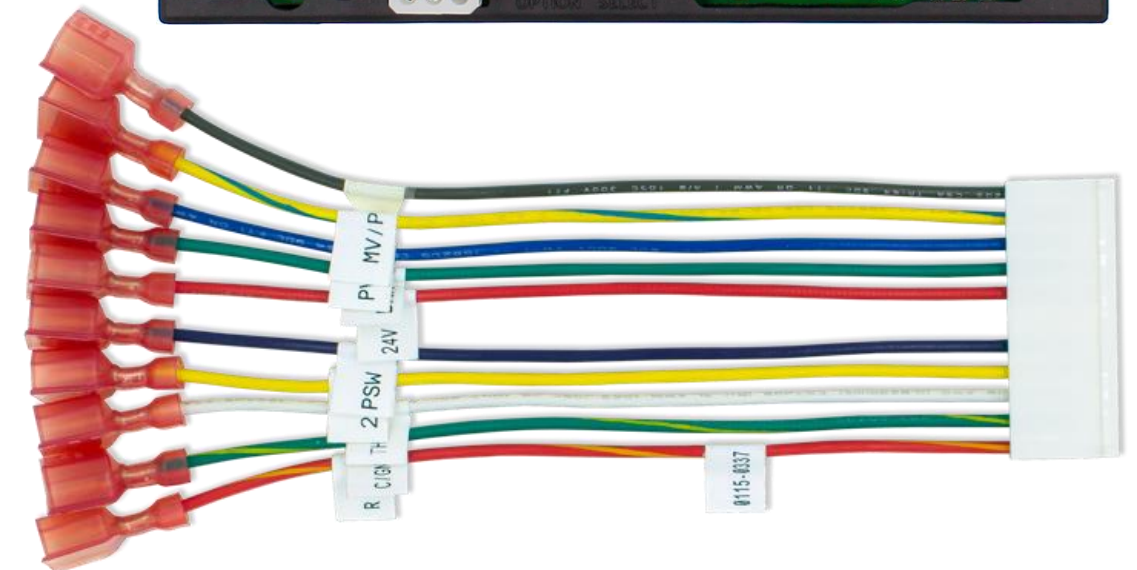
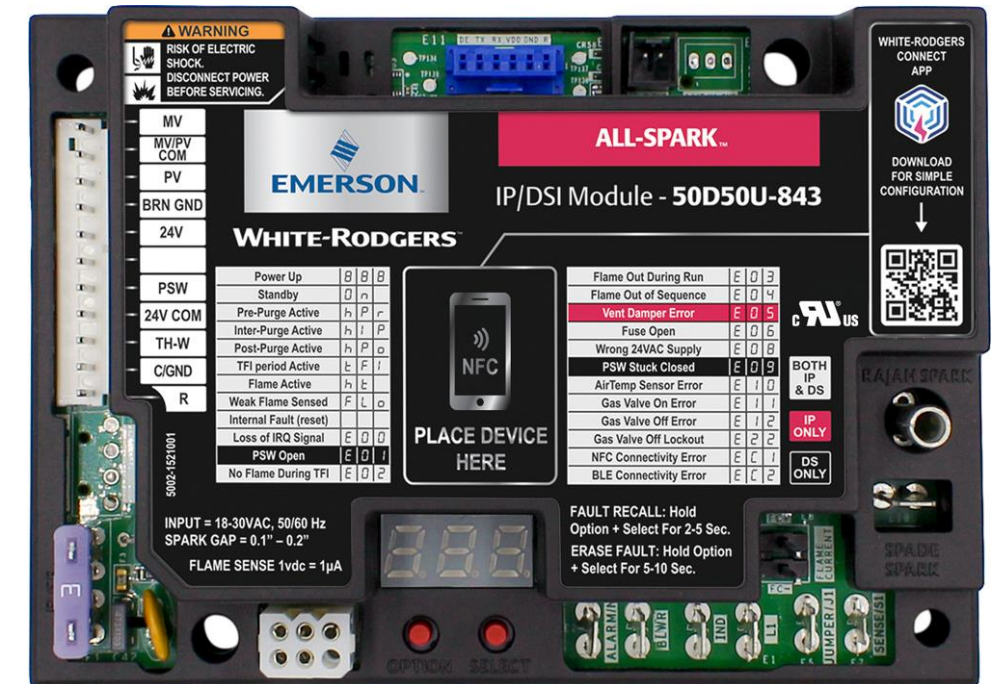


Product and Business Overview

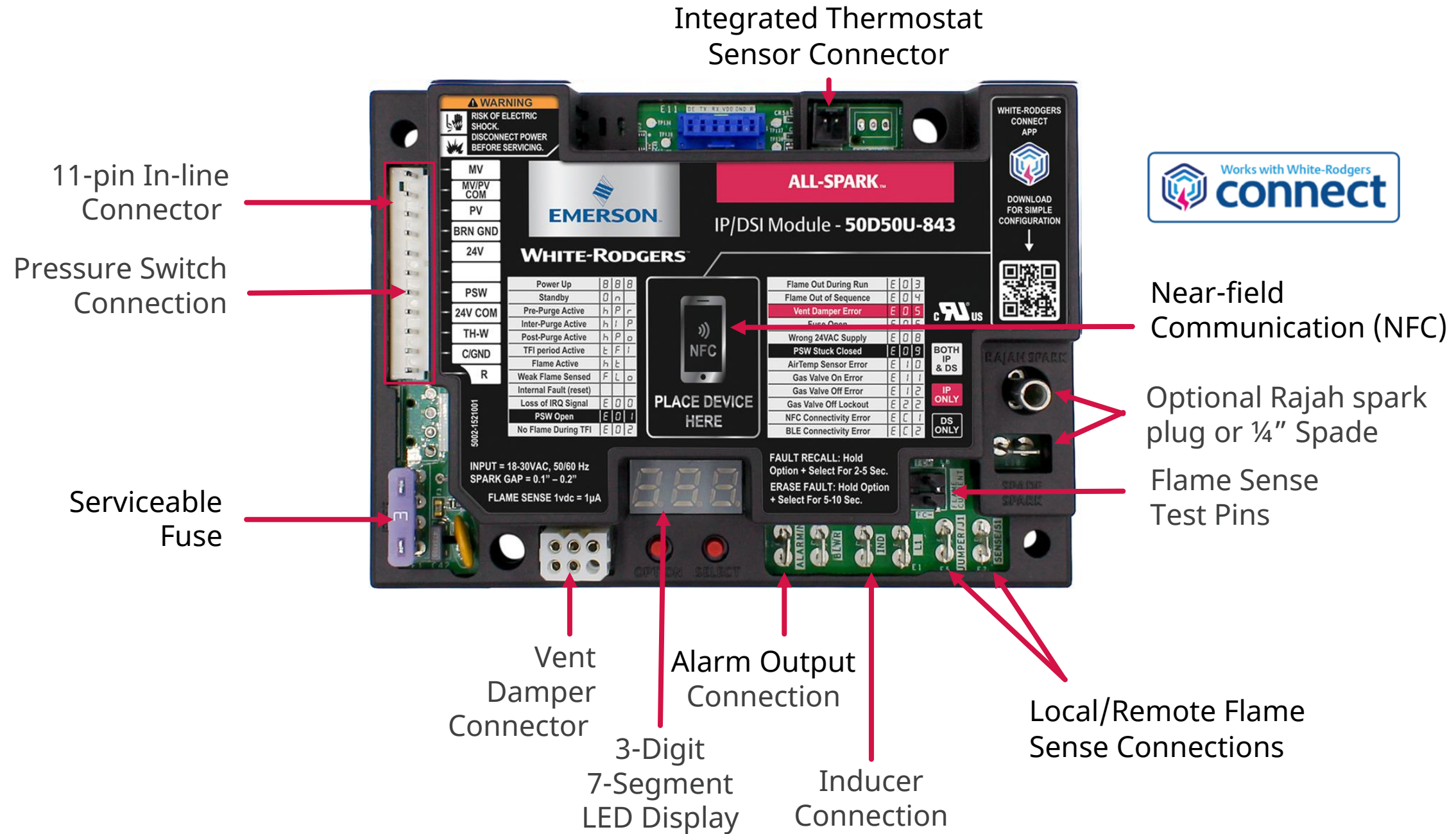
White-Rodgers All-Spark Ignition Module



- 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

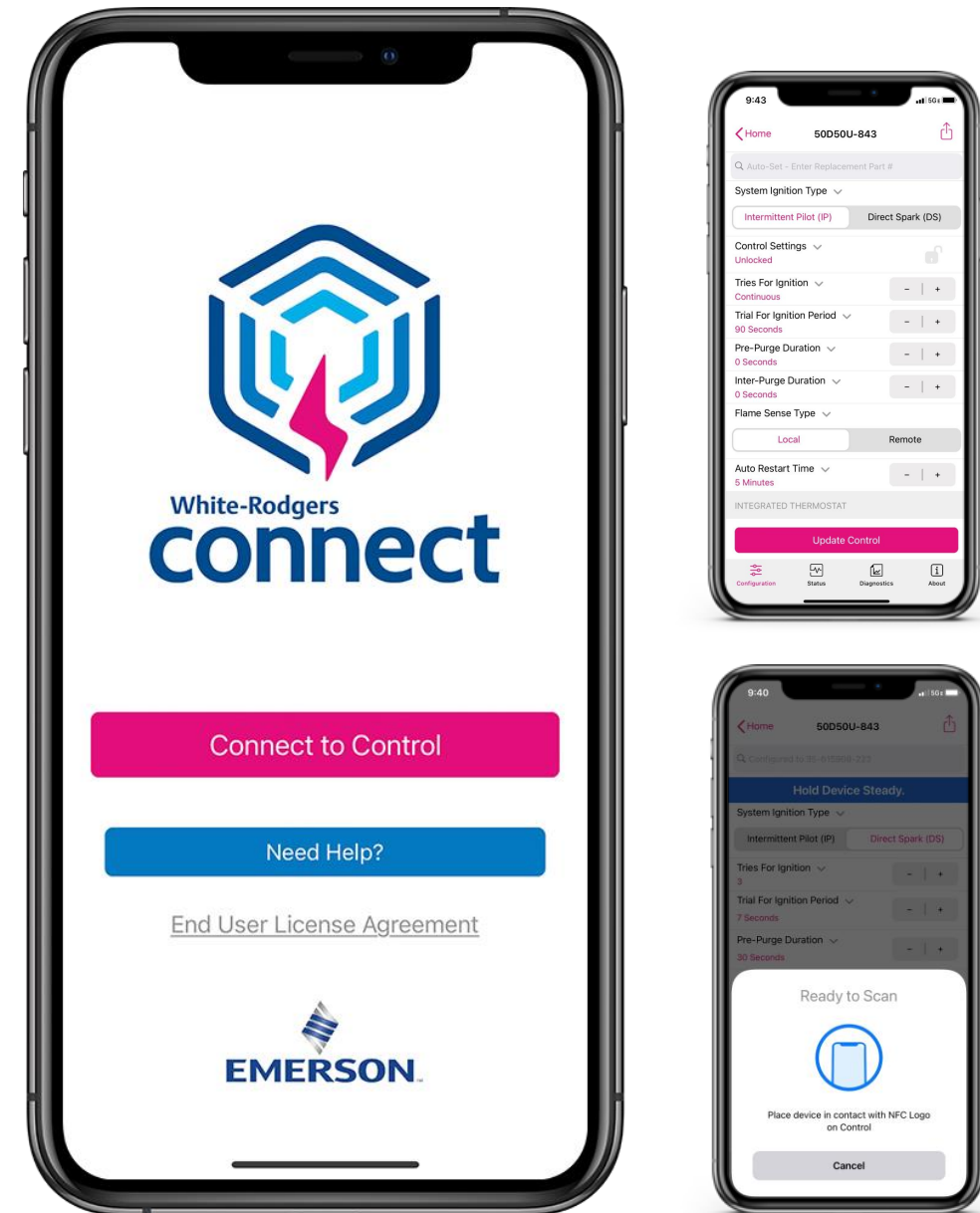


Introducing White-Rodgers Connect

- 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

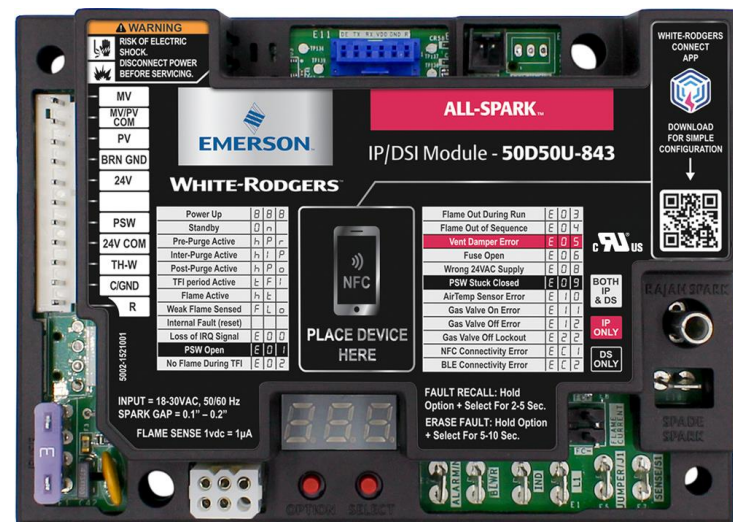


Honeywell
S87

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

CROSS REFERENCES

INTERMITTENT PILOT

HONEYWELL	S88H1089	S8610F1024	35-6UJ106-224	C644A4A-1C	G60CAG-8	G60BG-3	G60TL-1	G67AG-9	G770NGC-7	SPT35D	CARRIER/CP	CLEVELAND
RESIDEO	S86H1097	S8610F1032	35-630501-007	C644A4A-1C	G60CAG-9	G60BG-4	G60ZAG-1	G67AG-10	G770NHA-1	SP735L	BRANDS	FK105953
S86UJ3009	S86H1105	S8610H1004	35-630501-103	C644BEA-1C	G60CBA-1	G60BG-5	G60ZAG-2	G67AG-11	G770NHC-1	US1715U	US1715U	MIDDLEBY
S86A1001	S86H1113	S8610H1012	35-63U101-015	C644GA-1C	G60CBA-2	G60BG-6	G65BBG-1	G67BG-2	G770RGA-1	780-745	LH33CZ010	42810-0114
S86A1019	S86H1121	S8610H1020	35-63U103-117	C644FQA-1C	G60CBA-3	G60BG-7	G65BBG-2	G67BG-3	G770RHA-1	SP745	LH33CZ007	BKI
S86A1027	S86H1139	S8610H1038	35-630201-005	C631A9A-1C	G60CBG-1	G60CBG-8	G65BBG-3	G67BG-4	G770RHA-2	790-500	LH33C4650	C0772
S86A1035	S86H1147	S8610H1046	35-630200-007	C631A9A-1C	G60CBG-2	G60CBG-9	G65BBG-4	G67BG-5	G775RGA-1	790-507	GOODMAN /	CROWN STEAM
S86B1009	S90A1005	S8610H1053	35-63U101-415	C634AFA-1C	G60CBG-3	G60CBH-1	G65BBG-5	G67MG-1	G775RHA-1	ICM	AMANA	9-3381
S86B1017	S90B1003	S8610H1061	BASO	C661DEA-1C	G60CBG-4	G60CBK-1	G65BBG-6	G67MG-2	G775RHA-2	ICM290A	BRANDS	9226-2
S86B1025	S90B1011	S8610H1079	BG1600M0EK-1AAC	C661AEA-1C	G60CBG-5	G60CBK-2	G65BBG-7	G67MG-3	G779	ICM290A	BRANDS	9226-2
S86C1007	S86C1003	S8610H1095	BG1600M0EIM-1ADC	C661FCA-1C	G60CBG-6	G60CBK-3	G65BBG-8	G67MG-4	Y79ABC-1	WHITE	YORK/JCI	IP1-24-00
S86C1015	S86D1009	S8610H3000	BG1600M0EIP-1ADC	C664AEA-1C	G60CBG-7	G60CBL-1	G65BBM-1	G67NG-2	Y79ABC-2	RODGERS	BRANDS	BECKETT
S86C1023	S86D1017	S8610H3018	BG1600M0ER-1BDC	C664AFA-1C	G60CBG-8	G60CBL-2	G65BBM-2	G67NG-4	Y79ABC-3	50B48-1	325-42881-000	7586T0001
S86C1031	S86D0A1001	S8610H3026	BG1600M0FF-1ADC	C664BBA-1C	G60CBG-9	G60CCG-1	G65BBM-3	G60AX-1	Y79ABC-4	50B48-102	025-42681-000	7586C0001
S86C1049	S86D0B1009	S8610M1003	BG1600M0FP-1ADC	C664BFA-1C	G60CBG-10	G60CCJ-1	G65BBM-4	G60AX-2	Y79ABC-5	50B48-201	907-97010-15	MODINE
S86C1056	S86D0C1025	S8610M1011	BG1600M0FT-1ADC	JOHNSON	G60CBG-11	G60CCL-1	G65BCG-1	G60AX-3	Y79ABC-6	50B48-203	S1-0252363700	5H0689
S86D1005	S86D0B3005	S8610M1029	BG1600M01CR-1BDC	CONTROLS	G60CBG-12	G60CDG-1	G65BCM-1	G60AX-1	Y79ABC-7	50B48-301	025-29012-001	5H084743000
S86D1013	S86D0B3013	S8610M3009	BG1600M02CR-1ADC	CSA35A-617R	G60CBG-13	G60CFL-1	G65BFG-1	G60ULX-1	Y79ABD-1	50B48-4	025-29012-002	BRADFORD WHITE
S86D1021	S86D0C1015	S8610M3017	BG1600M03F-1AGP	CSA35A-618R	G60CBG-14	G60CGH-1	G65BFM	G60ULX-2	Y79ABCD-2	50B48-6	025-29012-003	233-42909

DIRECT SPARK IGNIT

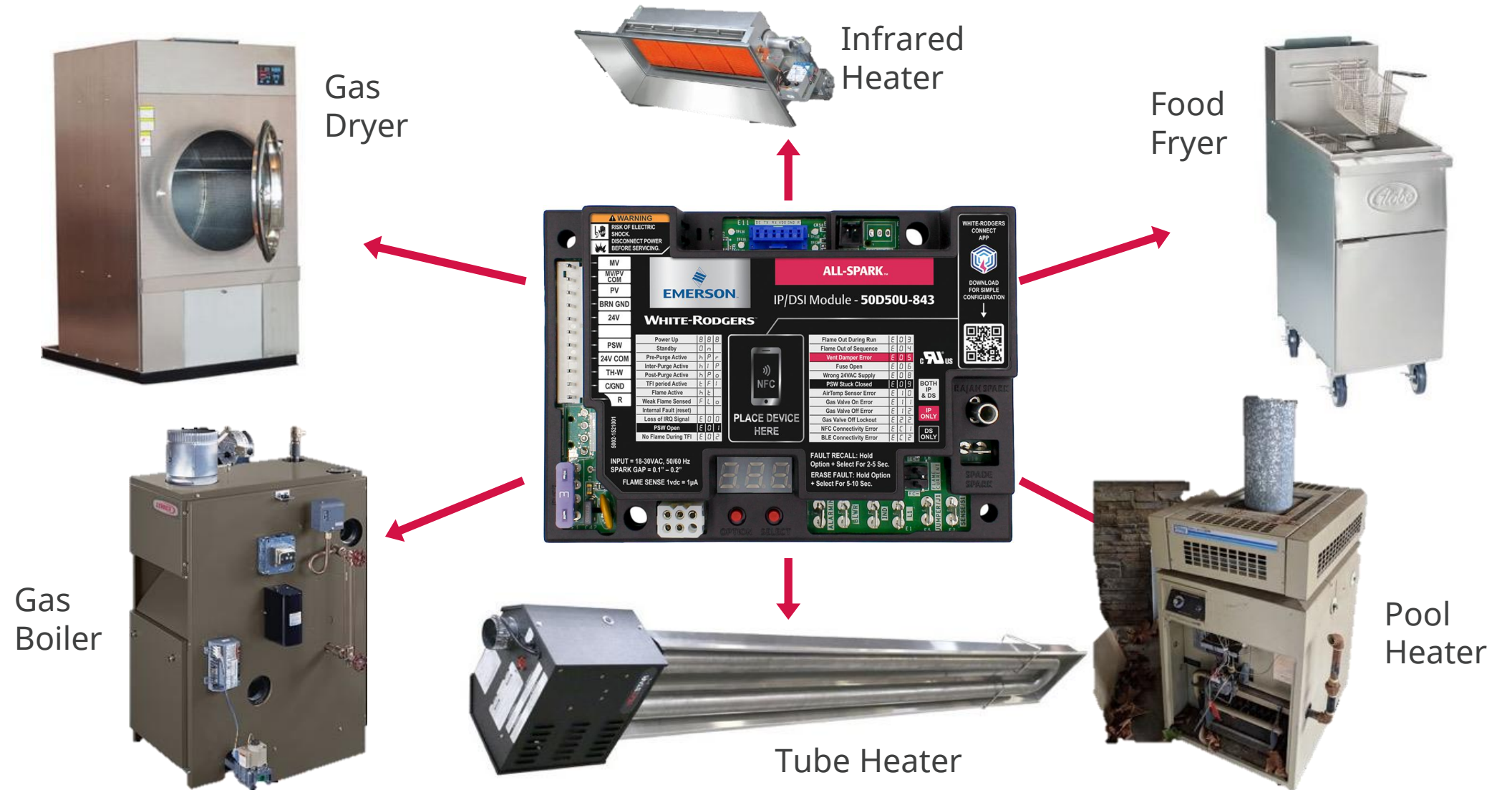
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RESIDEO	35-615910-225	2460D 902-005	35-605608-015	35-605601-001	35-605593-337	35-615908-223	05-299013-263	35-605603-223	05-169010-023	35-535911-113	05-279005-223	35-605600-001	2460D 901-005	35-605912-553	35-615221-001	35-615939-551	05-296486-151	C131AAA-1C	1016-452	50B47-261	50D20-50	76-2102	KE53469-2	CE005	
S87B1098	35-605608-015	35-605601-001	35-605593-337	35-615908-223	05-299013-263	35-605603-223	05-169010-023	35-535911-113	05-279005-223	35-605600-001	2460D 901-005	35-605912-553	35-615221-001	35-615939-551	05-296486-151	C131AAA-1C	1016-452	50B47-261	50D20-50	76-2102	KE53469-2	CE005			
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35-605608-227	35-605942-013	BASO	C107U-1	790-325	50B47-41	50D50-94Z	49H96	PICARD	ELI02-0165																
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35-60J106-021	35-6050601-101	BG1100M0AK-1GC	G760AAD-2	780-504	50B47-51																				

EMERSON. CONSIDER IT SOLVED.

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

2ⁱⁿ1



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

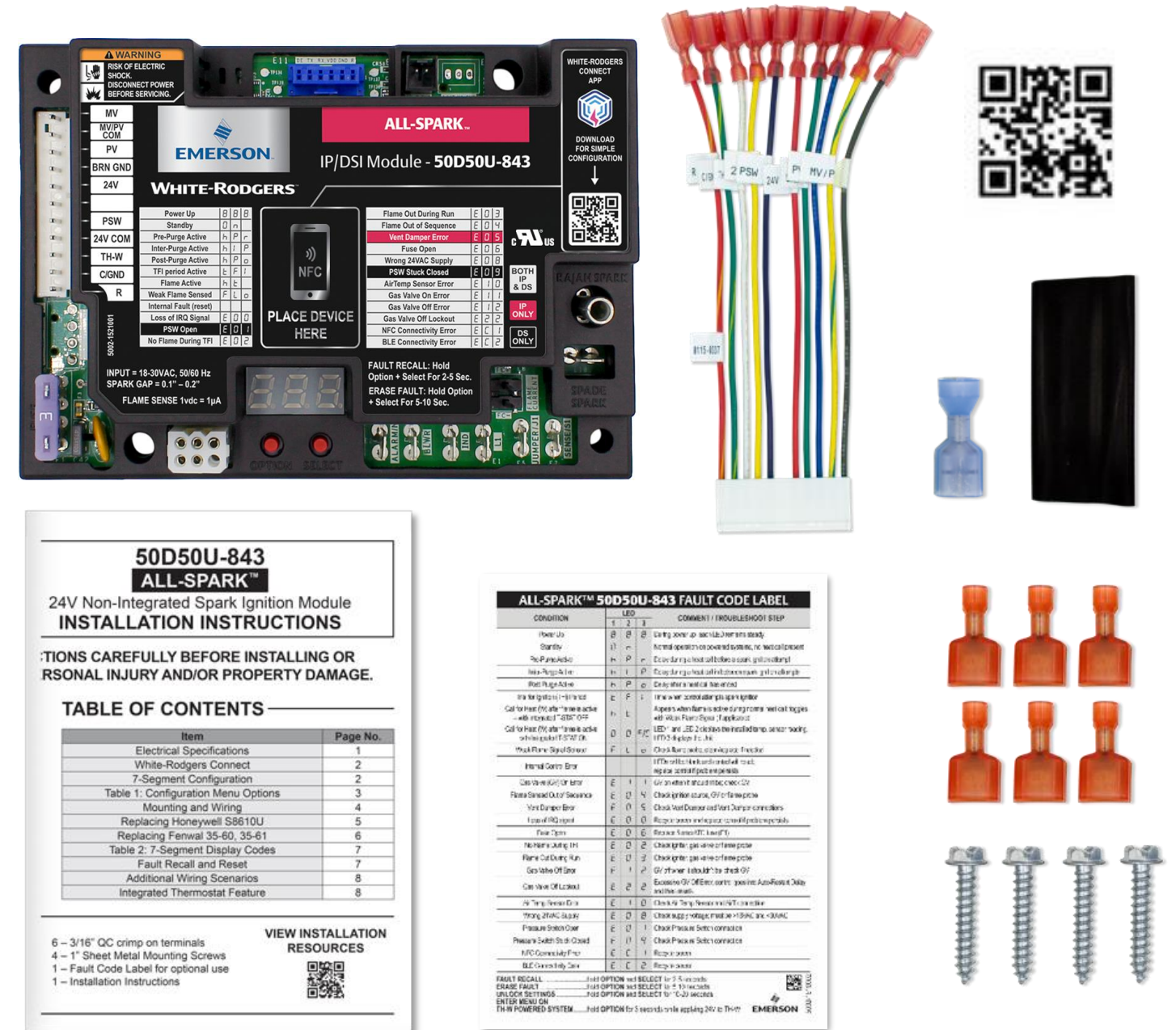
- With Rajah & ¼" spade, the All-Spark Ignition Module connects to the majority of spark wiring.
- 24v 11-pin harness has all configuration wires that are made active through personalized configuration.

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

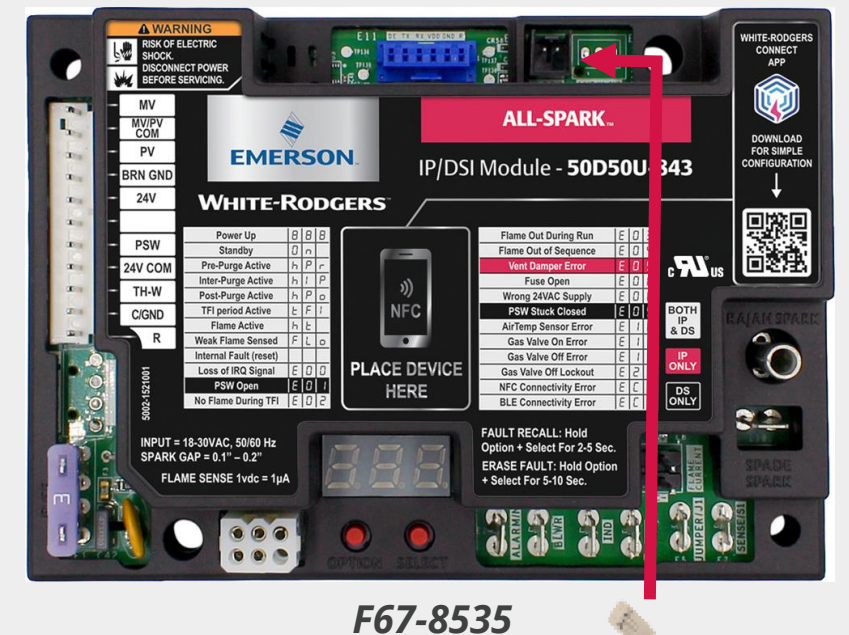
SOLD SEPERATELY

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.

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

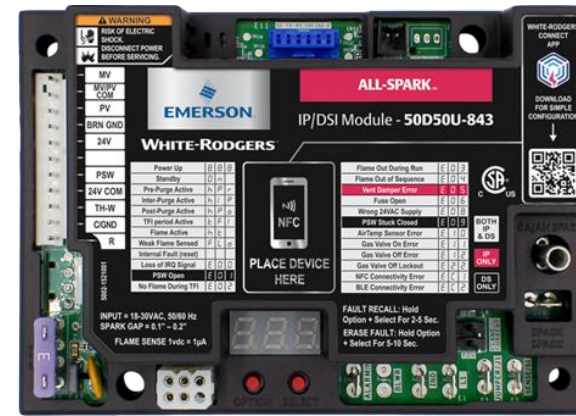


Easy to Install, Easy to Configure, Easy to Operate

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

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



SOLD SEPERATELY

F67-8535 Integrated Thermostat Sensor INSTALLATION INSTRUCTIONS

READ CAREFULLY BEFORE INSTALLING OR
REPAIRING TO AVOID PERSONAL INJURY AND/OR PROPERTY DAMAGE.



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.

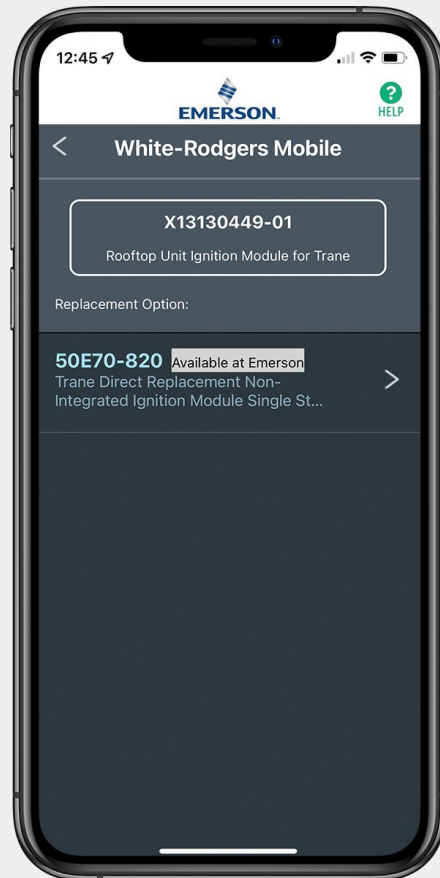
FIRE HAZARD

- 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.

WR Mobile App

Always up-to-date and easy to use:

- Search by OEM
- Competitive
- White-Rodgers model number



Sensi Touch 2 smart thermostat

Your resource for:

- Product information and spec sheets
- **NEW FEATURE:** Product availability with “Available at Emerson” tag
- Complete Cross Reference
- OEM compatibility
- Installation information and videos
- Wiring diagrams

Download:

1. Go to your app store
 2. Type in **WR Mobile**
 3. Install the app
- OR
1. Open your camera
 2. Hold it over the QR code
 3. Tap “Open” on the pop-down
 4. Install the app

NEW FEATURE

WRMobile and the desktop app offer up-to-the-minute inventory insights for our customers. The results will include suggested replacements & the tag “**Available at Emerson.**”



Scan this QR code to download the app



WR Mobile App



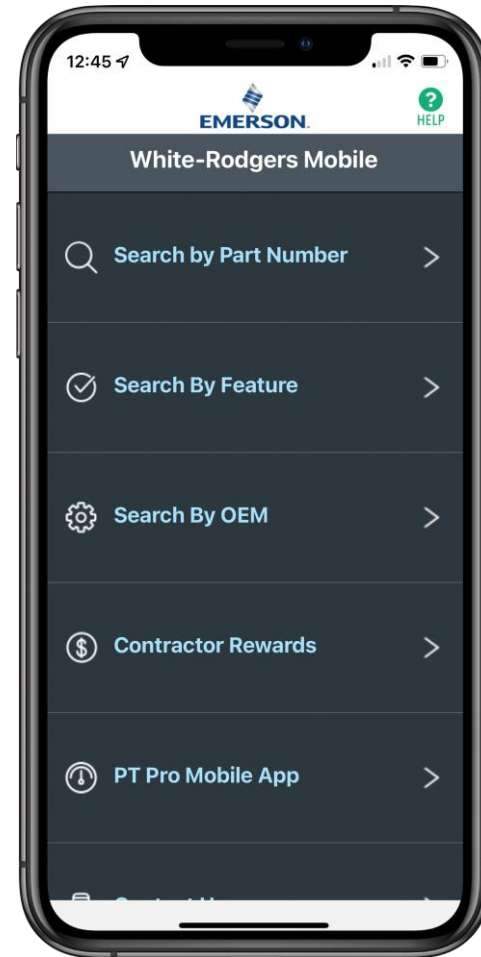
Easy to use!

Search by OEM, competitive, or White-Rodgers model number

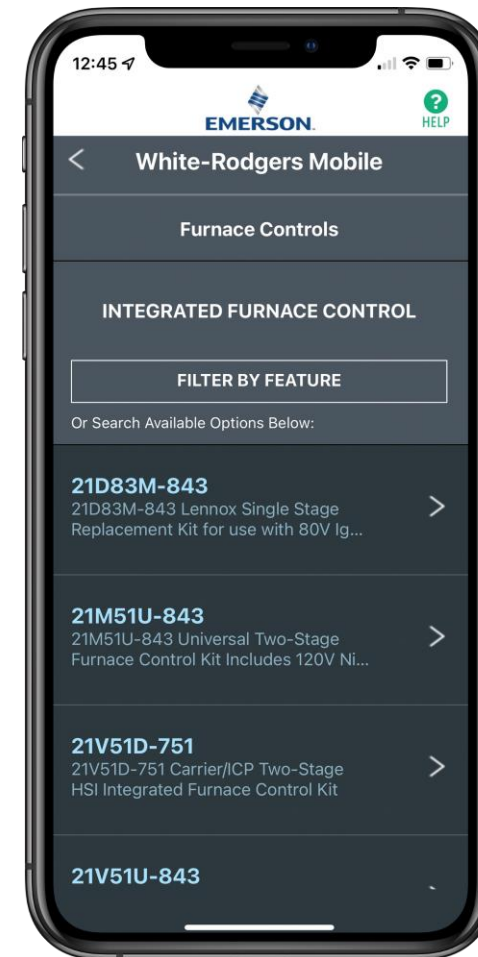
Try the desktop version at

<https://wrcrossref.com>

Search



Scrollable Product List



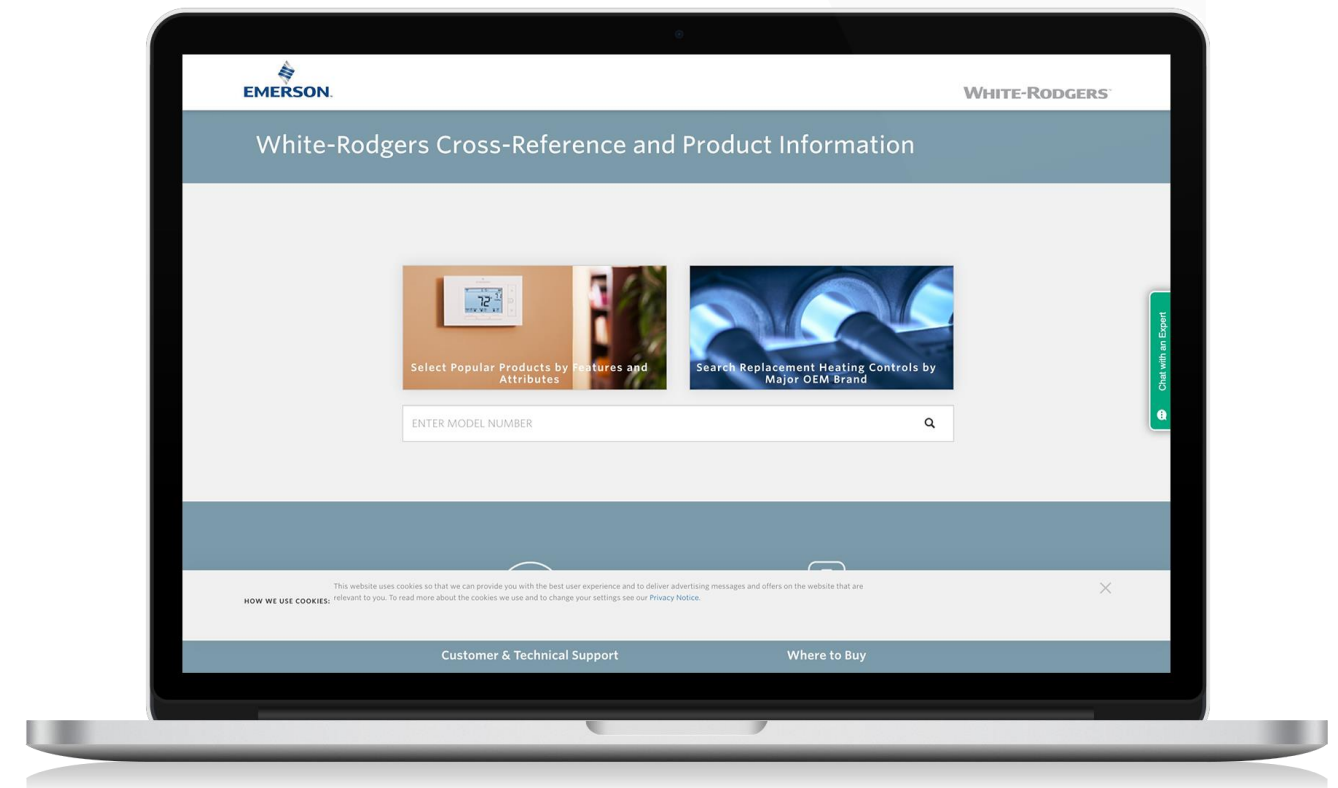
WR Replacement



White-Rodgers Cross Reference and Product Information

Go to: <https://wrcrossref.com>

- Select popular products by feature and attributes.
- Search replacement heating controls by major OEM brand.
- Enter the model number to search for replacement information.

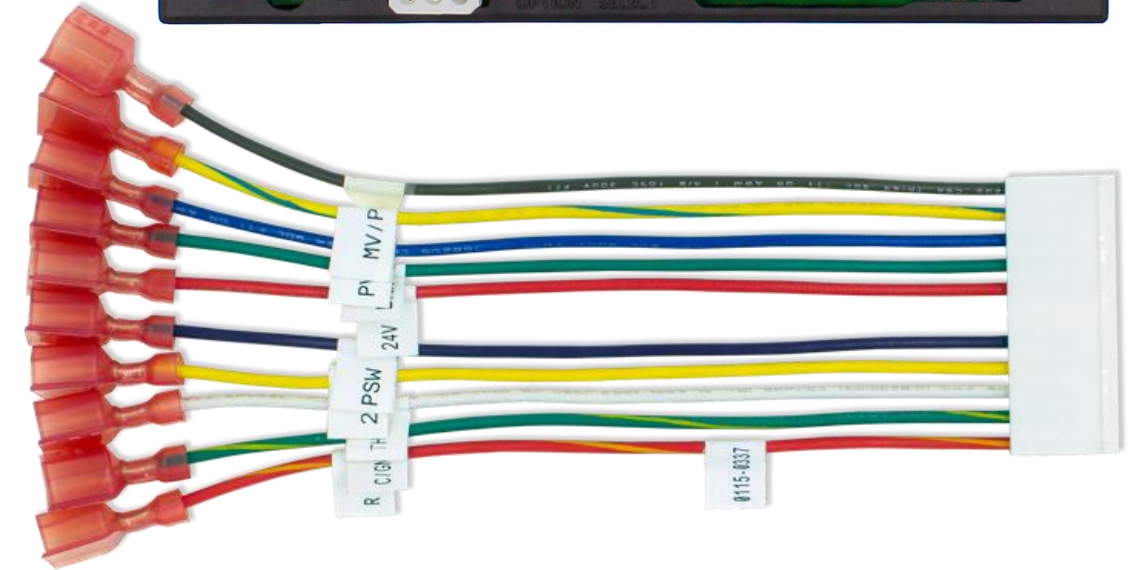
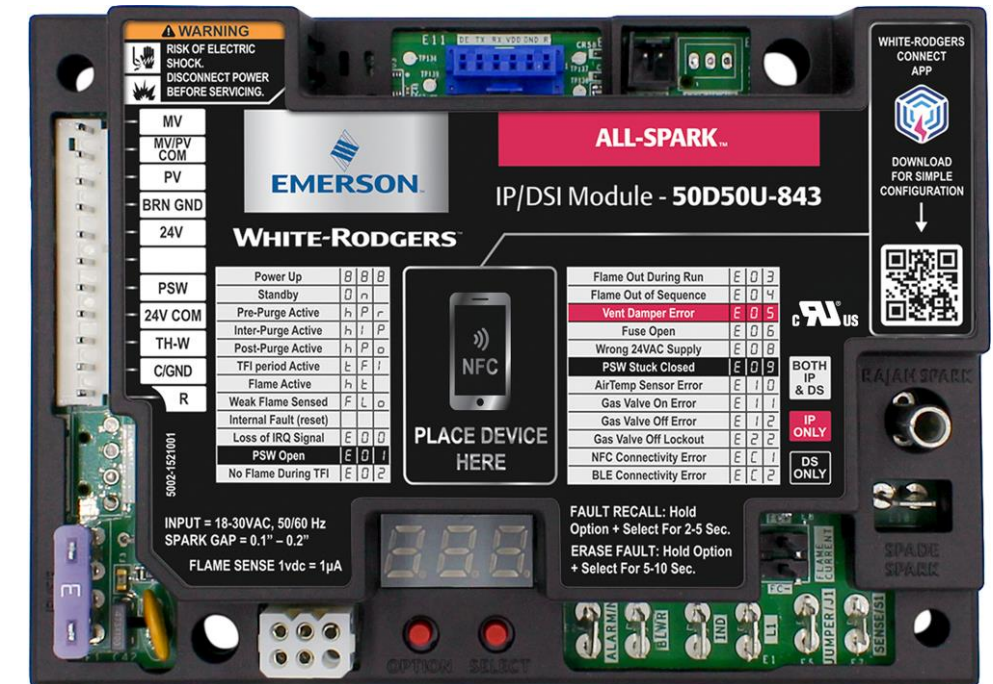


Technical

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.



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



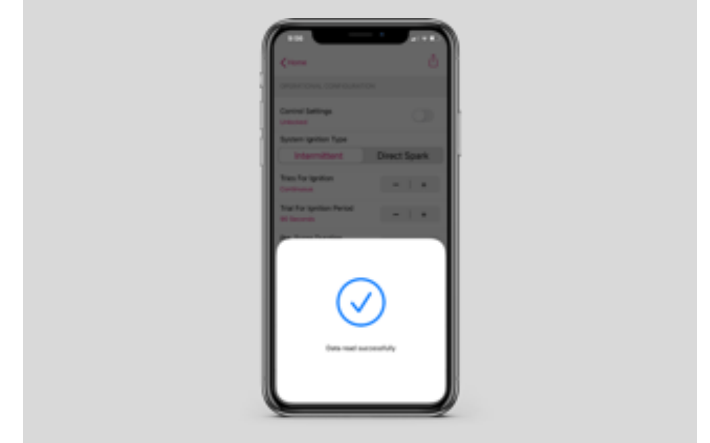
Once the control is read, you may move your phone away to configure in the app.

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

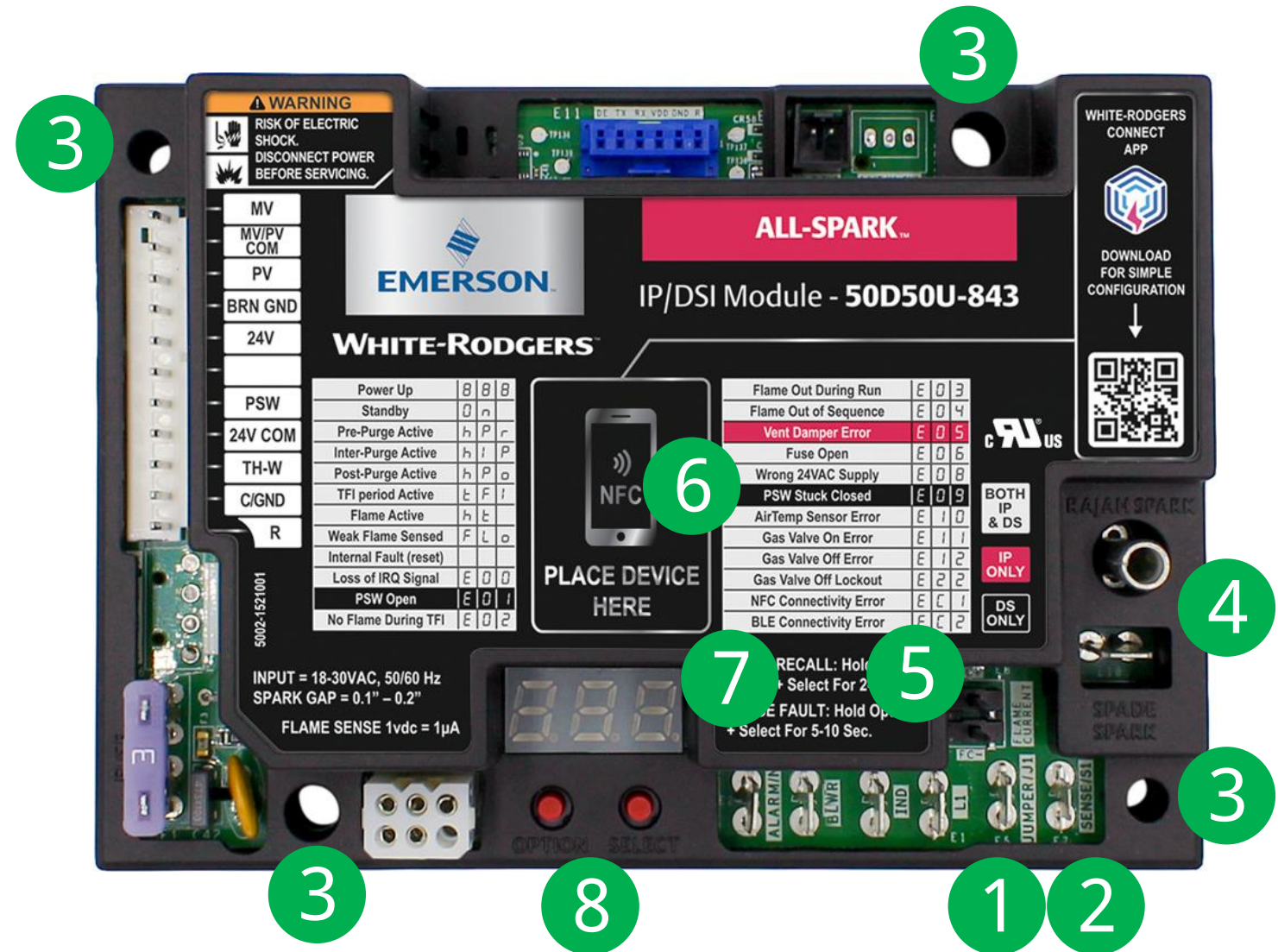


* Planned for release in 2022/2023

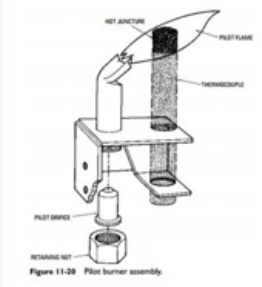
All-Spark Components

Other Components:

1. Flame Sense Jump Spade
2. Flame Sense Spade
3. Honeywell (S8600) or Fenwal (35-60) Mounting Options
4. Rajah or 1/4" 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



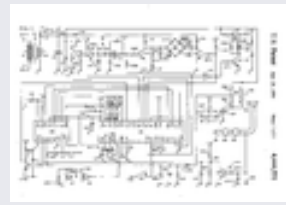
Dante Raso of Brooklyn, NY, invents the Standing Pilot light system

1928



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

1968



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

1984

The National Appliance Energy Conservation Act set a minimum of 78% Annual Fuel Utilization Efficiency (AFUE)
Manufacturers stop building furnaces with Standing Pilot light ignition systems

1987

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

*Exception: Rheem still uses Direct Spark Ign.

2006

Era of Forced Air Furnace Spark Ignition Systems

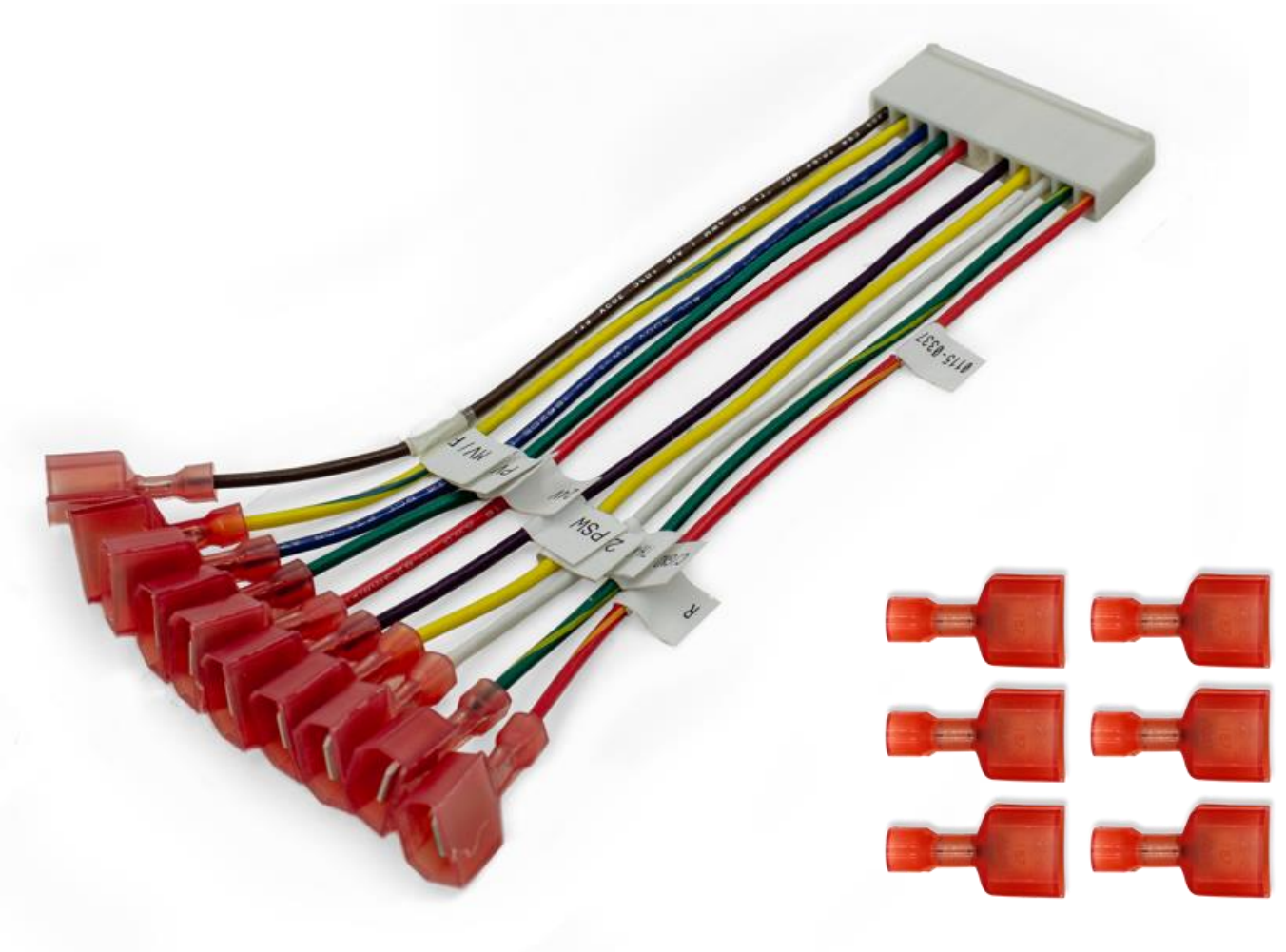
- Spark Ignition is the primary option for natural gas and propane furnaces.
- It requires a rapid release of high electrical voltage from an electrical coil.
 - Electric is transferred through an insulated wire to a metal rod placed close to a grounded object.
 - The electricity jumps the gap to create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

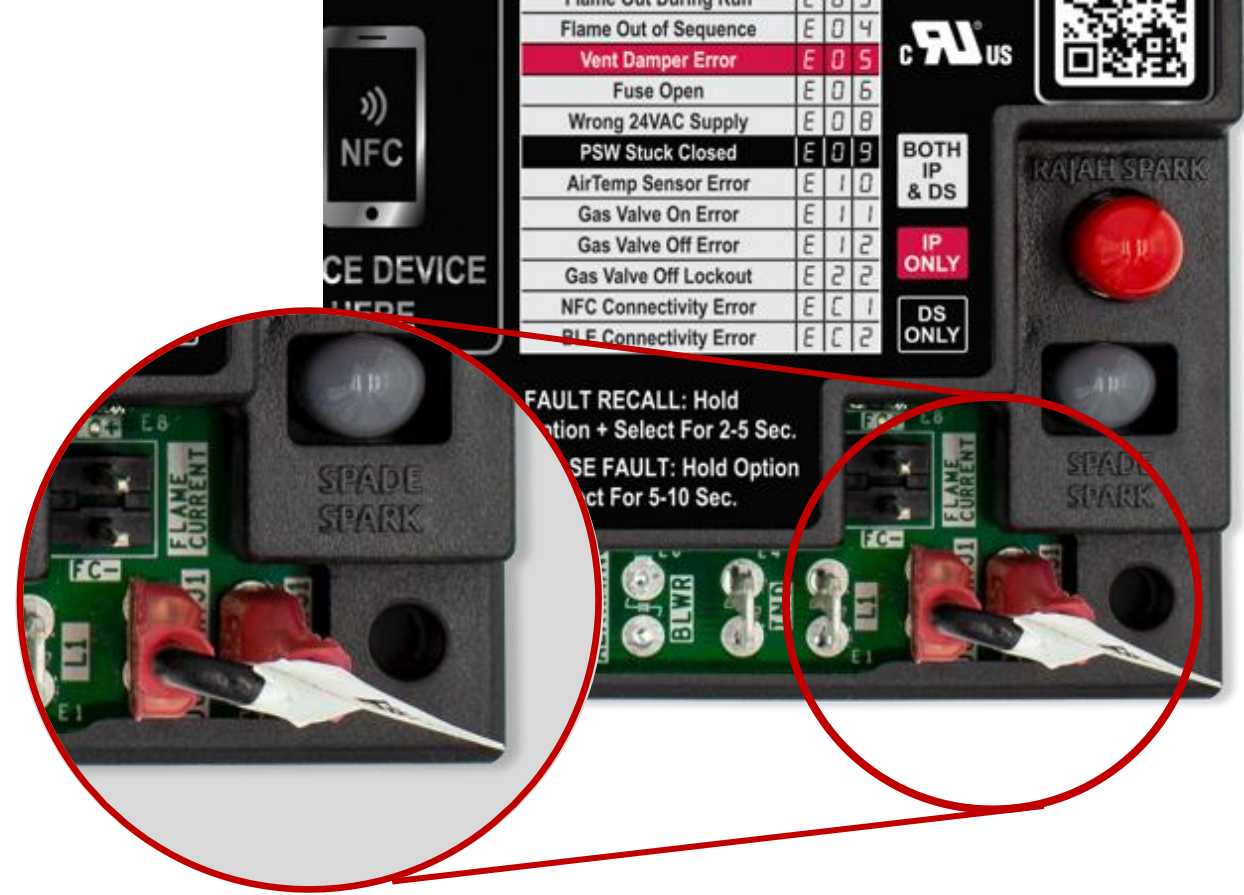
A ¼" spade to spike/nail adapter with a shrink sleeve is also included.



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.

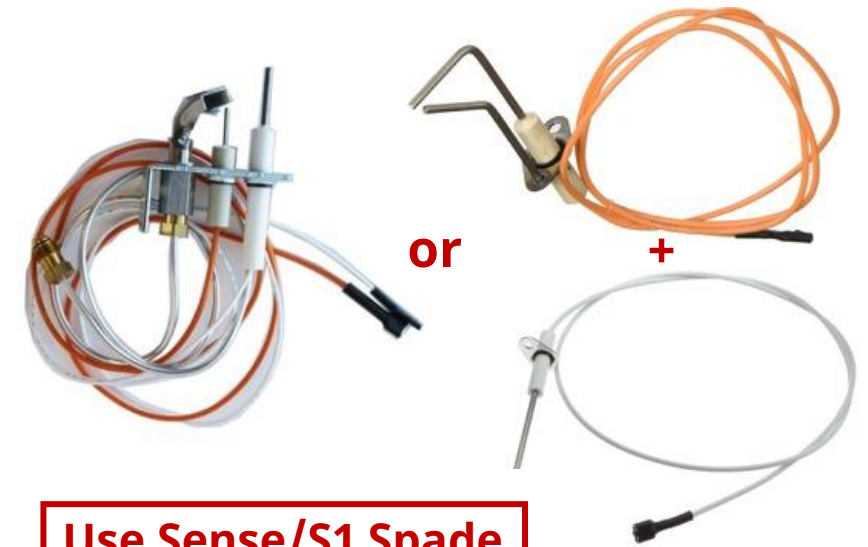


A **Local Configuration** refers to using a single rod by combining both spark and flame sense in one wire.



Use Jumper

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



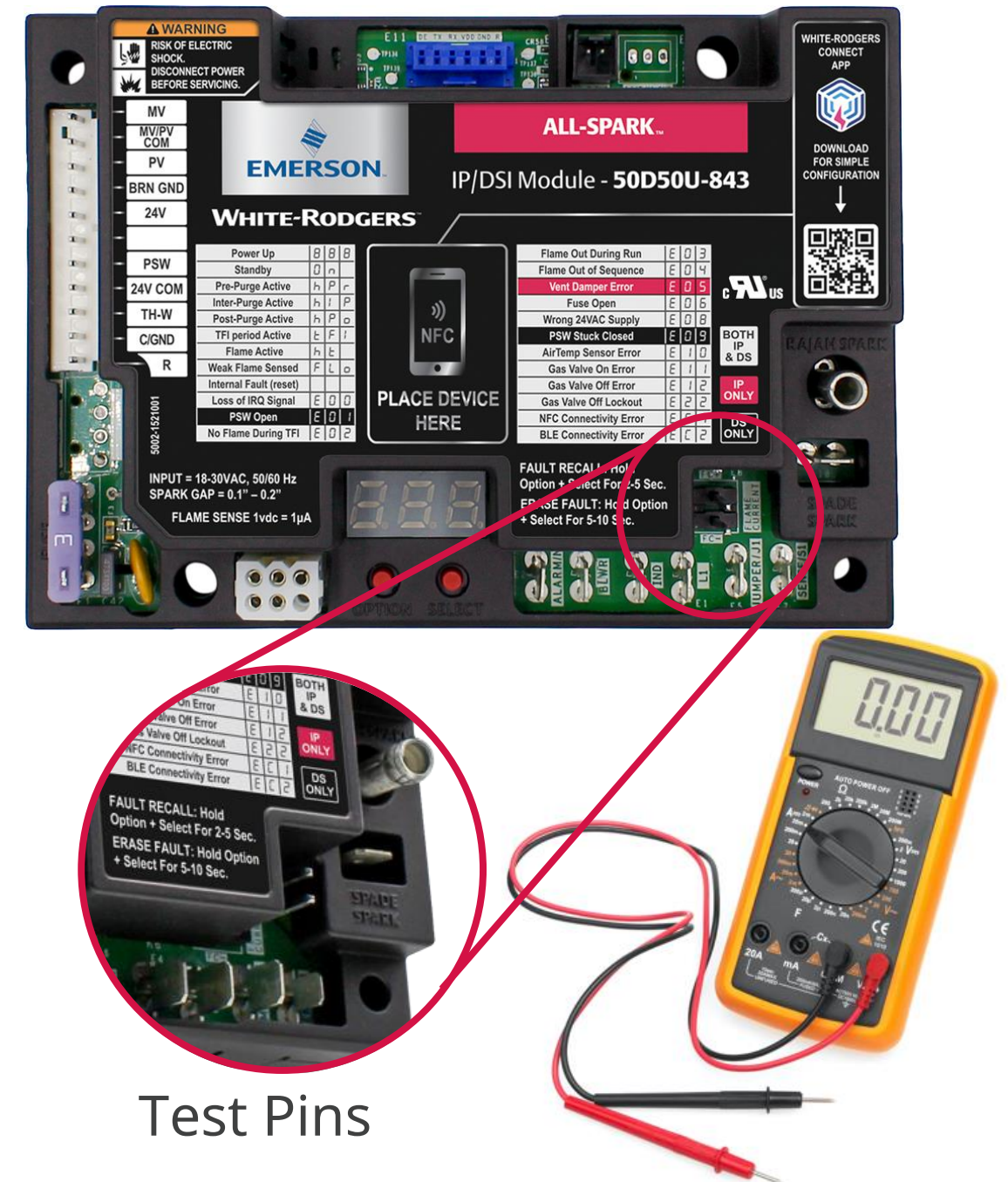
Use Sense/S1 Spade

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 μ A.



Test Pins

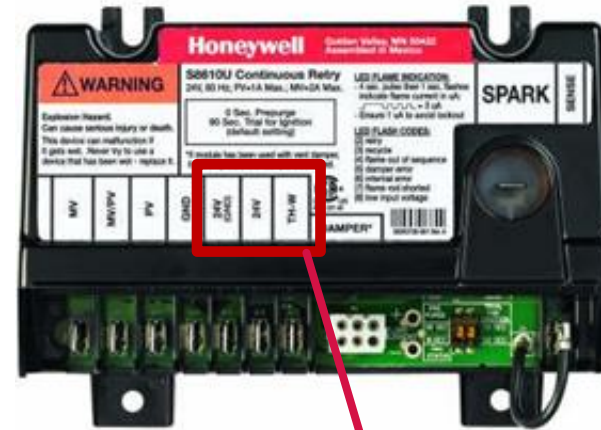
Intermittent Pilot-TH-W Wire Applications

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

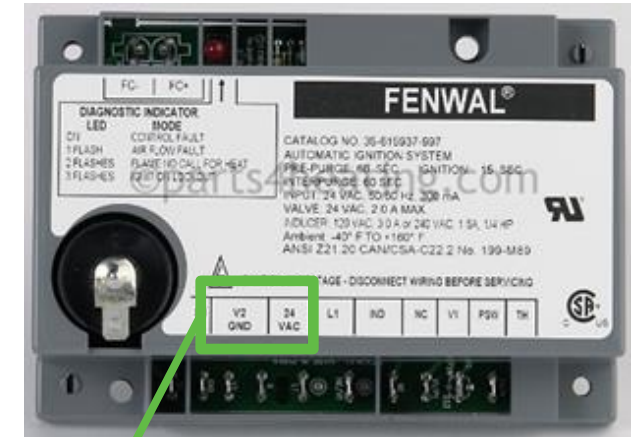
If the module only connects to 24v & 24v ground, when installing All-Spark Ignition Module connect the wire that was going to 24v to the TH-W wire on the 11-pin harness.

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



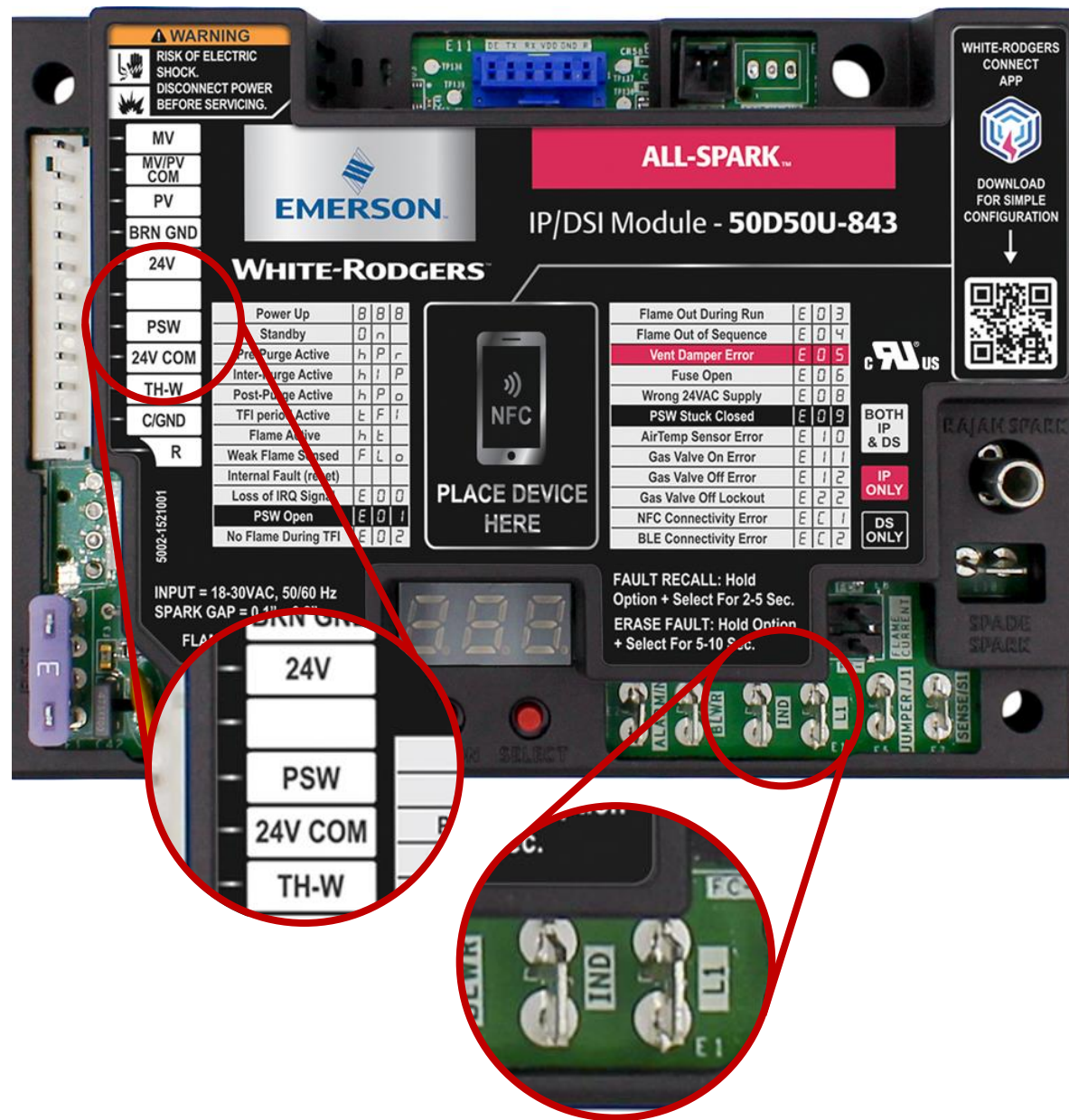
If 3 wires: connect all 3



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



DSI—Inducer & Pressure Switch Options



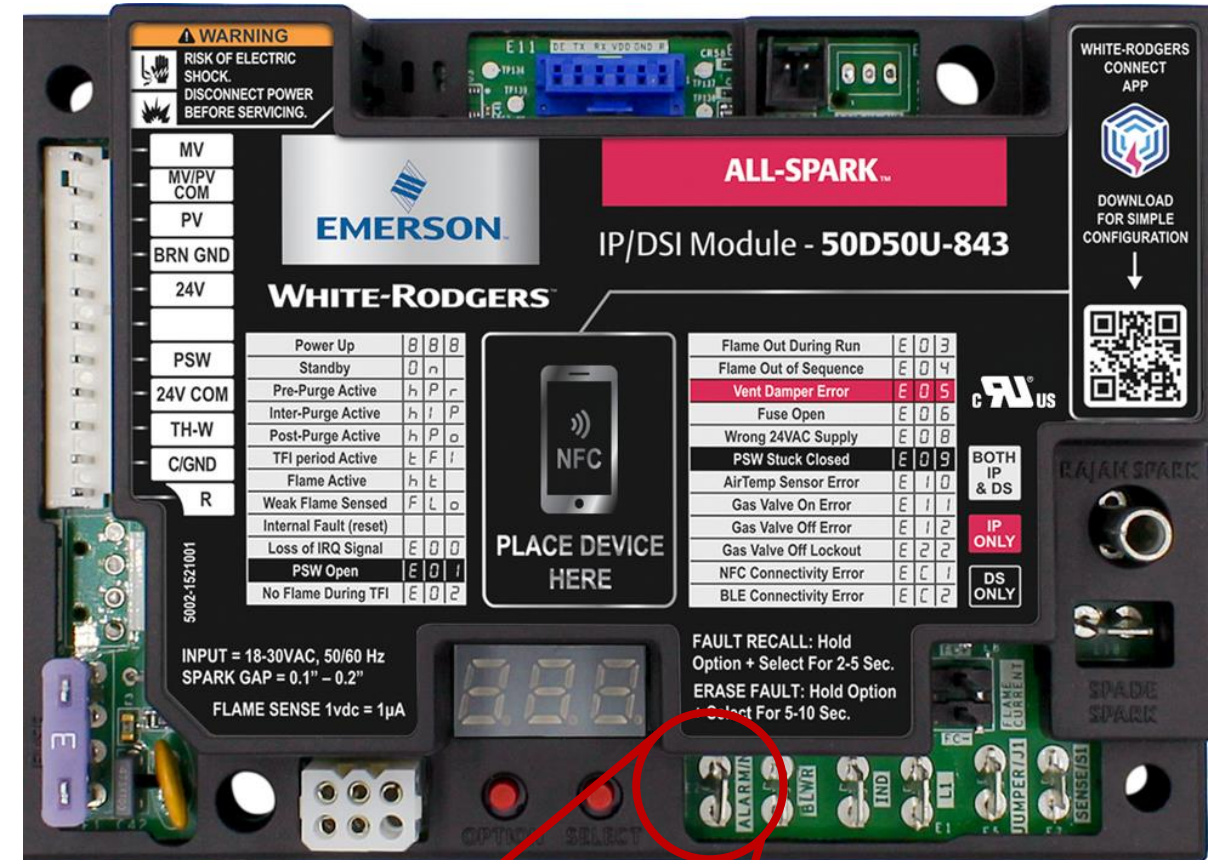
- When the module is set to Direct Spark Ignition, an option to power an inducer and monitor the system pressure switch is available.
- The module will not allow for system ignition until a signal is present on the pressure switch circuit indicating that the switch has closed.

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

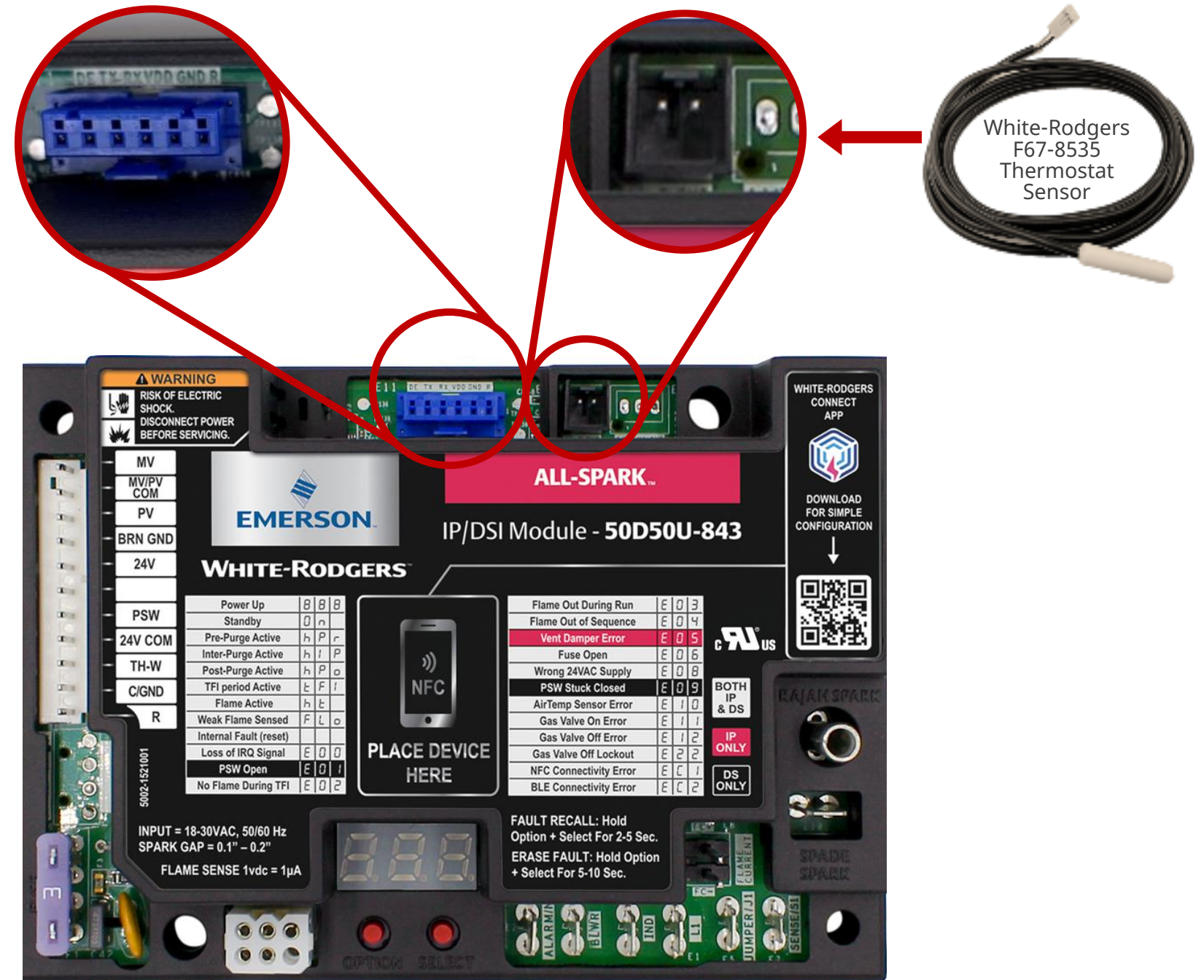
Bluetooth Capability

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

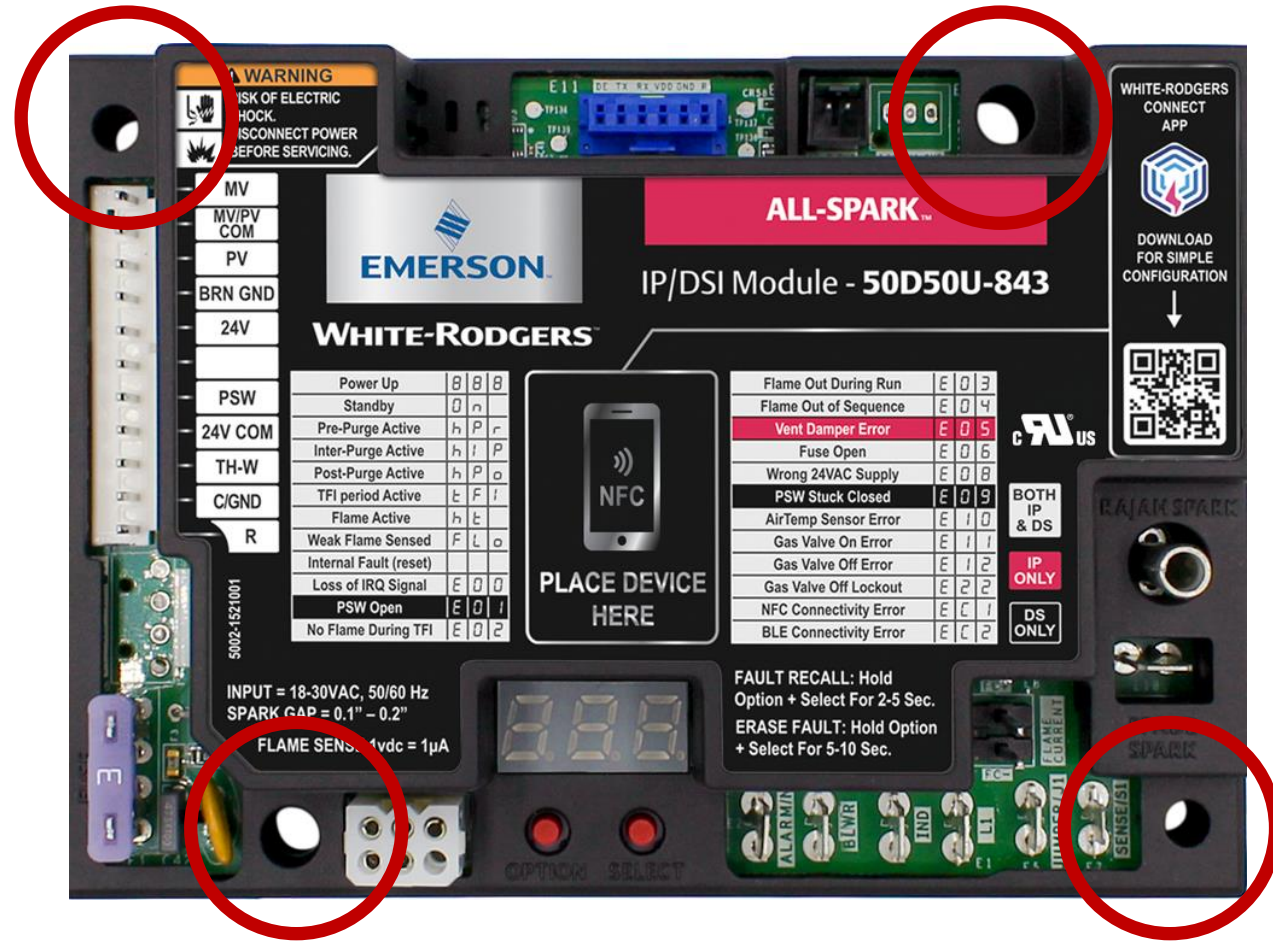
Integrated Thermostat Sensor

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



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"x1" 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

* Factory Default Setting

No.	Menu Item	LED 1 (flash)	LEDs 2 & 3 Display	Unit	Description / Rule
1.0	System Ignition Type	5 4 5	IP*, dS	N/A	Intermittent Pilot (IP) or Direct Spark (DS)
2.10	Integrated Thermostat	5 5 5	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	5 5 5	oF*, oC	N/A	Fahrenheit or Celsius
3.2	Temperature Offset	0 F 5	-9 - 0* - 9 (°F)	°F	This is the desired temperature for the space being heated
			-5 - 0* - 5 (°C)	°C	
3.3	Cycle Rate	5 4 5	SLo, nor*, FSt	N/A	Slow, Normal, Fast
3.4	Reset to Default	5 F 5	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	

**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.

3

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

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.

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)

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

FnF will display after 3 seconds

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



Decrease Setpoint

Increase Setpoint

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

50M56U-843 Competitive Comparison

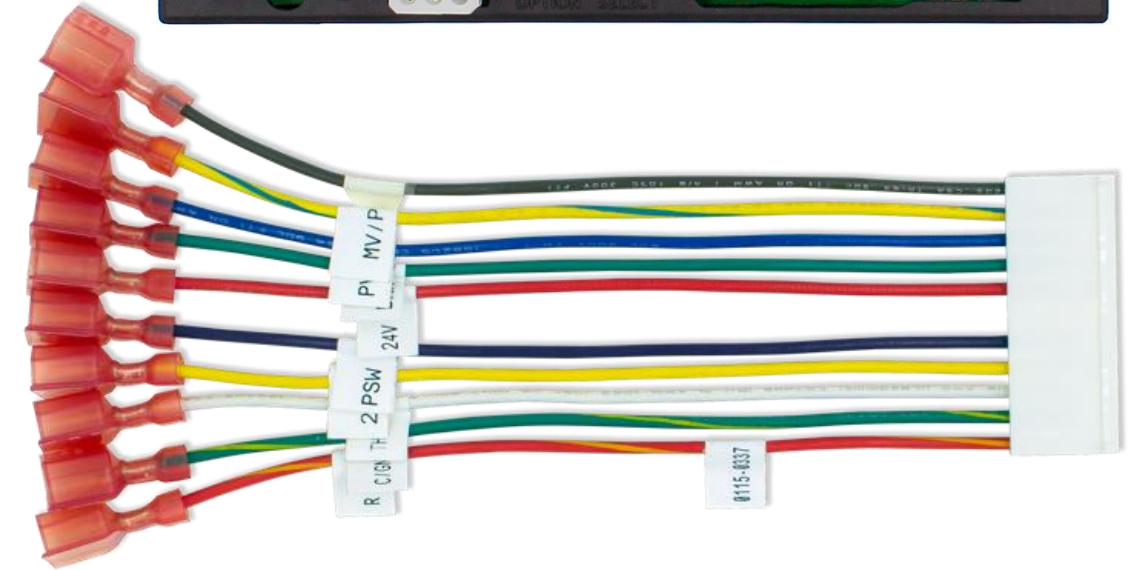
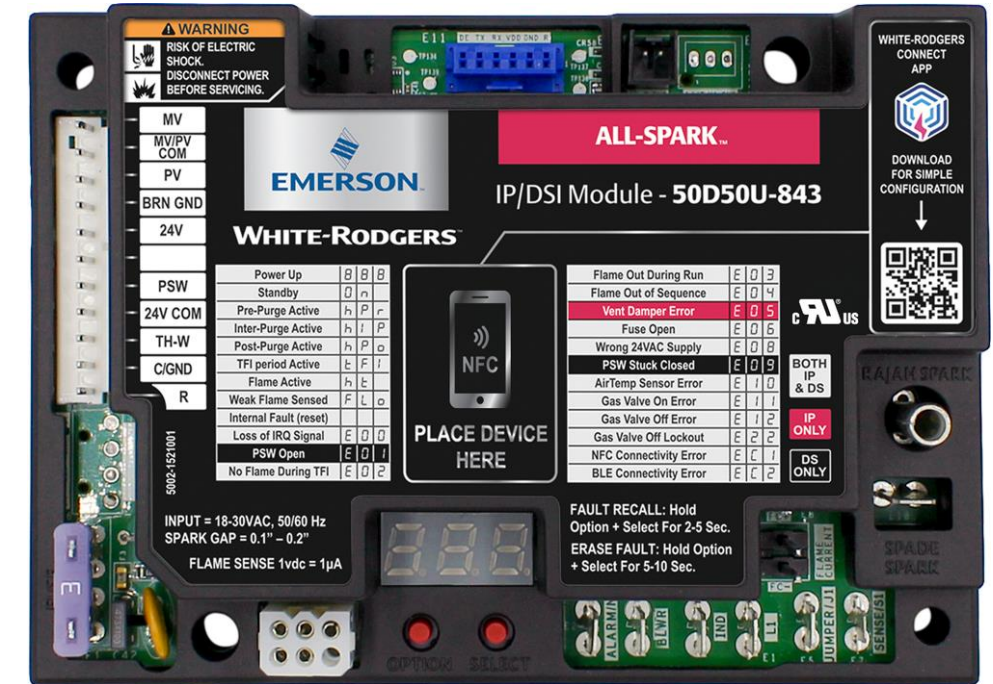
	Fenwal 35-60, -61	Honeywell S8610U	W-R All-Spark 50D50U-843
Cross Ref. #s	1 (individual SKUs)	425	1000+
Ignition Type	DSI	IP	Both in 1
User Configuration	✗	Dipswitch	White-Rodgers Connect App or Digital LEDs
Inducer/PSW	✓	✗	✓
Alarm Output	✓	✗	✓
On-board Spark Output	Rajah or Spade	Spade	Rajah and Spade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



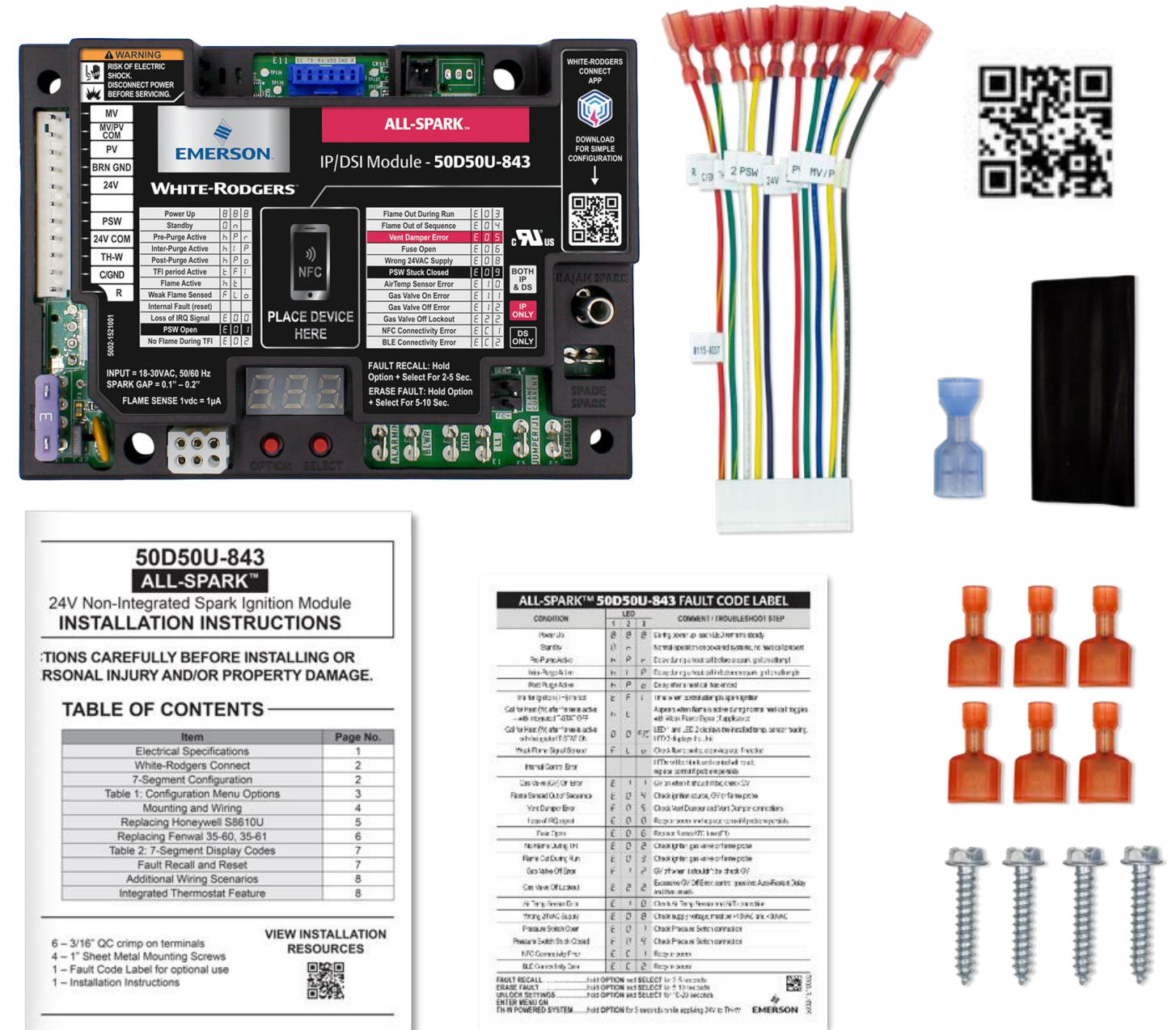
- The 50D50U-843 is the first universal replacement for 24V intermittent pilot or direct spark ignition that utilizes a mobile app for configuration and diagnostics.
 - Replaces over 600 IP and 400 DSI part numbers.
- Various configuration and mounting options.
- Configurable on the control OR via near-field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



Install

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



50D50U-843 ALL-SPARK™
24V Non-Integrated Spark Ignition Module

INSTALLATION INSTRUCTIONS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING OR REPAIRING TO PREVENT PERSONAL INJURY AND/OR PROPERTY DAMAGE.

TABLE OF CONTENTS

Item	Page No.
Electrical Specifications	1
White-Rodgers Connect	2
7-Segment Configuration	2
Table 1: Configuration Menu Options	3
Mounting and Wiring	4
Replacing Honeywell SB610U	5
Replacing Fenwal 35-60, 35-61	6
Table 2: 7-Segment Display Codes	7
Fault Recall and Reset	7
Additional Wiring Scenarios	8
Integrated Thermostat Feature	8

6 - 3/16" QC crimp on terminals
4 - 1" Sheet Metal Mounting Screws
1 - Fault Code Label for optional use
1 - Installation Instructions

VIEW INSTALLATION RESOURCES

ALL-SPARK™ 50D50U-843 FAULT CODE LABEL

CONDITION	LED	COMMENT / TROUBLESHOOT STEP
Power Up	B B B	During power up, each LED remains steady.
Standby	h h h	Normal operation on powered system, no electrical present.
Pre-Purge Active	h P	Occurs during pre-purge of boiler system, gas valve closed.
Post-Purge Active	h P	Occurs during post-purge of boiler system, gas valve closed.
Inter-Purge Active	h P	Occurs during inter-purge of boiler system, gas valve closed.
Flame Active	h L	Occurs when burner is active during normal operation.
Flame Out During Run	E 0 3	Occurs when burner is active during normal operation, but flame goes out.
Flame Out of Sequence	E 0 4	Occurs when burner is active during normal operation, but flame goes out before the sequence is complete.
Vent Damper Error	E 0 5	Occurs when vent damper is not open during normal operation.
Fuse Open	E 0 6	Occurs when a fuse in the system has blown.
Wrong 24VAC Supply	E 0 8	Occurs when the 24VAC supply is not correct.
PSW Stuck Closed	E 0 9	Occurs when the PSW is stuck closed.
AirTemp Sensor Error	E 1 0	Occurs when the air temperature sensor is not working.
Gas Valve On Error	E 1 1	Occurs when the gas valve is not opening correctly.
Gas Valve Off Error	E 1 2	Occurs when the gas valve is not closing correctly.
Gas Valve Off Lockout	E 1 3	Occurs when the gas valve is locked out.
NFC Connectivity Error	E 1 4	Occurs when the NFC connectivity is not working.
BLE Connectivity Error	E 1 5	Occurs when the BLE connectivity is not working.

FAULT RECALL: Hold OPTION and SELECT for 2-5 seconds.
ERASE FAULT: Hold OPTION and SELECT for 5-10 seconds.

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

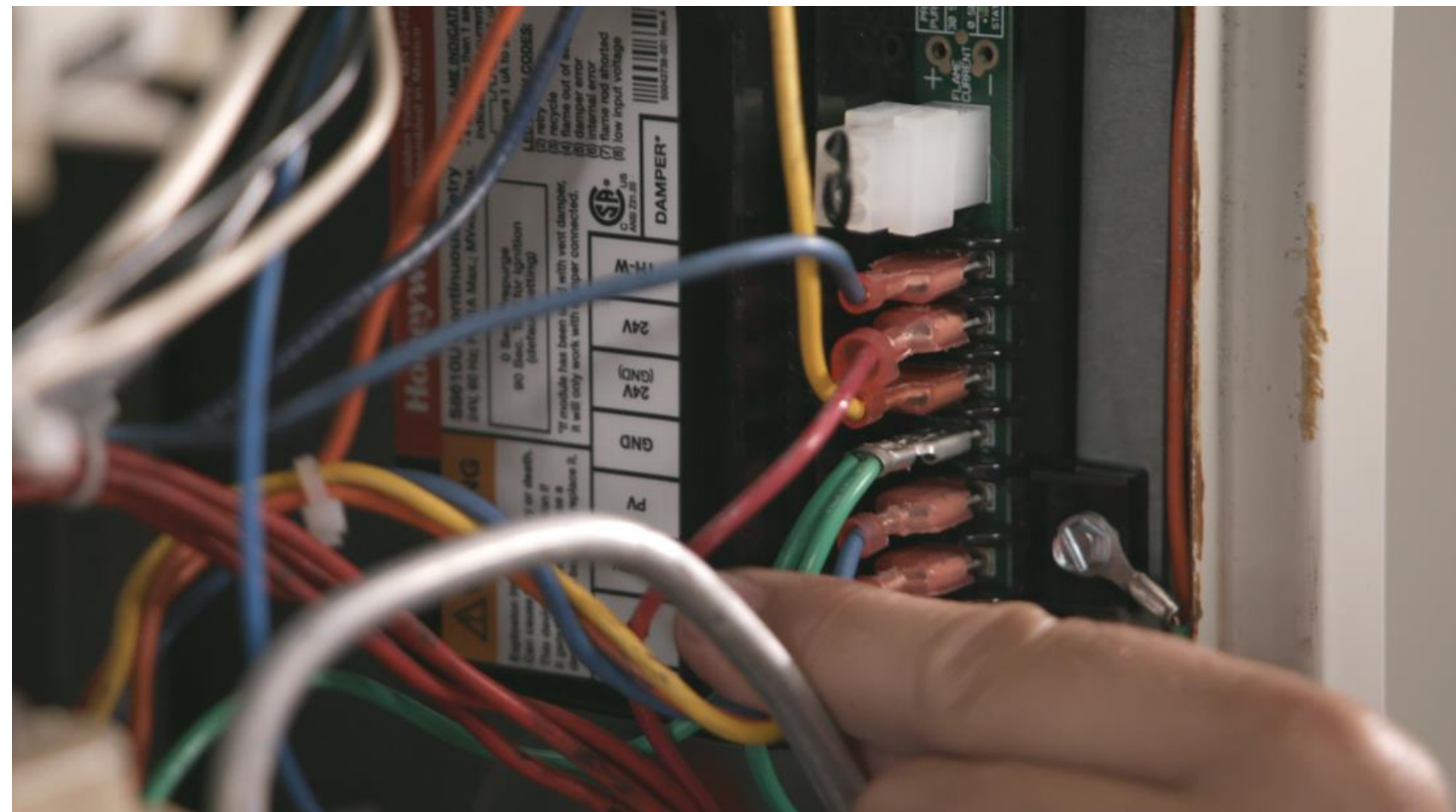
Take a picture of the existing module for reference before removing any wires.



Note Existing Wiring

4

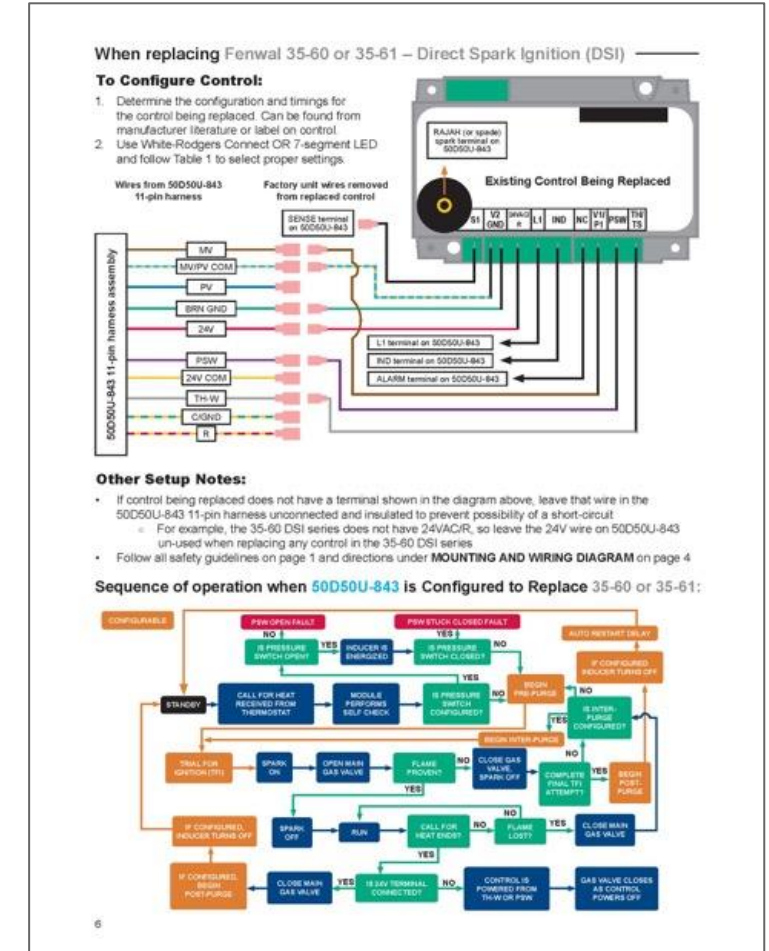
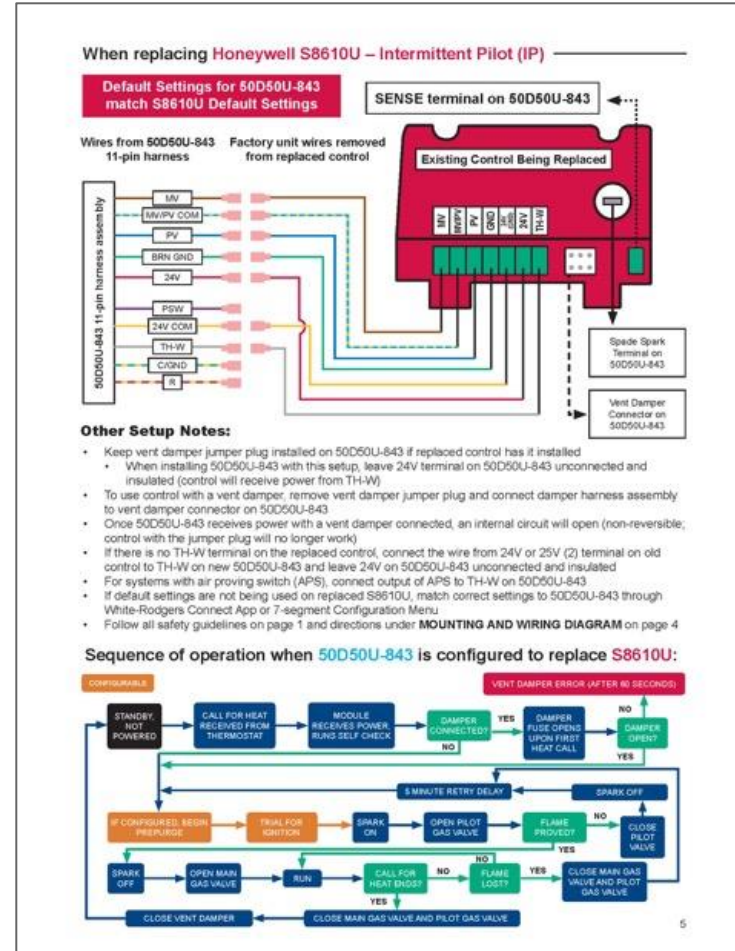
Identify the existing wiring and take note of the terminal identifiers on the existing module.



Reference Installation Instructions

5

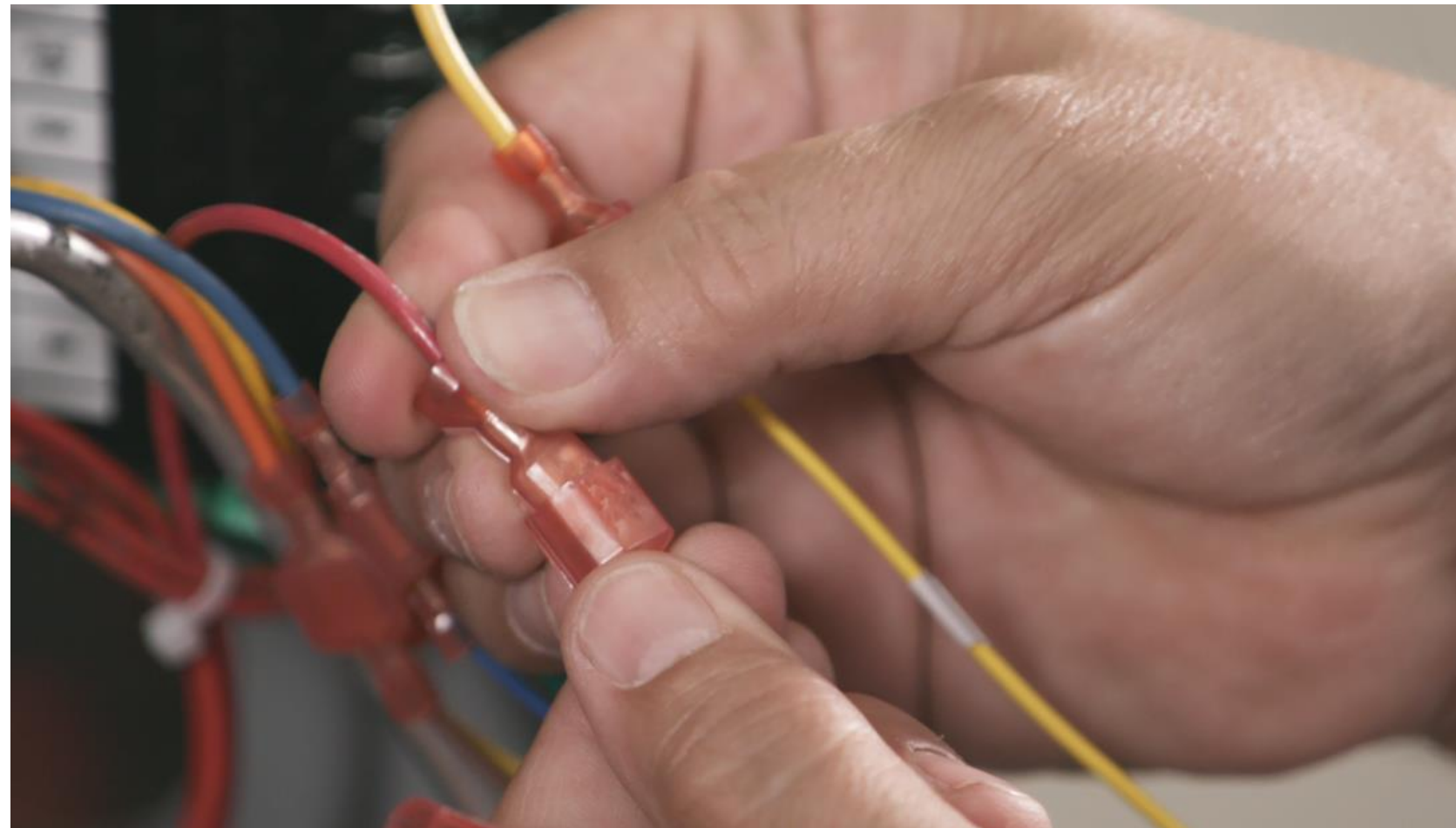
Remove the spark wire and locate the 11-pin harness assembly. The installation instructions come with a diagram showing wiring connections for both an Intermittent Pilot system and a Direct Spark system. For this application, the Intermittent Pilot diagram will be used.



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.

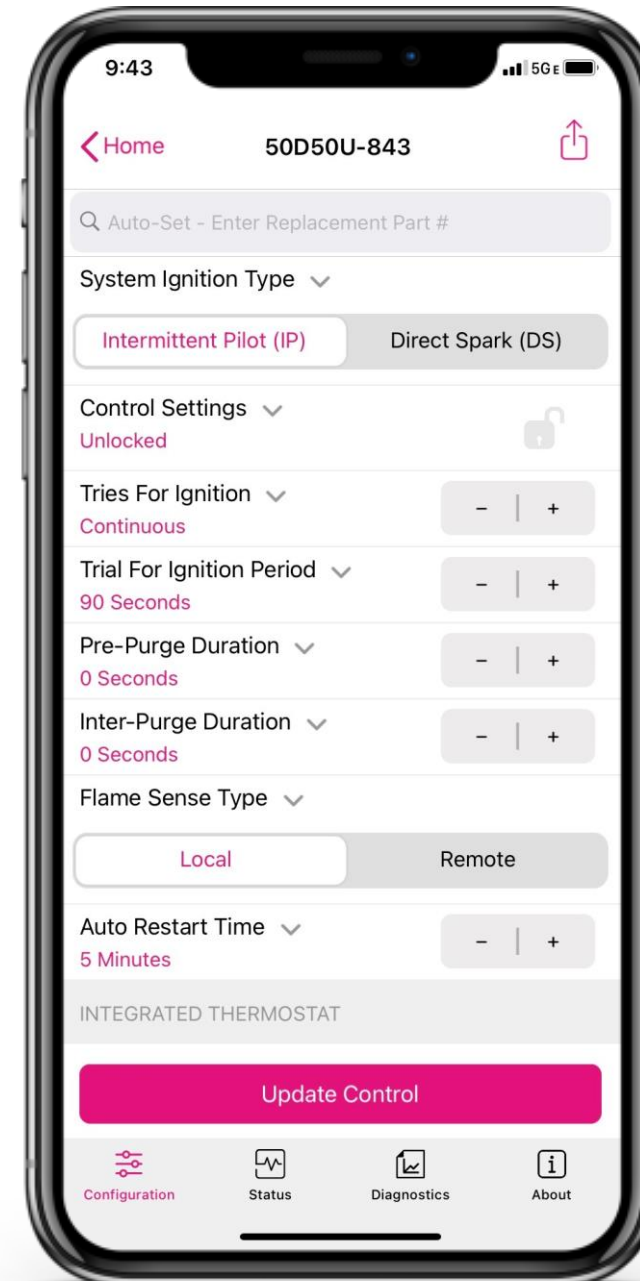
OR use the new Auto-set feature.



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.

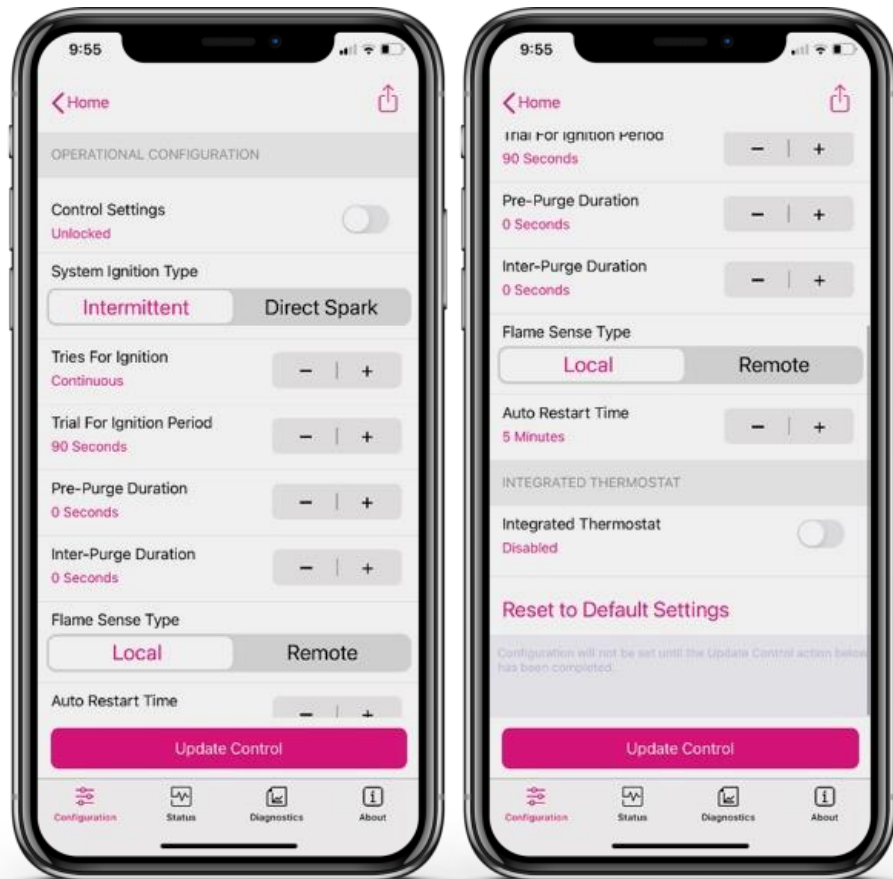


Enter replacement part number to automatically configure the All-Spark.

Fully Customizable App Programming

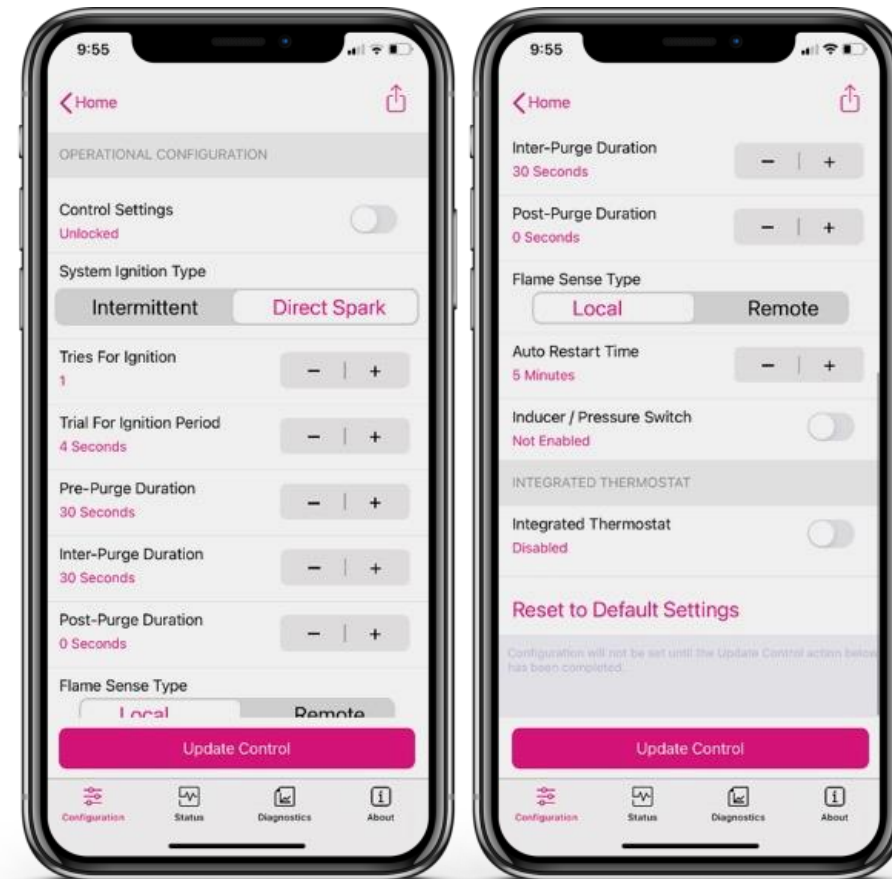


Intermittent Pilot Settings



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

Direct Spark Ignition Settings

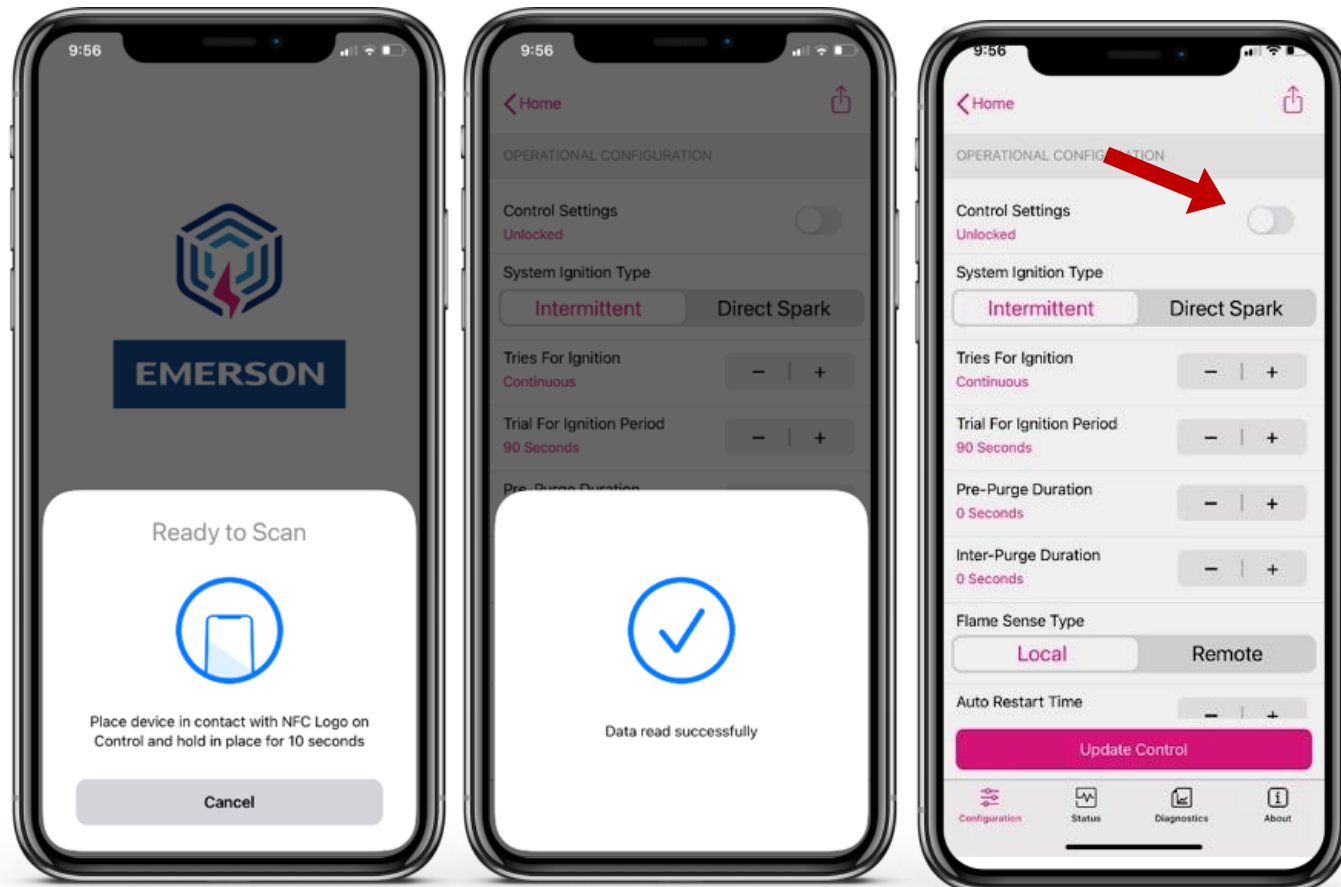


Choosing a system ignition type of "Direct Spark" will display only DSI options

Update Configuration Settings from the App



White-Rodgers Connect



Update

Complete!

Unlock

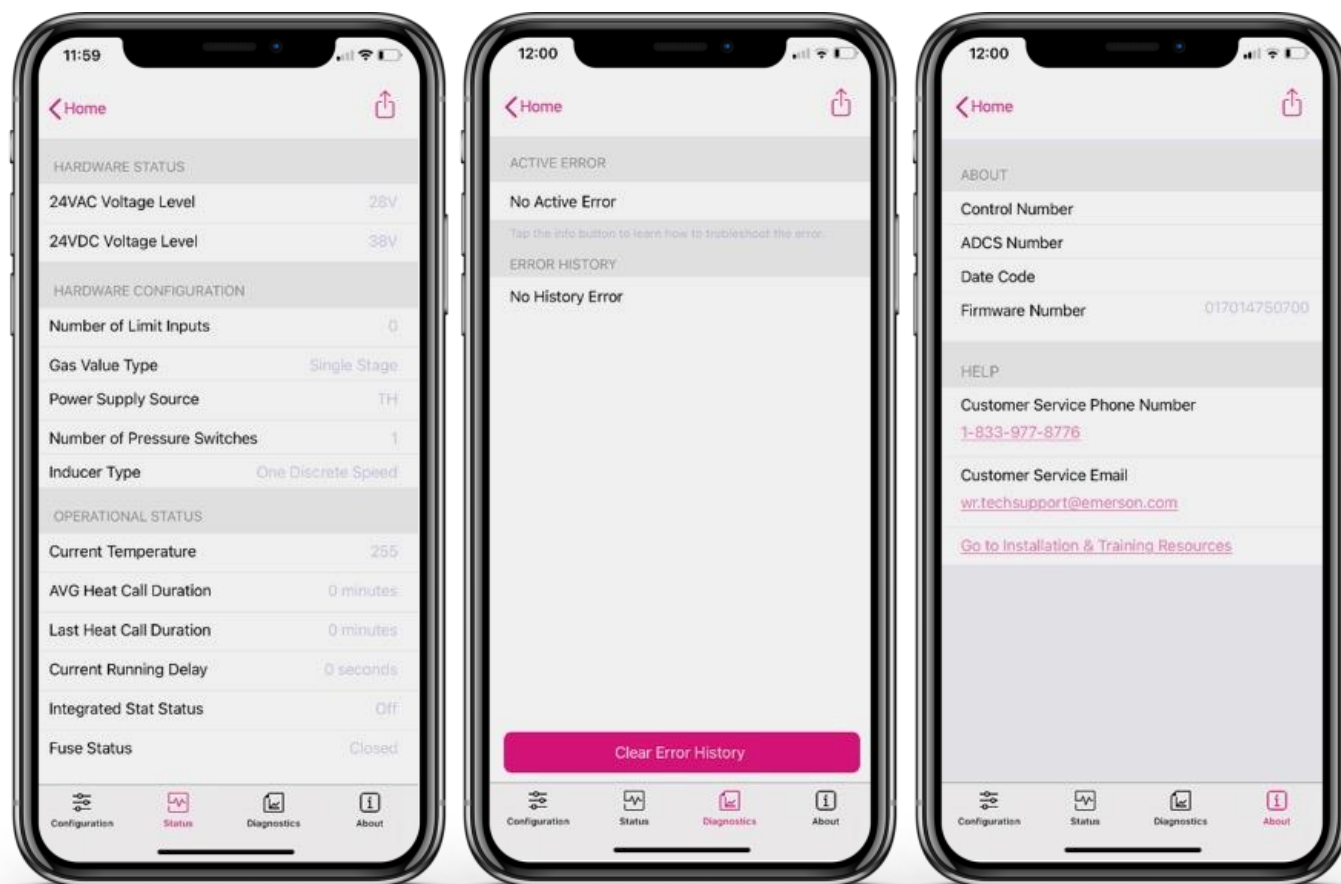
Easy Update

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

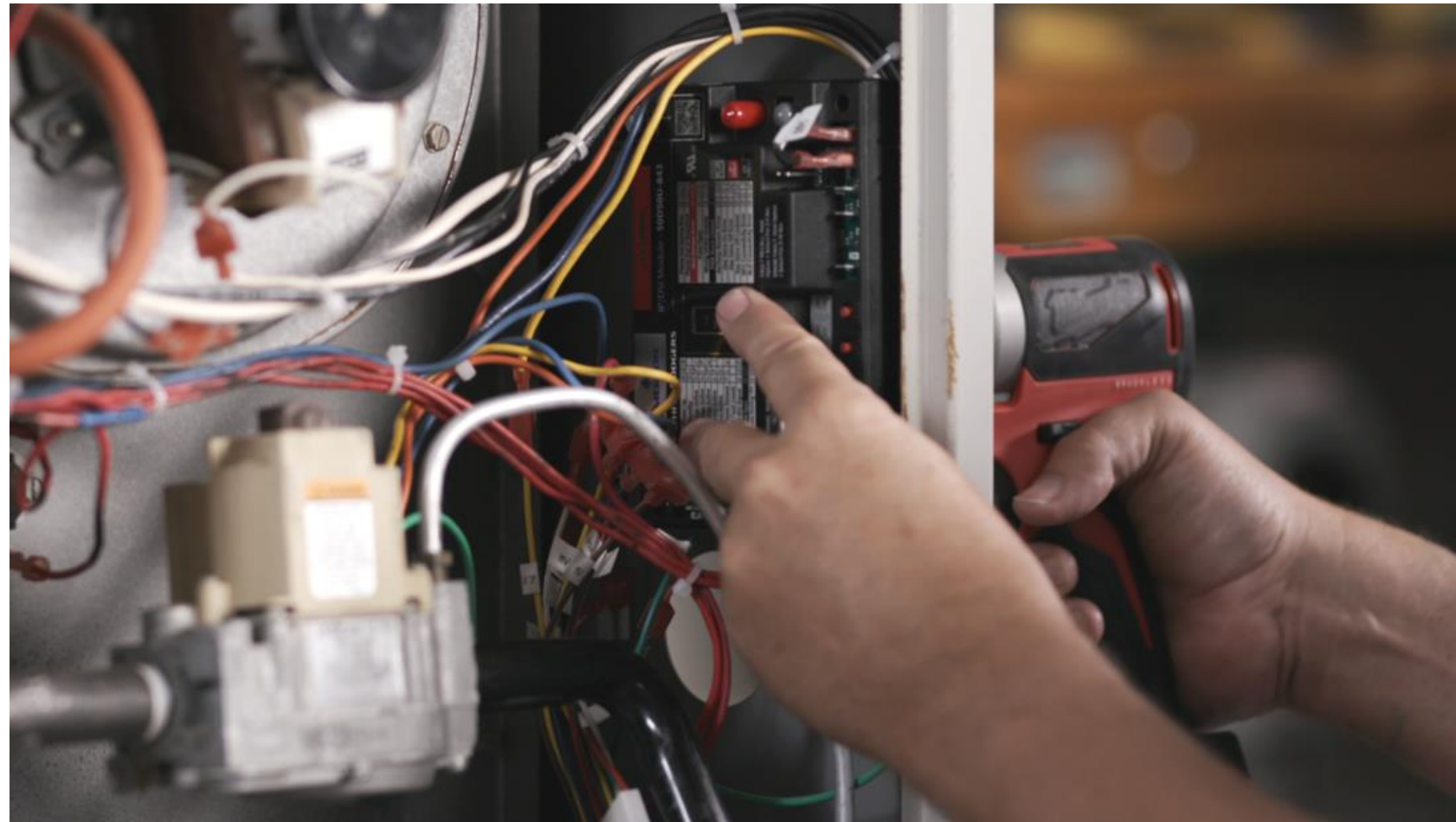
- Get module-specific information including the date code and the operating firmware.

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.

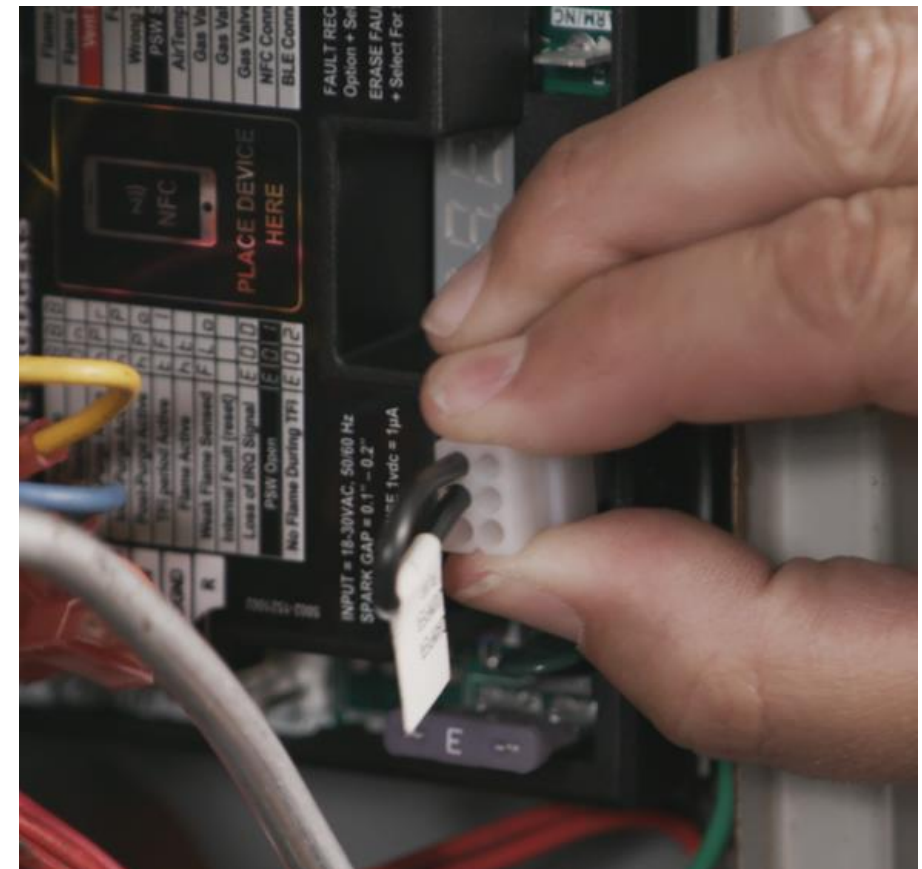


Vent Damper

11

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

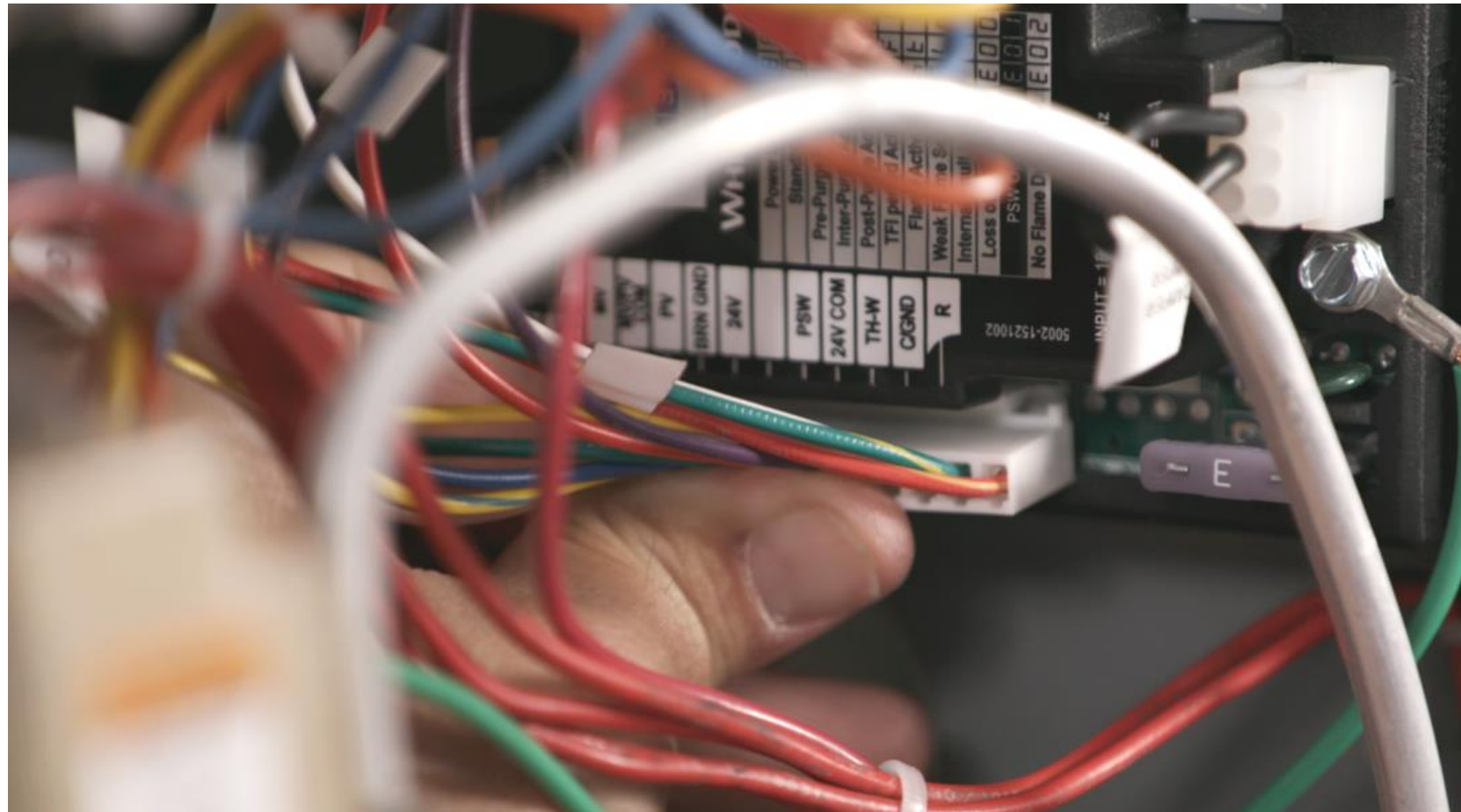
- In applications using a remote flame sensor, remove the flame sense jumper and plug the flame sense wire into the SENSE terminal.
- For this application no damper or remote flame sense is used.



Connect 11-pin Harness

12

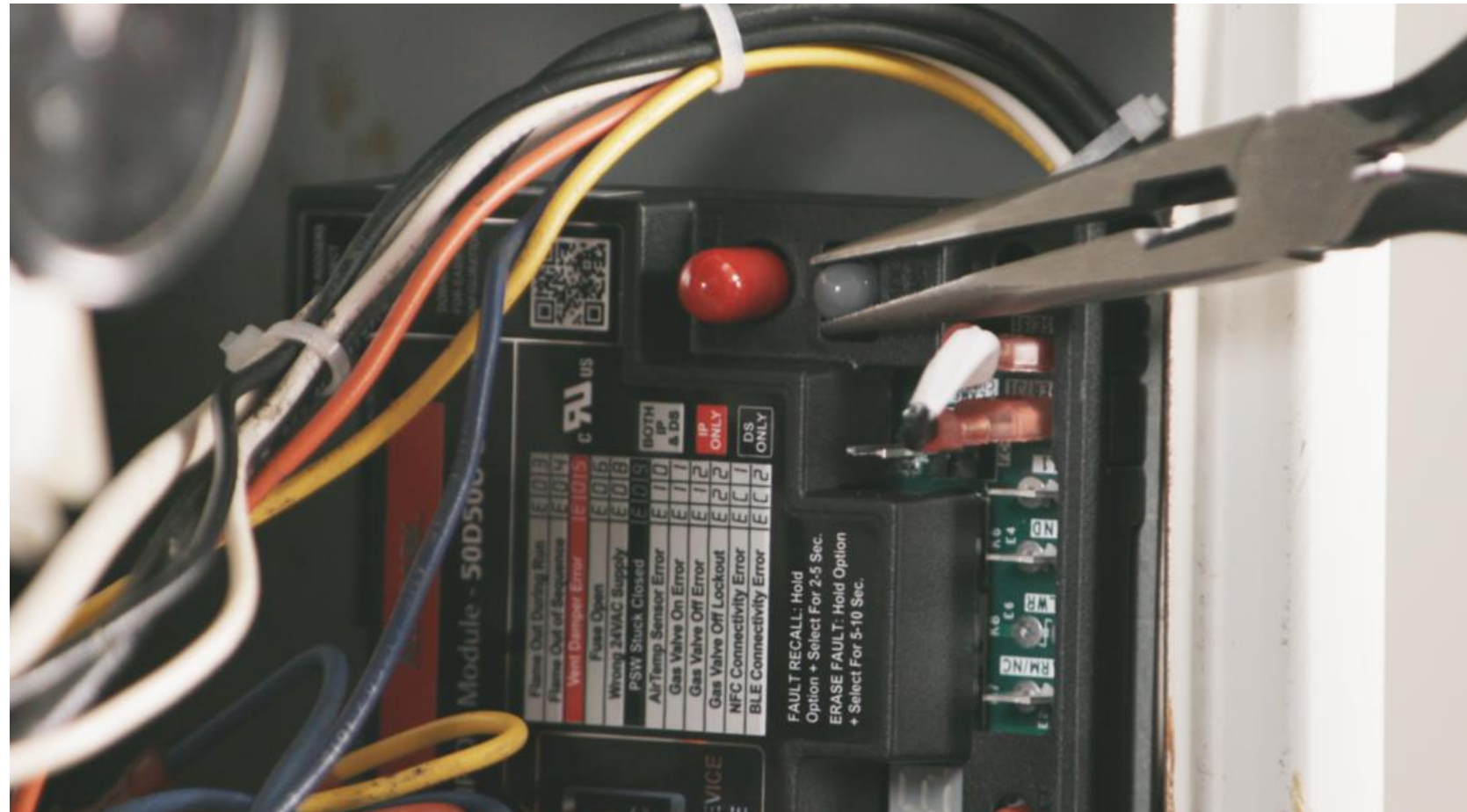
Plug the 11-pin harness into the module.



Attach Spark Wire

13

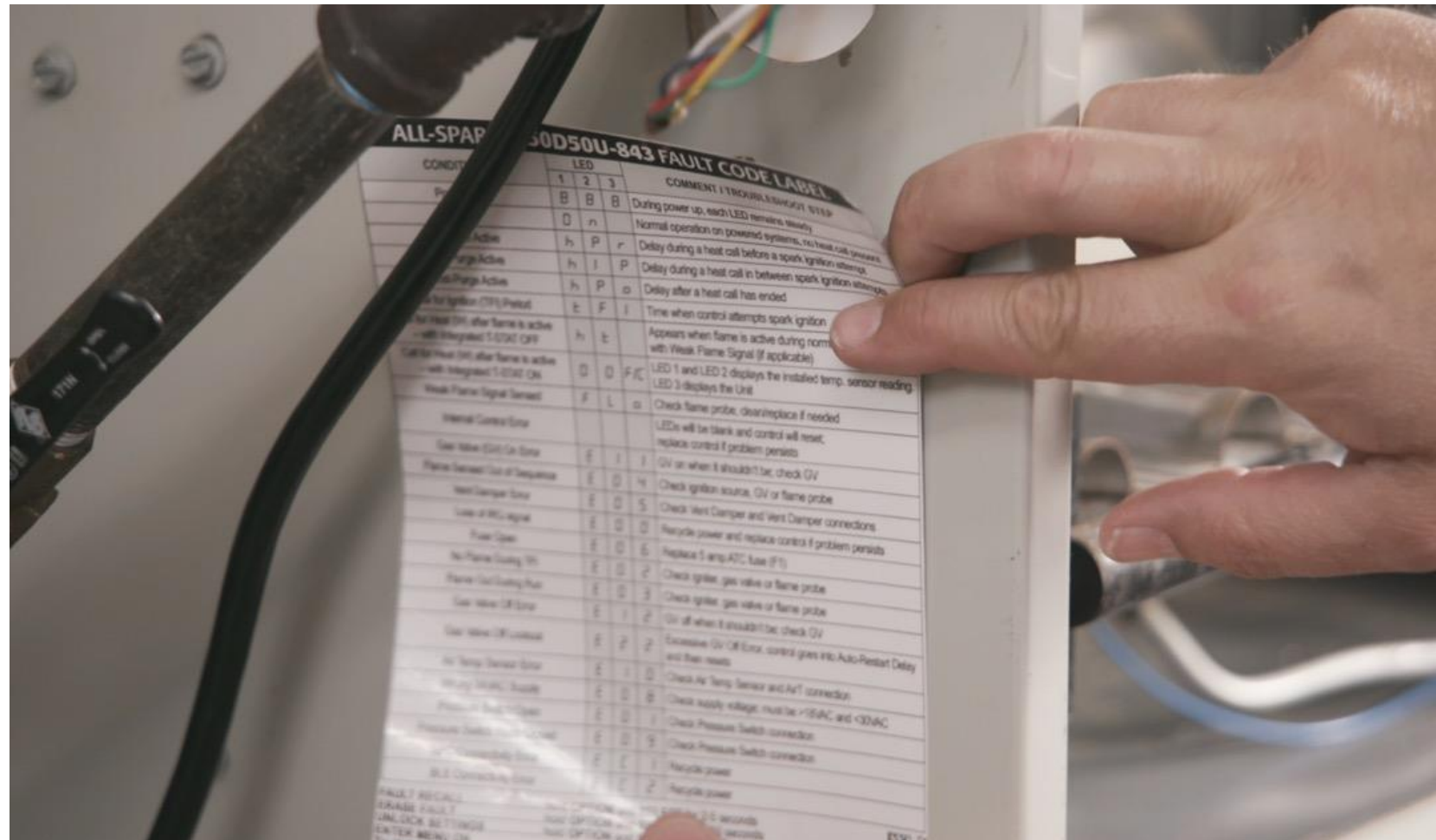
For this application, a ¼" spade is used. Remove the lower gray cap and plug in the spark wire.



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

16

Using Option & Select Buttons

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

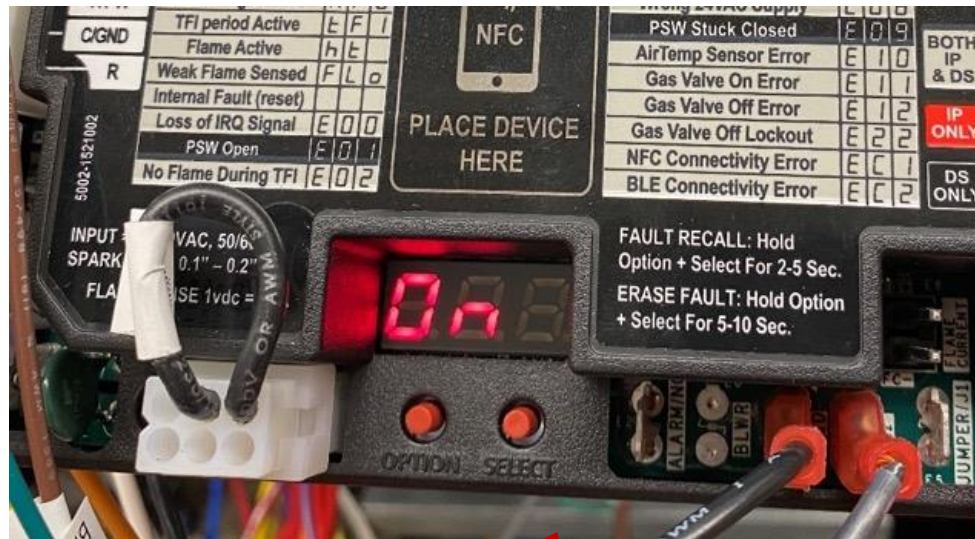
Menu Item	No.	LED 1 (flash)	LEDs 2 & 3 Display	Unit	Description / Rule
System Ignition Type	1.0	5-4-5	IP*, d5	N/A	Intermittent Pilot (IP) or Direct Spark (DS)
1. IP system menu will be displayed if System Ignition Type is selected as IP					
Tries for Ignition	1.1	1-1-1	0* (continuous), 1, 2, 3	N/A	Number 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-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	R-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	[-F-d	no*, 45	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	1-1-1	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-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	R-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	1-n-d	0F*, 0n	N/A	If control being replaced has inducer/pressure switch option, enable this setting to ON
Reset to Default	2.9	[-F-d	no*, 45	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

16

- 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

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	5-5-5	IP*, d5	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	1-1-1	0* (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-r-E	0*, 15, 30, 45	Seconds	Delay time before spark ignition attempt
Inter-purge	1.4	I-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	R-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*, 45	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	1-1-1	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-r-E	30*, 45, 0, 15	Seconds	Delay time before spark ignition attempt
Inter-purge	2.4	I-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	R-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	0F*, 0n	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*, 45	N/A	Reset to factory default for DS system configuration choices

Fault Code Reset	Standby	Hold OPTION and SELECT together	5-10 seconds	CLr and FLt 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 CLr 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	UnL after 10 seconds	<ul style="list-style-type: none"> 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 UnL 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

All-Spark and Integrated Thermostat

Installation on infrared heaters and space heaters

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

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.

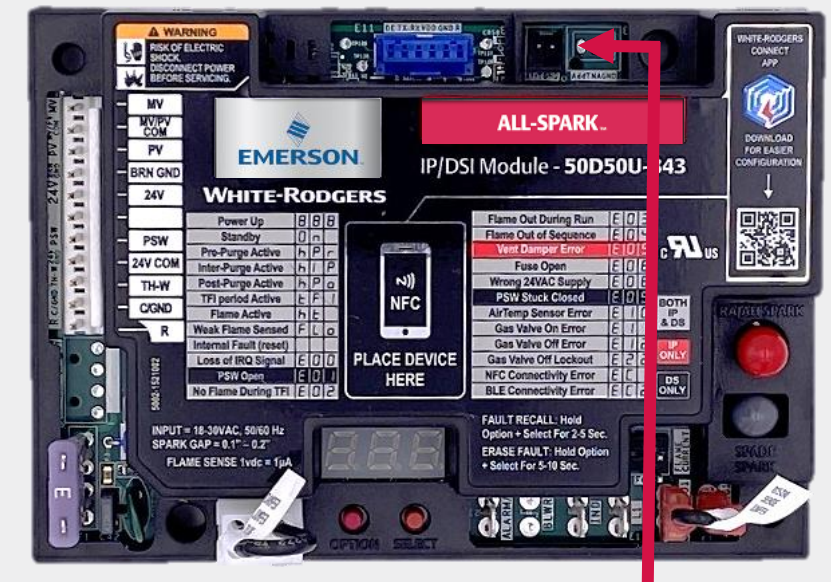
Ideal for heaters that are installed in the conditioned space, this eliminates the need for a separate thermostat.

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

CHANGED

SOLD SEPERATELY



F67-8535



What's in the Box: F67-8535

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



SOLD SEPERATELY

F67-8535 Integrated Thermostat Sensor INSTALLATION INSTRUCTIONS

READ CAREFULLY BEFORE INSTALLING OR
REPAIRING TO AVOID PERSONAL INJURY AND/OR PROPERTY DAMAGE.



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.

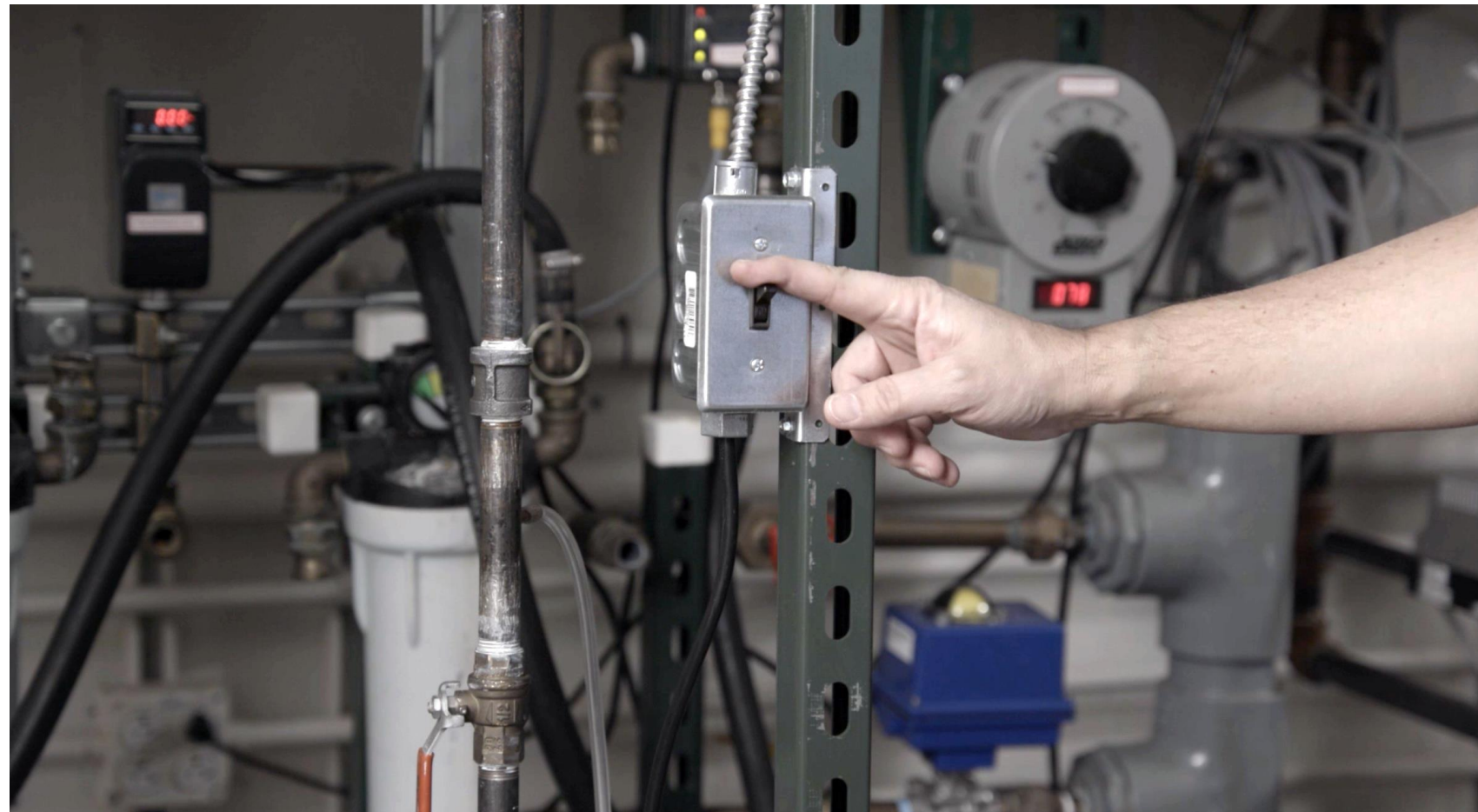
FIRE HAZARD

- 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

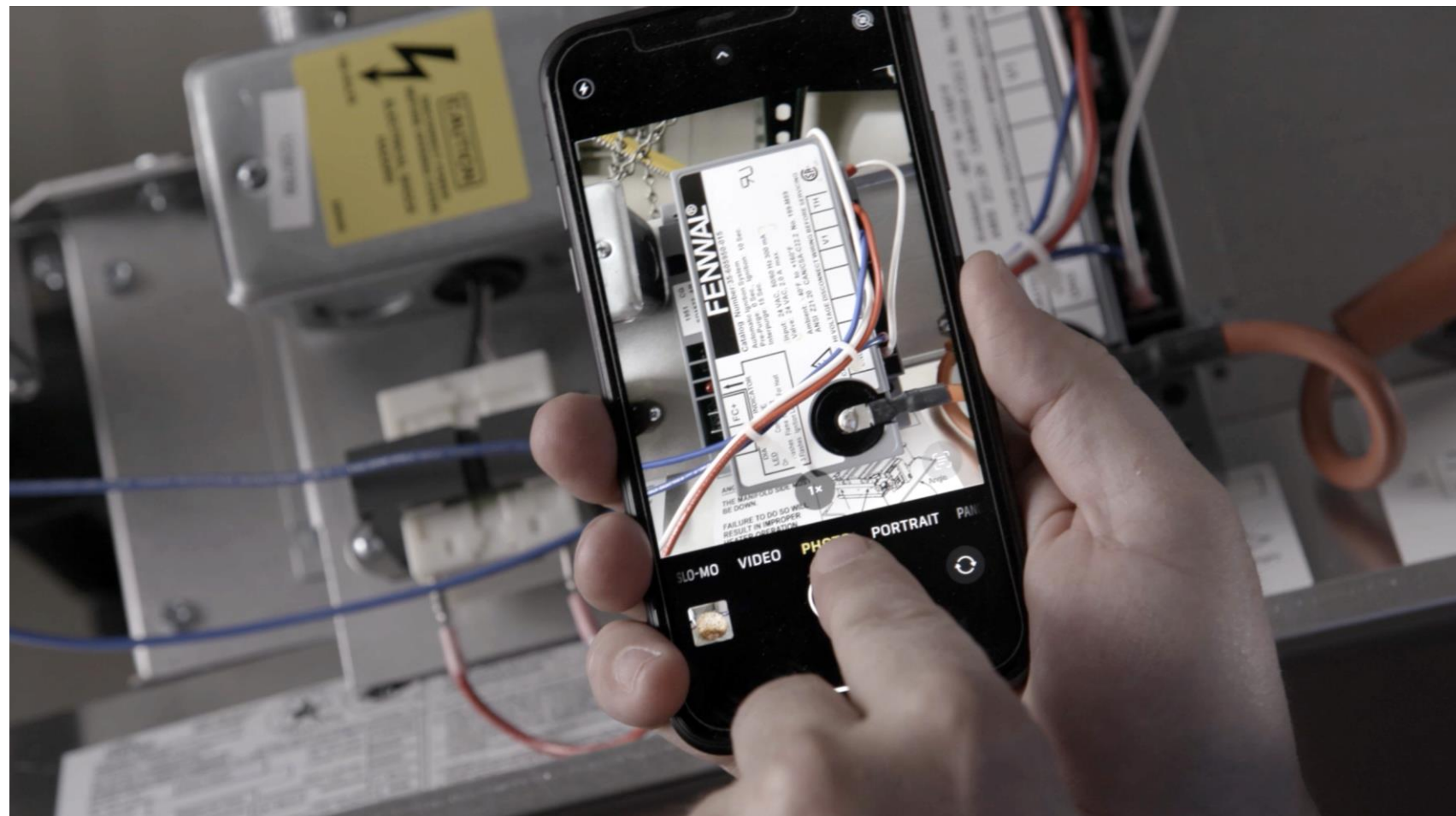
Check the part number on the existing control and verify it is one of the 1000+ modules that can be replaced with the 50D50U-843. Use the cross-reference on the side of the carton or the White-Rodgers Mobile app.



Take a Picture

3

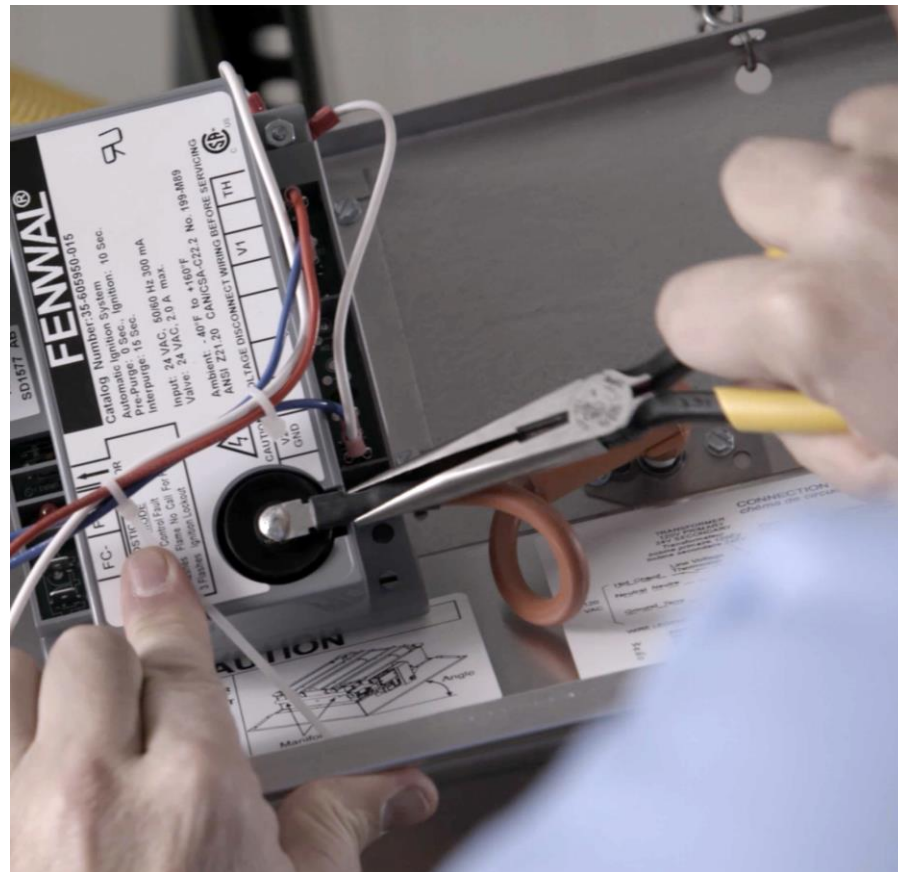
Take a picture of the existing module for reference before removing any wires. Identify the existing wiring and take note of the terminal identifiers on the existing module.



Transfer wires

4

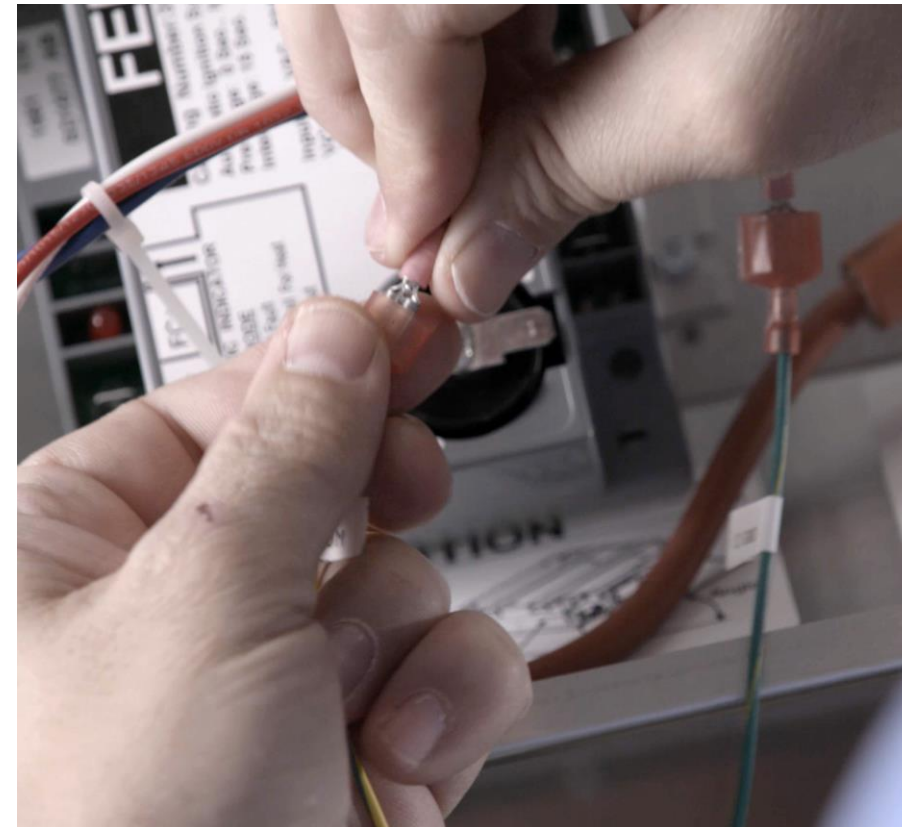
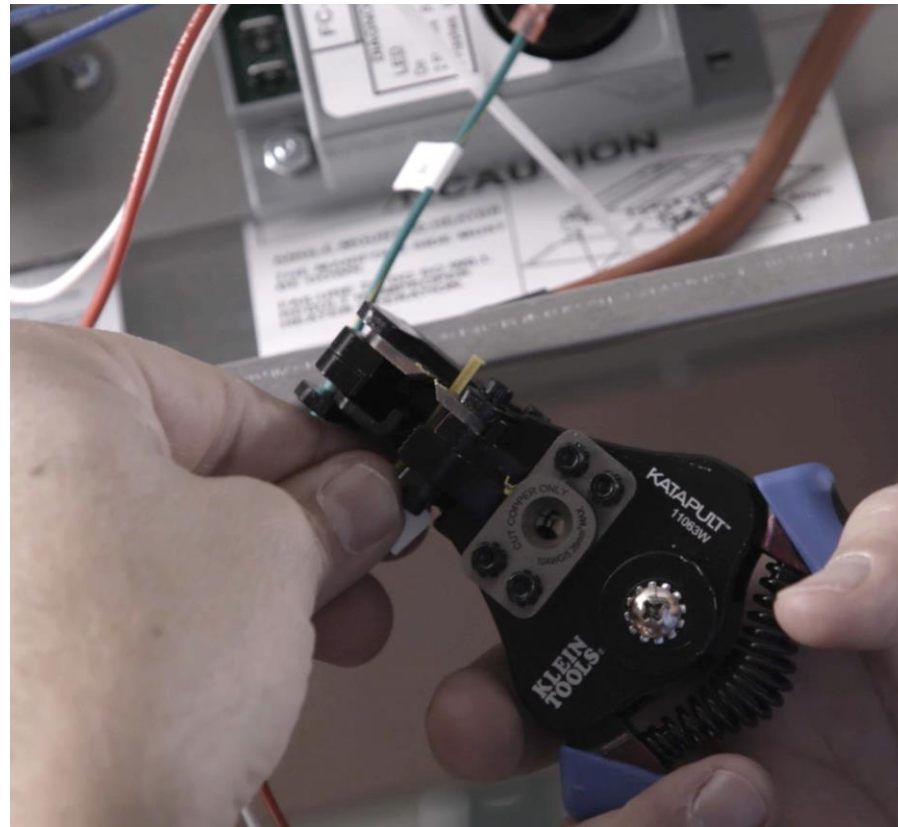
- Remove the spark wire.
- Locate the 11-pin harness assembly. Individually disconnect and transfer each wire from the existing control and connect it to the appropriate Quick Connect terminal on the 50D50U-843 11-pin harness.



Transfer Wire Continued

5

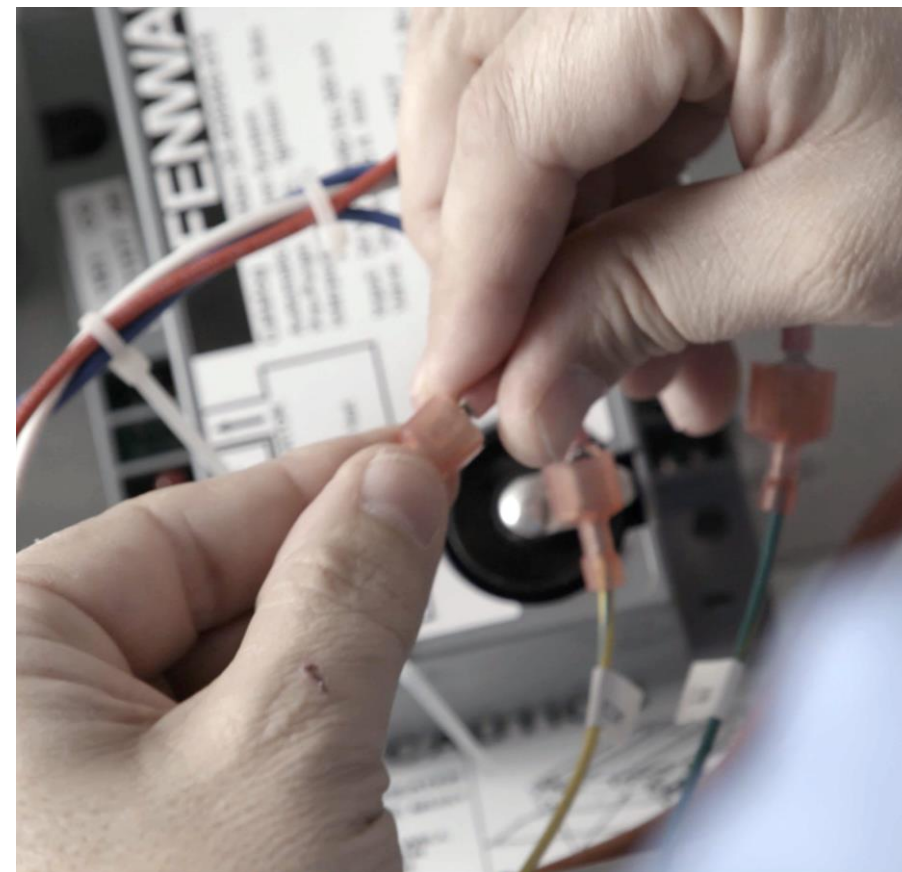
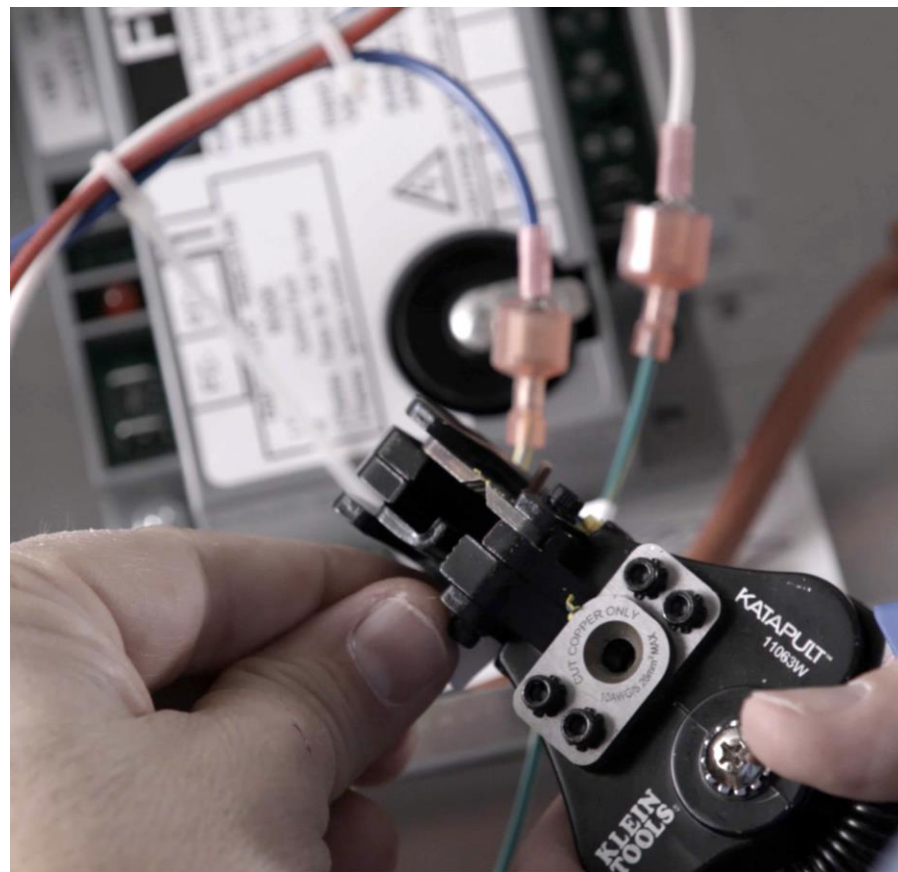
- Connect the white **V2GND** wire to **BRNGND**,
- Locate the **MVPVCOM** on the 11-pin harness and cut the ¼" male spade off. Strip back the wire and install one of the 3/16" male spade quick connector included in the installation accessories bag.
- Remove the blue **V2GND** wire and connect to **MVPVCOM**.



Strip MV Wire

6

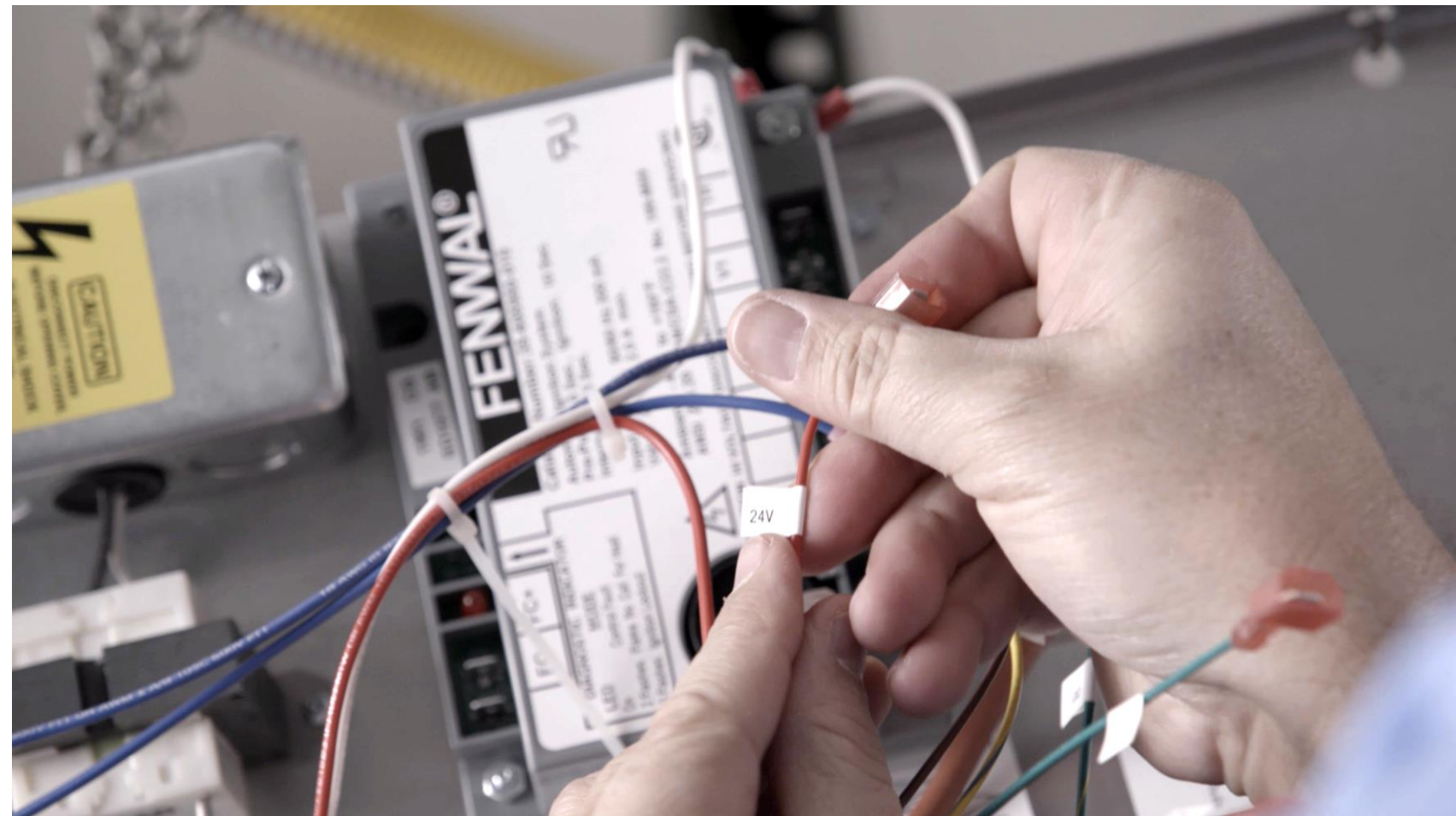
Locate the **MV** on the 11-pin harness and cut the ¼" male spade off. Strip back the wire and install one of the 3/16" male spade quick connector included in the installation accessories bag.



Transfer the Last Wires

7

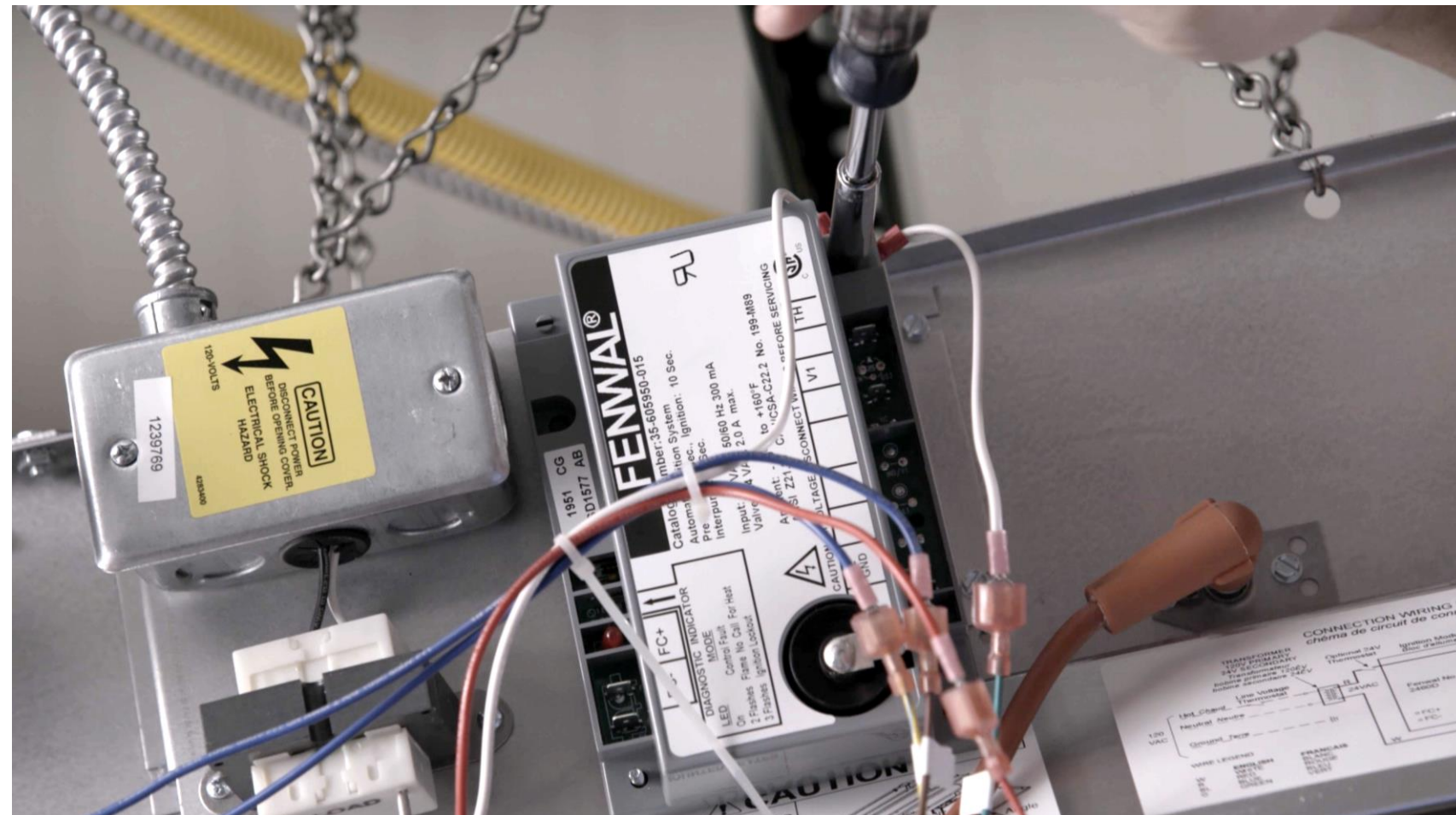
Remove the blue **V1** wire and connect to **MV**, and, finally, remove the **TH** and connect to **24V**



Remove existing module

8

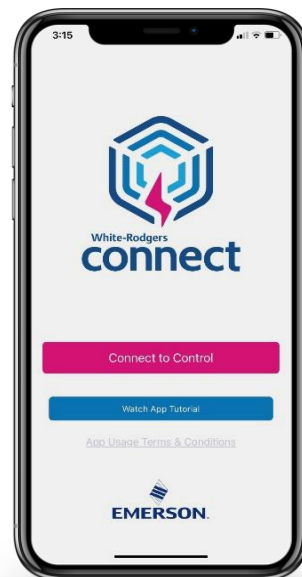
Once all of the wires have been transferred, remove the existing module. Take note if there is a ground wire attached to one of the mounting screws.



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.



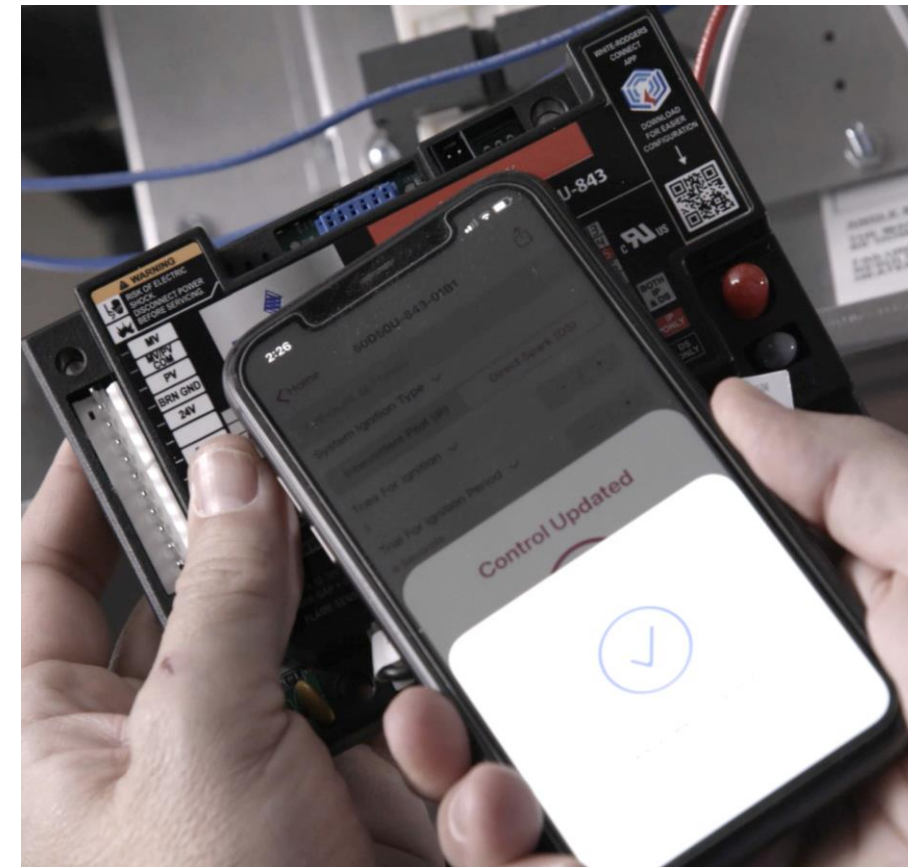
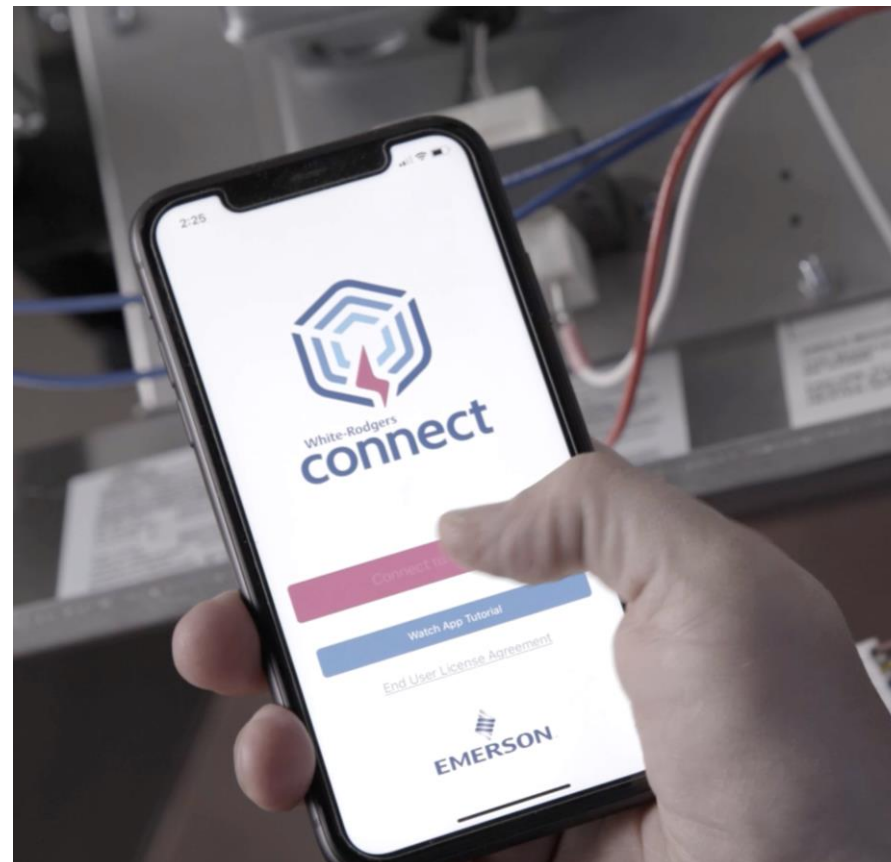
To get the free White-Rodgers Connect app, go to your mobile device's app store, search for "White-Rodgers Connect," and download.



Configure the Sensor

10

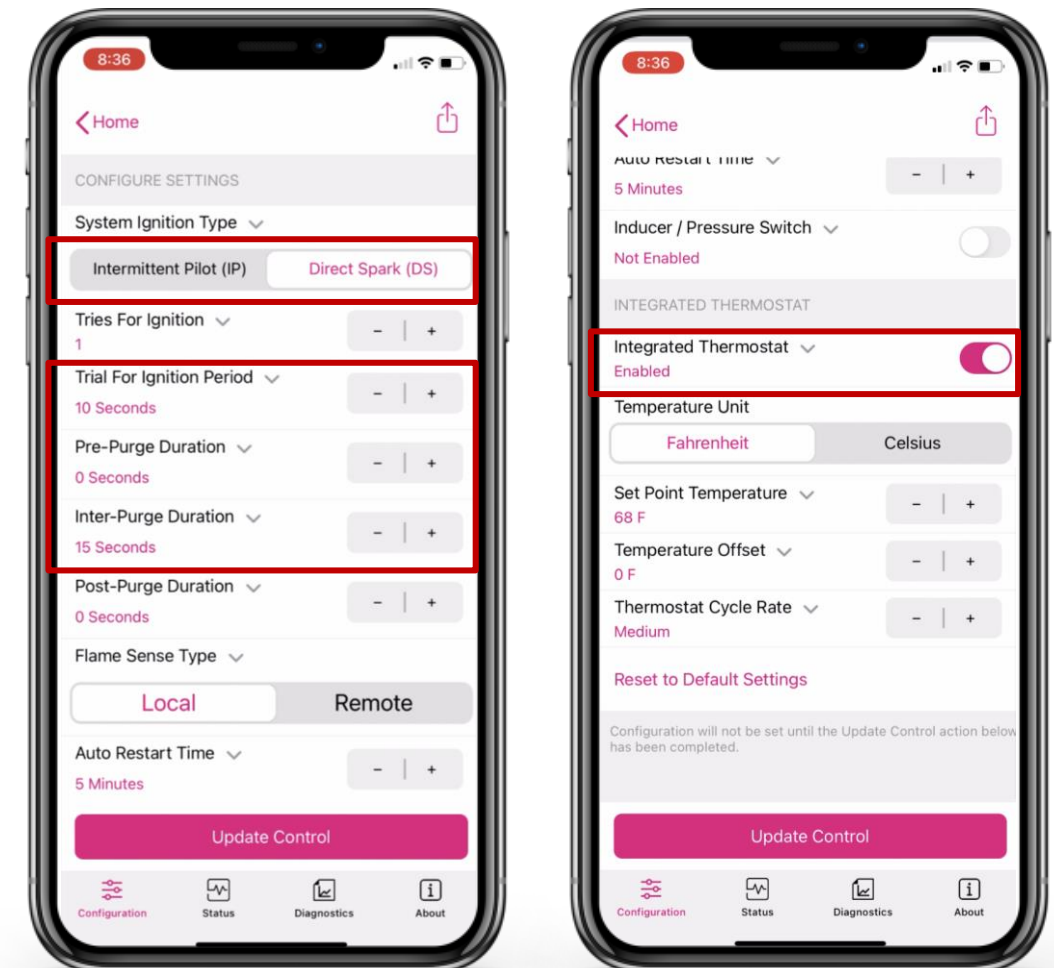
- Select the **Connect to control** button. The screen will show **Ready to scan**.
- Place the mobile device in contact with the NFC logo on the module. A check mark will appear to show that connection was successful.



Configure the Sensor

11

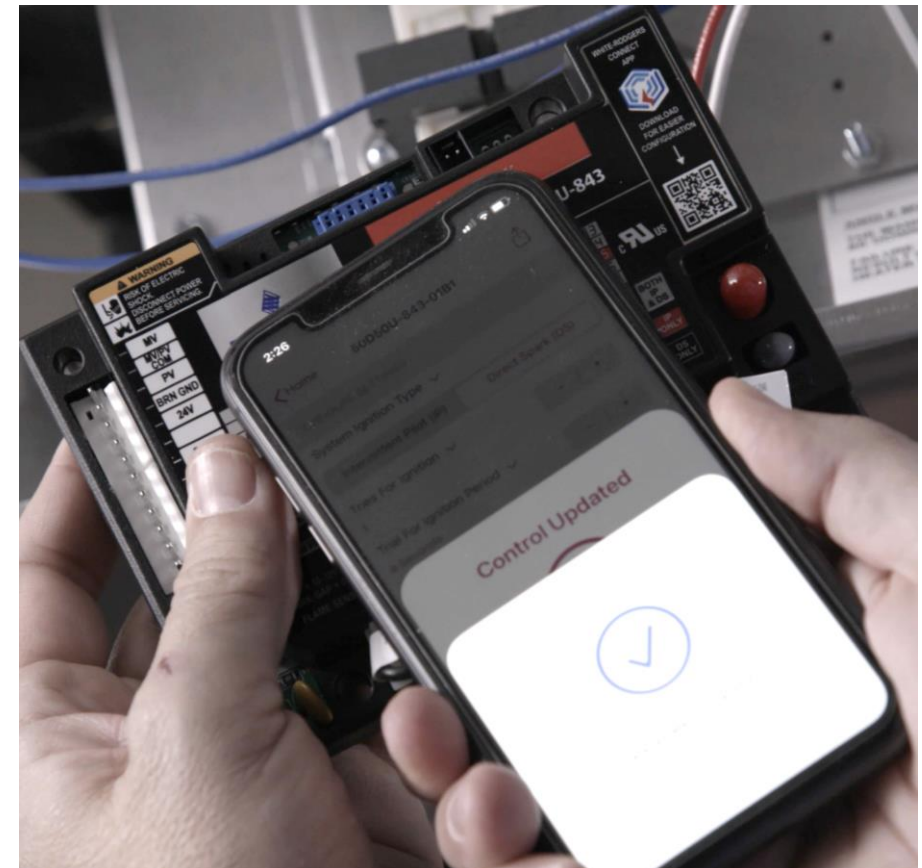
- The app will then display the 50D50U-843 settings configuration screen.
- Choose **Direct Spark** under the **System Ignition Type**.
- Match the timings with the existing control.
- For this application, adjust the **Trial For Ignition Period** to **10 seconds**, the **Pre-Purge Duration** to **0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



Configure the Sensor

12

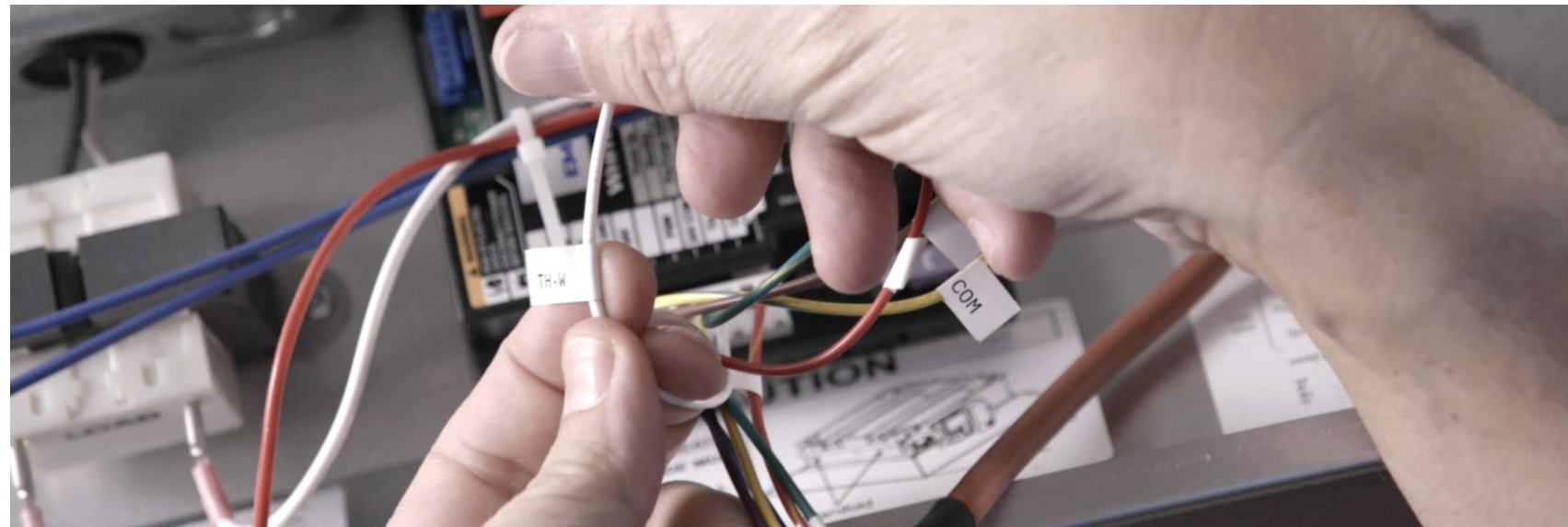
- Once the changes have been completed in the app, press **Update Control** and hold the mobile device over the module again.
- Make sure you hold the mobile device steady until the screen shows that the update was successful.



Configure the Sensor

13

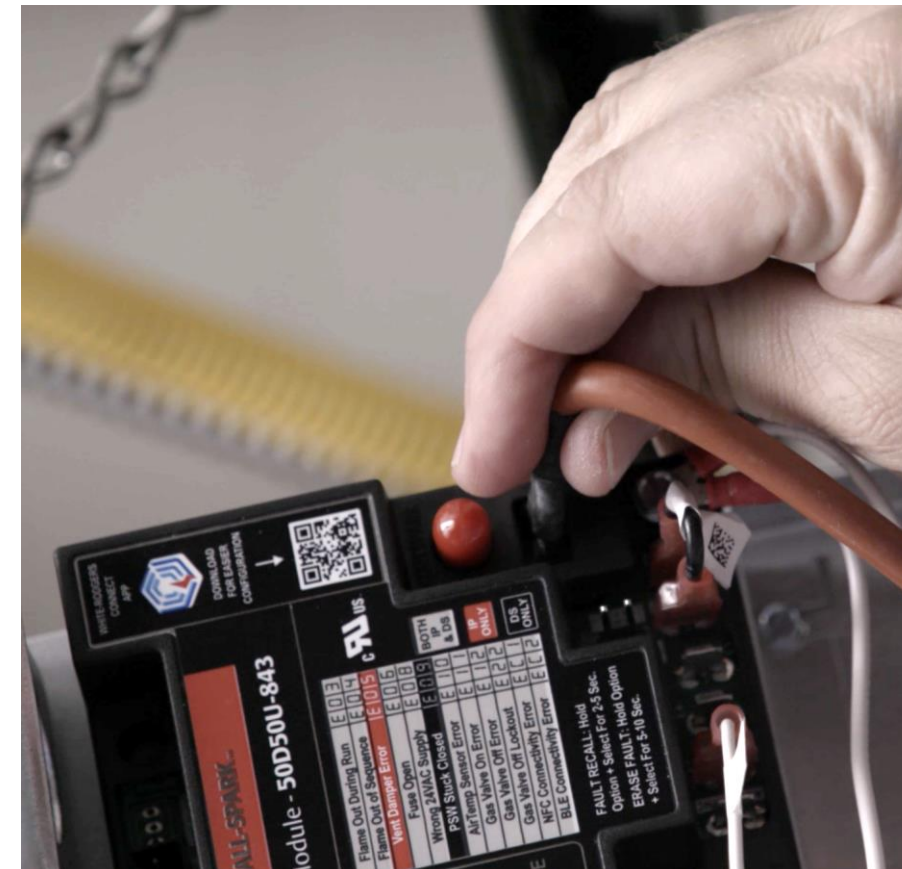
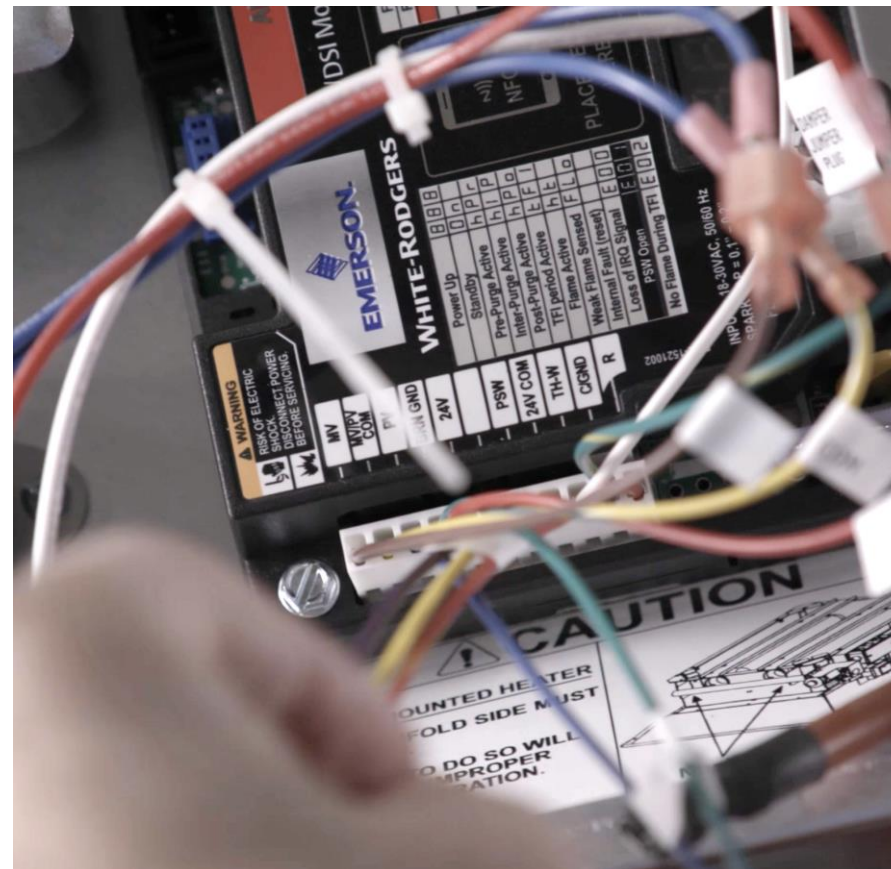
- For integrated thermostat applications, a limit circuit must be completed. Connect the **W out** spade to the first component in the unit's safety circuit, and, after the last safety switch, connect the wire to the **THW** 11-pin harness wire.
- For this application, no safety switches exist, so the **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

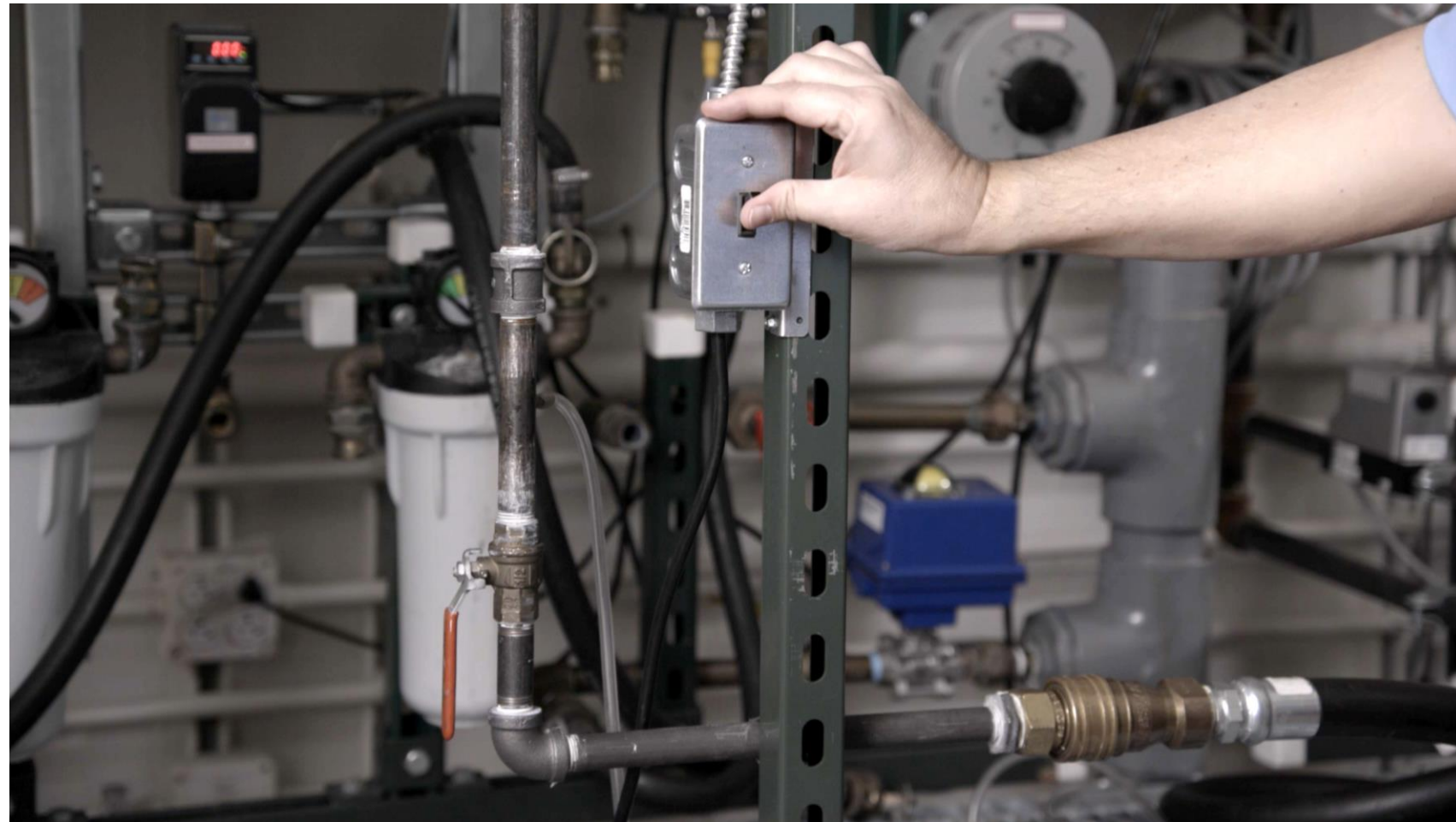
- Locate the White Rodgers F678-535 Integrated Thermostat Sensor.
- Plug the sensor into the **Air T** port.
- Secure the sensor thermistor out of the direct heat path of the unit.



Reconnect Power and Gas

16

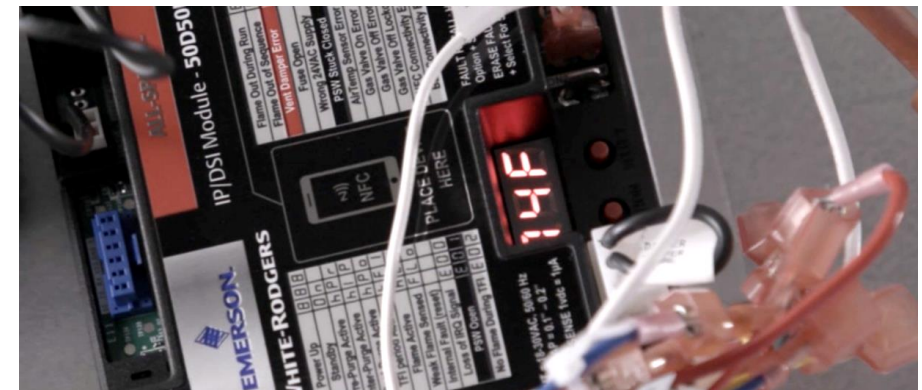
The system is now ready to be powered on. Reconnect the electric power and gas to the unit.



Setpoint

17

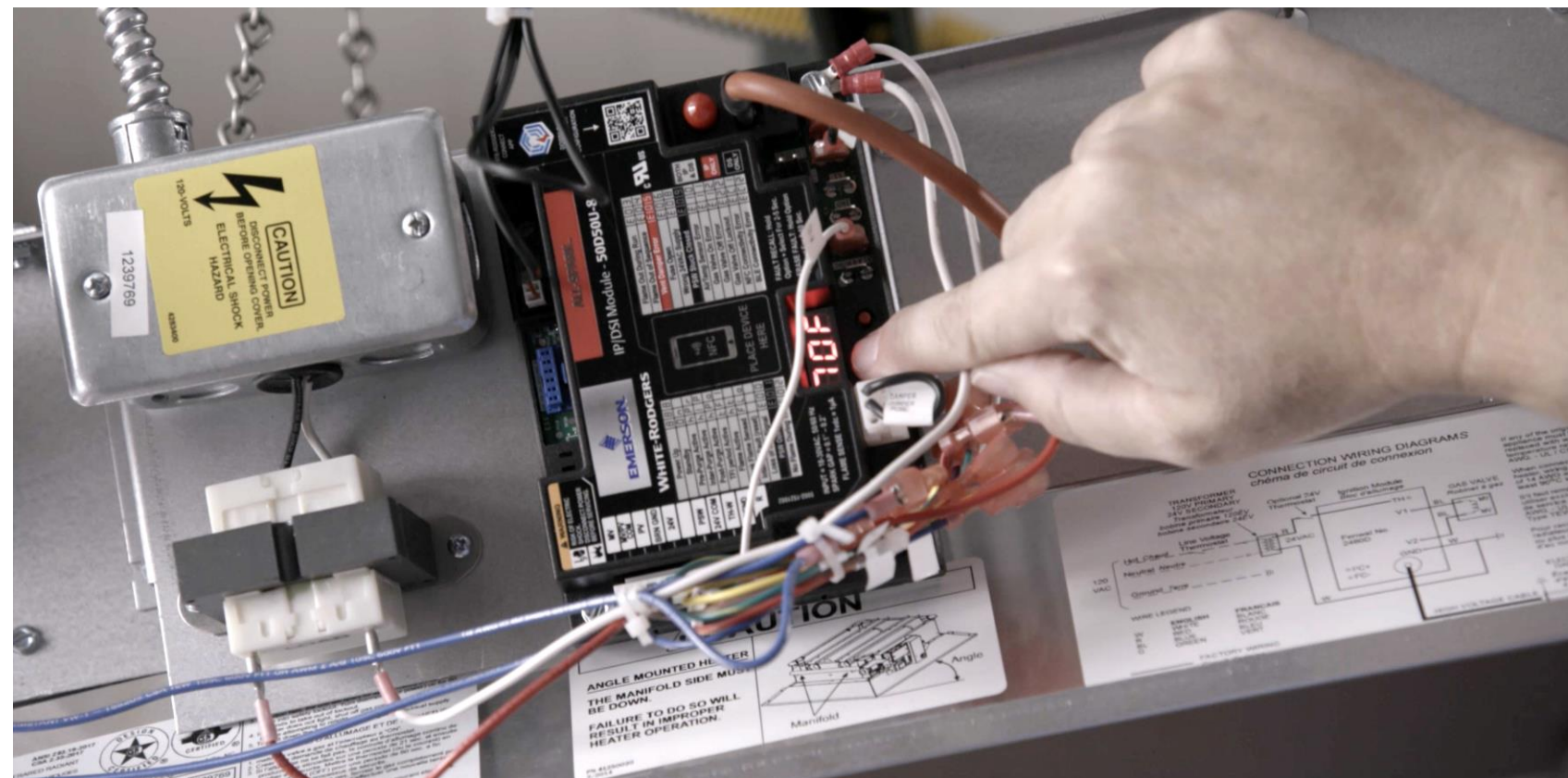
- During power-up the three seven-segment LEDs will each display an 8.
- Once ready, the control will enter the integrated thermostat standby mode and the LEDs will display the current room temperature.
- To see the current setpoint, press the **Option** button for less than three seconds.
- Increase 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.



Thank you.
