



# GAS FURNACES

Mingledorff's Technical Services / SE

03/19/2025

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# NEW 97% (UPFLOW) MODELS

- Intended to meet requirements for IRA (Inflation Reduction Act) tax incentives
- Low Amp kit planned to be applied to allow 15A breaker and 14AWG wire size

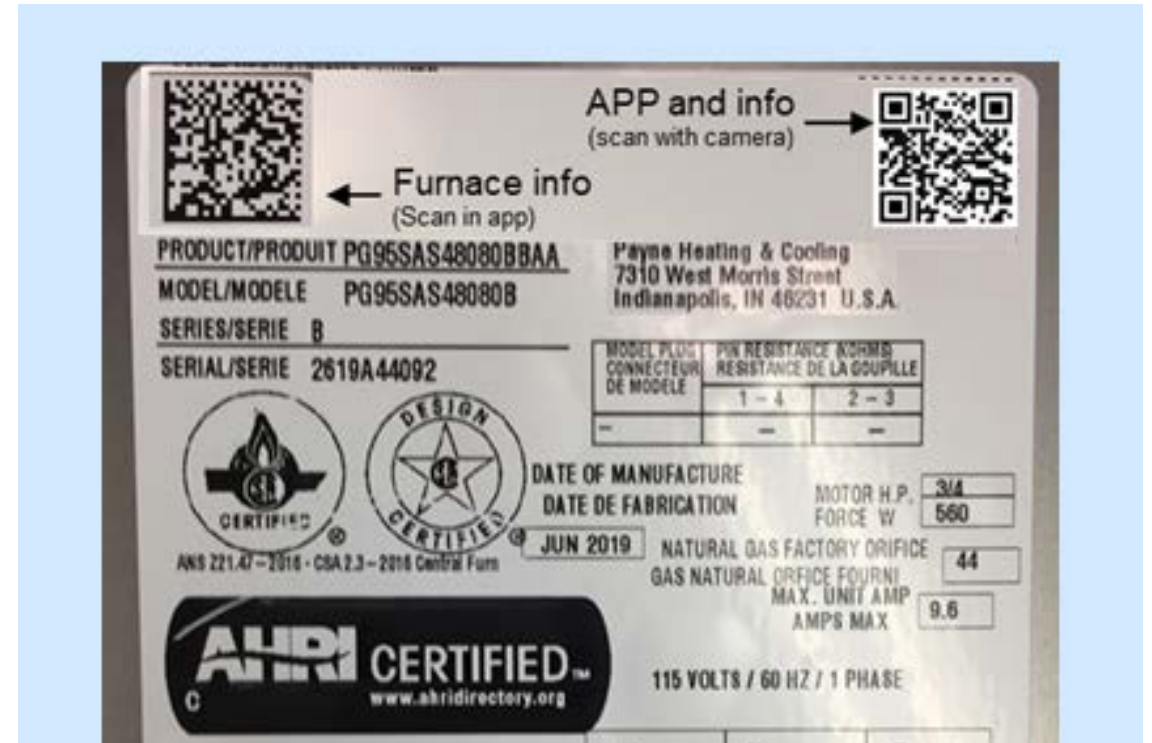
| Carrier          | Bryant        | Payne          |
|------------------|---------------|----------------|
| Deluxe           |               |                |
| 59TN7A060C17--16 | 987TA48060C17 |                |
| 59TN7A080C17--16 | 987TA48080C17 |                |
| 59TN7A080C21--20 | 987TA60080C21 |                |
| 59TN7A100C21--22 | 987TA66100C21 |                |
| 59TN7A120C24--22 | 987TA66120C24 |                |
| Mid-Tier         |               |                |
| 59TP7A060V17--16 | 927TA48060V17 | PG97VTAA48060B |
| 59TP7A080V17--16 | 927TA48080V17 | PG97VTAA48080B |
| 59TP7A080V21--20 | 927TA60080V21 | PG97VTAA60080C |
| 59TP7A100V21--20 | 927TA60100V21 | PG97VTAA60100C |
| 59TP7A100V21--22 | 927TA66100V21 |                |
| 59TP7A120V24--22 | 927TA66120V24 | PG97VTAA66120D |

Note-models are tentative, and not all models may be available at launch

# FURNACE RATING PLATE

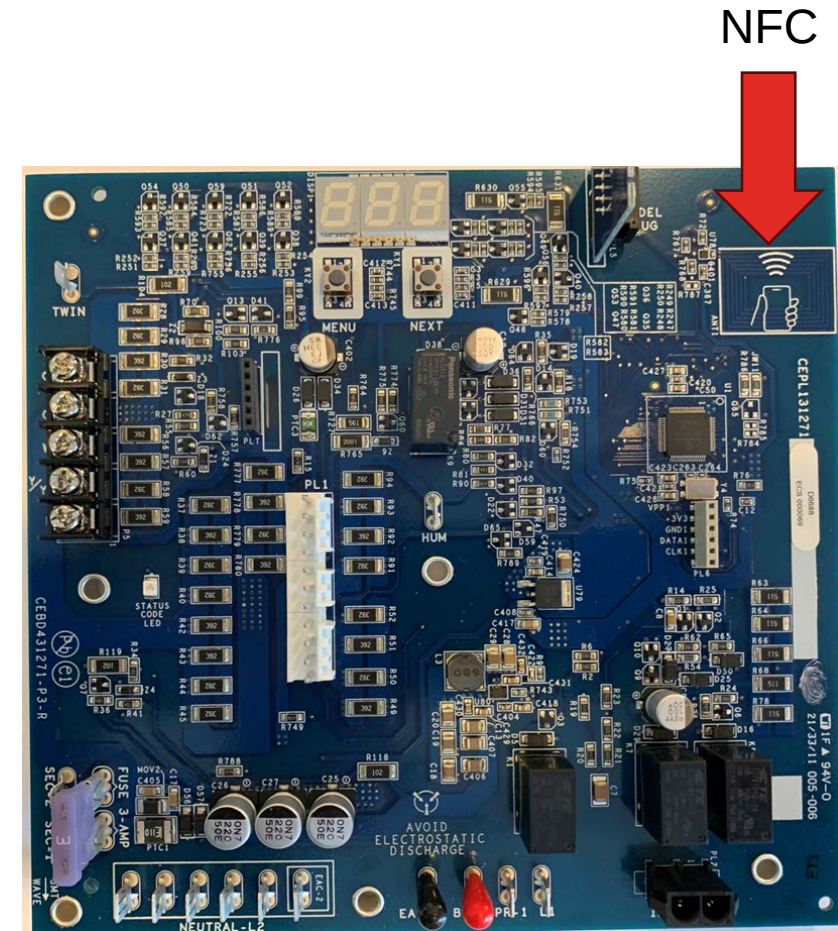
## Rating plate QR and bar codes

- QR Code
  - link to page in HVACPartners
  - Training video
  - Registration
  - App link
- 2D Bar Code
  - Contains unit serial number



# NFC FURNACE CONTROL BOARD

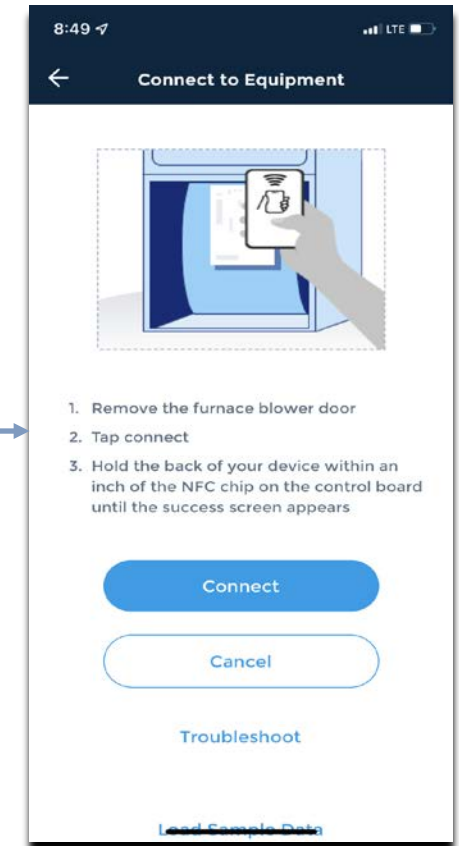
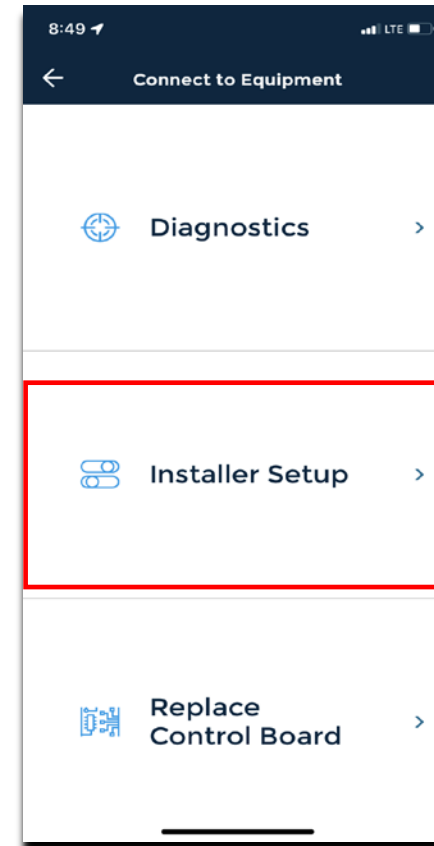
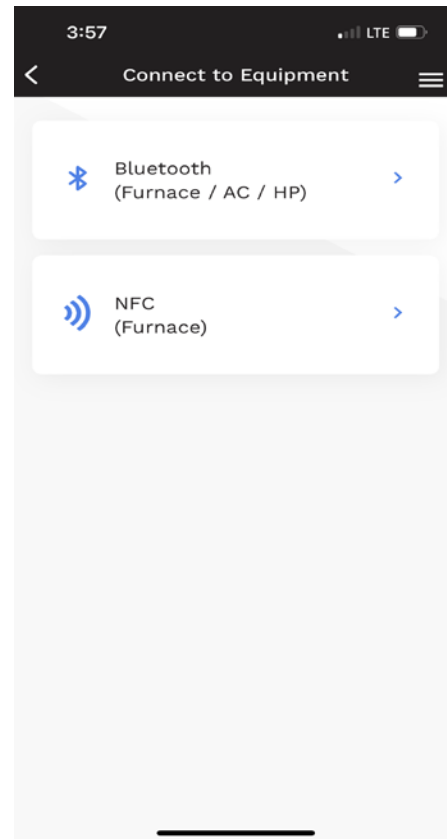
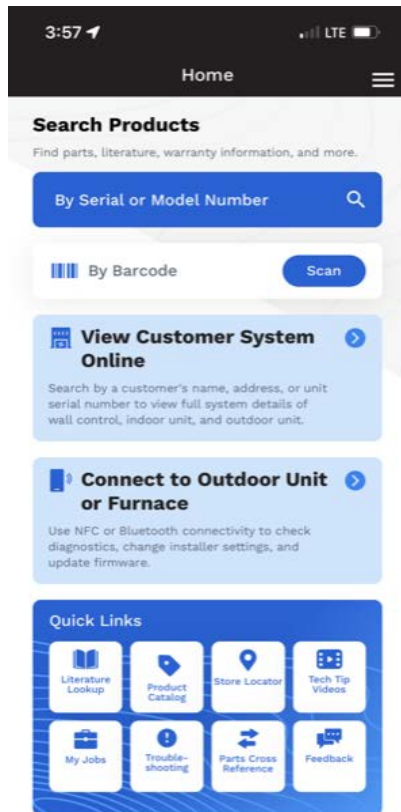
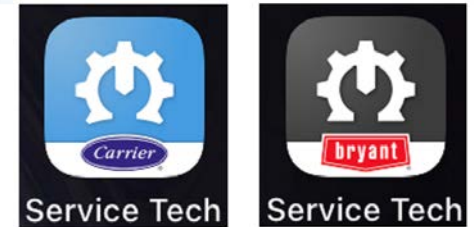
- Near Field Communication (NFC)
  - Requires Service Tech App
    - Access & Modify installation settings
  - Access Diagnostic menus
  - Access Replace Control Board functionality
- No login required
- Smart Phone must be within ½" or touching board at NFC chip
- Perform only with furnace power OFF
- App recommended, Super Plug Alternate
- Service replacement boards do NOT contain run parameters
- NFC is supported:
  - Apple® iPhone® 8 or later, operating with IOS® 13
  - Most Android® with Android® 11 and later



# FURNACE CONTROL COMMISSIONING

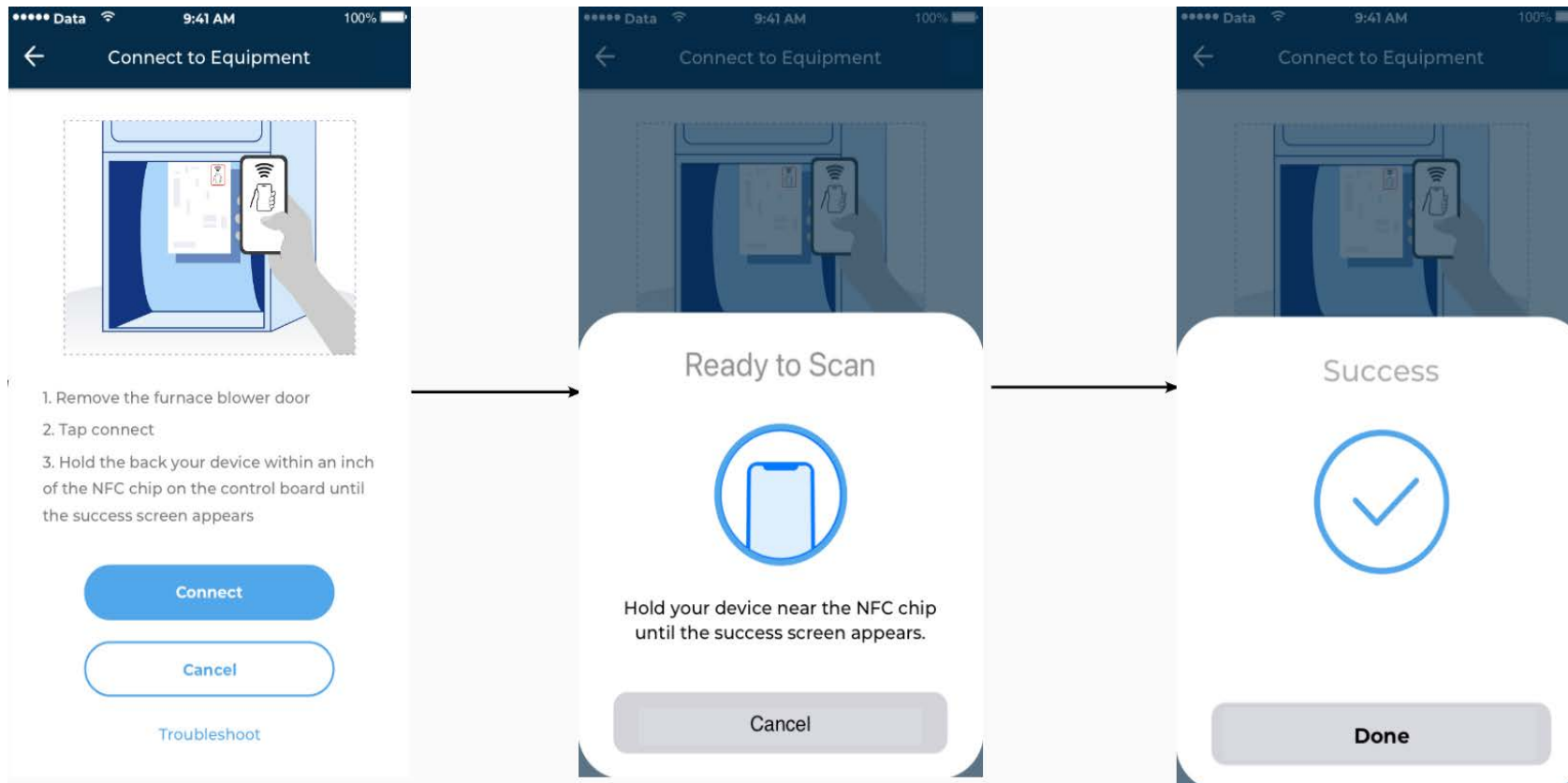
Service Tech App featuring patent-pending Near Field Communication (NFC) or Bluetooth

- Diagnostics / Installer Setup do not require internet



# FURNACE CONTROL COMMISSIONING

Service Tech App featuring patent-pending Near Field Communication (NFC) or Bluetooth  
Connecting



# INFINITY / EVOLUTION FURNACE

## Installation Settings

10:29 LTE

2323A43481  
59MN7C120C241122

**Installation Settings**  
Recipe #: 605 | Version #: 3

Open Favorite Settings + Save to Favorites

Current

Temperature Display Fahrenheit

Heating Airflow Efficiency 1

High Cooling Airflow 1625

Low Cooling Airflow 1225

Continuous Fan Airflow CFM 9

Heating Blower Off Delay 120s

Cooling Blower Off Delay 90s

Reset to Default

Continue



10:29 LTE

2323A43481  
59MN7C120C241122

**Heating Airflow**

☐ Efficiency 2  
HIGH = 1900 CFM  
INTERMEDIATE = 1067 CFM  
LOW = 892 CFM

☒ Efficiency 1  
HIGH = 1735 CFM  
INTERMEDIATE = 970 CFM  
LOW = 785 CFM

☐ Comfort 2  
FACTORY DEFAULT  
HIGH = 1609 CFM  
INTERMEDIATE = 889 CFM  
LOW = 701 CFM

☐ Comfort 1  
HIGH = 1452 CFM  
INTERMEDIATE = 831 CFM  
LOW = 600 CFM

Cancel OK

Reset to Default

Continue



11:21 LTE

2323A43481  
59MN7C120C241122

**Confirmation**

Summary of Changes

| Setting         | Current → New            |
|-----------------|--------------------------|
| Heating Airflow | Comfort 2 → Efficiency 1 |

Back Continue



7:38 LTE

8105B42090M17A-A  
4421A14481

**Confirmation**  
Summary of changes.

|                          | CURRENT |   | NEW |
|--------------------------|---------|---|-----|
| High Heating Airflow     | 10      | → | 13  |
| High Cooling Airflow     | 11      | → | 15  |
| Continuous Fan Airflow   | 1       | → | 4   |
| Cooling Blower Off Delay | 30s     | → | 5s  |

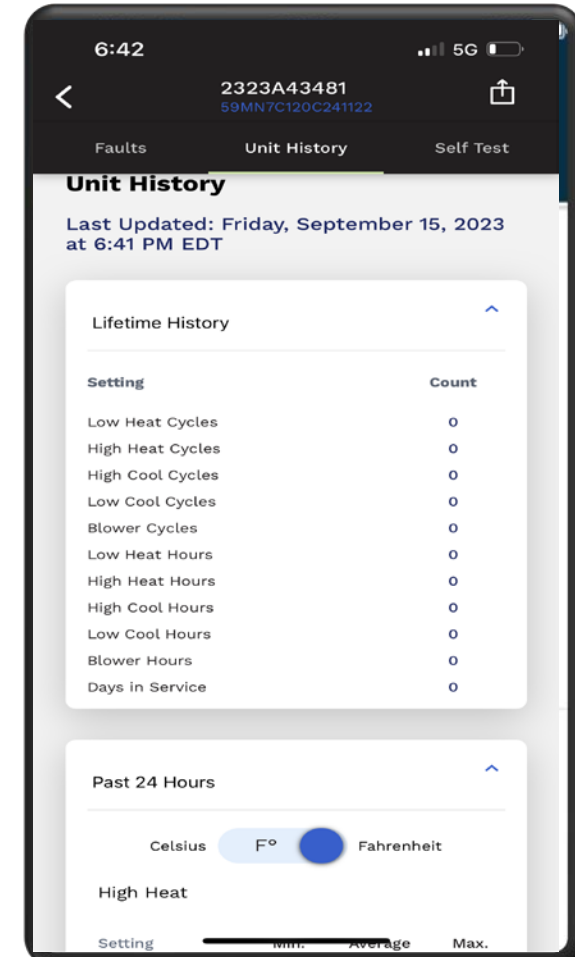
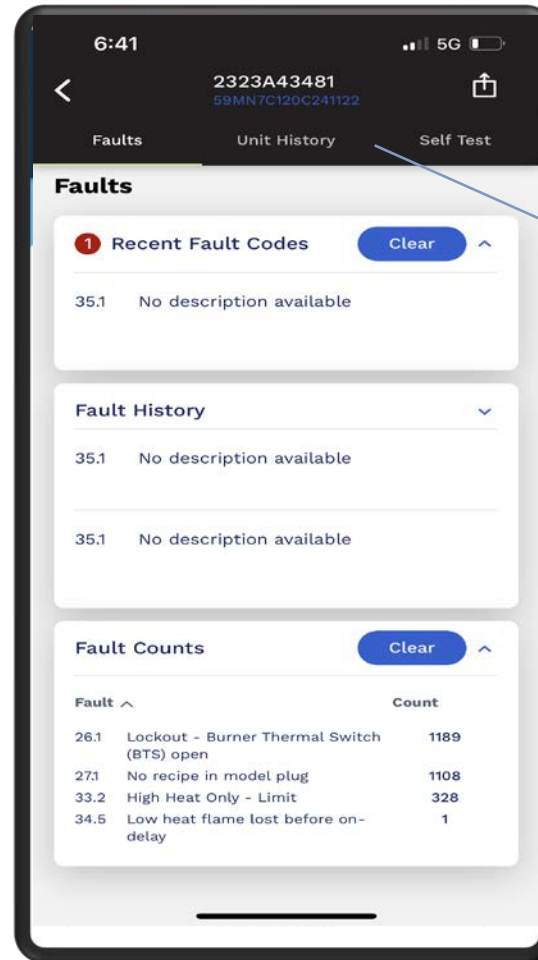
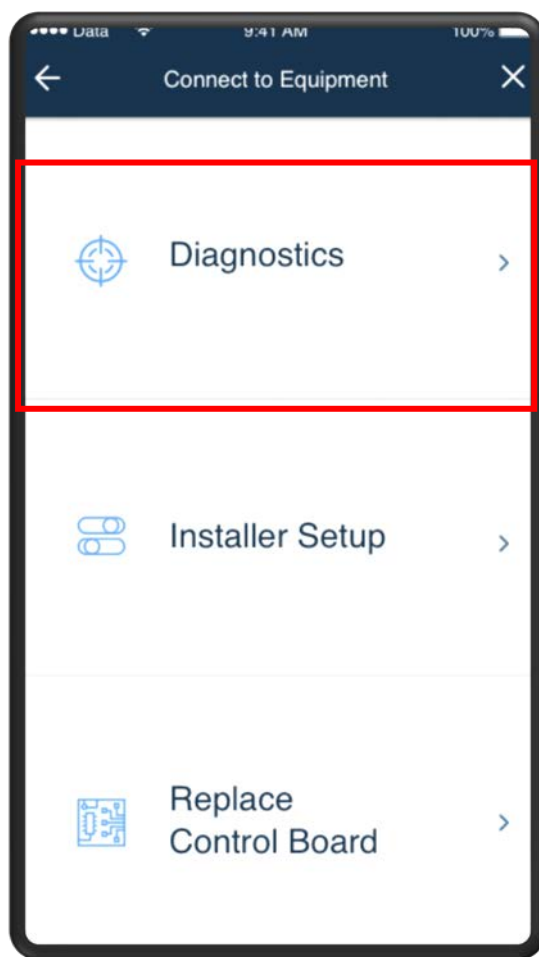
Ready to Scan

Hold your device near the NFC chip until the success screen appears.

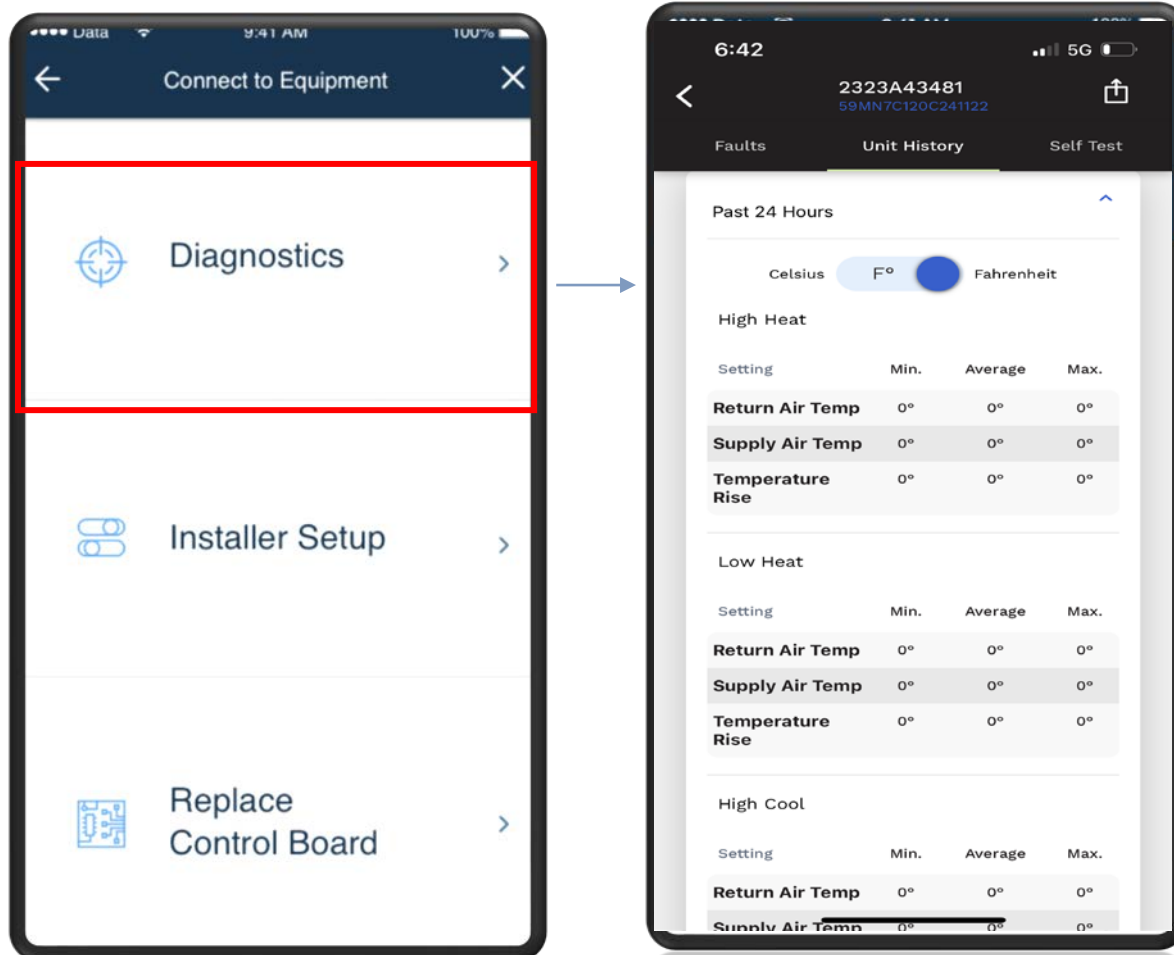
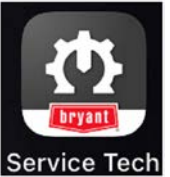
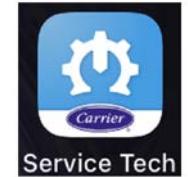
Cancel



# INFINITY / EVOLUTION APP DIAGNOSTICS



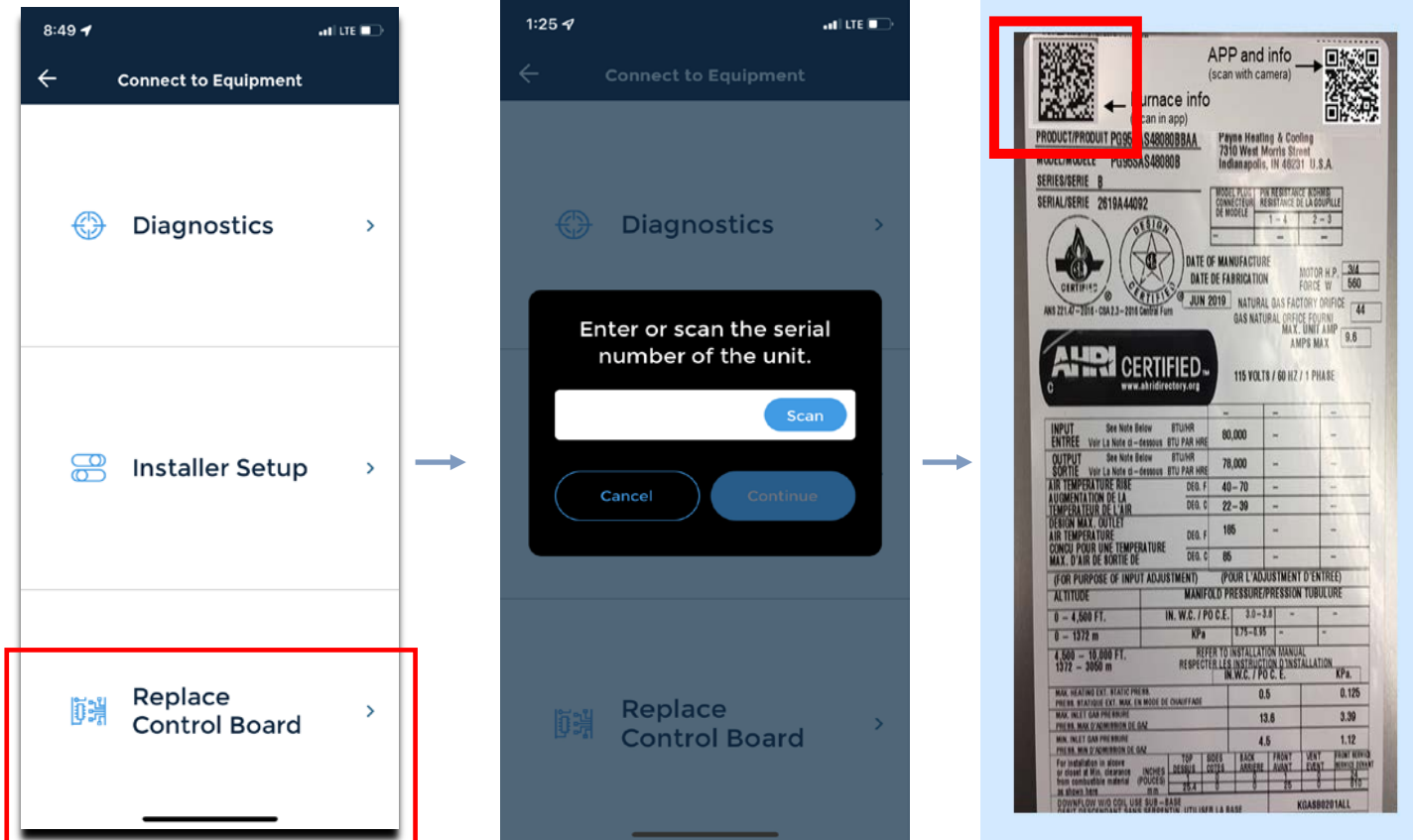
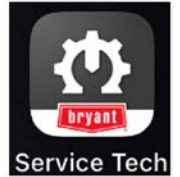
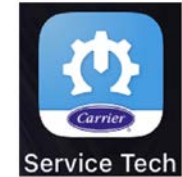
# INFINITY / EVOLUTION APP DIAGNOSTICS



- Diagnostics area (unit history) will also include data for the Supply and Return thermistors
- Will display min., average and Max. values for the return, supply, and temp rise over the past 24 hours
- Broken down by individual modes
  - High heat
  - Low heat
  - High cool
  - Low Cool

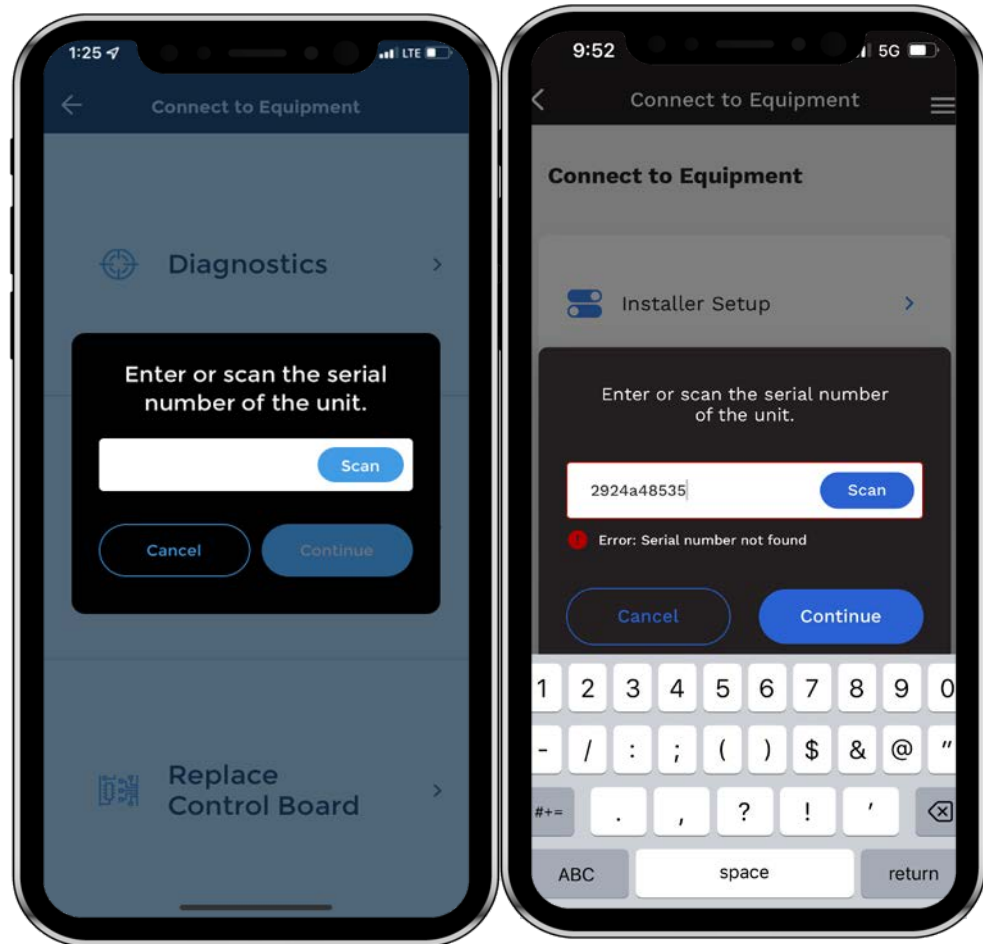
# FURNACE CONTROL COMMISSIONING

## Replace Control Board



- Unit serial can be scanned or entered manually
- Scan or Manual entry will reference the Product History Database and do a model look up for that serial # to assure correct recipe is being loaded
- **Requires Wi-Fi or Cell Service**
- Model and serial number will be transferred into the new furnace control

# FURNACE CONTROL COMMISSIONING

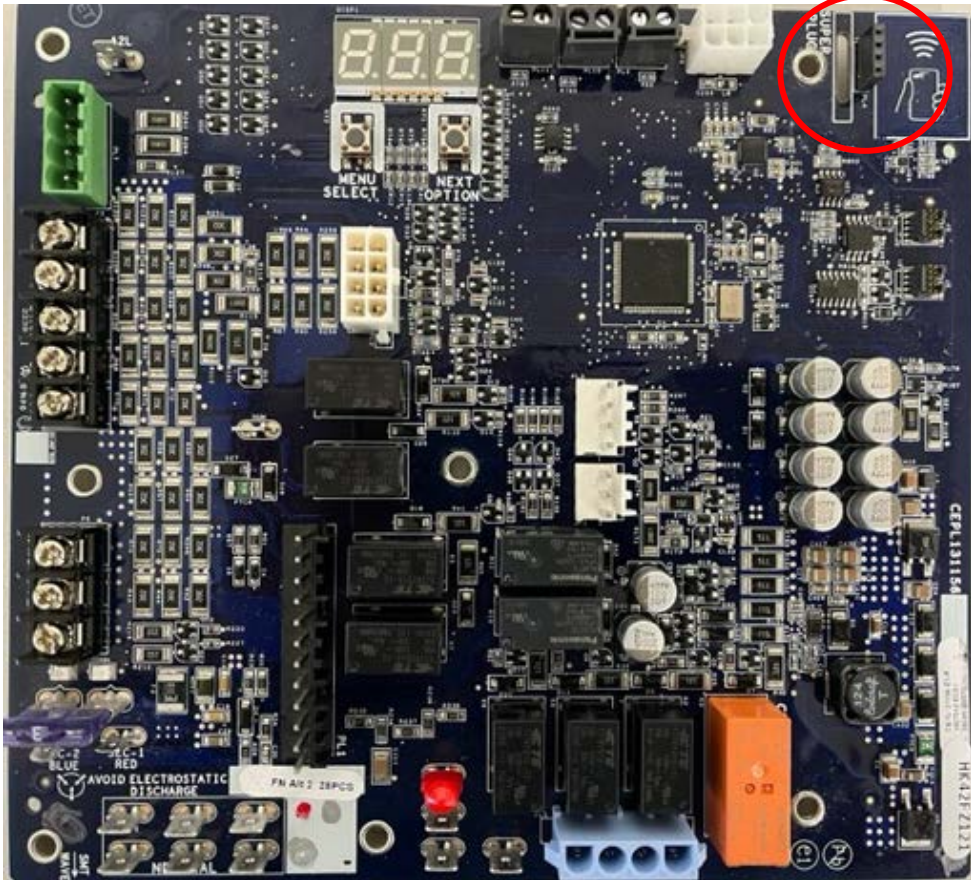


## Serial number not found

- May be caused by serial number not being properly transferred into the product history database
- May be caused by a problem with the transferred information or missing information.
- Service Tech app references the serial number, and then references other fields in product history database to return correct recipe. If model or other needed info is incorrect or missing, the serial number not found message is displayed

# FURNACE CONTROL COMMISSIONING

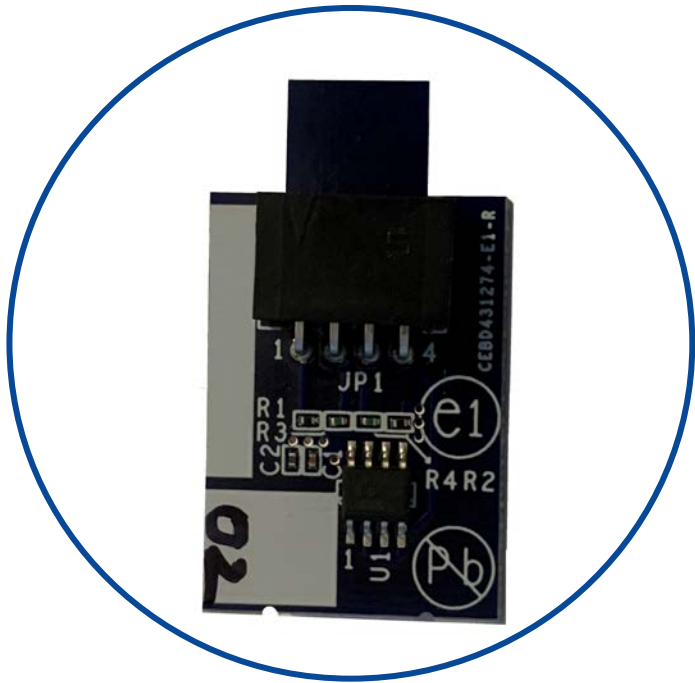
## App Alternates - Super Plug



- Service controls do NOT contain run parameters
- Super plug is an alternate method of loading “run recipe” into furnace control
- Not in place while furnace is operating
  - Power up while plug is in place will automatically initiate programming mode , but will revert to run mode after 2 minutes
- Upon release for Deluxe-tier, Super Plug will contain recipes for all Entry-tier, Mid-tier, and Deluxe Tier units.

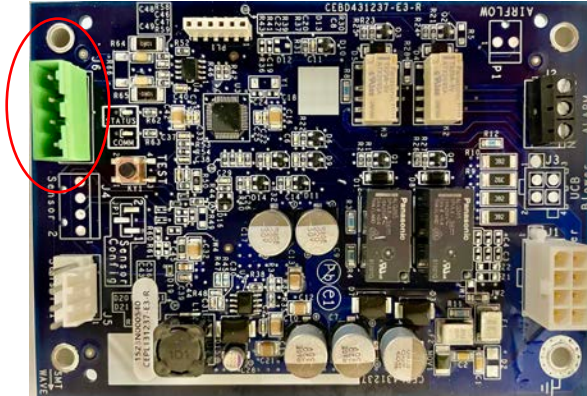
# FURNACE CONTROL COMMISSIONING

## Super Plug Part Numbers (only needed if no Smart Phone)



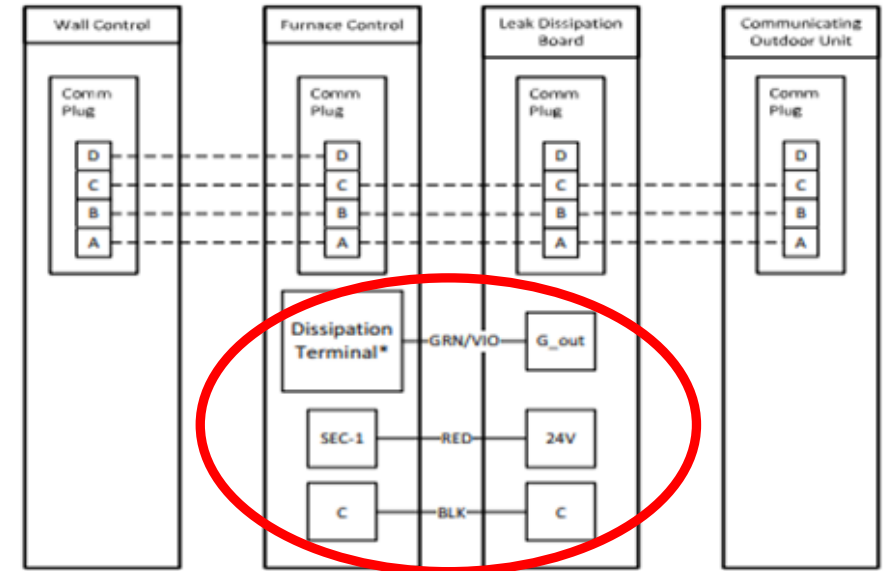
- HK70EA001 plug contains the information to commission a service board on the entry-tier Comfort/Legacy series, single-stage models.
- HK70EA002 plug contains the information to commission a service board on the Comfort/Legacy series models and the mid-tier Performance/Preferred series models. **Superseded to 003**
- HK70EA003 Plug contains information to commission all furnaces - Comfort/Legacy, Performance/Preferred, and Deluxe-tier Infinity/Evolution series models.
- HK70EA004 Plug will contain all information included on the -003 plug, plus new 97% 2-stage units and newly released Ultra Low NOx (CA)

# DISSIPATION BOARD WIRING – COMMUNICATING FURNACES



## Dissipation Board is Communicating for Deluxe Models

- ABCD connection header will be used
  - (A, B and C wires)
- 8-pin connector also partially used
  - (R,C, and G wires utilized)
- Function remains the same



**NOTE:** Dissipation terminal is only used on Carrier communicating furnaces manufactured Q4 2023 and later. Use a 3/16" spade connector on the GRN/VIO wire to connect to the dissipation terminal on communicating furnaces. Attach wire nut to all unused wires from the power harness.

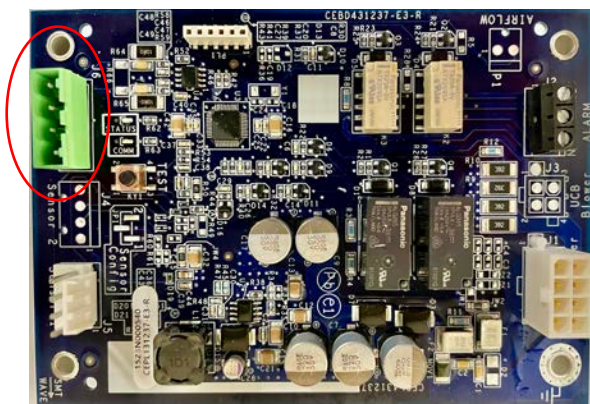
Fig. 21 – Wiring Layout, Communication Unit

A230462

Table 3 – Communication Plug Designations

| CCN Plug Connections |     |     |     |     |
|----------------------|-----|-----|-----|-----|
| Color                | GRN | YEL | WHT | RED |
| Signal               | A   | B   | C   | D   |

# DISSIPATION BOARD WIRING – COMMUNICATING FURNACES



To accommodate the dissipation board connection, Infinity/Evolution furnaces will start to ship with generic communicating plug in parts bag containing the SAT sensor



Turn to the experts

## Product Bulletin

| Date               | Subject                      | Department        |
|--------------------|------------------------------|-------------------|
| September 10, 2024 | Deluxe Furnace Parts Bag 702 | Product Marketing |
| Bulletin Number    | Product Model Number(s)      | Author Name/Email |
| 101-24-80          | Deluxe Furnaces              |                   |

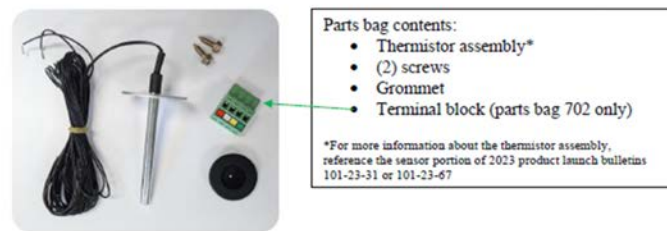
### Deluxe Furnace Parts Bag 702

Beginning mid-September, all deluxe gas furnaces will be shipped with an updated parts bag. Parts bag 702 will include the current contents of parts bag 701 in addition to an ABCD plug (terminal block) that is needed to support the R454b dissipation board. This plug will be required only when a system uses a deluxe wall control, deluxe furnace, and a R454b outdoor unit. Mid-tier furnaces will continue to ship with the current parts bag 701.

Parts bags:



Parts bag contents:

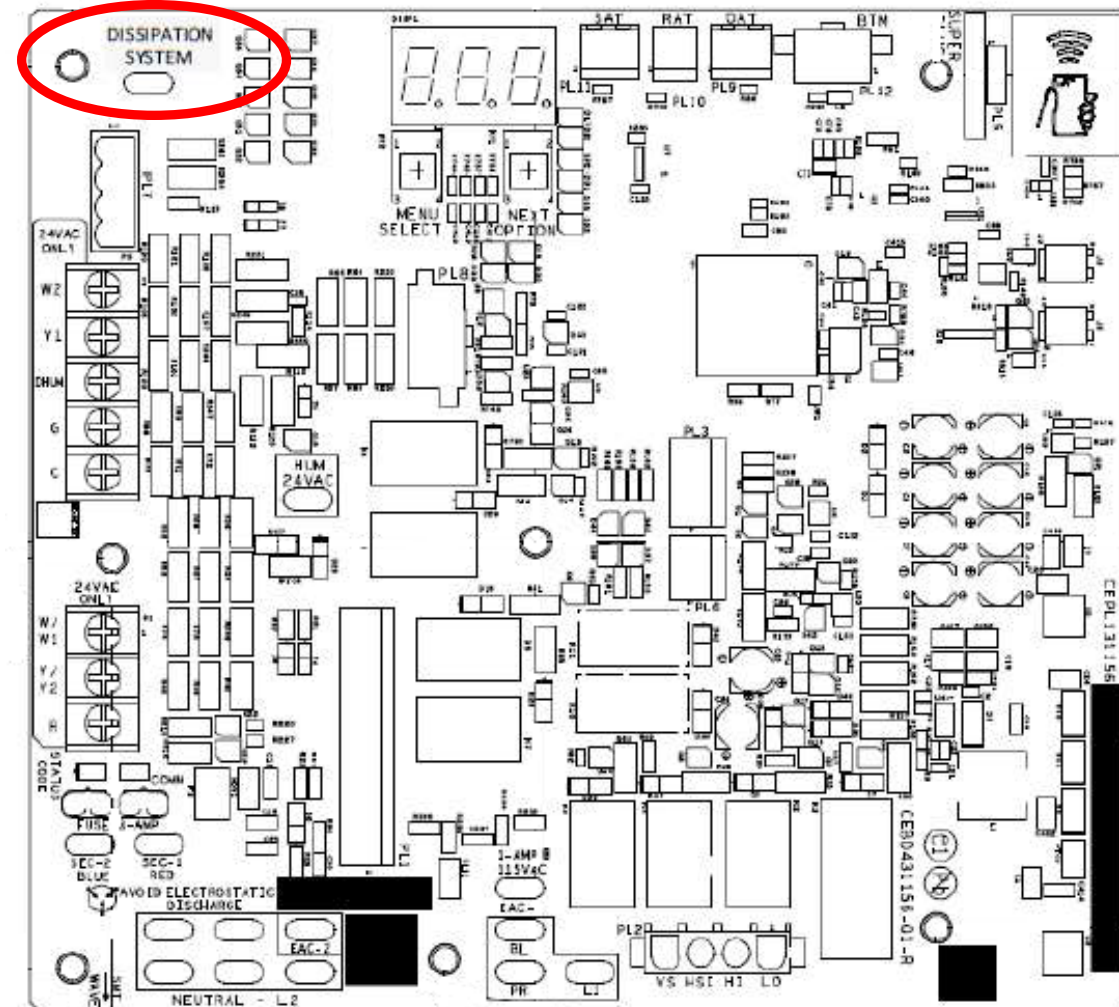


- Parts bag contents:
- Thermistor assembly\*
  - (2) screws
  - Grommet
  - Terminal block (parts bag 702 only)

\*For more information about the thermistor assembly, reference the sensor portion of 2023 product launch bulletins 101-23-31 or 101-23-67

# DISSIPATION BOARD WIRING – COMMUNICATING FURNACES

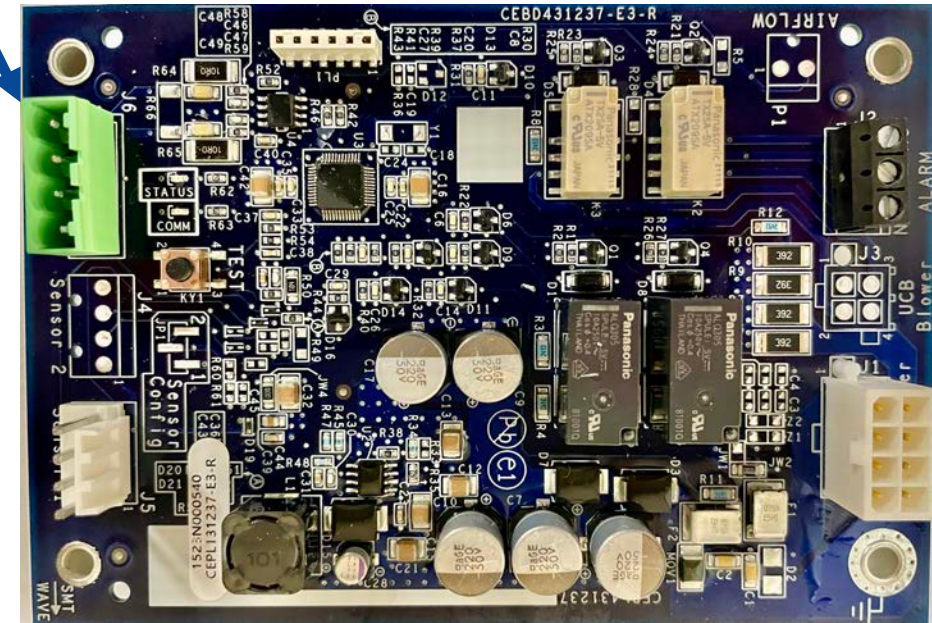
- Dissipation Board is Communicating for Deluxe Models
- Wall control will shut down heating or cooling call during dissipation event
- Dissipation event triggers a constant fan call at user determined airflow
- G wire to “Dissipation System” input terminal on furnace control forces a minimum airflow command to comply with A2L requirements



# DISSIPATION BOARD WIRING – COMMUNICATING FURNACES

- Dissipation Board is Communicating for Deluxe Models
- Mitigation board will be discovered by the wall control during Installation process
- 454-B outdoor equipment will not be allowed without the mitigation board present – discovery install will fail

Comm Header



# TWINNING KIT - AGATWNP UA01A

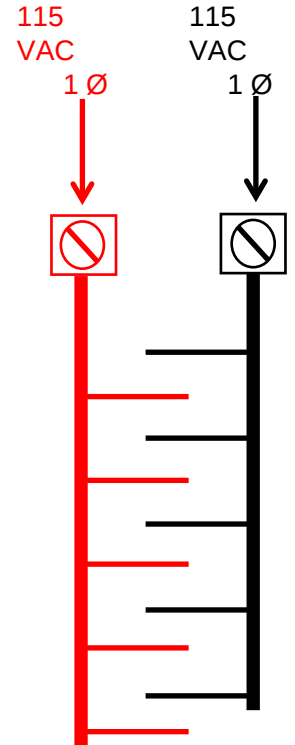
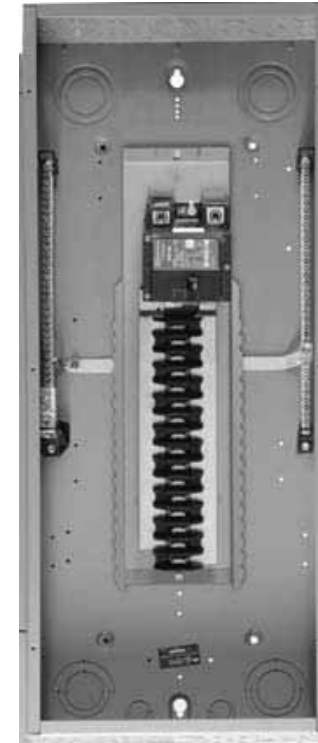
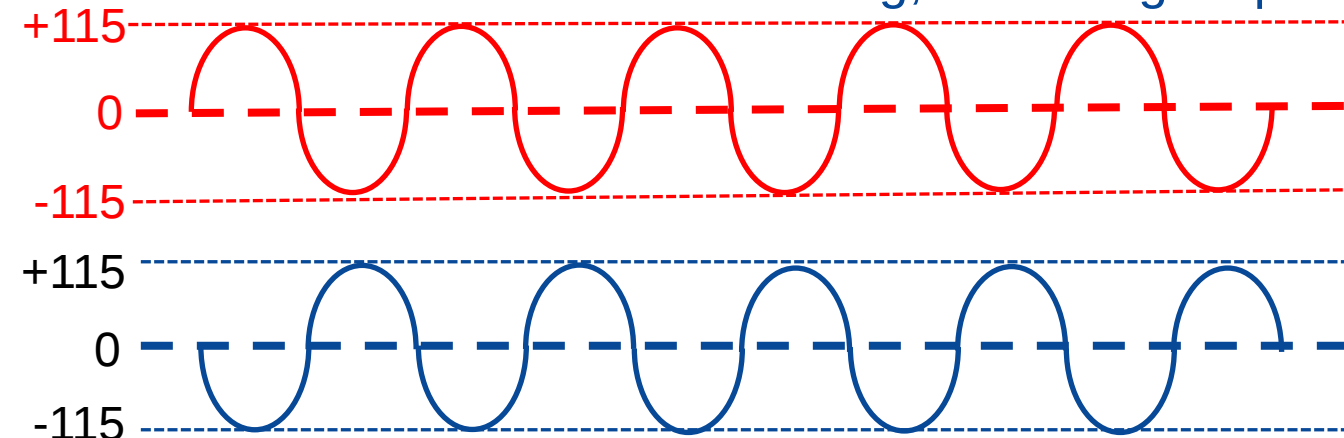
## Most common issues with twinning

- Wiring error
  - Wiring must be exactly as shown on wiring diagram
- Furnaces require adequate grounding
  - Confirm ground to and at service panel
- Polarity
  - Furnaces must be on same phase of power from panel
    - Measure voltage from primary furnace L1 to secondary furnace L1, should be zero volts
    - If voltage is not zero, phasing is incorrect, must relocate on breaker
    - Confirm transformer wiring

# TWINNING KIT - AGATWNP UA01A

## Service Panel

- Each leg is 115 VAC
- Note how tabs are alternate
- When two breakers are side-by-side
  - Measured voltage across the two is 230 VAC
  - Resulted phasing
  - Both furnaces must see the same sine wave as the twin/test terminal is communicating, not voltage input/output



Residential power supply is considered "single phase" and has two legs of power; while sometimes called "two-phase" incorrectly, it's important to understand that both legs are derived from a single phase with a center-tapped neutral, meaning they are 180 degrees out of phase with each other, not a true two-phase system.

# INDOOR FAN MOTORS



## Multi-tap ECM

Fixed-Speed Constant Torque  
(FCT)



## Pulse Width Modulation ECM

Variable-Speed Constant Torque (VCT)  
Multi-Speed Constant Torque (MCT)  
Variable-Speed Constant Air (VCA)

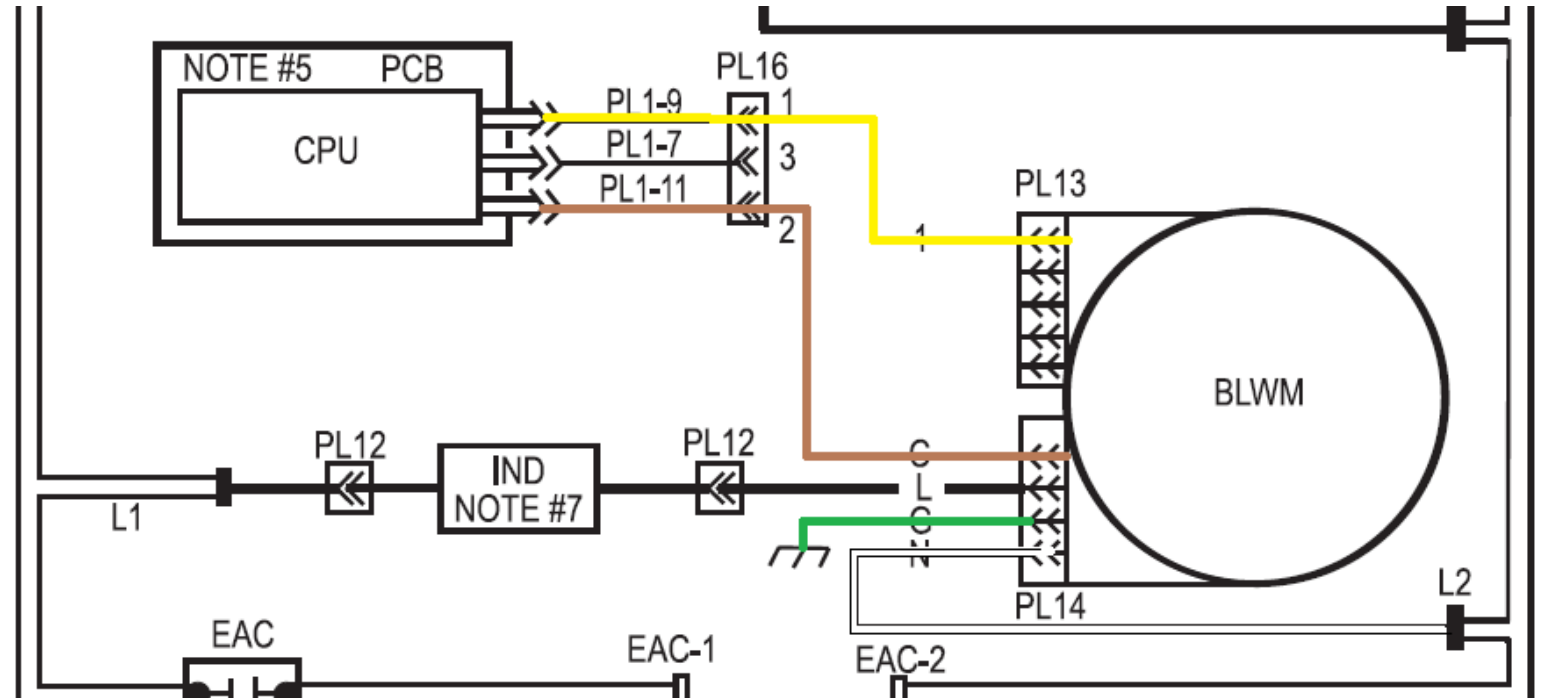


## Full Feature Communicating ECM

Variable-Speed Constant Air (VCA)

# PWM MOTORS

- Only two wires to the control motor speed
  - **Brown** wire feeds constant 15VDC to motor
  - **Yellow** wire feeds back FROM the motor to the furnace control (switching)



# CHECKING MOTOR TORQUE CONTROL SIGNAL (YELLOW WIRE)

- Motor operates via switching (open/close) of the yellow wire circuit
  - Switch closed / motor on, motor current
  - Switch open / motor off, no motor current
- Motor speed is set by ratio of ON/OFF switching
- Measure DVC between Yellow wire and common
  - No motor operation – 15v
  - As motor speeds up, voltage will drop
    - Generally, half of original voltage (5-8vdc)
    - A voltage change indicates board is switching

