat option to Enabled.

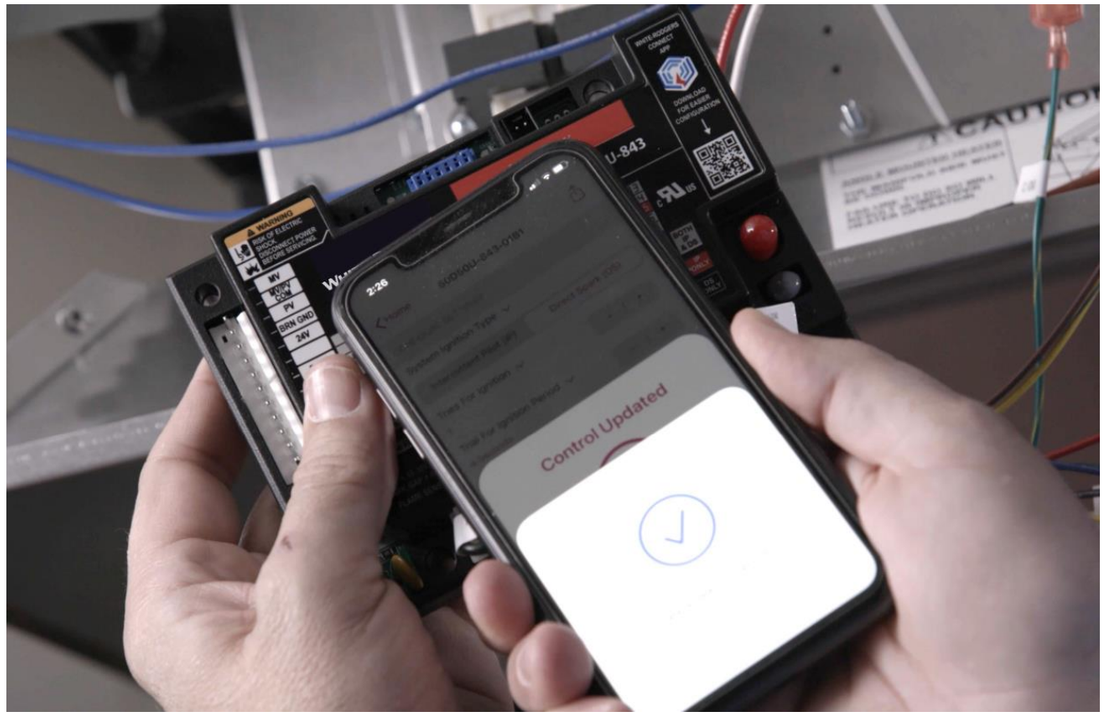




Configure the Sensor

12

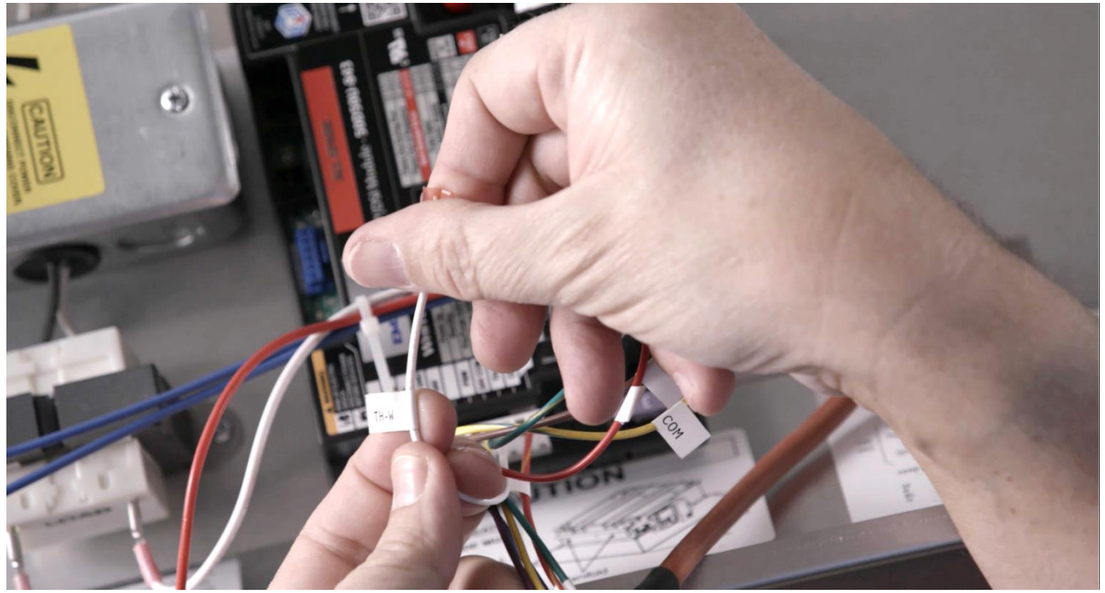
- Once the changes have been completed in the app, press **Update Control** and hold the mobile device over the module again.
- Make sure you hold the mobile device steady until the screen shows that the update was successful.



Configure the Sensor

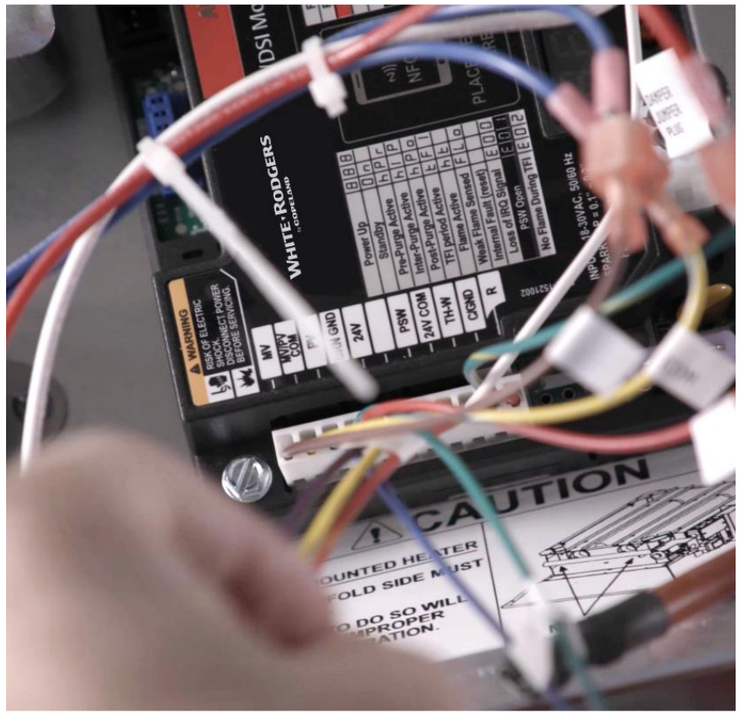
13

- For integrated thermostat applications, a limit circuit must be completed. Connect the **W out** spade to the first component in the unit's safety circuit, and, after the last safety switch, connect the wire to the **THW** 11-pin harness wire.
- For this application, no safety switches exist, so the **W out** spade can be connected directly to the 11-pin **THW** wire.
- Cut the ¼" male spade off the 11-pin harness wire labeled **THW**. Strip back the wire and install one of the ¼" female spade quick connectors included in the installation accessories bag. Plug the **THW** wire into the **W out** spade.



Configure the Sensor

14 Plug the 11-pin harness into the All-Spark module. Reconnect the Spark ignitor wire. Dress loose wires.



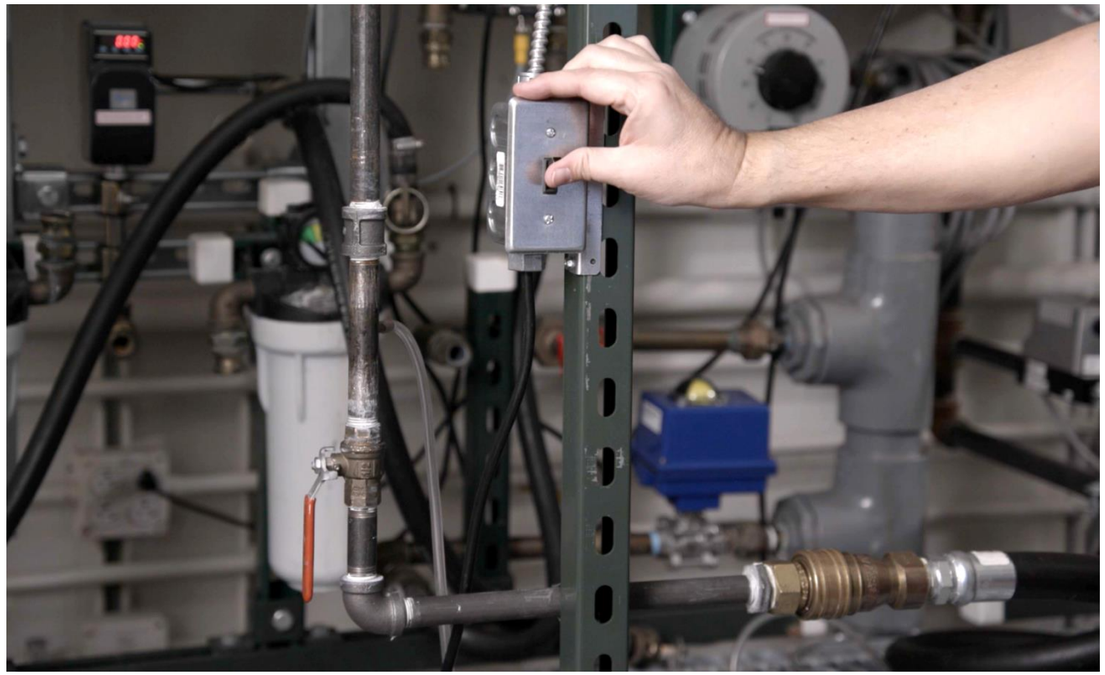
Configure the Sensor

15

- Locate the White Rodgers F678-535 Integrated Thermostat Sensor.
- Plug the sensor into the **Air T** port.
- Secure the sensor thermistor out of the direct heat path of the unit.

Reconnect Power and Gas

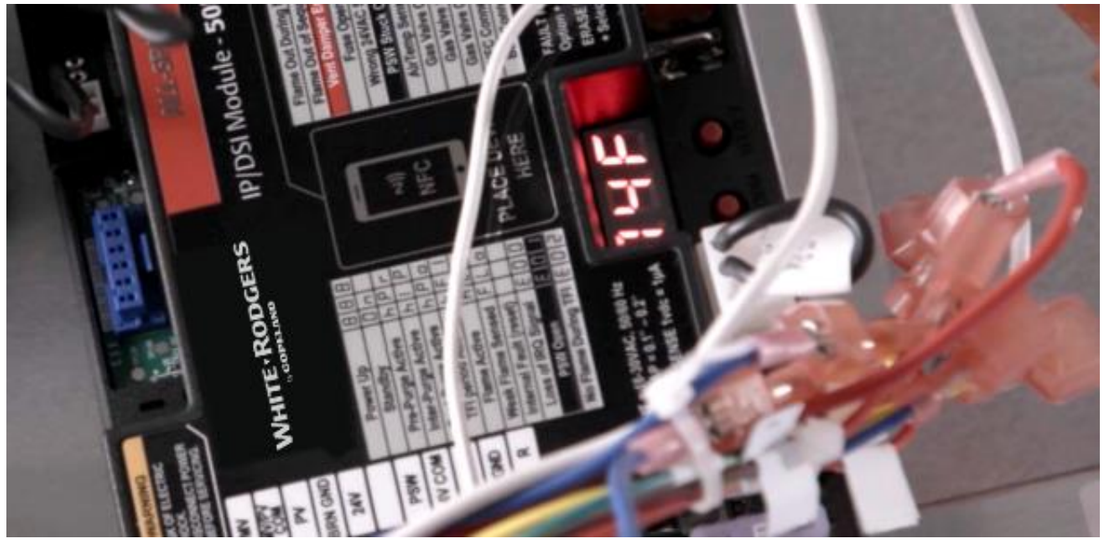
16 The system is now ready to be powered on. Reconnect the electric power and gas to the unit.



Setpoint

17

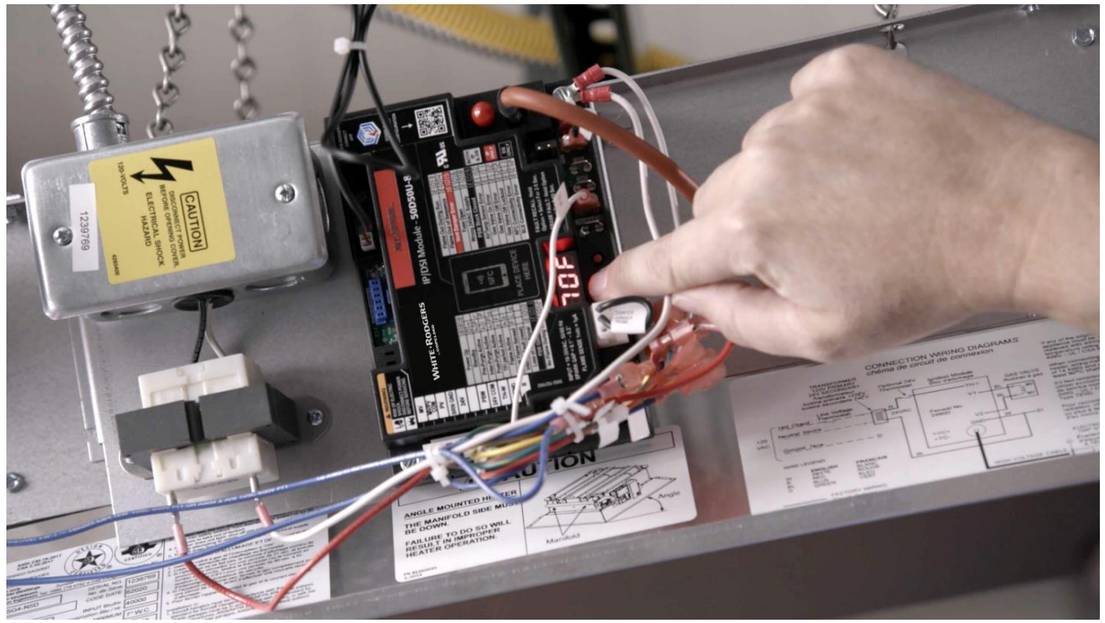
- During power-up the three seven-segment LEDs will each display an 8.
- Once ready, the control will enter the integrated thermostat standby mode and the LEDs will display the current room temperature.
- To see the current setpoint, press the **Option** button for less than three seconds.
- Increase the setpoint by pressing the **Select** button less than three seconds or decrease the setpoint by pressing the **Option** button for less than three seconds.
- The setpoint will now flash, indicating a change is being made. To save the new setpoint, press and hold the **Select** button for three seconds until the LEDs stop flashing.
- For onboard configuration, press and hold the **Option** button for greater than three seconds to enter the configuration mode. See the installation instructions for settings.



Verify Heater Operation

18

- To verify heater operation, raise the temperature setpoint above the temperature shown on the module.
- By using the All-Spark 50D50U-843 with an F6785-35 temperature sensor attached, the thermostat feature will cycle the unit and maintain the set temperature.



COPELAND

Thank you.