Training Will Begin at 8:00am

Go Above.
Think Beyond.

2024
Infinity/Evolution Controls Training

Instructor
NAME

Carrier Enterprise South Central Technical Support
Carrier, Bryant and Payne Technical Training and Support

Technical Support & Training Website

cesctechsupport.com

Tablet View

Desktop View

Mobile View

Technical Support & Training Website

cesctechsupport.com

- Dealer training calendar
- Training registration
- Self-Study Courses (4 Infinity qualifying)
- Manager role (Register your techs for training)
- See your scheduled training
- See all training orders
- See all your submitted forms
- 60+ troubleshooting, service & installation videos
- Troubleshooting guides
- Numerous service manuals available

- VFR checklist and manuals
- RTU replacement quote form (Inside sales)
- 8 Field reporting & troubleshooting forms
- TIC's and Bulletins (back to 2019)
- Serial number decoder
- Technician mentoring request form

and much more being added daily…

Let's look at the new website. If you have any questions, please ask.

VERY IMPORTANT – IF YOU DO NOT HAVE A LOGIN FOR CESCTECHSUPPORT.COM, PLEASE SCAN THE QR CODE TO GET REGISTERED

If you just registered or do not see this class within your "Purchased Zoom Meetings" please scan the below QR Code and add/enroll in the course

Infinity/Evolution Controls Course Page Link

Helpful Mobile Apps

CE HVAC Pro+™ Mobile App

Our mobile app gives you access to everything you need to be successful in the field.

Available on the App Store | GET IT ON Google play

Scan the QR code to download the CE HVAC Pro+™ Mobile App from your app store.

Carrier Service Tech App

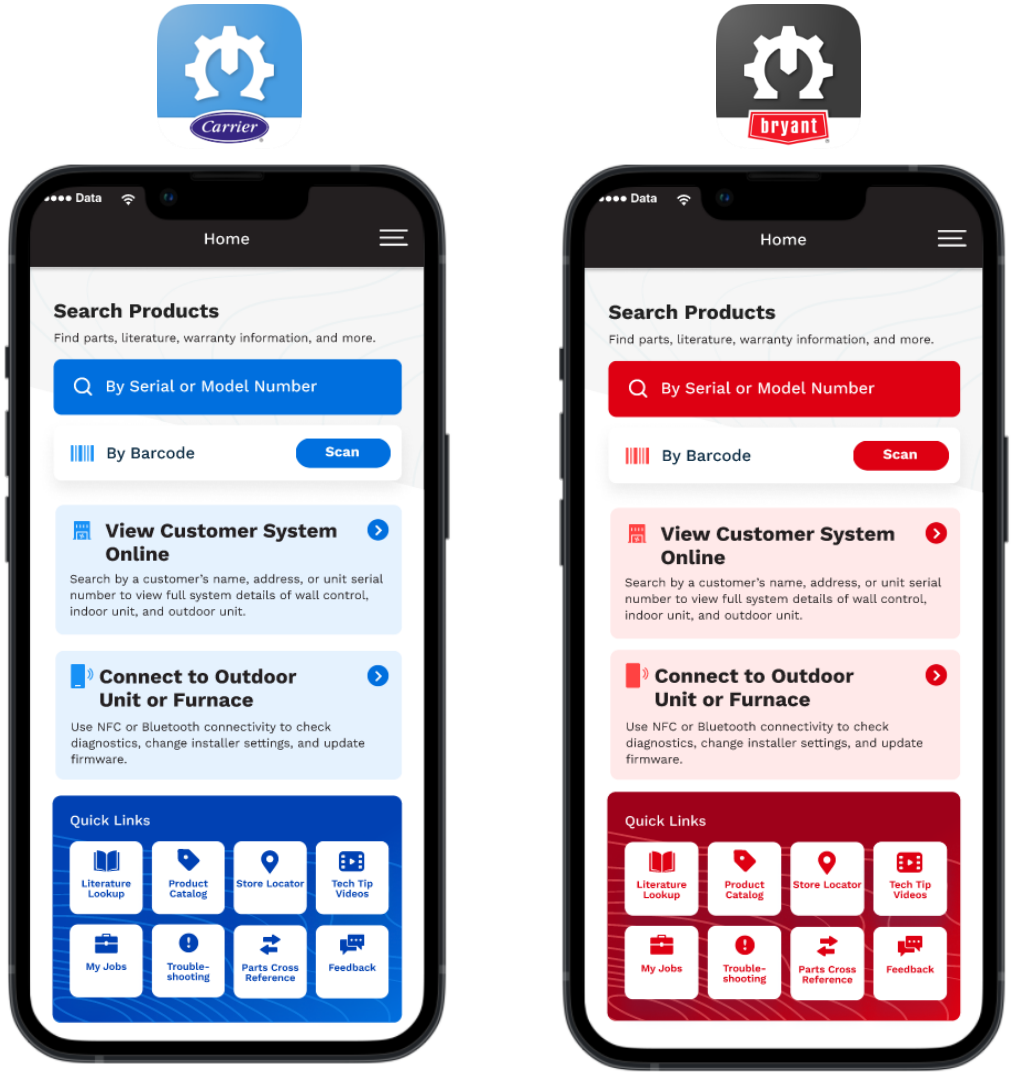
Bryant Service Tech App

Available on the App Store | ANDROID APP ON Google play

Available on all Apple® & Android® Phone and Tablet Devices

Carrier/Bryant Service Technician Apps – One Page Summary

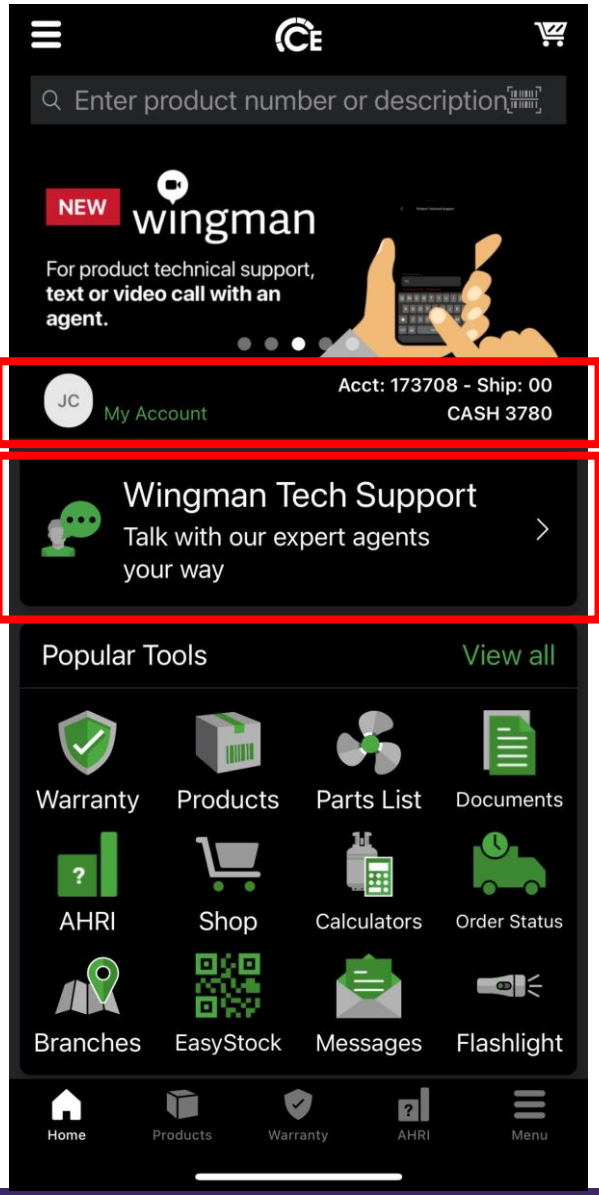
- ***NEW!*** **User Interface & Quick Links**
- ***NEW!*** **Customer System Online** search customer's equipment profiles
- ***NEW!*** **Near Field Communication (NFC) with select furnaces**
- ***NEW!*** **InteliSense Mid-Tier Equipment**
- ***NEW!*** **Remote Diagnostics (Test Equipment) –** (Mid-Tier InteliSense)
- **Barcode scanning** of unit's serial or model number
- **Warranty** entitlement & service history
- **Literature** list for models and ability to search all available literature
- **Product Catalog** model lookup
- **Bill of Material** parts list including part supersession
- **Bluetooth Connectivity** to pair to select outdoor equipment
- **Aftermarket components** cross reference tool
- **Tech Tips videos** for installation guides, interactive troubleshooting help



Wingman Tech Support Assistance

CE HVAC Pro+™ Mobile App
Watsco, Inc.
4.6, 212 Ratings
Free

You will need the CE app installed on your phone or tablet and you must be logged into your account. (If you have questions on how to get a login, please contact your salesman for assistance)

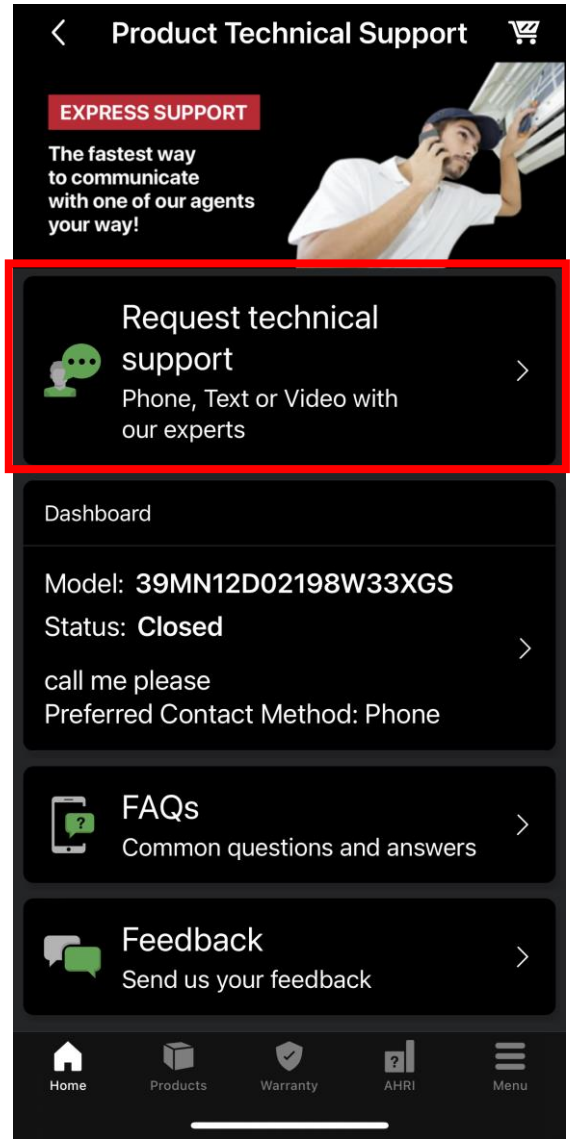


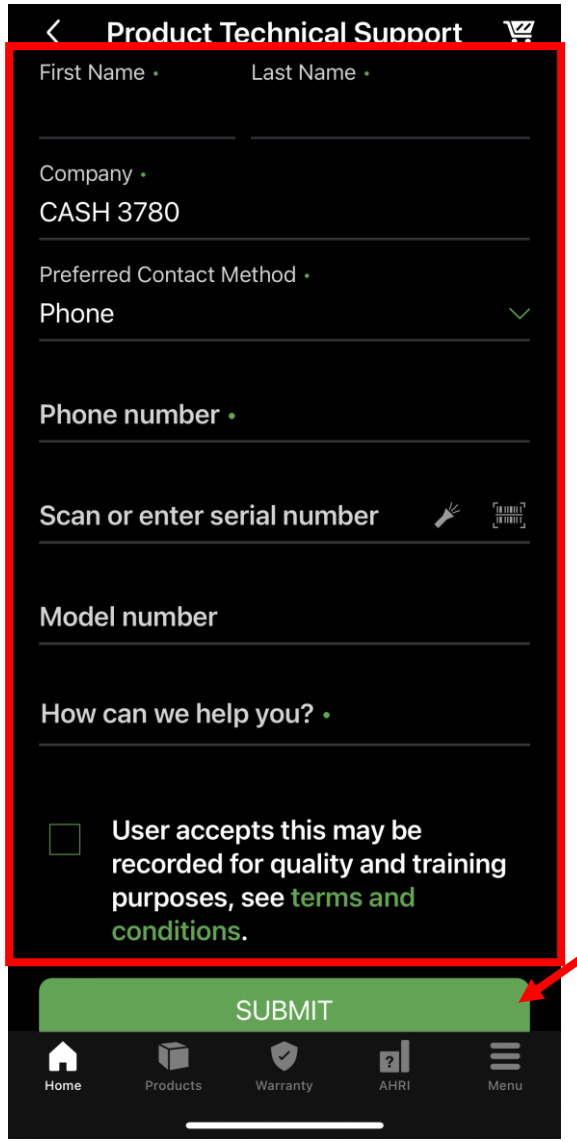
Available on the App Store

ANDROID APP ON Google play

Available on all Apple® & Android® Phone and Tablet Devices

Wingman Tech Support Assistance





LIVE TRAINING TEST

A passing grade of 75 is required in order to receive credit for the class.

If you fail to pass the test the first time you may re-take the test again but if you do not pass the test the second time you will be required to retake the course.

ALL QUIZZES & TEST MUST BE COMPLETED BY MIDNIGHT OF THE SAME DAY AS THE CLASS/COURSE – NO EXCEPTIONS

HOW TO ACCESS THE QUIZ/TEST

- Click “My Account”
- Find “Your Courses”
- Select the appropriate course
- Scroll to “Course Content”
- Click into “Quiz” or “Test”
- Find “Lesson Content”
- Click into “Quiz” or “Test”
- Click

- Answer all questions and submit

ALL QUIZZES & TEST MUST BE COMPLETED BY MIDNIGHT OF THE SAME DAY AS THE CLASS/COURSE NO EXCEPTIONS

Rest Room Breaks

Go When You Gotta Go! Just Hurry Back.
Cause We Ain't Waitin!

Infinity/Evolution Controls Day 1

-B Controller

Carrier
turn to the experts

Infinity® Touch
User Interface

-C Controller

bryant
Heating & Cooling Systems

EVOLUTION® CONNEX™
User Interface

Features/Benefits

Features/Benefits

- Carrier's Infinity® System Control and Bryant's Evolution® System Control are the smart controls of the future. Their unique system self-configuration and diagnostics capabilities make installation and service fast and accurate, helping to avoid costly call-backs.

- They feature a high-resolution display, making it easier to read. Intuitive prompts let you program everything from humidity levels to fan speeds, giving you the ultimate control over your home comfort.

Features/Benefits

Features Include:

- Longer cooling and heating cycles at lower fan speeds which lead to
  - Consistent space temperature
  - Consistent space humidity
- State-of-the-art diagnostics
- Fast simple installation
  - Self-configuring system
  - 4-wire communications
    - 4-wire indoor
    - 2-wire outdoor

Fan Coil Unit

Outdoor Unit

User Interface

Features/Benefits

Features Include (Cont.):

- 4-wire installation from each major component in the system
- 2-wire connection to communicating outdoor equipment (including geothermal split units)
- Infinity®/Evolution® Zoning System compatibility
- Occupancy sensing to provide comfort when spaces are occupied and energy savings when they're not
- Intuitive on-screen prompts for ease of installation and service
- Ideal Humidity System™ settings are the default; no longer requiring increased system setup
- Complete integration of the temperature, humidity and ventilation in every season

Features/Benefits

Features Include (Cont.):

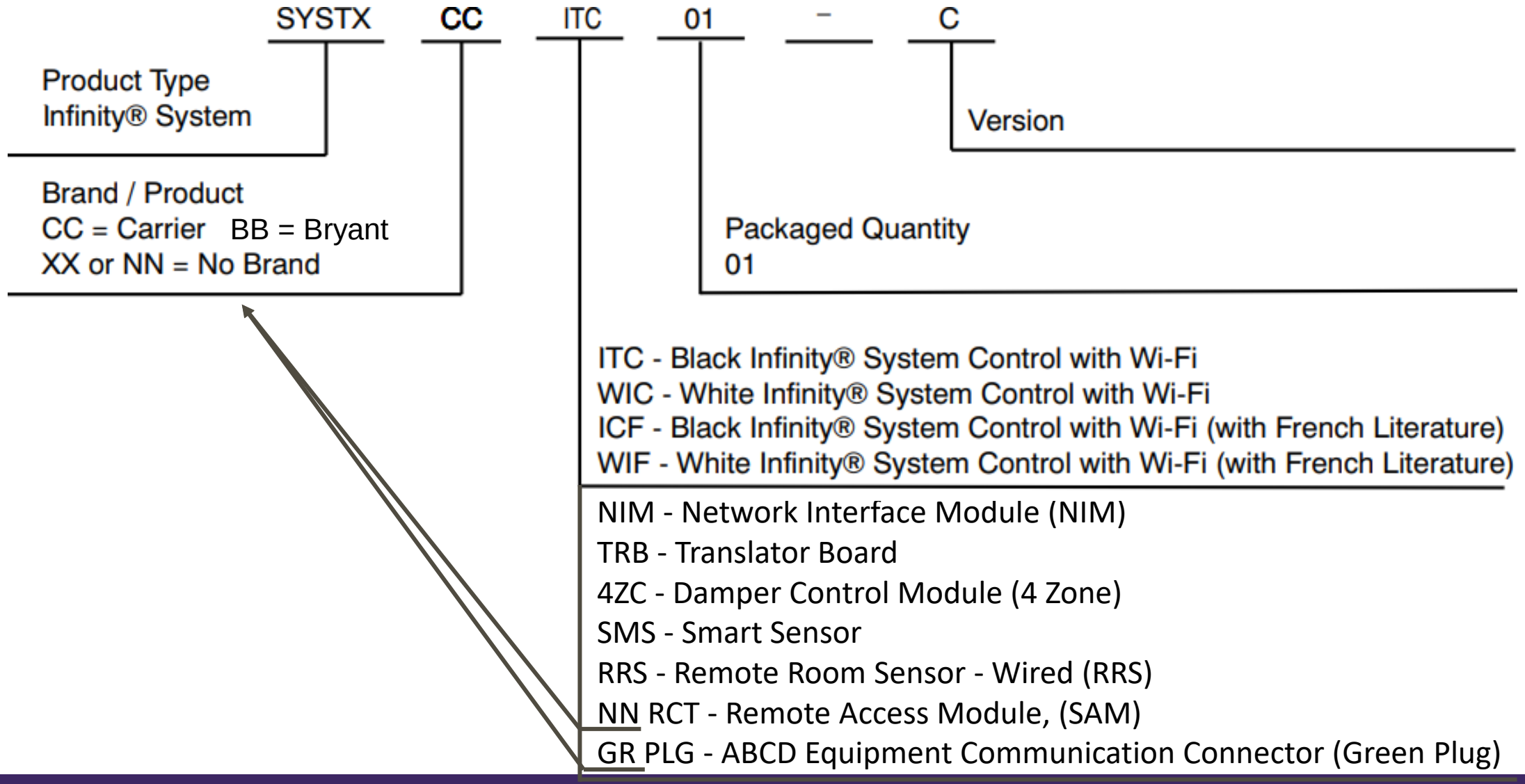
- For Zoned Systems, auto mode selection to satisfy simultaneous heating and cooling demands in different zones via more aggressive Auto Changeover algorithm--*installer must enable*
- 7-day programmability with Lifestyle Comfort Profiles and Touch-N-Go® features; complies with California Title 24 programmability requirements
- Easy timed-override schedule
- Simplified vacation schedules
- Day-at-a-glance programming for simplified ease of use
- Programmable fan by period
- TrueSense™ Dirty Filter Detection
- Indoor Air Quality pop up service reminders
- General maintenance reminder messaging
- Wi-Fi® remote access capability

Features/Benefits

Features Include (Cont.):

- For Series B upload photo, dealer info, and software updates locally via MicroSD card. Software updates available automatically when connected to the Infinity web server
- Series B controls are compatible with home automation through the SYSTXNNRCT01 system access modules, or Amazon ™ Alexa ™ interface.
- Compatible with Infinity® System geothermal products (GC and GZ models). Energy Tracking feature for geothermal systems is available with Entering Water Temperature sensor installed in heat pump.

Model Number Nomenclature



Compatible Communicating Products

Compatible with Infinity® Evolution® System indoor and outdoor equipment built since 2004:

- Furnaces, Fan Coils, Condensing Evolution & Infinity units and Heat Pumps
- Evolution & Infinity ERV & HRV
- Home Automation Systems with API (Application Programming Interface)
- Wi-Fi
- *Not all control features are backward compatible*
  - Low ambient control
  - Auto defrost

User Interface Overview

- User Interface used with:
  - Communicating (ABCD wired) split systems or SPP
  - Partially communicating split system
    - Communicating indoor unit (ABCD wired)
    - Non-communicating outdoor unit with NIM
- Full system features available through ABCD wiring
- Limited system features without ABCD wiring
- User interface may be replaced by a normal thermostat

  Only in Emergency Situations

System Configuration

- System configuration decisions to identify:
  1. The type of system
  2. Equipment type
  3. Outdoor unit compressor staging
  4. Outdoor unit type
  5. Outdoor unit size
  6. Accessories installed
  7. Zoned systems

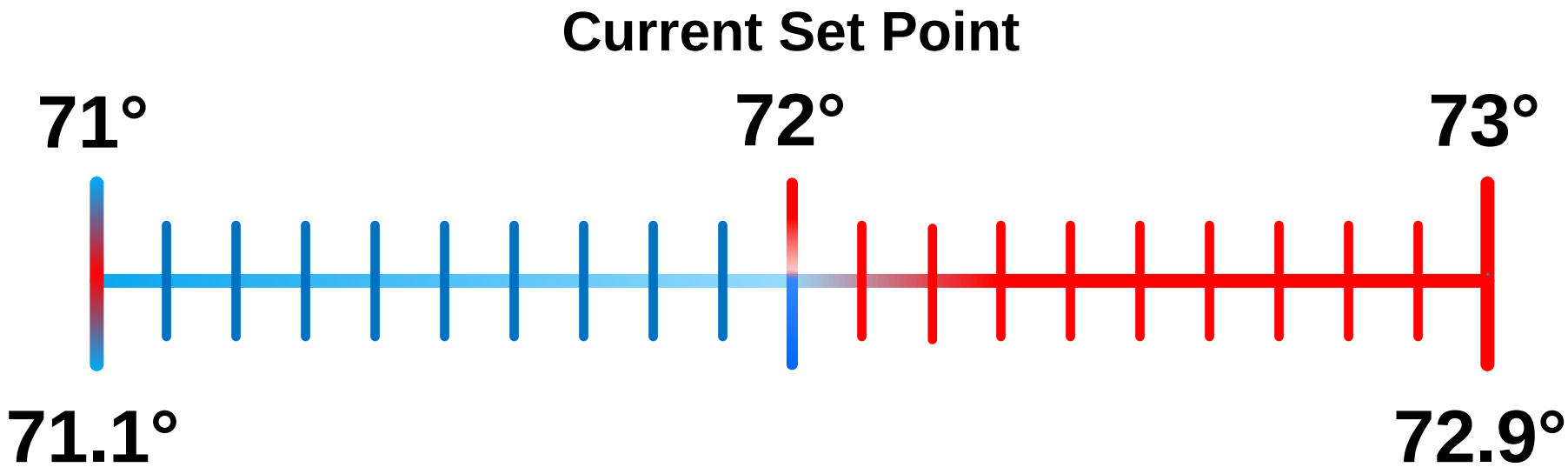
- Fully communicating split systems
  - 1 to 5 and 7 are done automatically
  - 6 is done manually
- Partially communicating split system 3, 4, 5, 6 are done manually

Root Screen Temperature Display

- Rounding
- The temperature displayed on the screen is rounded toward the set point.
- It only changes at the xx.**0** mark.
- 70°F can be anywhere from 69.1°F to 70.9°F.
  - It won't change to 71°F until 71.**0**°F. It won't change to 69°F until 69.**0**°F. Once it changes, it won't change back to 70°F until 70.**0**°F.

Temperature Display

- **Why is the unit running when the temperature is set to 72° and the actual temperature *is* 72°?**
- **Our electronic controls round toward the set point. If the actual temperature is within 0.9° degrees of set point, the actual temperature shown will match the set point.**
- **If the set point is 72° degrees, the actual temperature can be anywhere between 71.1° and 72.9° and the temperature displayed will be 72°.**



Remote Access Responses

When using a smart phone or tablet, the UI response is not instantaneous. The UI pings the server 3 times per minute when you are logged in to your account. When you are not logged in to your account, the UI pings the server 1 time per minute.

If you go to the UI and touch the controller after making a change on one of your apps, you may cancel the request for the settings change. When there is a change at the app and there is also a change at the UI, the UI wins. Do not run to the UI right after making a change on the web page or with an app to see if the UI settings have changed.

<u>You have to be in the UI's home screen, or the UI will not accept the command from the mobile device or computer.</u>

HOME SCREEN

TEMPERATURE ADJUST SCREEN

Software Updates

First – Update Wall Control

- Check Control Software Version
- Current –B version of firmware is 4.47
- Control must be a Series B or greater model:

Carrier Infinity

✓**SYSTXCCITC01-B Black Face**

✓**SYSTXCCWIC01-B White Face**

Bryant Connex

✓**SYSTXBBITC01-B Black Face**

✓**SYSTXBBWIF01-B White Face**

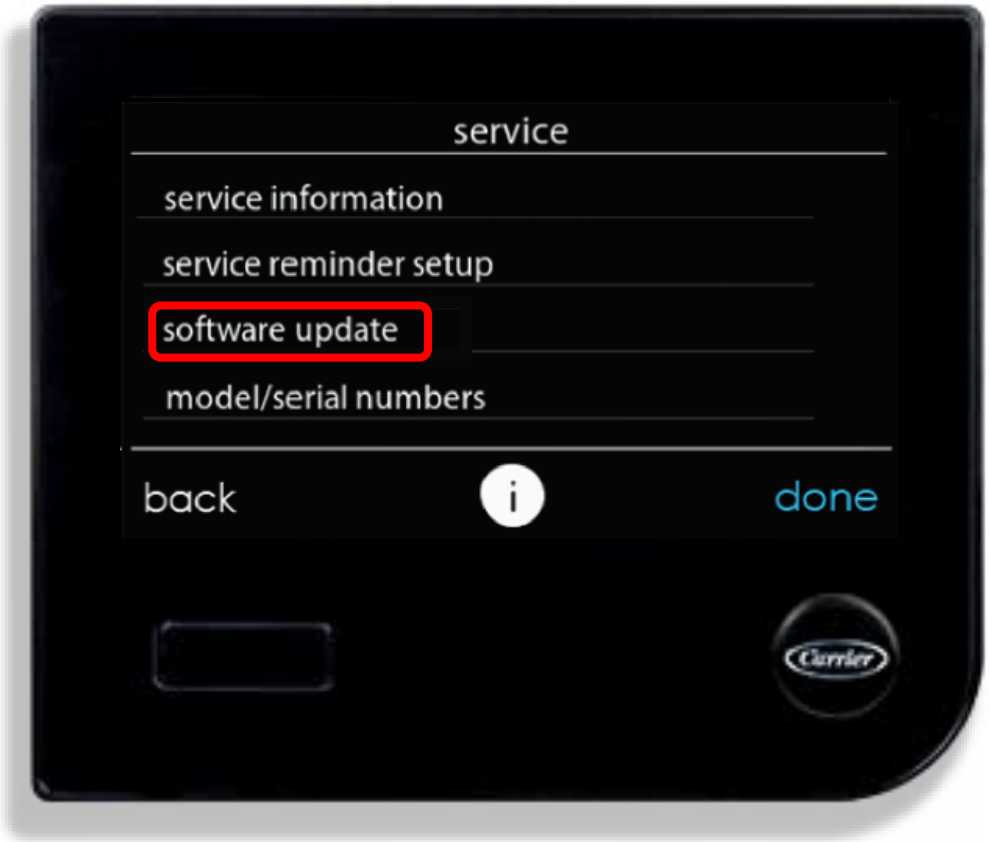
Version 4.47 Release Notes

Version 4.47 (August 2023)

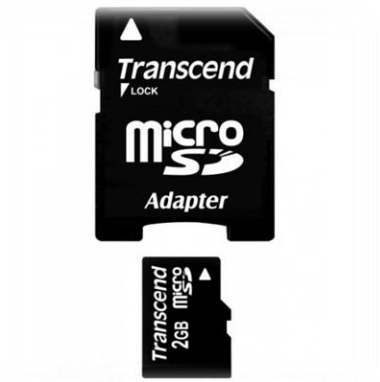
Version 4.47 software includes the following updates to the Series B Carrier® Infinity® System Control:

- Integrate New Communicating gas furnace model into the System Control
- Integrate New Communicating Fan Coil model into System Control
- A2L (R454B Refrigerant) Mitigation Response
- Create user adjustable setpoint limits for both heating and cooling
- System monitor to not alert for over-cool to dehumidify while in the Away profile
- Fixed ventilator and humidifier fields on the 'equipment operating status' screen to properly reflect if either accessory is operating
- Improved OTA speed for wall control
- Changed text on UI to "enable/disable" system monitor versus "on/off"
- Improved reference in the 'system malfunction' screen as the originator of the malfunction
- Added more V coil models
- Corrected possible short cycling, cooling call not responding and continuous fan momentarily stopping from version 4.38

Step 1 – Updating The Wall Control



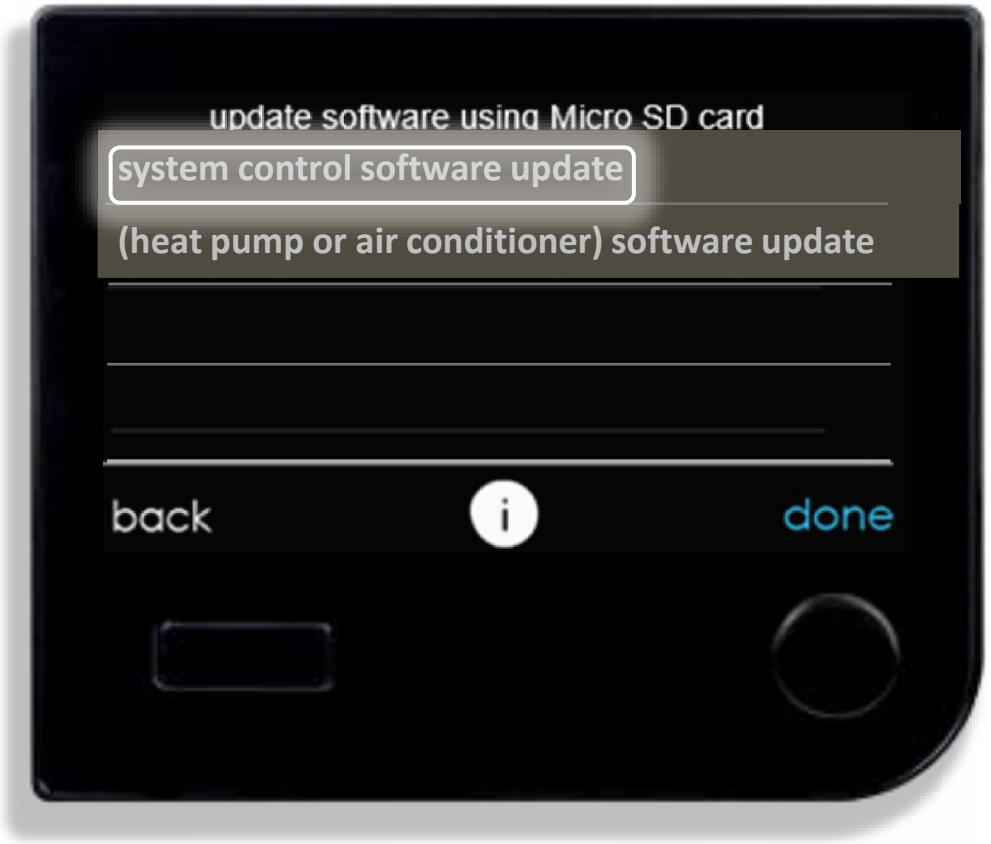
- **Update with MicroSD™ Card**
- From the MENU screen, select the SERVICE icon, don't hold it down. Only press it and then release it.
- Select software update



Step 1a – Updating The Wall Control

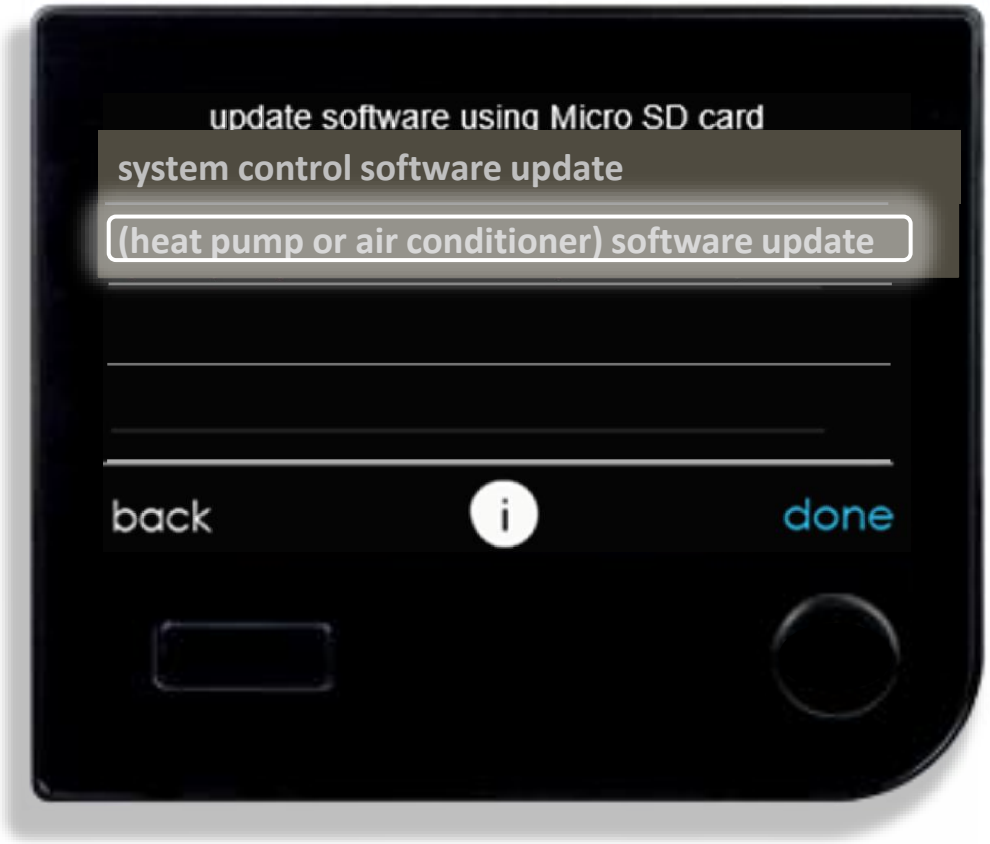
- **Update with MicroSD™ Card**
- From the MENU screen, select the SERVICE icon, hold it down until it turns green. Once it turns green release it.
- Select software update

Step 2 – Updating The Wall Control



- Select update software using MicroSD™ card
- The equipment selection will only show on the 24/26 SEER equipment currently.

Step 2a – Updating Outdoor Equipment



- Select update software using MicroSD™ card
- The equipment selection will only show on the 24/26 SEER equipment currently.

Step 3 – Updating The Wall Control

- Insert the MicroSD™ card into the UI, if has been inserted correctly, select system control software update.
- If the MicroSD™ card is not in place or fully locked into the slot, you will get the message below.
- Reinsert the MicroSD™ card and the control will automatically detect the card and begin the upgrade process.

Step 4 – Updating The Wall Control

- Press YES to continue with the firmware upgrade
- The upload and installation will take several minutes
- Once upgraded, select the done button

NOTE: There will be a longer than normal delay as the firmware is installed

Step 5 – Updating The Wall Control

- Once restarted, this will complete the Infinity or Evolution™ System Control firmware upgrade process
- Remove the MicroSD™ card

Places to Find Software Updates for the Controller and Equipment

1. Go to https://HVACPartners.com

2. Go to www.myinfinitytouch.carrier.com or www.myevolutionconnex.bryant.com

We are going to cover both methods in this section.

HVAC PARTNERS | All Brands | Richard Gambaro | Sign Out

Products | Marketing | Support | Learning | Admin | Search

- Dashboards
  - Product Catalog
  - Controls Expert Dashboard
  - ecobee - Powered by Carrier
  - ecobee - Powered by Bryant
  - Enhanced Packaging
  - Distributor Bulletin Board
- Parts
- Software
- Customer Order Logistics Tracking System (COLTS)

What ts

Product Data 5/11/2022

2023 Bryant Split System Compliance Existing Inventory - RNC
Brochure 5/11/2022

2023 Bryant Split System Compliance Existing Inventory - AOR
Brochure 5/11/2022

https://hvacpartners.com/products/dashboards/productcatalog

Quick Links

Product Catalog | EPIC Internet Explorer | EPIC Multi-Browser | Service Bench | Customer Gateway | RC Community

Feedback

Go Above. Think Beyond.

Product Catalog

1 Select A Product Category
2 Select A Sub-Category
3 Select A Model

- Airside
- Boilers
- Commercial Controls
- Chillers
- Ductless Systems
- Geothermal Heat Pumps
- Furnaces
- IAQ
- Packaged Indoor Units
- Packaged Outdoor Units
- Residential Controls
- Split Systems
- Variable Refrigerant Flow
- Toshiba Carrier VRF
- Carlyle Compressors

Feedback

Product Catalog

Residential Controls 2 Select A Sub-Category 3 Select A Model

Thermostats

System Controls & Accessories

Zoning Systems

Humidifier Controls

Feedback

Product Catalog

Residential Controls | System Controls & Accessories | 3 Select A Model

SYSTXBB4ZC01
Evolution™ Zoning Panel

SYSTXBBECC01-B
Evolution™ Connex™ Control (Black)

SYSTXBBECC01-C

SYSTXBBECF01-B
Evolution® Connex™ Control

SYSTXBBNIM01

SYSTXBBRRS01

SYSTXCCICF01-B
Infinity® System Control (Black)

SYSTXCCITC01-B
Infinity® System Control (Black)

SYSTXCCITC01-C

Feedback

SYSTXCCITC01-B

Infinity® System Control (Black)

Residential Contr... | System Controls & Acce... | SYSTXCCITC01-B

Overview | Documents

OVERVIEW

The Infinity® system control is designed for homeowners who understand the value of precision comfort and an easy to use, intuitive user interface. With wireless connectivity, occupancy sensing capabilities and built-in smarts, the Infinity system control puts you in command of comfort and energy savings like never before.

As part of a complete, communicating Infinity® system, this smart control takes full advantage of the best technology Carrier has to offer, including Greenspeed® technology and Hybrid Heat® system management. Taking your comfort

Overview Documents

DOCUMENTS

Search

English Español Français

Show Prior Versions of Documents

Bulletin Marketing Software Technical Literature

Installation

Owner's Manual

Product Data

Warranty Card

Infinity Zoning Design Guide

Installation 08/13/2021 SYSTXZNSMS-02DG

SYSTXCC4ZC01 Infinity Damper Control Installation and Start-up Instructions

Installation 08/13/2021 DAMP4ZC-04SI

DOCUMENTS

Search

English | Español | Français

Show Prior Versions of Documents

Bulletin | Marketing | Software | Technical Literature

Firmware Installer

General

Infinity® System Control Software Update – Version 1402-0132

Firmware Installer 04/30/2018

Infinity® System Control Software Update – Version 1402-0200

Firmware Installer 08/27/2018

Series B Carrier® Infinity® System Control Version 2.40 Release Notes and Software Update Instructions

Firmware Installer 01/20/2020

Click Hyperlink

hvacpartners login - Bing | My Home Page | HVACpartners :: SYSTXCCICF01-B | Microsoft Word - Infinity System

Not secure | files.hvacpartners.com/docs/1010/ValCust/07/sw_infinity_notes_0361.pdf

1 of 18 | Page view | Read aloud | Draw | Highlight | Erase

October 22, 2020

Contents

General 1
Copyright Notice 1
End User License Agreement 1
Revision History 2
Installation Instructions 10
Finding the Current Software Version 10
Downloading the Software Update 12
Installing the Software Update 16

General

This document is provided in conjunction with the "hex" file BINF0361.hex, which comprises the executable code for the following Infinity System Control model numbers:

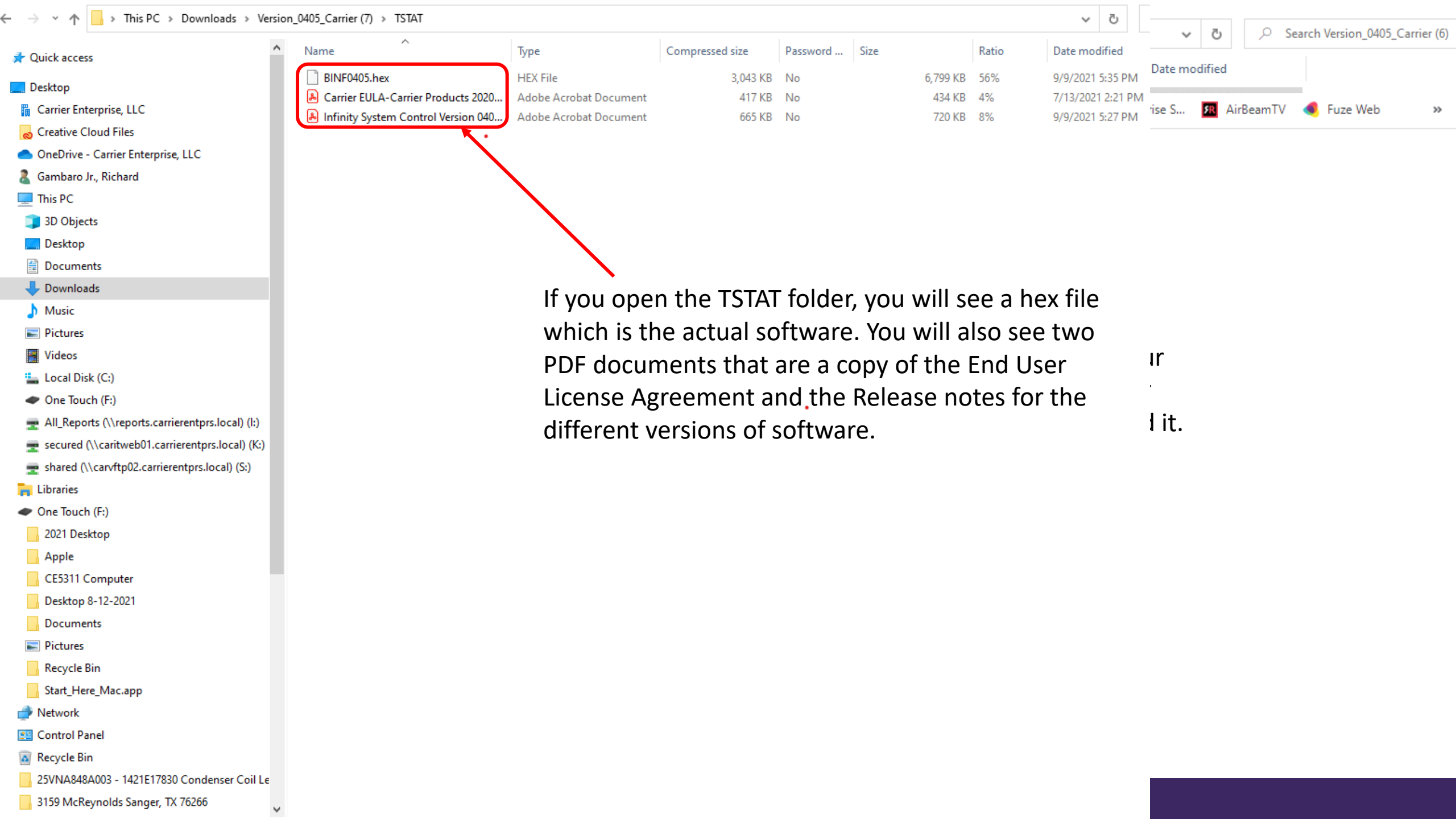
- SYSTXCCITC01-B
- SYSTXCCWIC01-B
- SYSTXCCICF01-B
- SYSTXCCWIF01-B

This software is ONLY compatible with these model wall controls.

Detailed instructions on uploading this software into the Infinity System Control are included in this document. The software release package is available through this link:

http://cacbdpapps.net/marketing/eula/Infinity_System_Control_V0361_EULA.html

Note: This software is for the Series B controls only. The Series A controls cannot use Series B software and vice-versa.

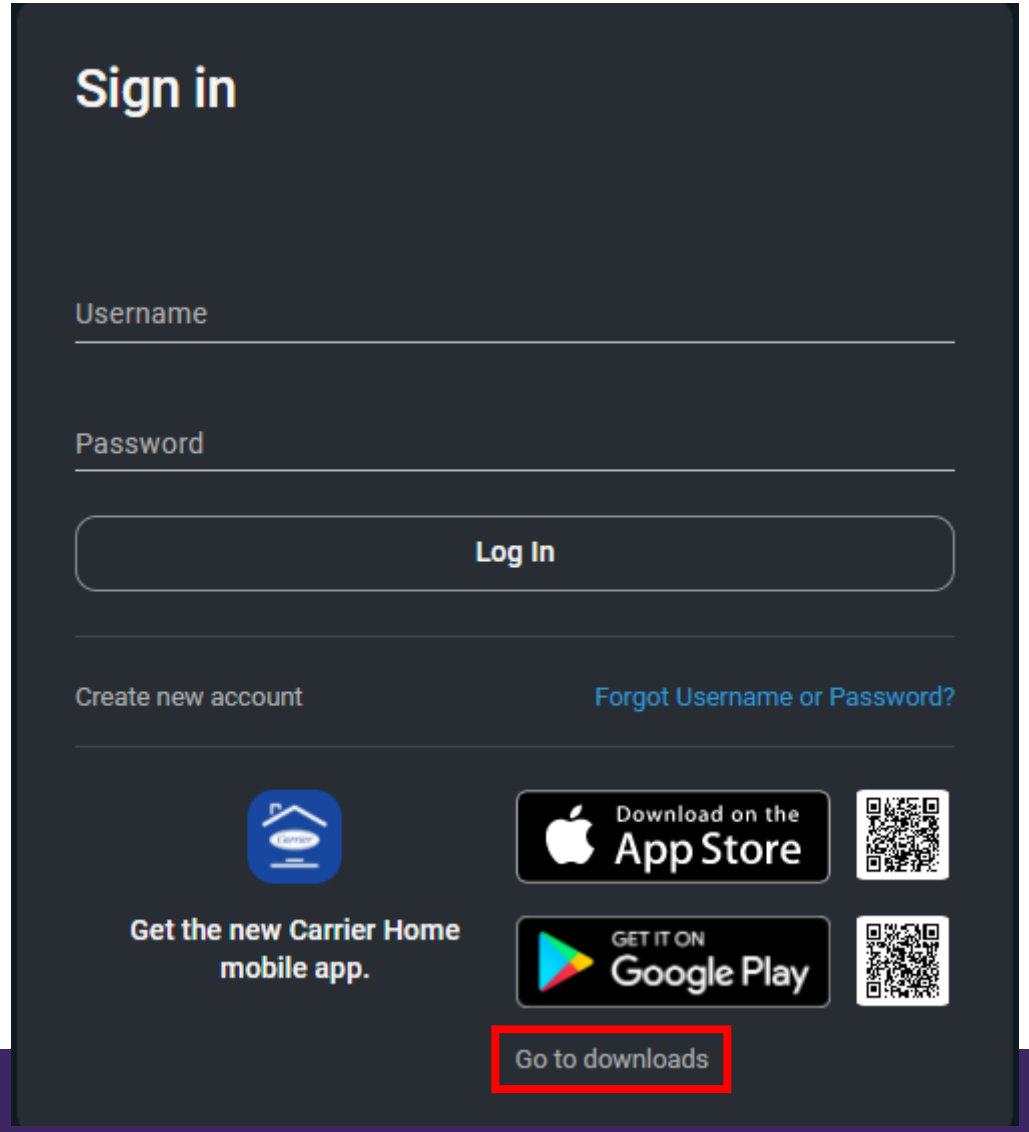


If you open the TSTAT folder, you will see a hex file which is the actual software. You will also see two PDF documents that are a copy of the End User License Agreement and the Release notes for the different versions of software.

Places to Find Software Updates for the Controller and Equipment

Go to www.myinfinitytouch.carrier.com or www.myevolutionconnex.bryant.com

Go to www.myinfinitytouch.carrier.com or www.myevolutionconnex.bryant.com



Downloads Page

Carrier MY INFINITY®

ABOUT INFINITY® LEARN MORE DOWNLOADS

Get the Latest Software for Your Infinity® System Control

You must first agree to the End User License Agreement, then you will then have the option to download the software and installation instructions.

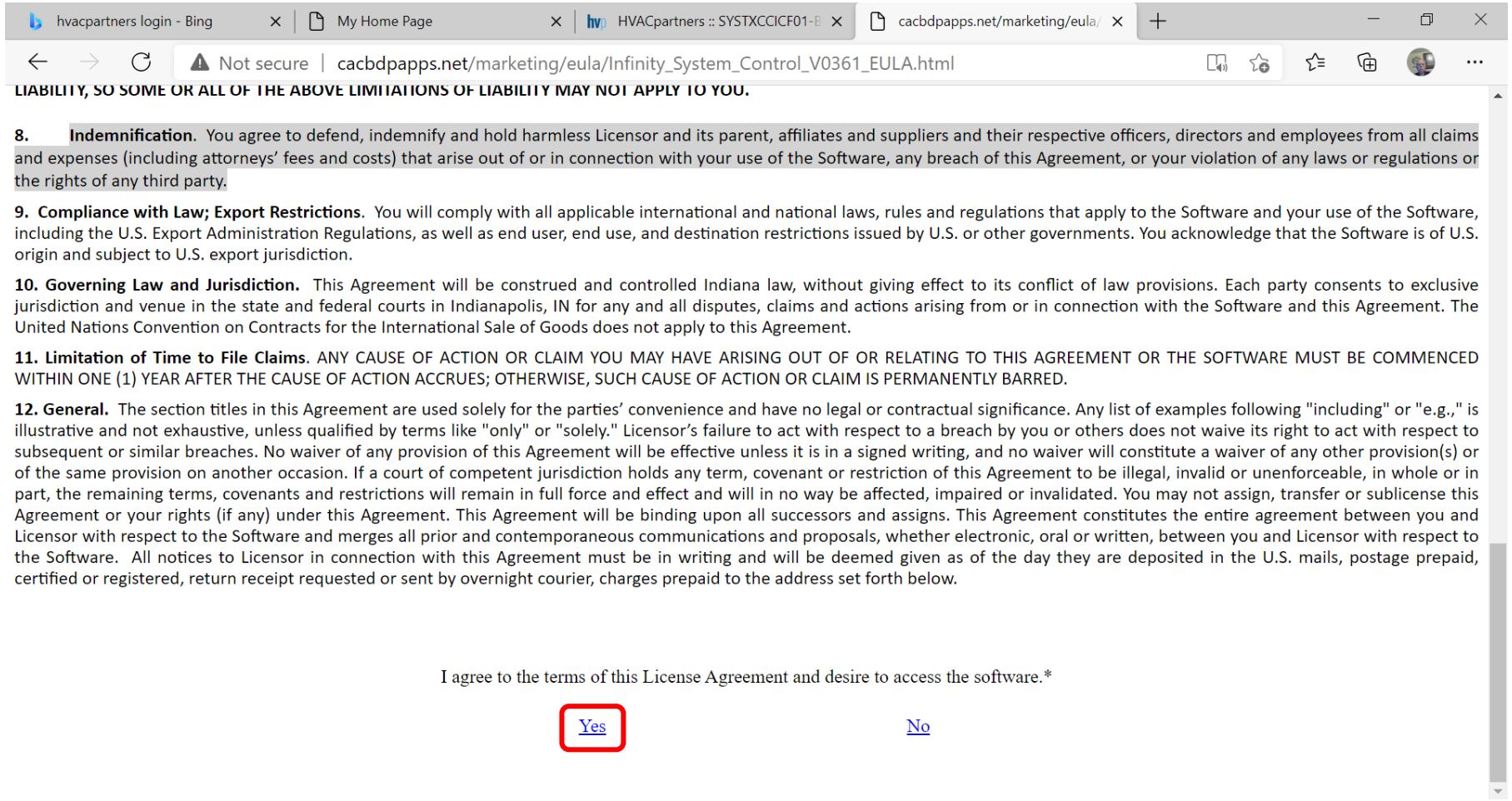
Series A Software
Series B Software
Series B Software release notes

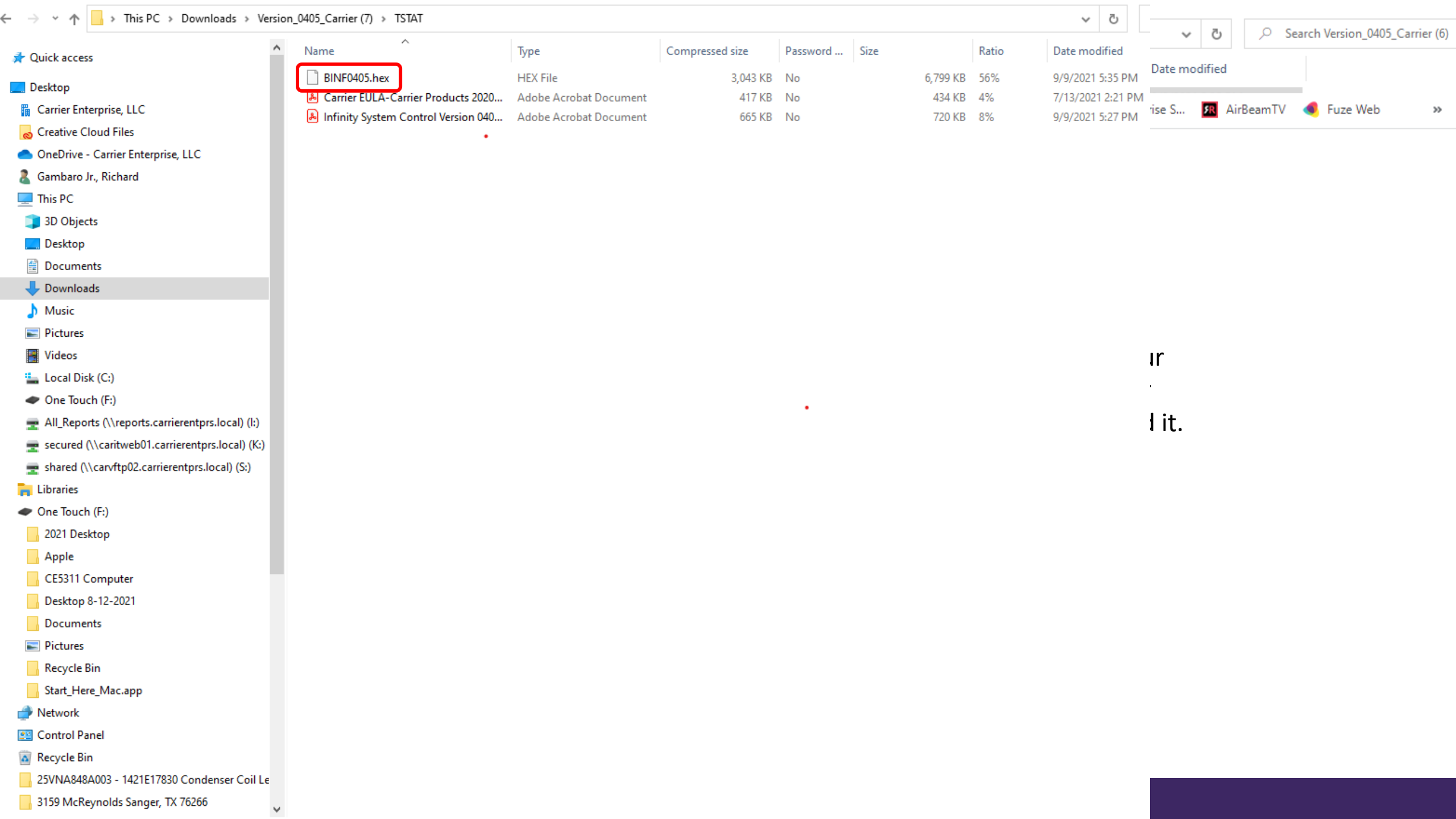
Get the Latest Software for Your Infinity® 26 Air Conditioner and Infinity® 24 Heat Pump with Greenspeed® Intelligence

You must first agree to the End User License Agreement, then you will then have the option to download the software and installation instructions.

Infinity® 26 Air Conditioner and Infinity® 24 Heat Pump Software

Choose Yes To User License Agreement




This PC › Downloads › Version_0405_Carrier (7) › TSTAT
Search Version_0405_Carrier (6)
Quick access
Desktop
Carrier Enterprise, LLC
Creative Cloud Files
OneDrive - Carrier Enterprise, LLC
Gambaro Jr., Richard
This PC
3D Objects
Desktop
Documents
Downloads
Music
Pictures
Videos
Local Disk (C:)
One Touch (F:)
All_Reports (\\reports.carrierentprs.local) (I:)
secured (\\caritweb01.carrierentprs.local) (K:)
shared (\\carvftp02.carrierentprs.local) (S:)
Libraries
One Touch (F:)
2021 Desktop
Apple
CE5311 Computer
Desktop 8-12-2021
Documents
Pictures
Recycle Bin
Start_Here_Mac.app
Network
Control Panel
Recycle Bin
25VNA848A003 - 1421E17830 Condenser Coil Le
3159 McReynolds Sanger, TX 76266
Name
Type
Compressed size
Password ...
Size
Ratio
Date modified
BINF0405.hex
HEX File
3,043 KB
No
6,799 KB
56%
9/9/2021 5:35 PM
Carrier EULA-Carrier Products 2020...
Adobe Acrobat Document
417 KB
No
434 KB
4%
7/13/2021 2:21 PM
Infinity System Control Version 040...
Adobe Acrobat Document
665 KB
No
720 KB
8%
9/9/2021 5:27 PM
Date modified
AirBeamTV
Fuze Web
ır
l it.

Knowledge Check 1
Finding Software

How many places are there to find the controller software?

HVAC Partners

&

www.myinfinitytouch.carrier.com

or

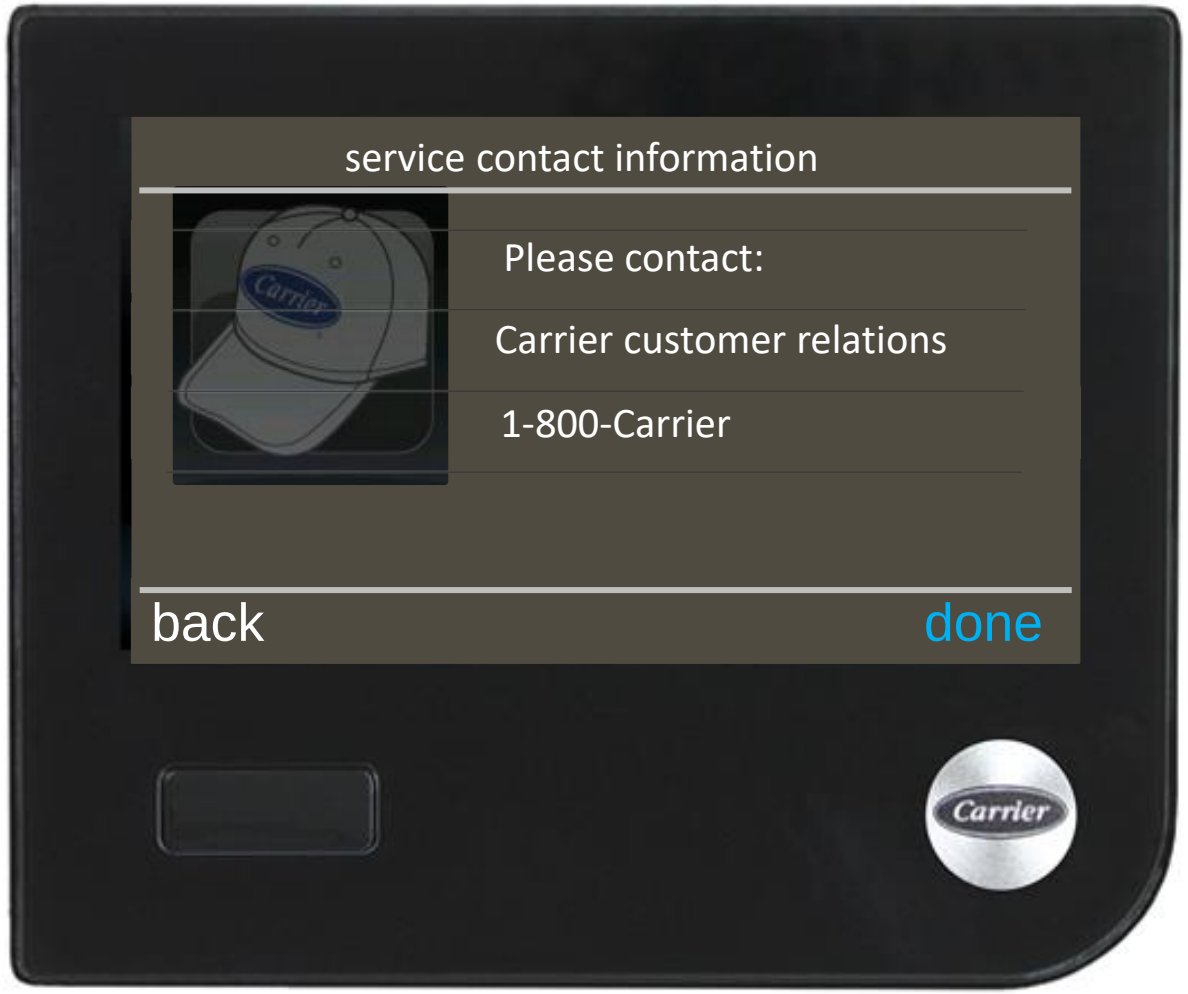
www.myevolutionconnex.bryant.com

Homeowner Advanced Screen

Temperature/Mode Display Screen

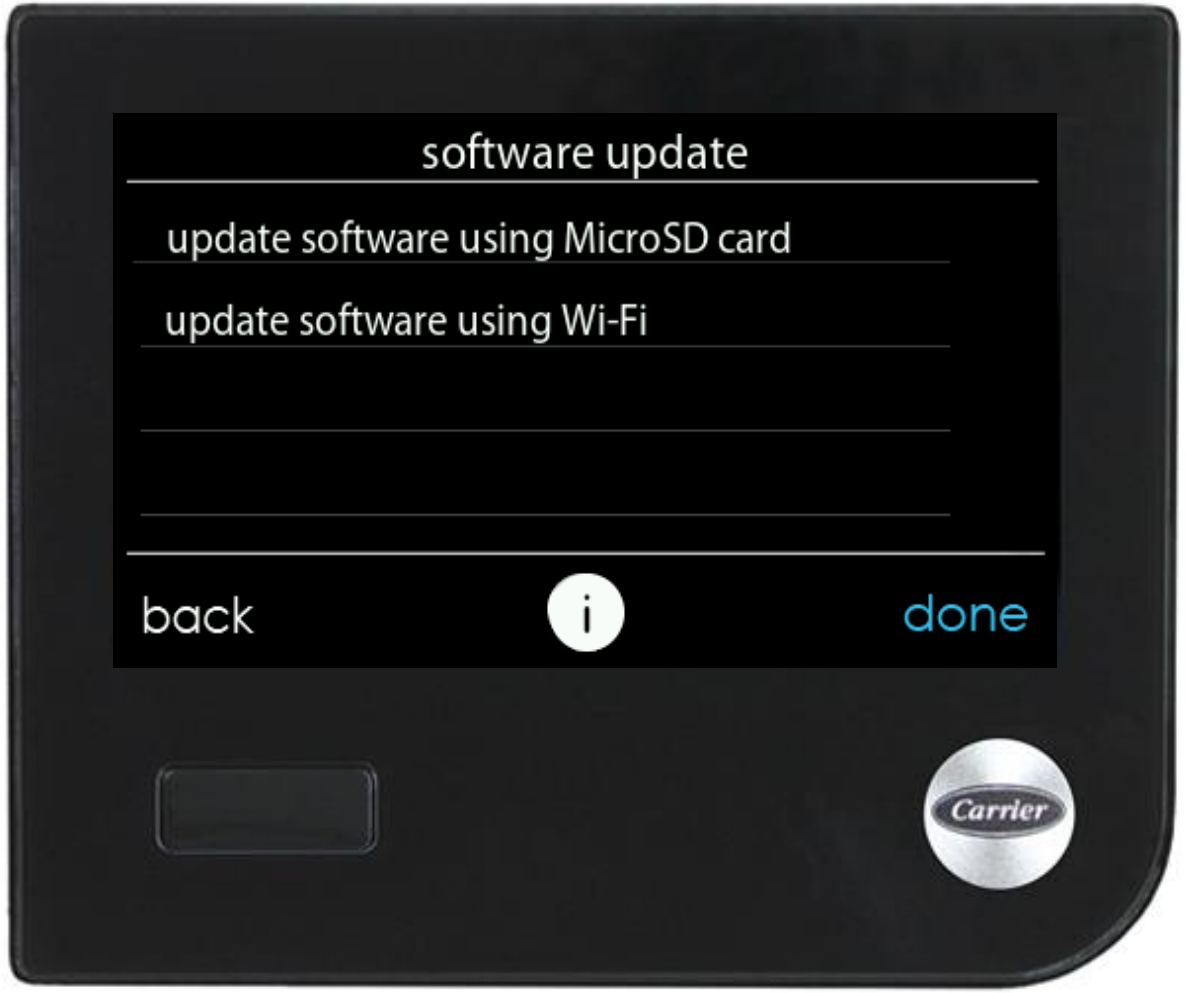
Temperature Display Screen

Service Contact Information Screen

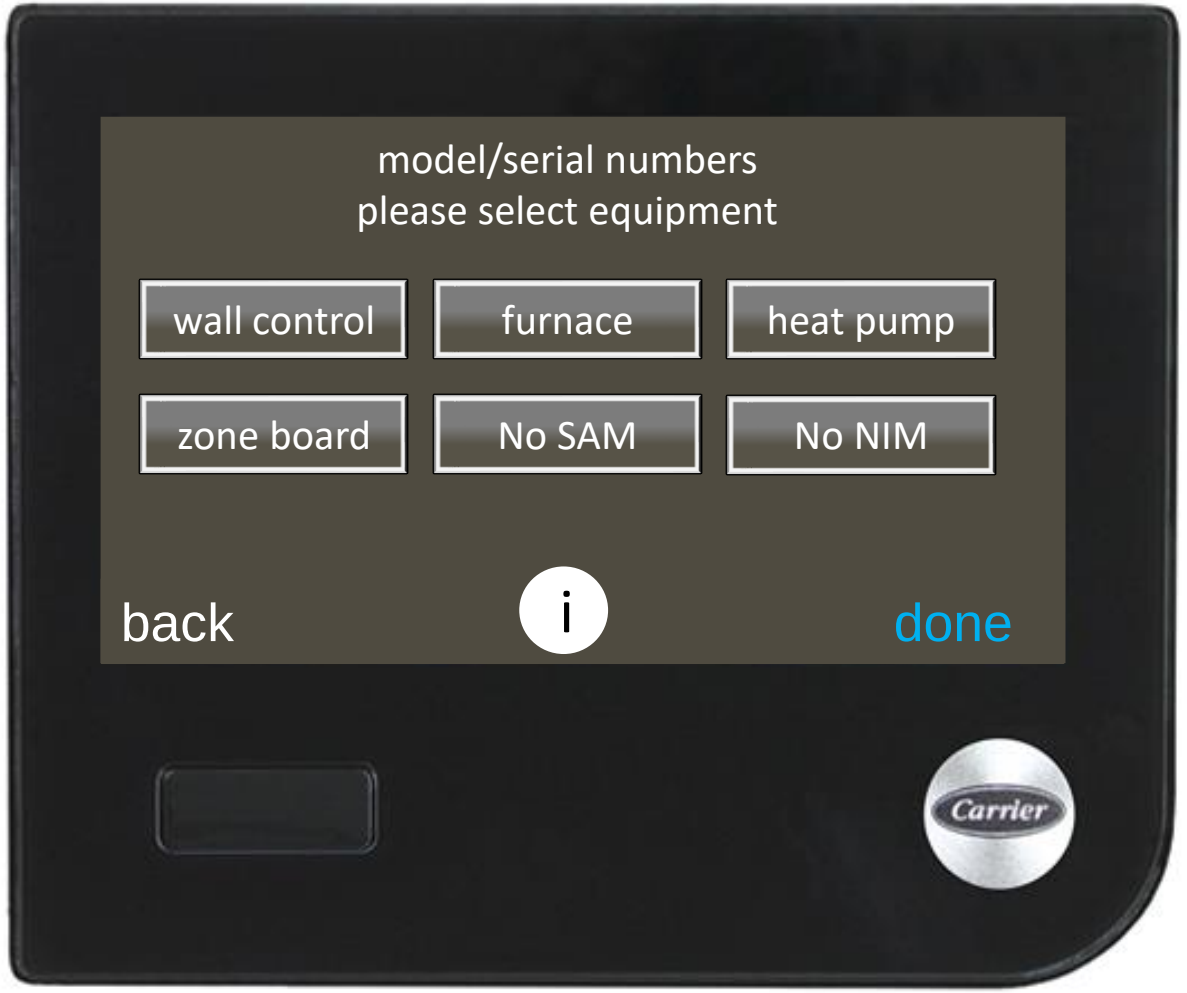


Service Maintenance Reminder Screen

Software Update Screen



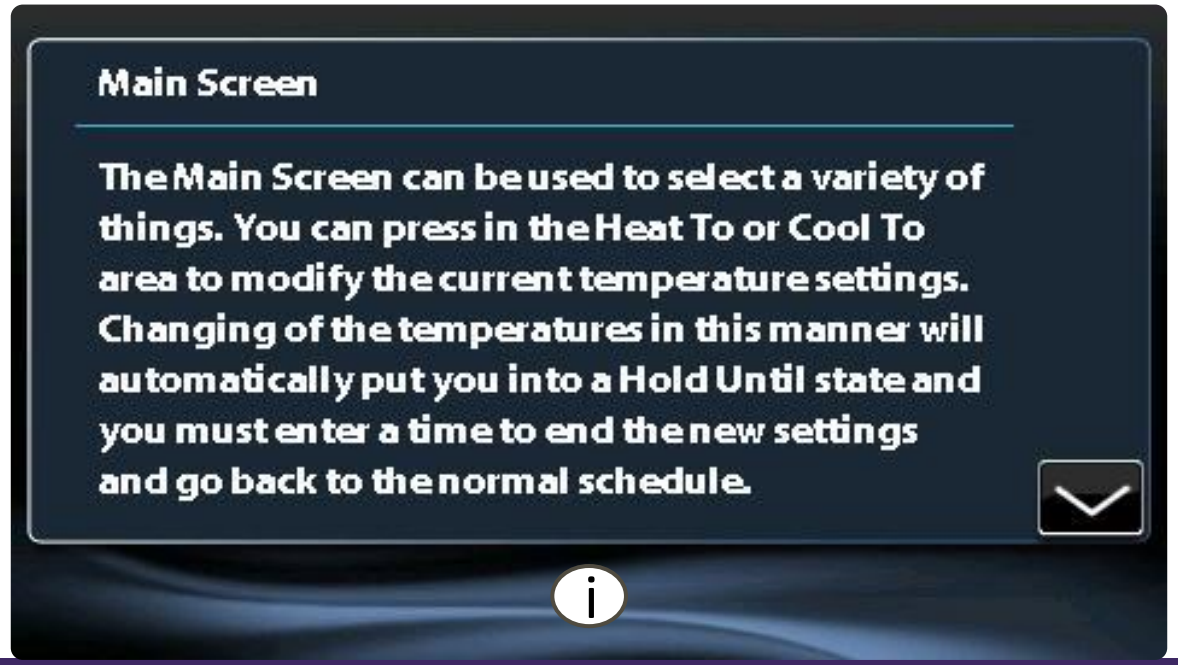
Model/Serial Number Screen



Homeowner Menu Screen Icons

Information Button

- Touch the (i) symbol for additional information
- (i) is only displayed when additional information is provided
- Information provided is relevant to the screen displayed
- Allows more in-depth navigation of displayed screen's capabilities



Override and Hold

First Menu Display Screen

Second Menu Display Screen

Comfort Profiles

Comfort Profiles

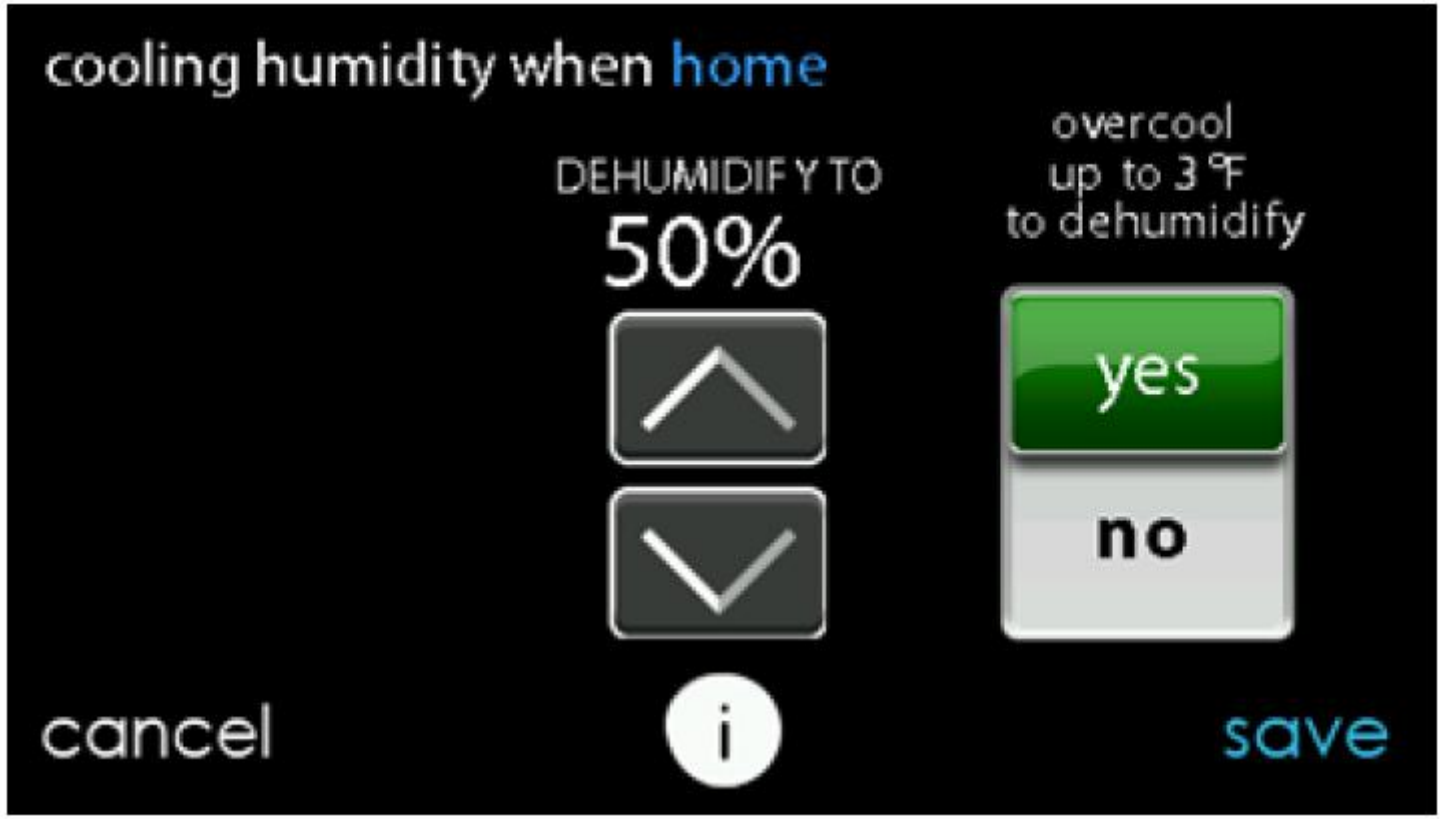
Comfort Profiles Temperature and Fan

Comfort Profile screen shown without zoning and with zoning. You will notice that when you have zoning applied you can set the profiles, including the fan for each independent zone.

Comfort Profiles

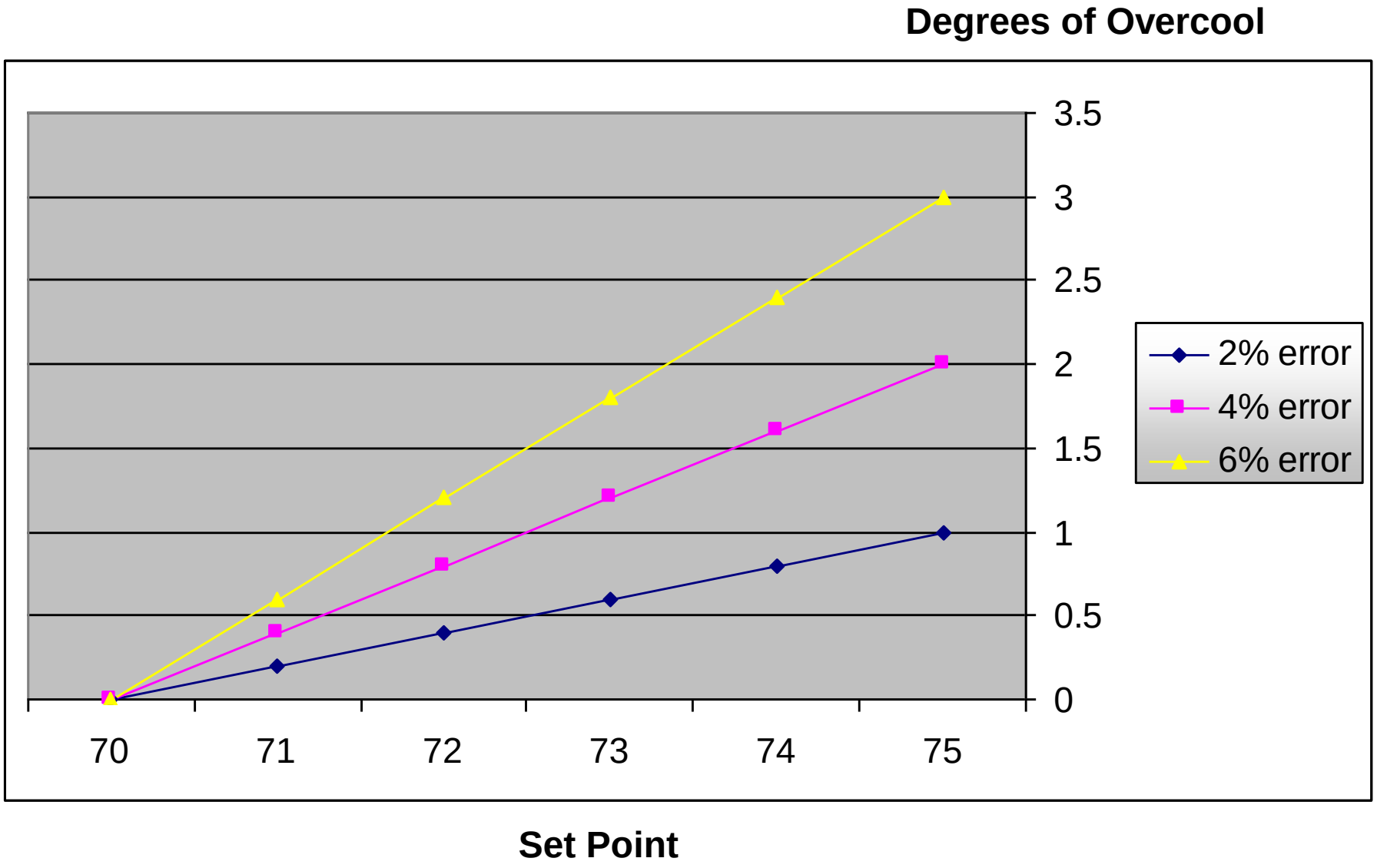
Comfort Profiles Humidity And Fresh Air

Cooling Humidity Selection

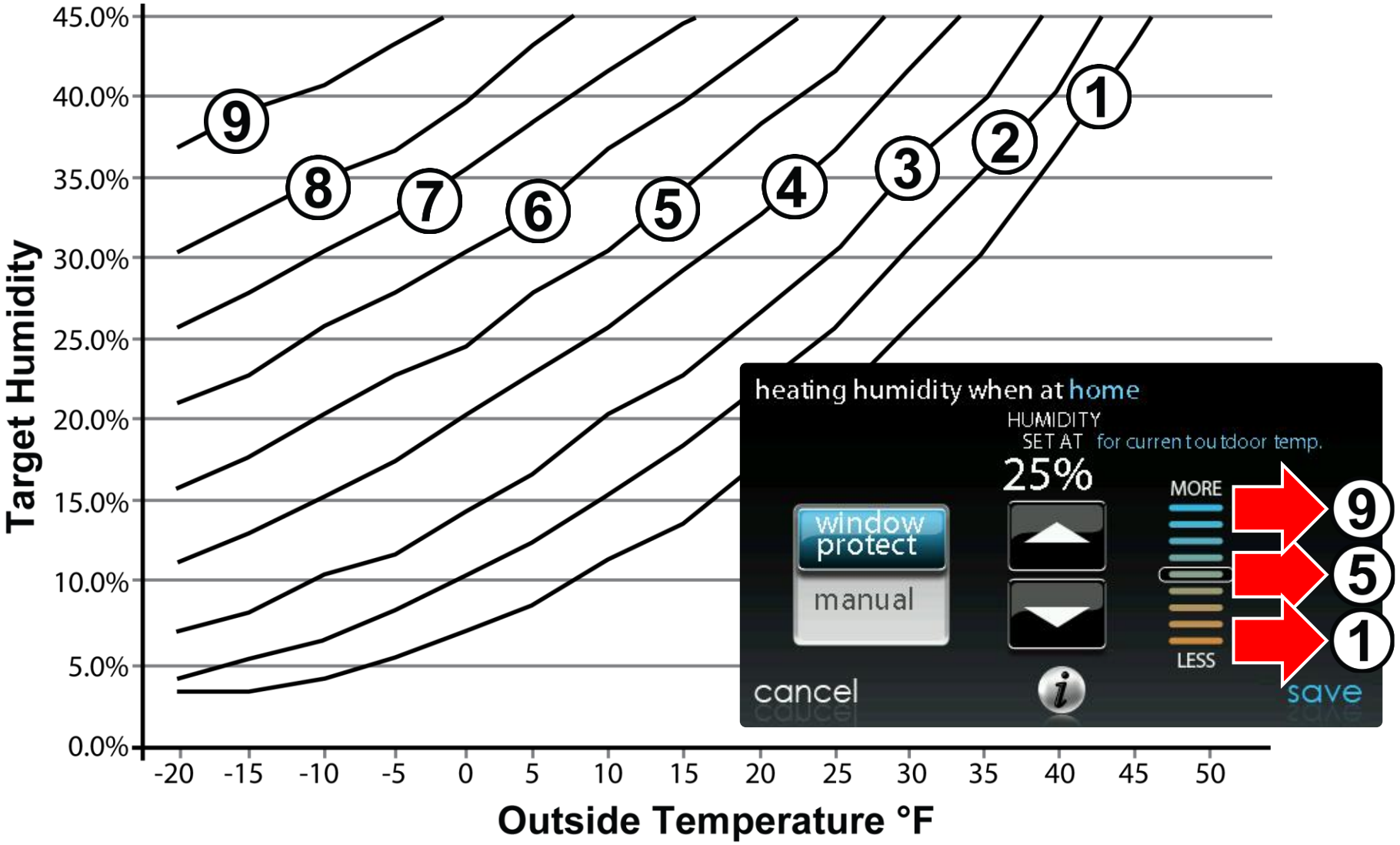


The system can overcool the space by up to 3° degrees as a maximum or as low as 70° degrees as a minimum. This is determined by how far we are from the humidity setpoint, what the indoor temperature is and the algorithms.

Dehumidify Overcool



Heating Humidity Selection

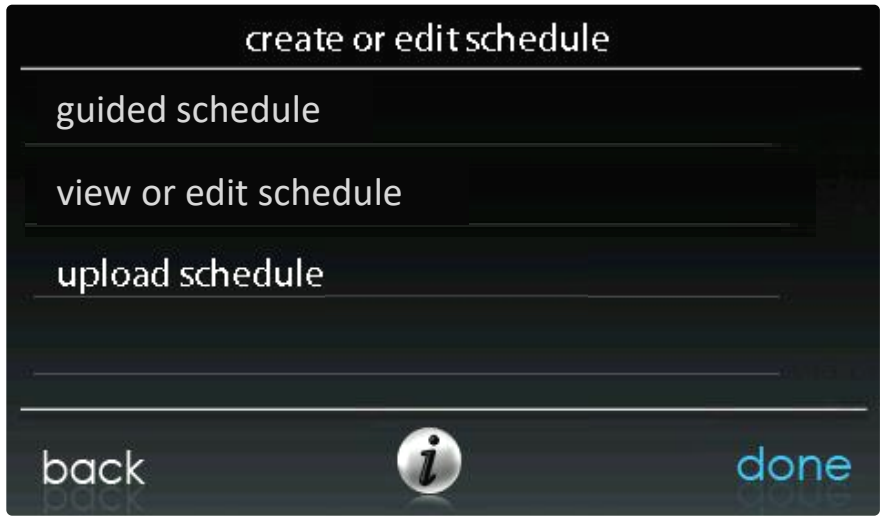


Schedules

HOME
AWAY
WAKE
SLEEP
comfort profiles
schedules
vacation
reminders
on
off
operating status
display
time / date
back
done
Carrier

Schedules

- Guide me through scheduling
- Select the zones with the same schedule
- I wake up at:
- I am home all day?
- I leave home at:
- Enable smart setback?
- I am back home at:
- Different comfort sleep settings desired?
- I go to sleep at:
- SAVE the created schedule



Programming Schedules

Take a Break!

Be back in

04:[redacted]

Minutes

Take a Break!

Be back in

03:[redacted]

Minutes

Take a Break!

Be back in

02:[redacted]

Minutes

Take a Break!

Be back in

01:[redacted]

Minutes

Take a Break!

Be back in

00:[illegible]

Seconds

Vacation

HOME
AWAY
WAKE
SLEEP
comfort profiles
schedules
vacation
reminders
on
off
operating status
display
time / date
back
done
Carrier

Vacation

vacation starts on
May 29 2022 6:00 a
profile for vacation
Cool to 78 Heat to 68 cont. fan AUTO
vacation ends on
June 01 2022 5:00 p
cancel
save
Carrier

Reminders

HOME
AWAY
WAKE
SLEEP
comfort profiles
schedules
vacation
reminders
on
off
operating status
display
time / date
back
done
Carrier

Reminders

set reminder pop-up messages
filter
humidifier
UV lights
ventilator pre-filter
yes
yes
yes
yes
no
no
no
no
cancel
save
Carrier

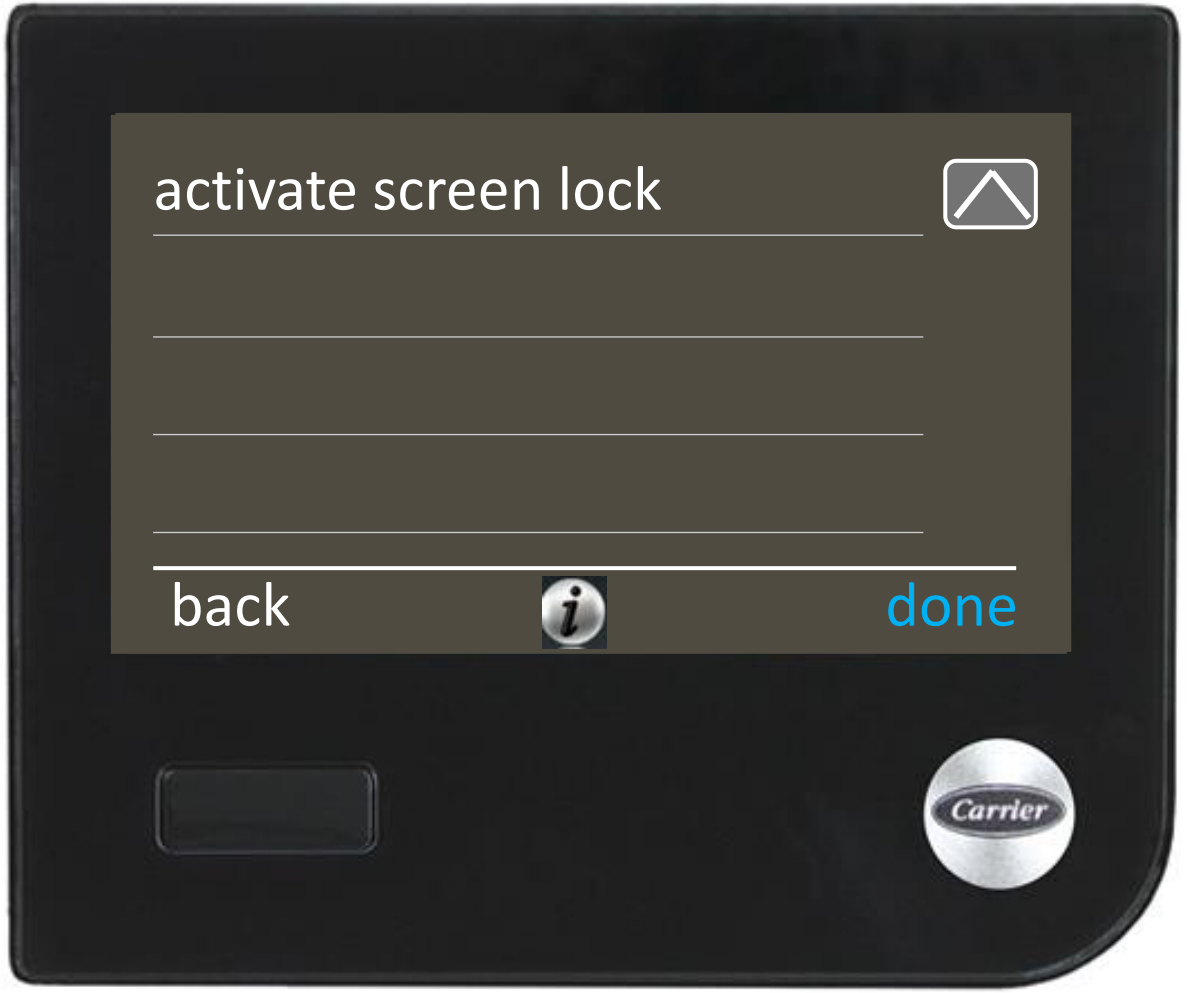
Operating Status

Operating Status

Display

HOME
AWAY
WAKE
SLEEP
comfort profiles
schedules
vacation
reminders
on
off
operating status
display
time / date
back
done
Carrier

Display



Screen Lock

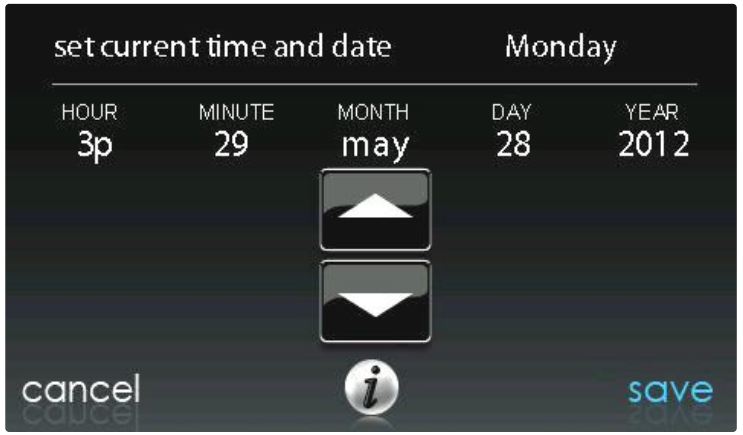
please confirm that you want to
lock the screen
yes
no
Carrier

Dec 14, 2012 8:00a
room temp
59°
91°
outside temp
unlock
heating...
bryant

Time/Date

HOME
AWAY
WAKE
SLEEP
comfort profiles
schedules
vacation
reminders
on
off
operating status
display
time / date
back
done
Carrier

Set Time, Date, Daylight Savings



Set Time and Date

- Select HOUR and MINUTE
- Select MONTH, DAY and YEAR
- Select SAVE

Set Daylight Savings Time

- Enable Daylight Savings Time
- Select SAVE
- Select start WEEK, DAY, and YEAR
- Select SAVE
- Select end WEEK, DAY, and YEAR
- Select SAVE

Second Menu Display Screen

Photo Upload

Heat Source

service
photo upload
heat source
wireless
weather
sensors
back
done
Carrier

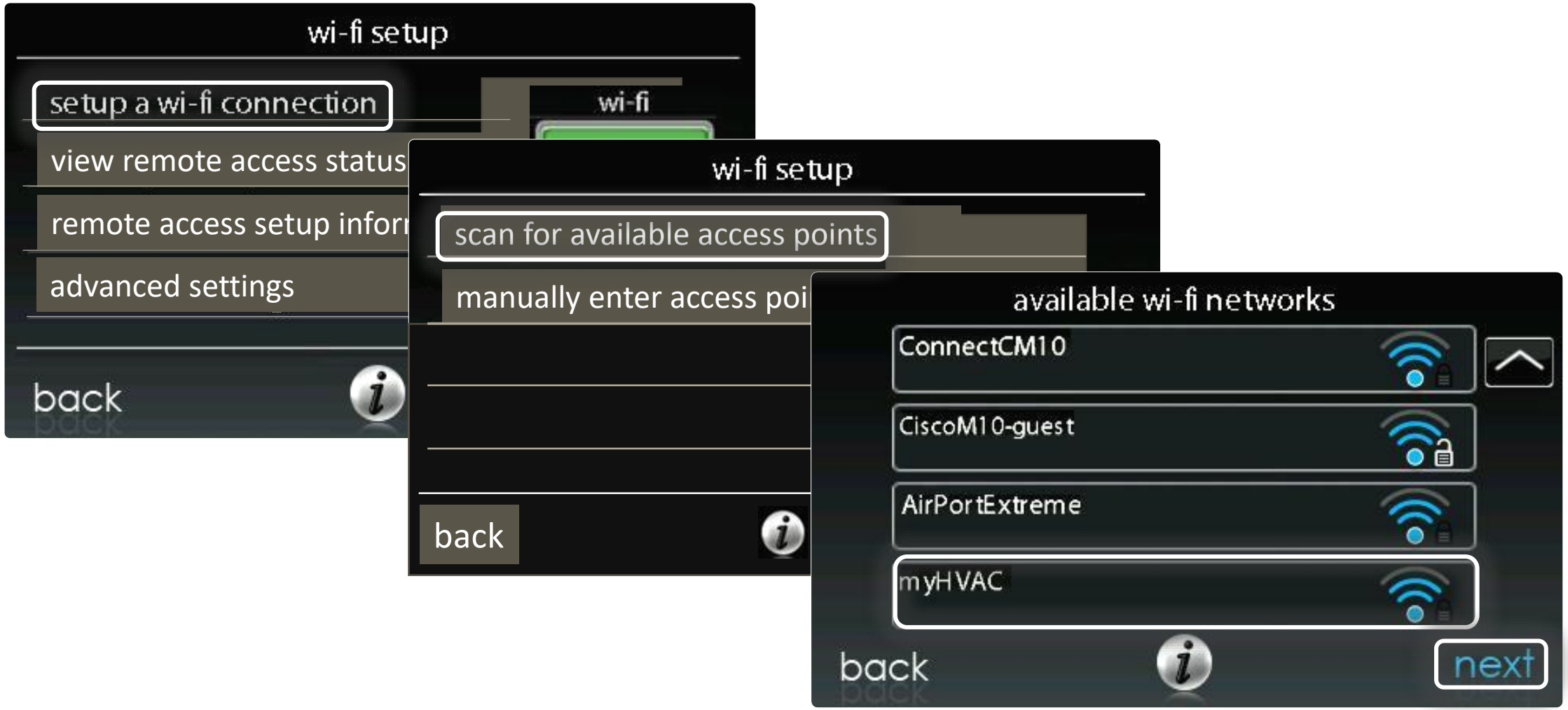
Heat Source

heat source
system in control
furnace only
heat pump only
cancel
save
Carrier

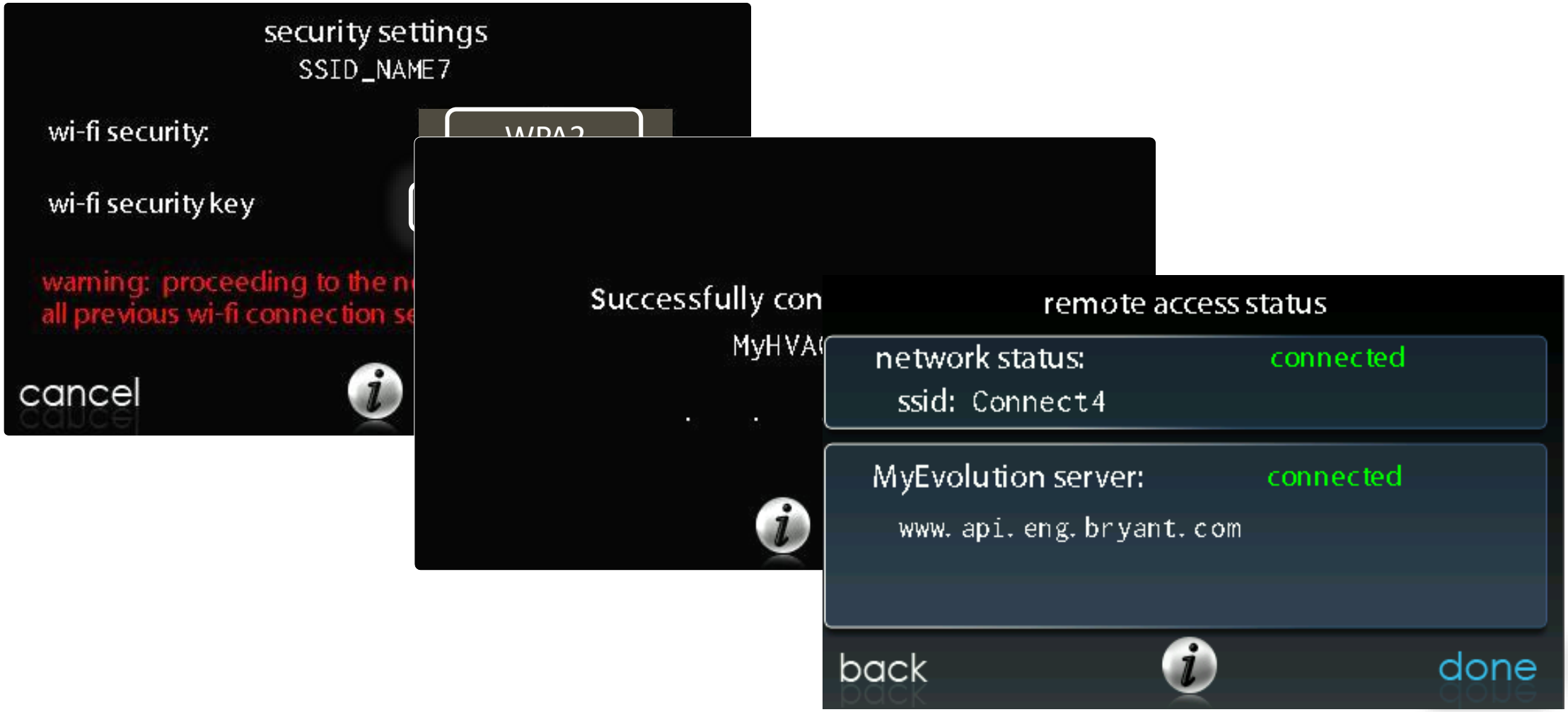
Wi-Fi Setup

service
photo upload
heat source
wireless
weather
sensors
back
done
Carrier

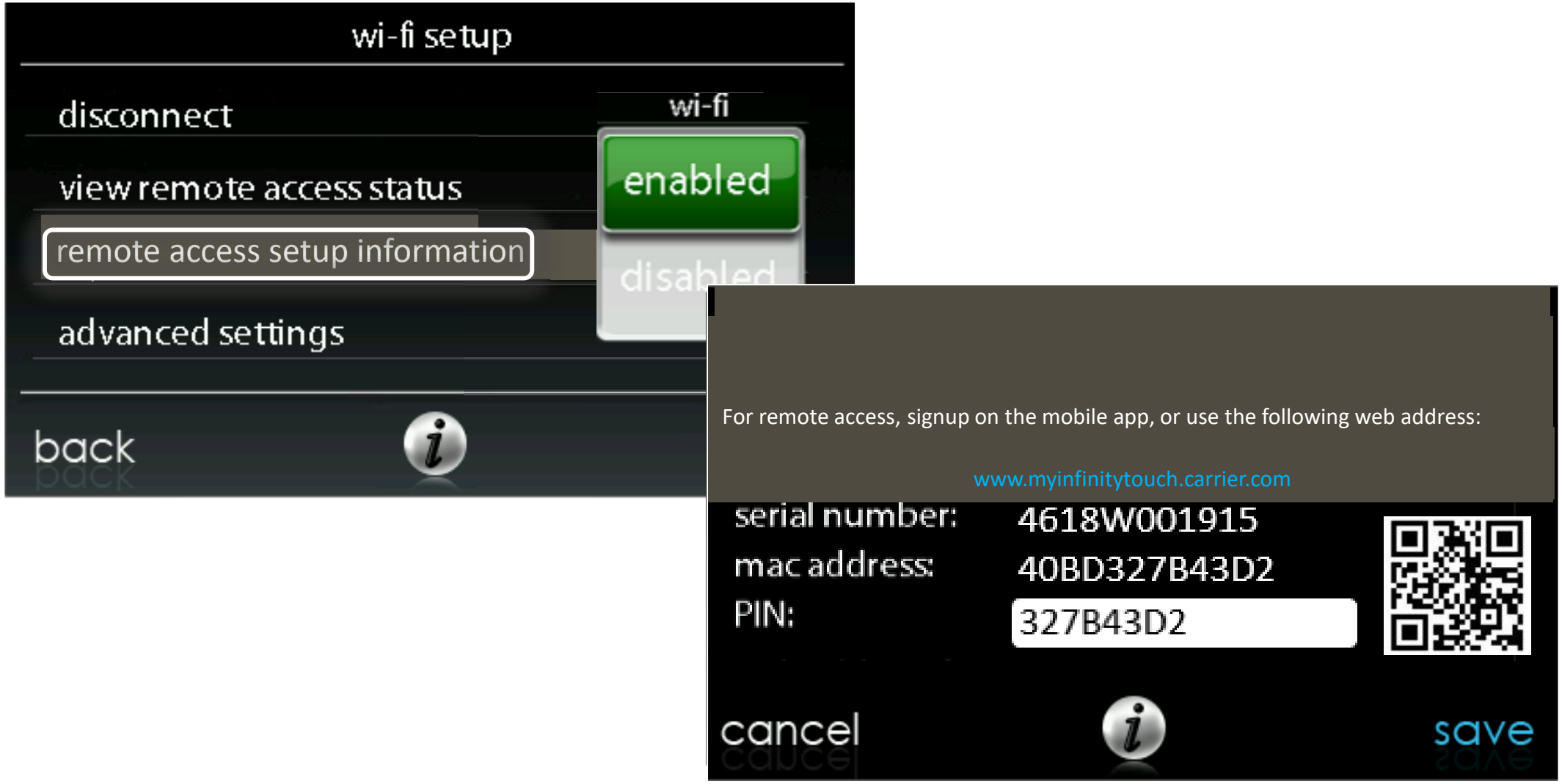
Wi-Fi Setup


wi-fi setup
setup a wi-fi connection
wi-fi
view remote access status
remote access setup infor
advanced settings
back
wi-fi setup
scan for available access points
manually enter access poi
back
available wi-fi networks
ConnectCM10
CiscoM10-guest
AirPortExtreme
myHVAC
back
next

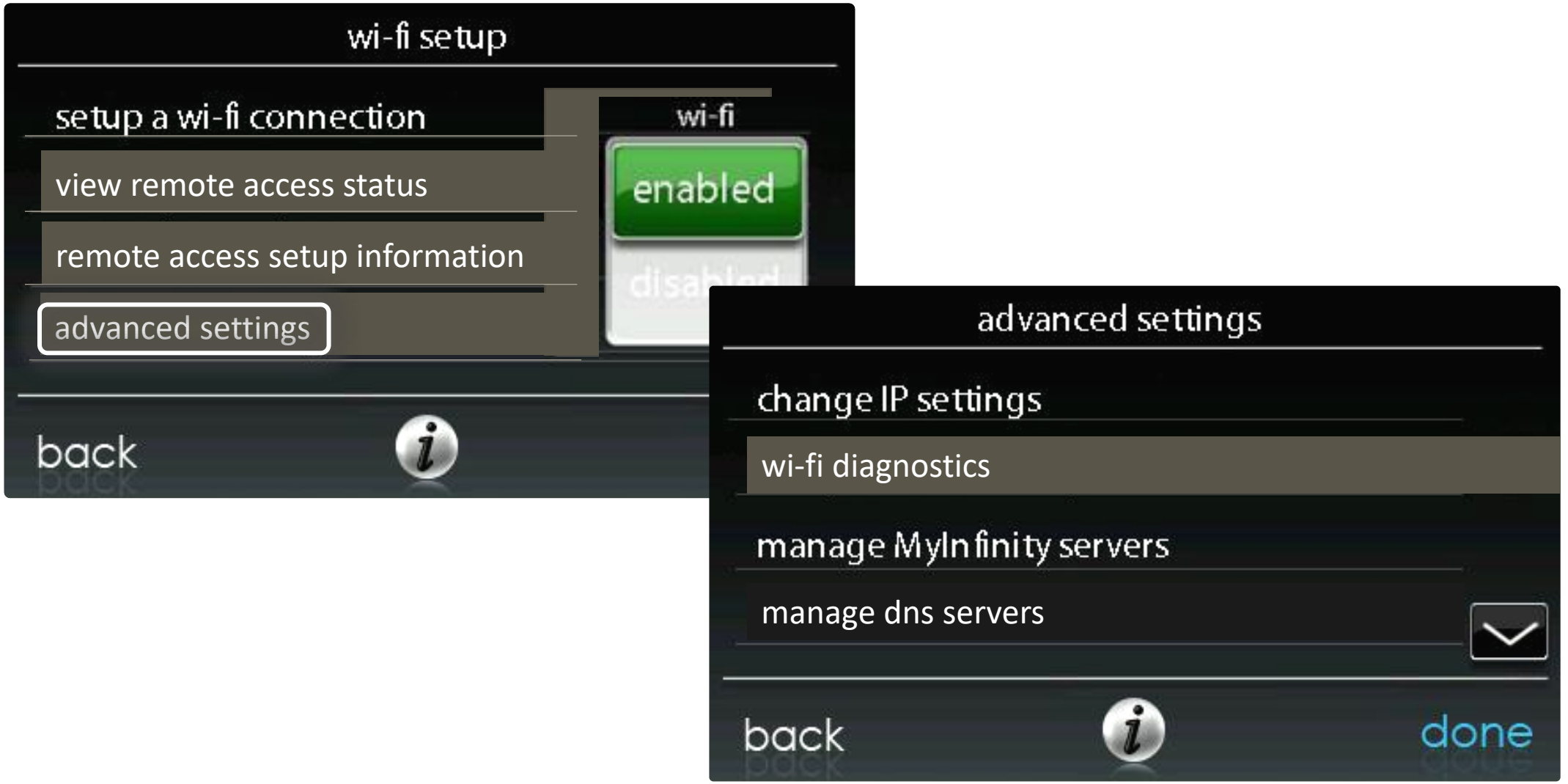
Wi-Fi Setup Continued



Wi-Fi Registration Information



Wi-Fi Advanced Screens



Weather

service
photo upload
heat source
wireless
weather
sensors
back
done
Carrier

Weather Setup

Occupancy Sensor

Occupancy Sensor *(Non-Zoning System)*

NOTE: The default setting is ‘disabled’

Occupancy Sensor *(Zoning System)*

NOTE: The default setting is ‘disabled’

Occupancy Sensor

Knowledge Check 2
Homeowner Advanced Screen

Do you have to hold the Service Hat until it turns green to get into the Homeowners Advanced Screen?

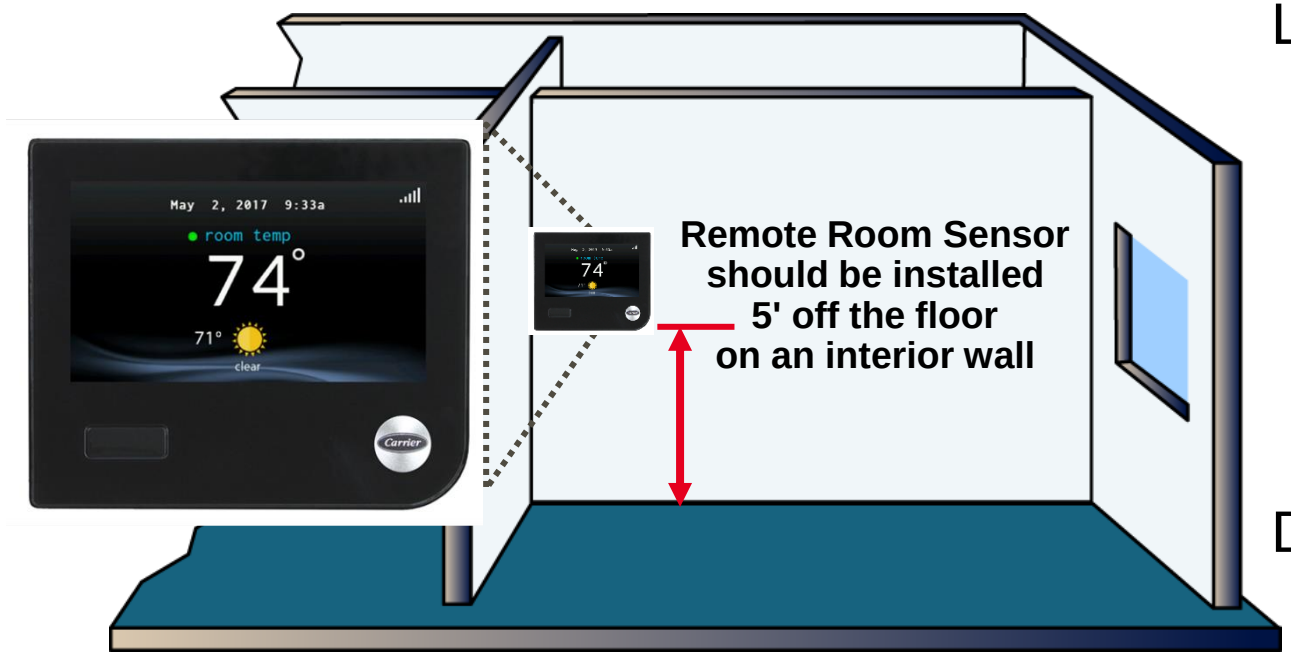
NO

Installation

Locate User Interface

- Command center for entire system
- Locate as if a thermostat
  - See earlier sensor location guidelines
  - Only humidity sensor in system
- For more freedom in location:
  - Use RRS for Zone 1
  - Wire RRS to ZDM Zone 1 terminals

UI & Sensor Location Guidelines



Locate devices:

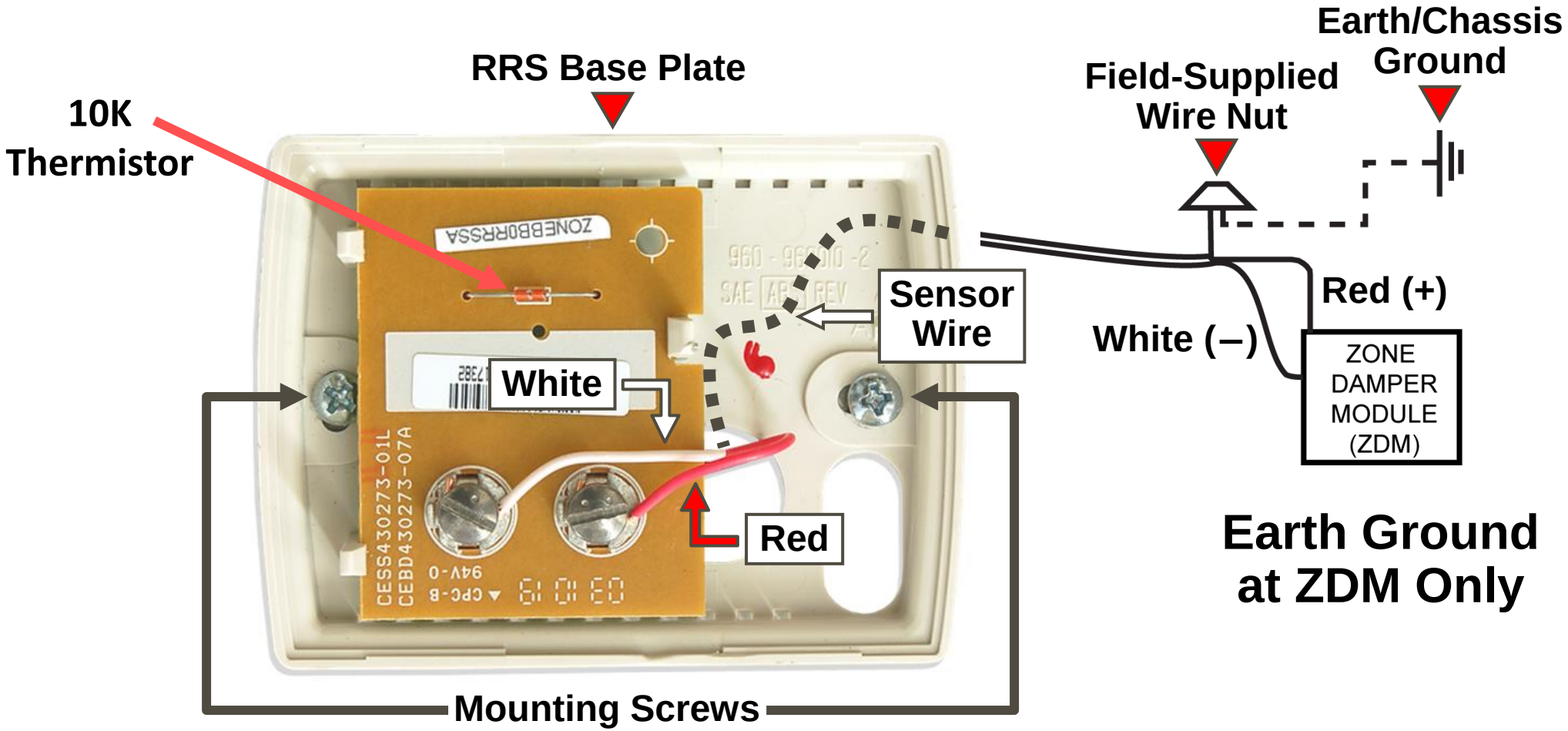
- Approximately 5 feet (1.5 m) from the floor
- Close to or in a frequently used room
- On an inside partition
- On a wall without pipes or ductwork

Do not locate devices:

- Close to a window outside wall or a door to the outside
- Exposed to direct light, heat, sun, etc.
- Close to or in direct airflow from registers
- In alcoves, behind doors, or other areas of poor circulation

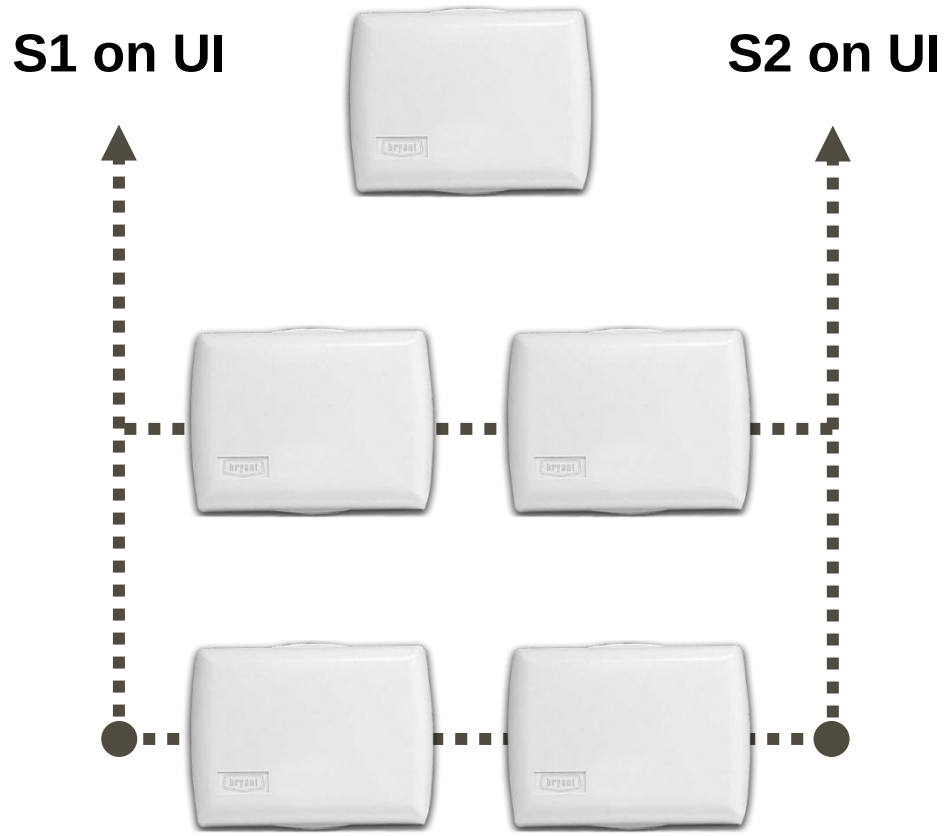
Install Remote Room Sensors

- 18 gage – 1000′ from ZDM
- 22 gage – 500′ from ZDM



Using Remote Room Sensors

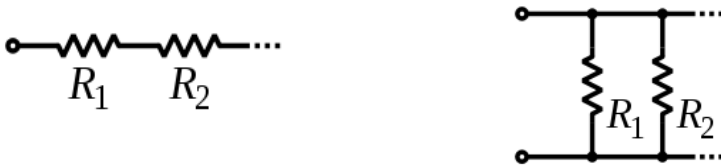
- Used in any zone
  - Wire to Zone Damper Module
- Instead of User Interface
  - Wire to S1 and S2 on user interface back plate
- User Interface automatically detects its presence
- Temperature sensor only
- Must use 4 sensors together for zone temperature averaging

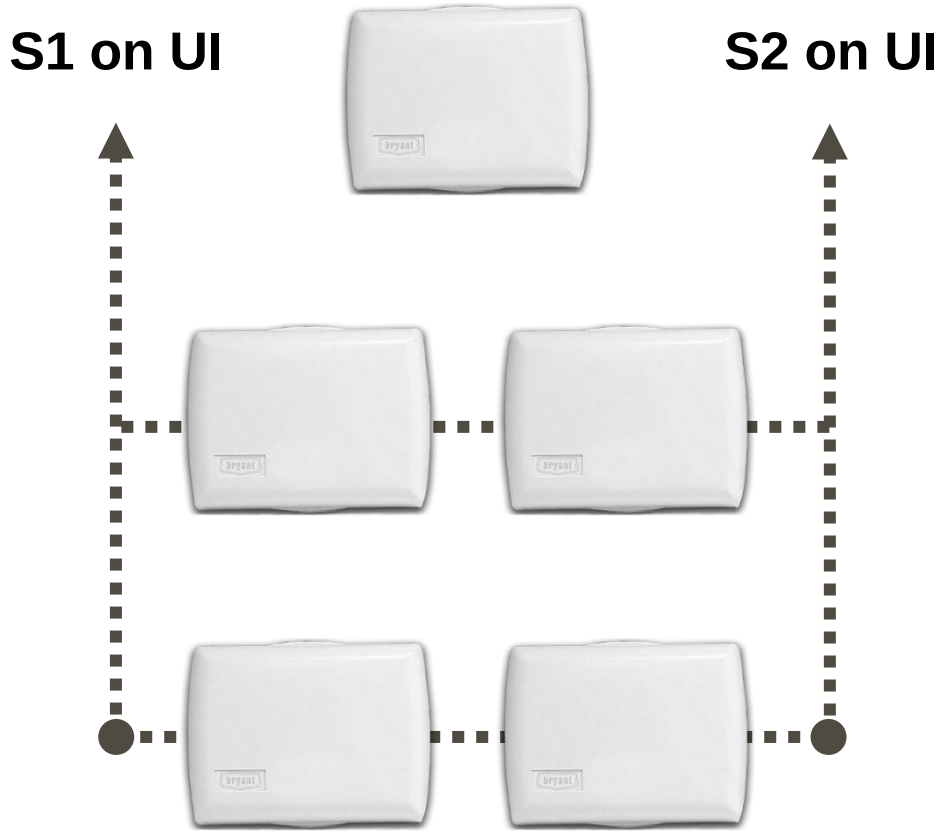


Remote Room Sensor Averaging

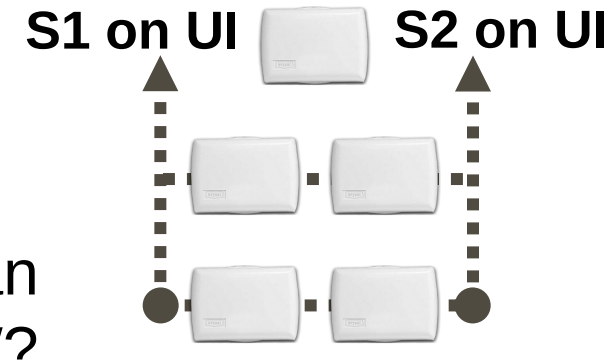
- Why are 4 sensors required for sensor averaging?
  - Series sensors add up, sensors in parallel require the addition of the reciprocals (see below)

$$Rseries = R1 + R2 \qquad 1/Rparallel = 1/R1 + 1/R2$$





Remote Room Sensor Averaging

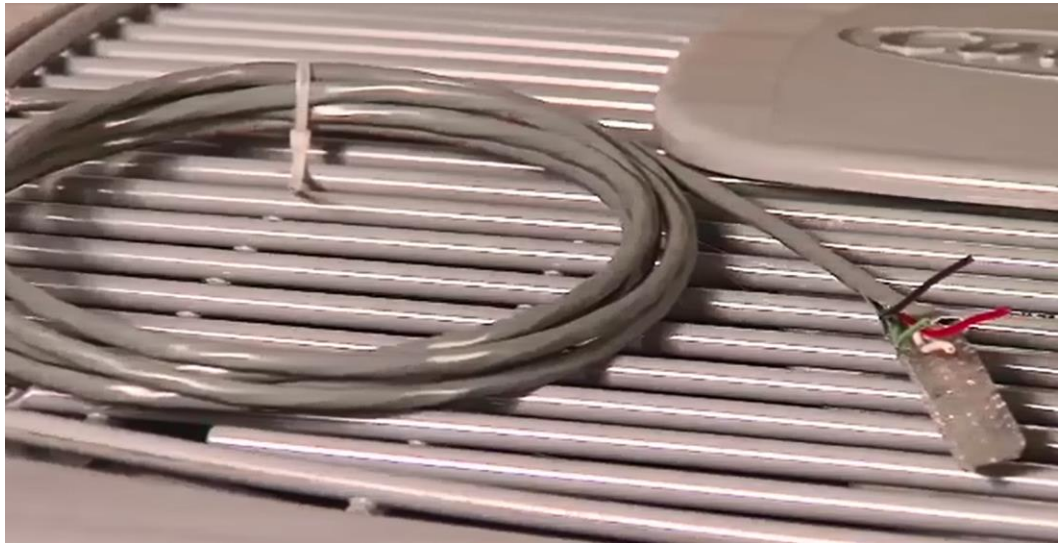


Example:

- On-board sensor resistance is 10KW (77ºF), using more than 1 sensor, how many sensors are required to get 10KW?
- 10KW + 10KW = 20KW
  - This is 2 sensors in series, but 20KW is way off! (double, to be exact). If we only use two resistors in parallel, we get:
- 1/10 + 1/10 = 2/10 which equals 1/5 = 5KW
  This still isn't what we want.
  - By using two resistors in series and parallel another two resistors in series, you get:
- 1/(10+10) + 1/(10+10) = 1/20 + 1/20 = 2/20 = 1/10 =10KW the desired result.

Wiring Considerations

- Ordinary Thermostat Wire (Recommended)
  - 18-20 AWG
- Lengths over 25 FT
  - 18 AWG
  - Only 4-Wires Needed
  - Should run more wires in the event of broken or damaged wire.
- Shielded Wire Shielded wire must grounded at one end only, the indoor unit is the preferred location



All wiring must comply with national, local, and state codes.

Wiring Considerations

How to Properly run the Communication Wire

- Do not run next to or with high voltage wires.
- Do not bury the communication wire unless it is going to be in some type of conduit, sealed from water.
- Do not run one wire like 8 strand to the outdoor units and have 4 conductors go off to each unit or run one C & D to both units.
- Make sure any conduit or seal tight ran above ground is sealed at both ends preventing any moisture to collect.
- Try not to have any splices in the wiring outside, however if you must it might be a good idea to use some type of water preventative in the wire nuts to prevent them from rusting.
- Never use a single cable for multiple systems

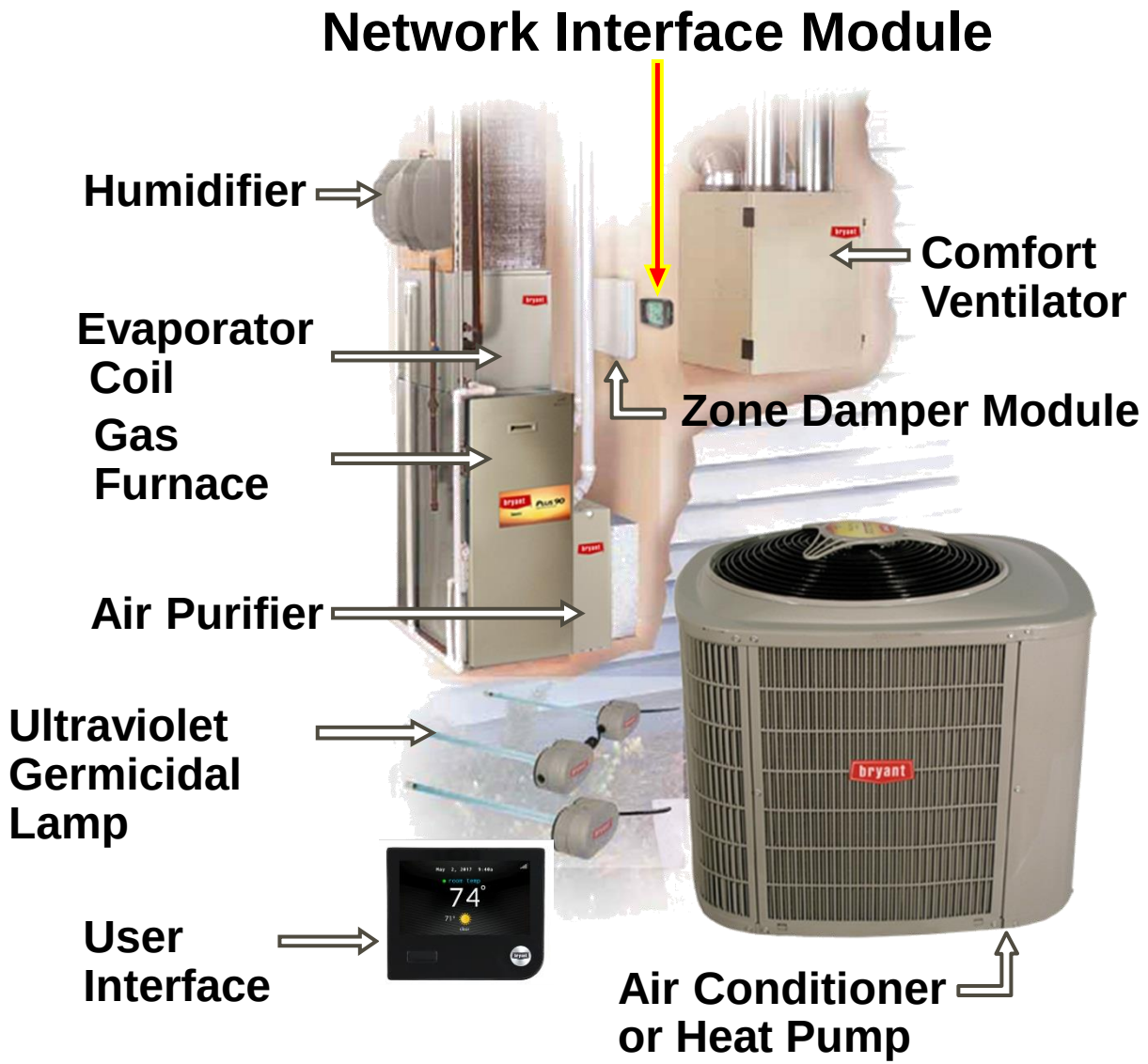
Network Interface Module (NIM)

Connects the following to the 4-wire communications bus:

- HRV/ERV unit (Non-zoned only)
- Non-communicating 1-stage heat pump to a communicating control furnace
- Non-communicating 2-stage outdoor unit to a communicating control system

Installing a NIM

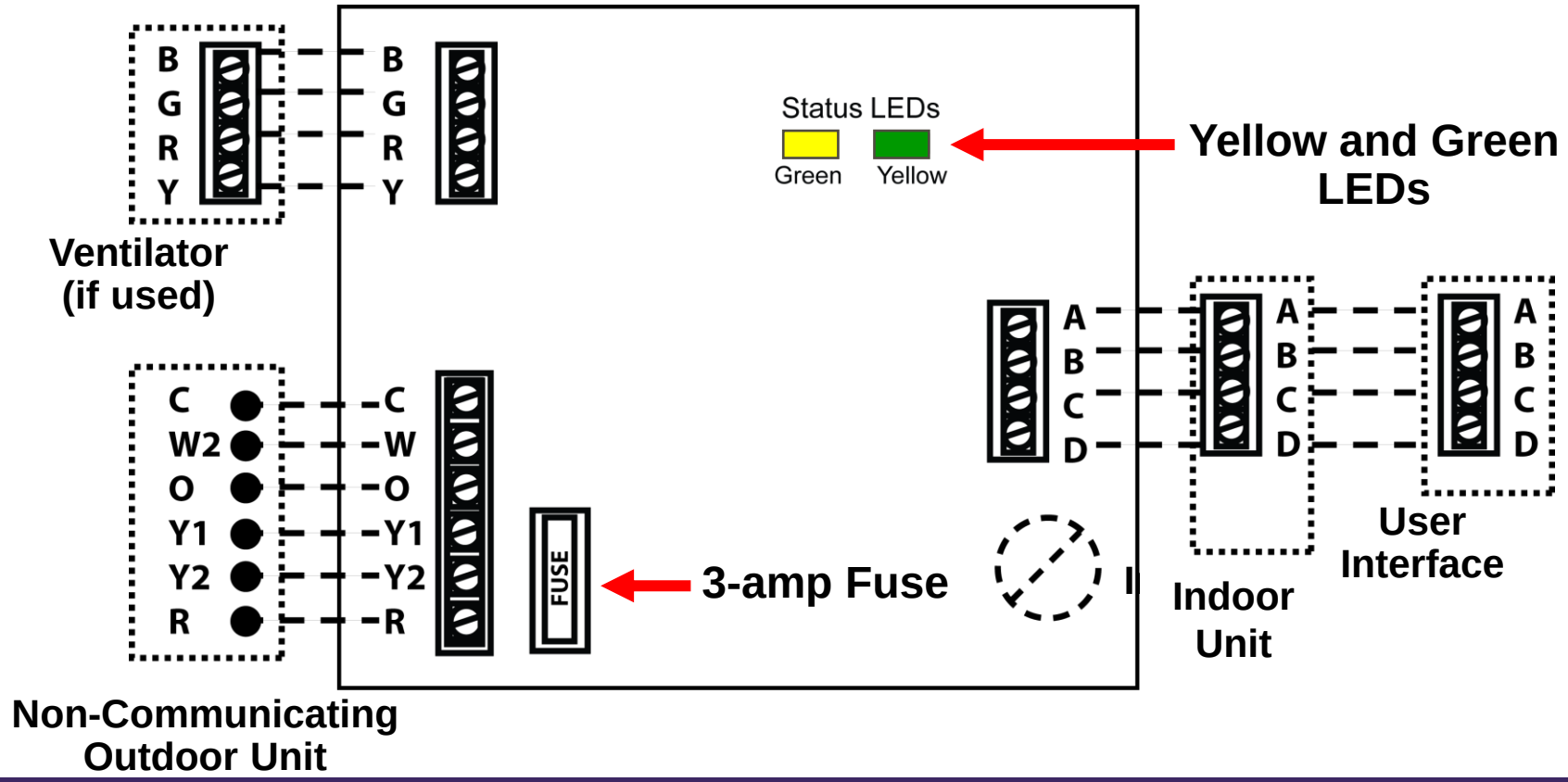
- Locate near indoor unit
  - Minimize wiring
- NOT in outdoor unit
  - Must be inside
  - (32°F to 158°F)
  - Non-condensing
- 24 vac power comes from the indoor unit standard (40 VA) transformer



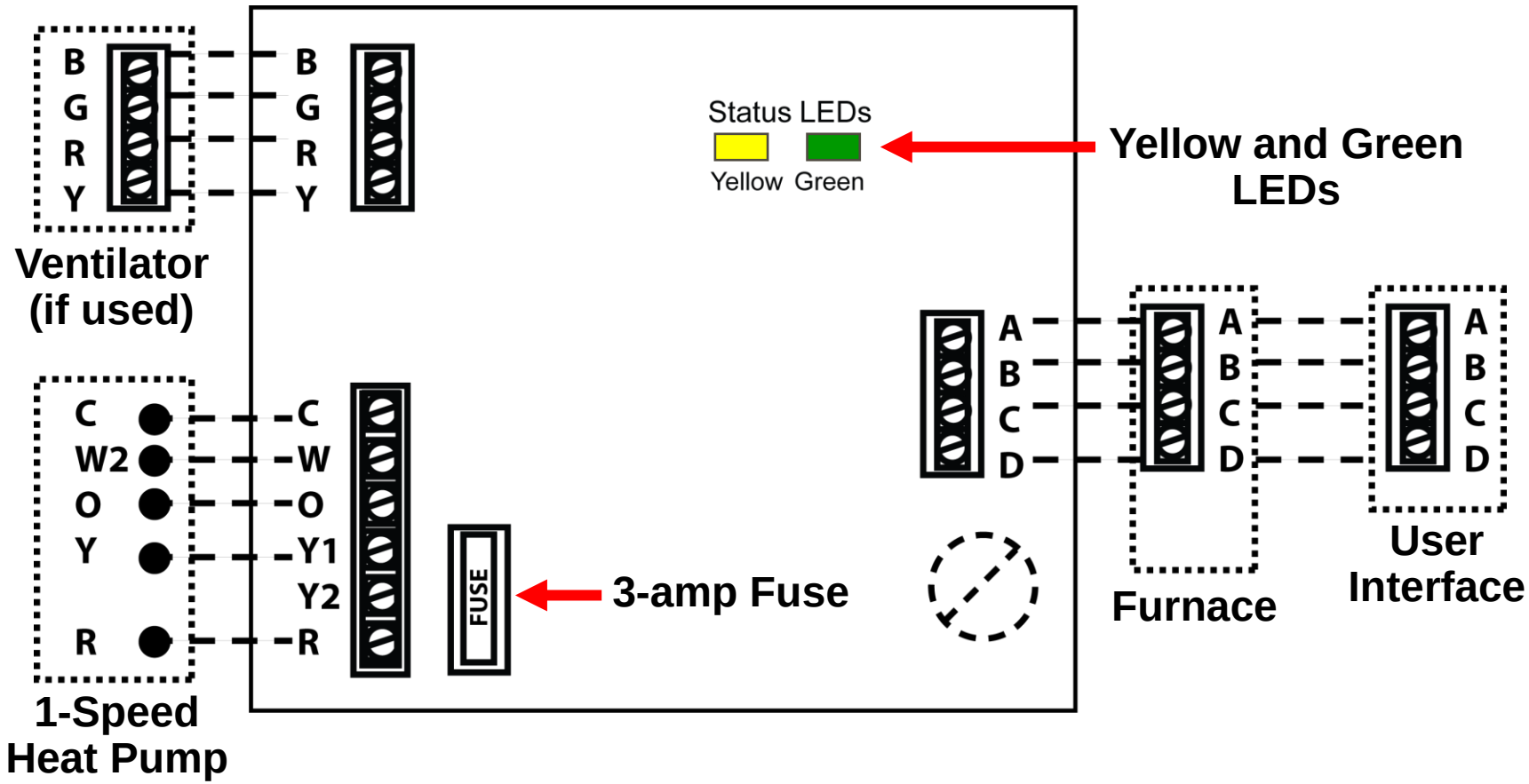
Network Interface Module

Required to Interface:

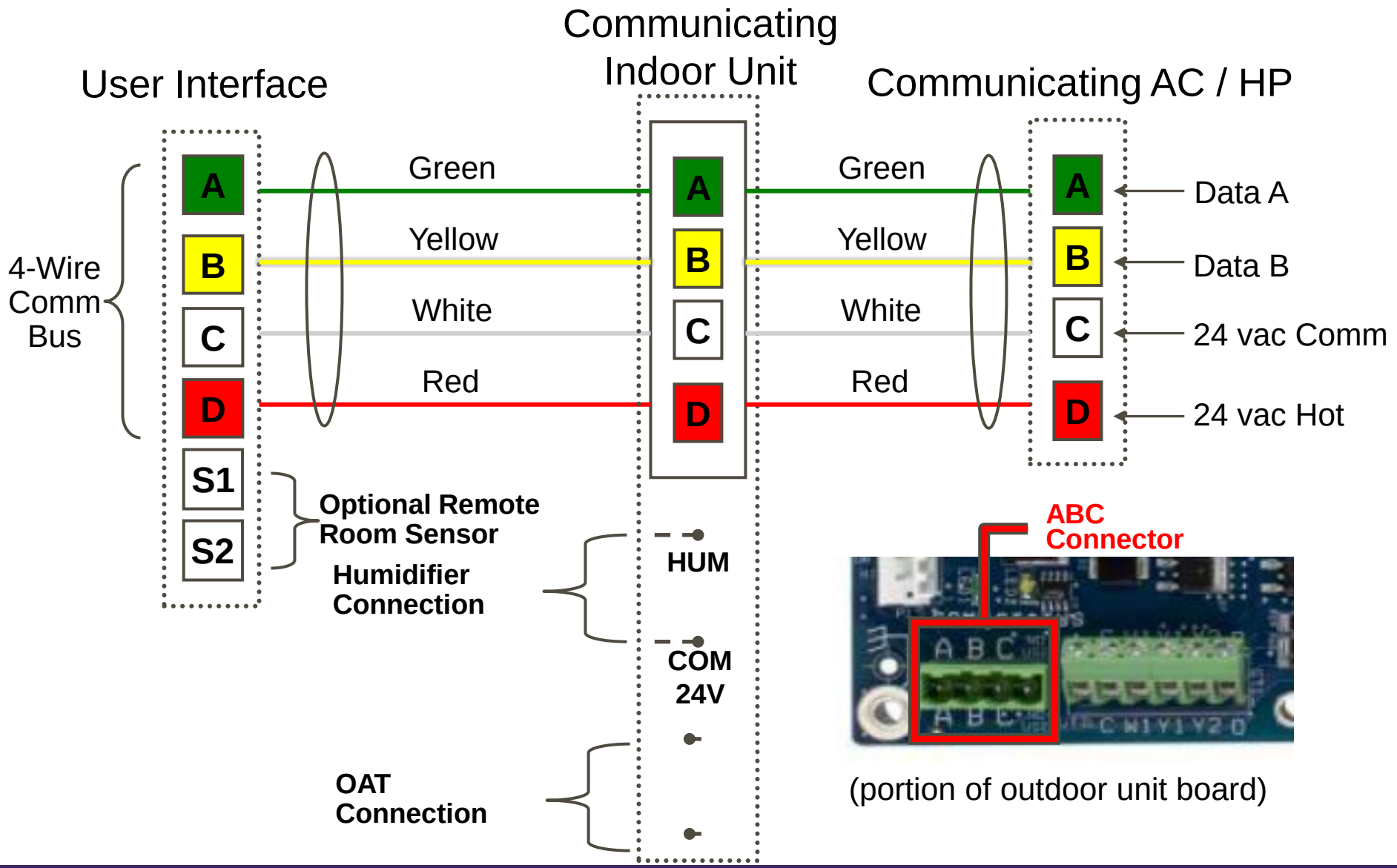
- Ventilator (HRV/ERV, unless zoning)
- 1-stage (non-communicating) heat pump with gas furnace
- 2-stage (non-communicating) air conditioner or heat pump



NIM Wiring Connections (Hybrid Heat)

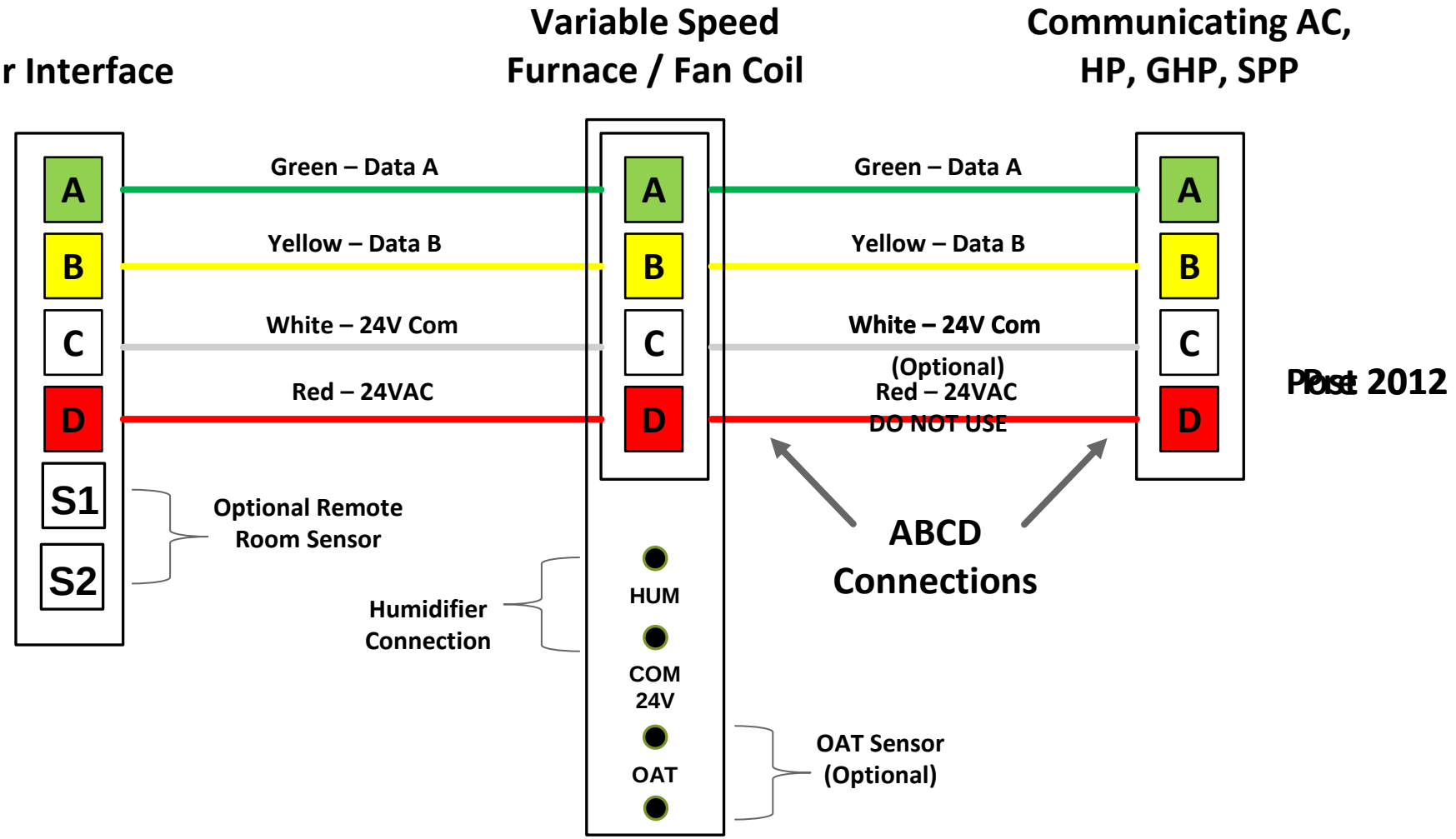


Control Wiring Detail



(portion of outdoor unit board)

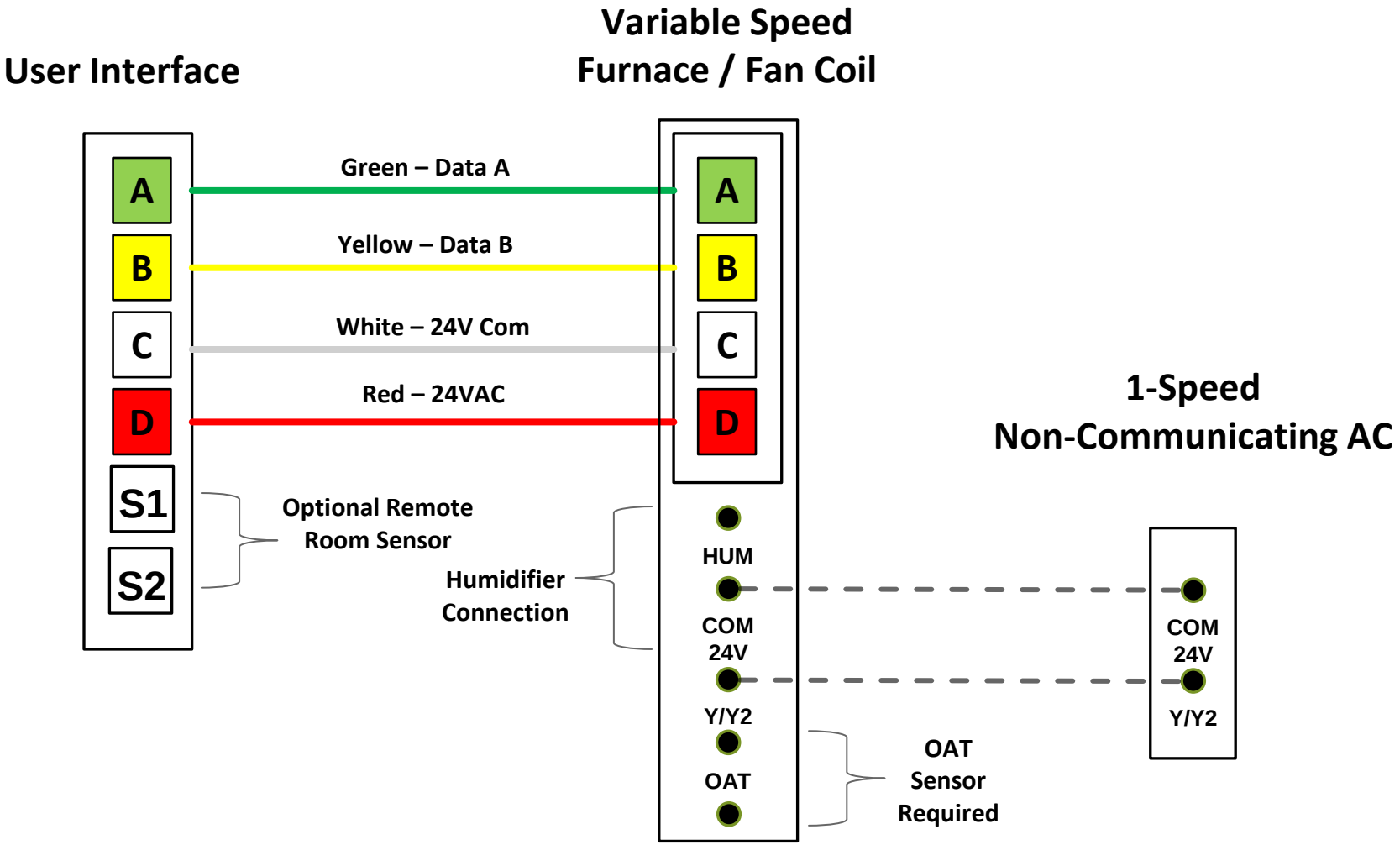
Control Wiring Detail



***Note:** Some outdoor units do not require the "C" & "D" Connections. See outdoor unit Installation Instructions.

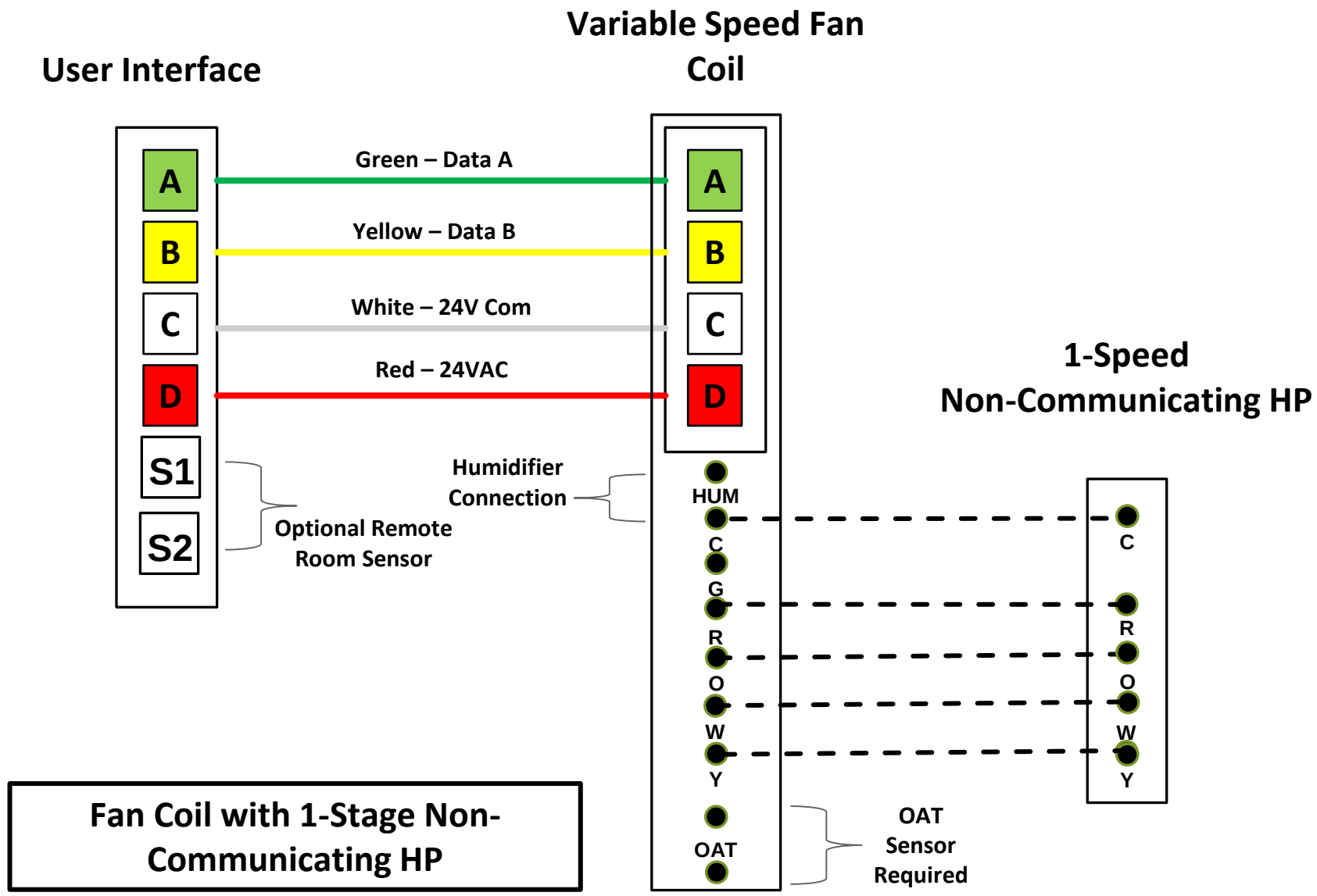
4 Wire Communicating System

Control Wiring Detail



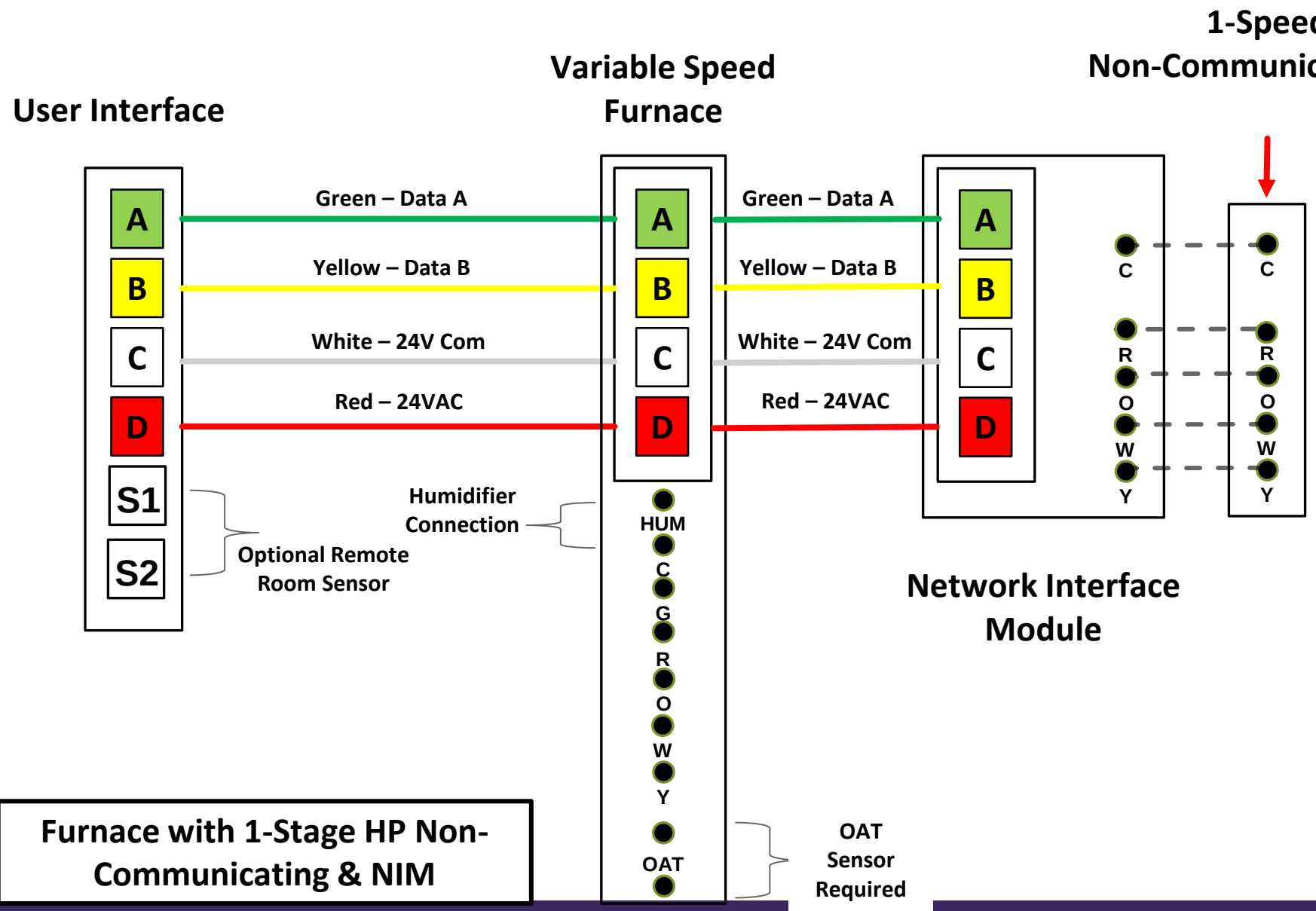
Furnace/Fan Coil with 1-Stage AC

Control Wiring Detail



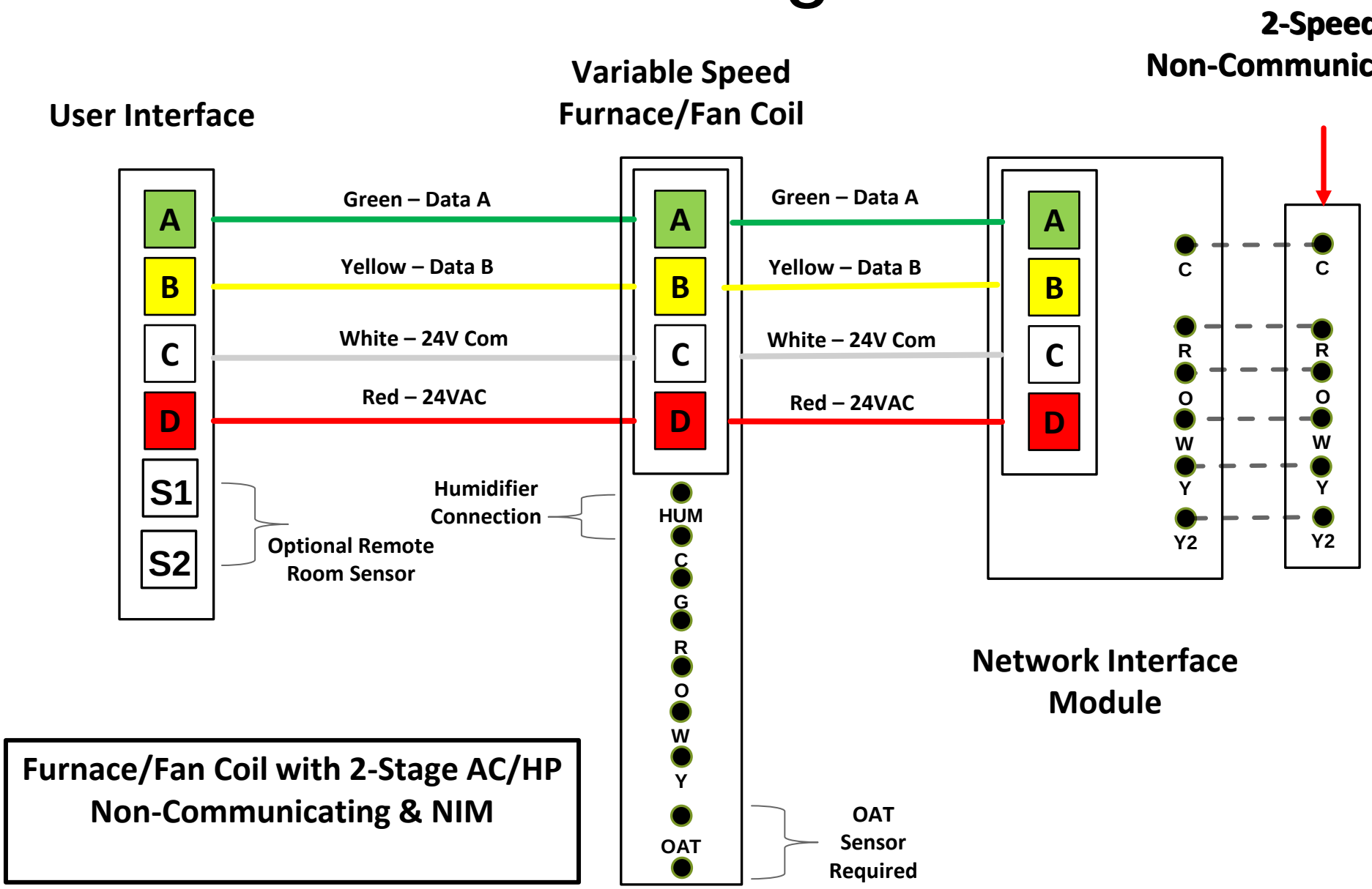
Fan Coil with 1-Stage Non-Communicating HP

Control Wiring Detail



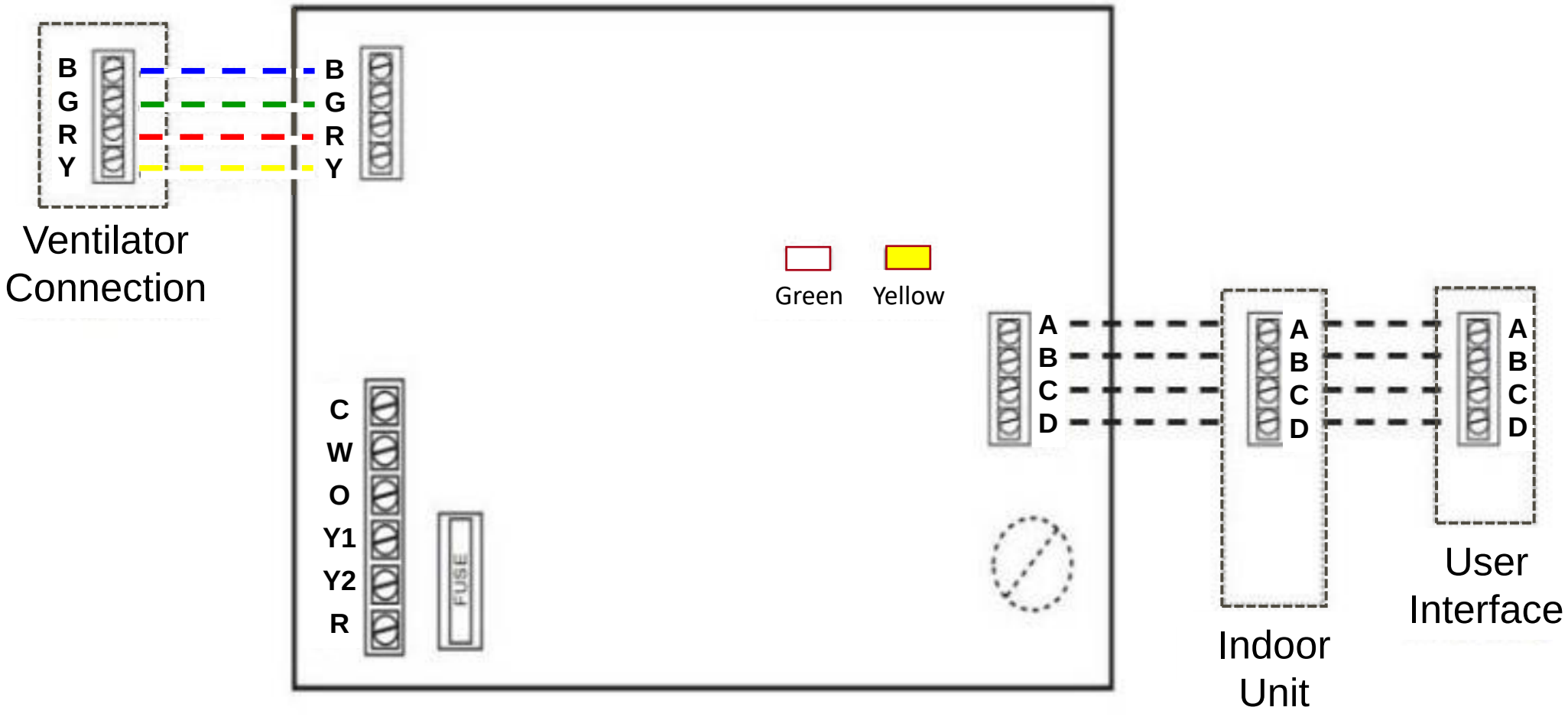
Furnace with 1-Stage HP Non-Communicating & NIM

Control Wiring Detail

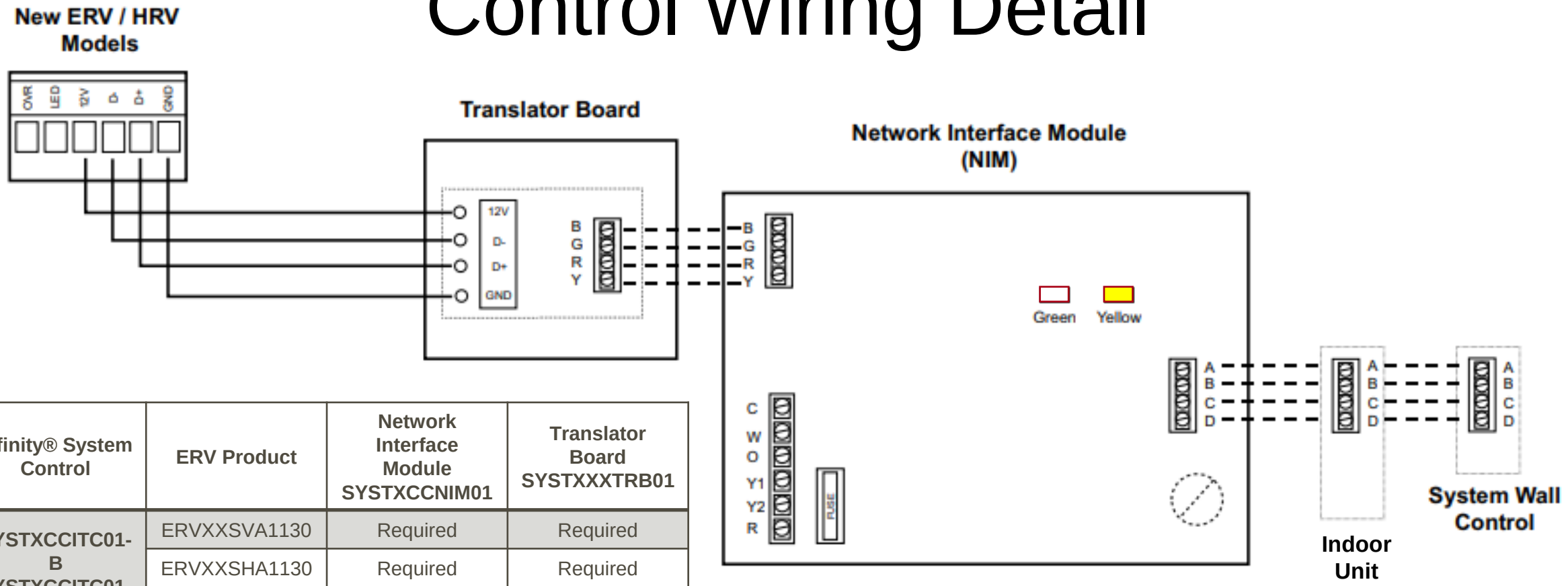


Furnace/Fan Coil with 2-Stage AC/HP Non-Communicating & NIM

ERV Control Wiring Detail

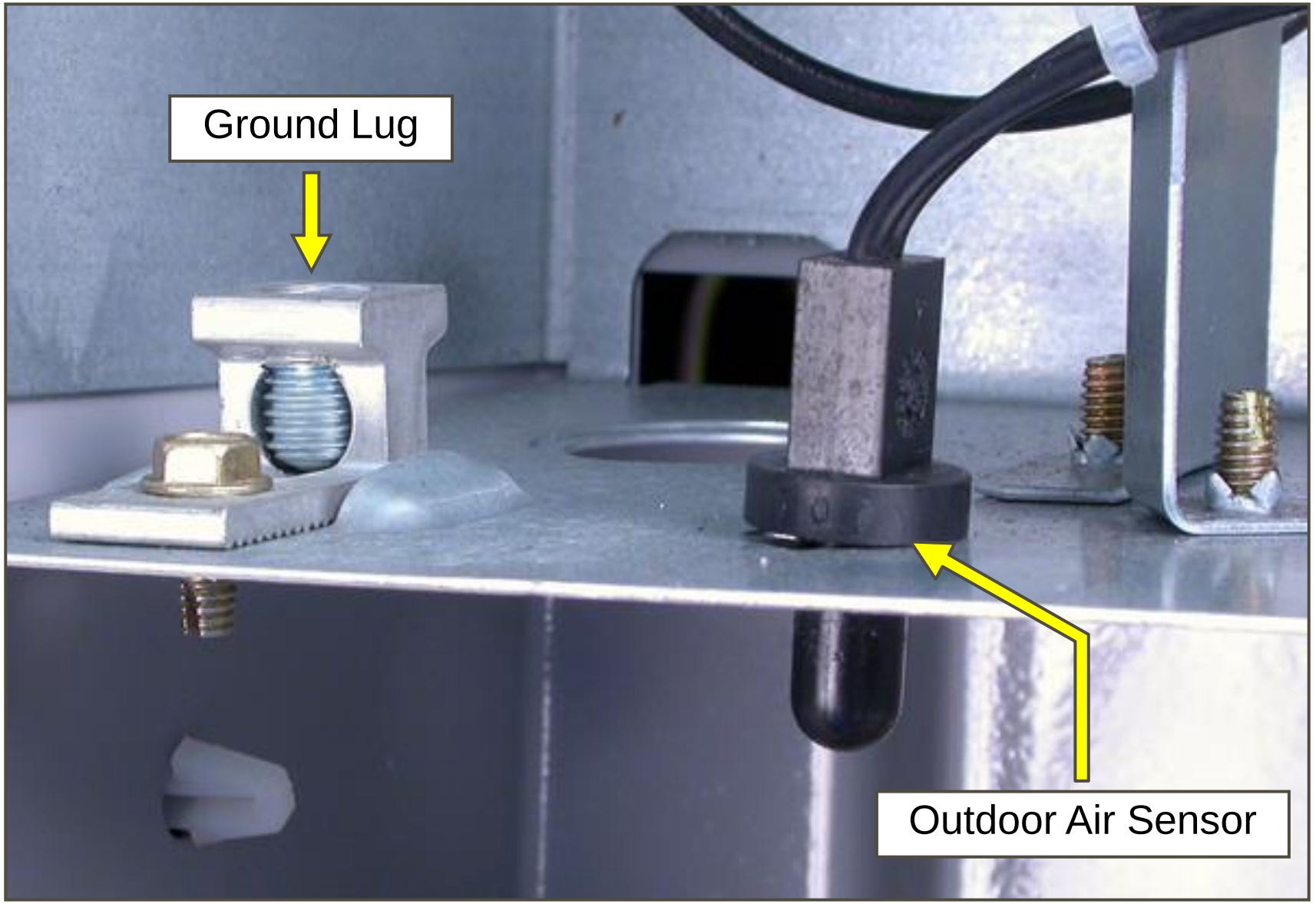


New Performance/Preferred ERV Control Wiring Detail



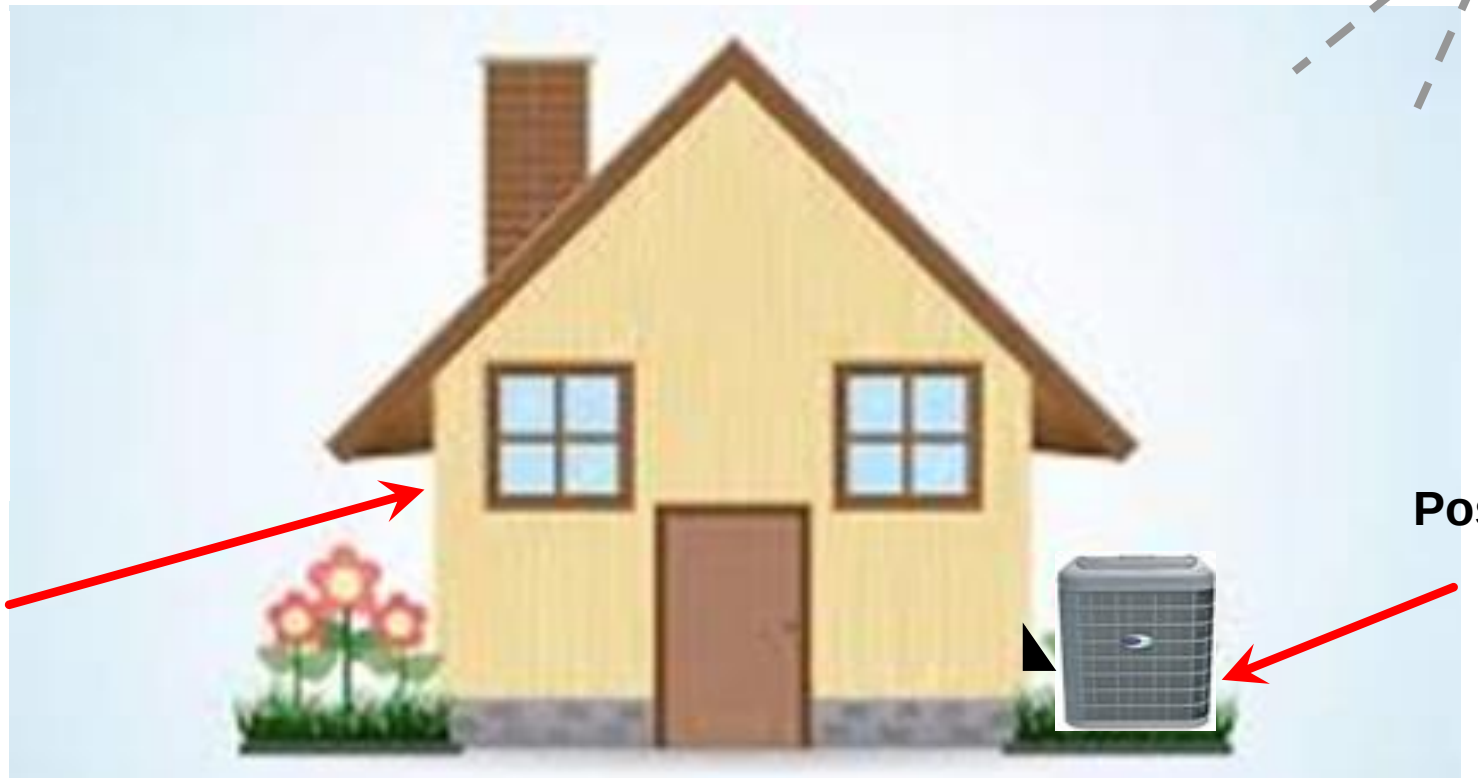
Infinity® System Control	ERV Product	Network Interface Module SYSTXCCNIM01	Translator Board SYSTXXXTRB01
SYSTXCCITC01-B SYSTXCCITC01-C SYSTXCCWIC01-B SYSTXCCICF01-B SYSTXCCWIF01-B	ERVXXSVA1130	Required	Required
	ERVXXSHA1130	Required	Required
	ERVXXSVB1145	Required	Required
	ERVXXSHB1145	Required	Required
	ERVXXSVA1150	Required	Required
	ERVXXSHA1150	Required	Required
	ERVCRLHB1200	Required	Not Required

Outdoor Air Temperature Sensor



Outdoor Air Temperature Sensor

TSTATXXSEN01---B



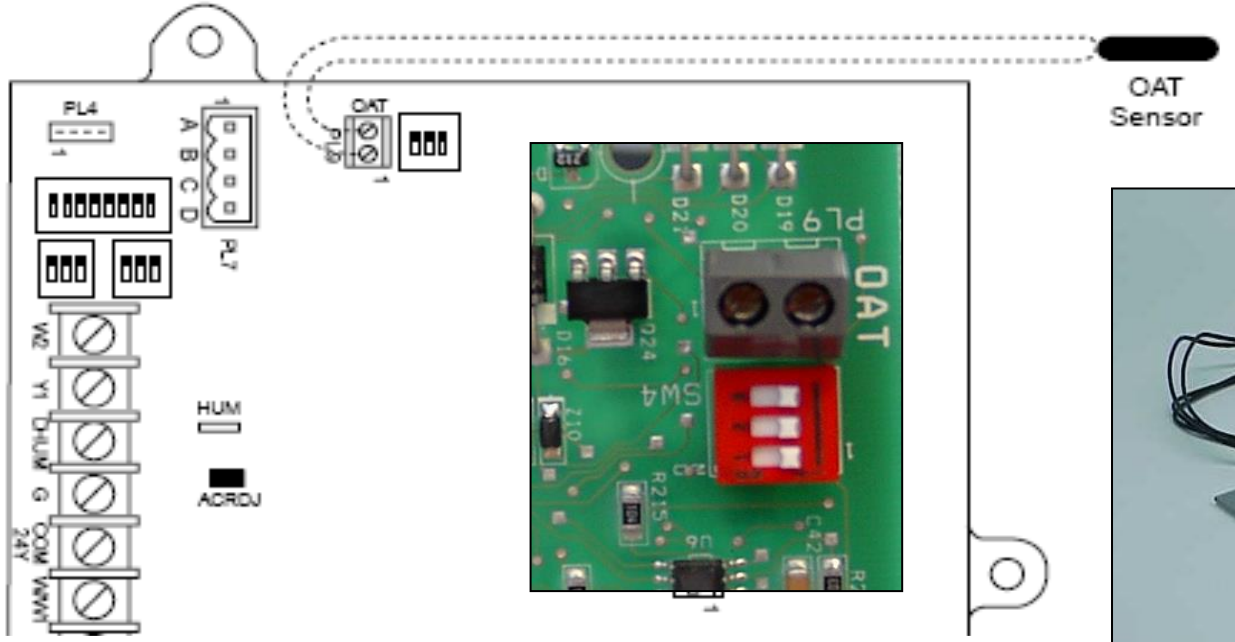
Possible Mounting Locations

Possible Mounting Locations

Connect to OAT Terminals on Indoor Unit

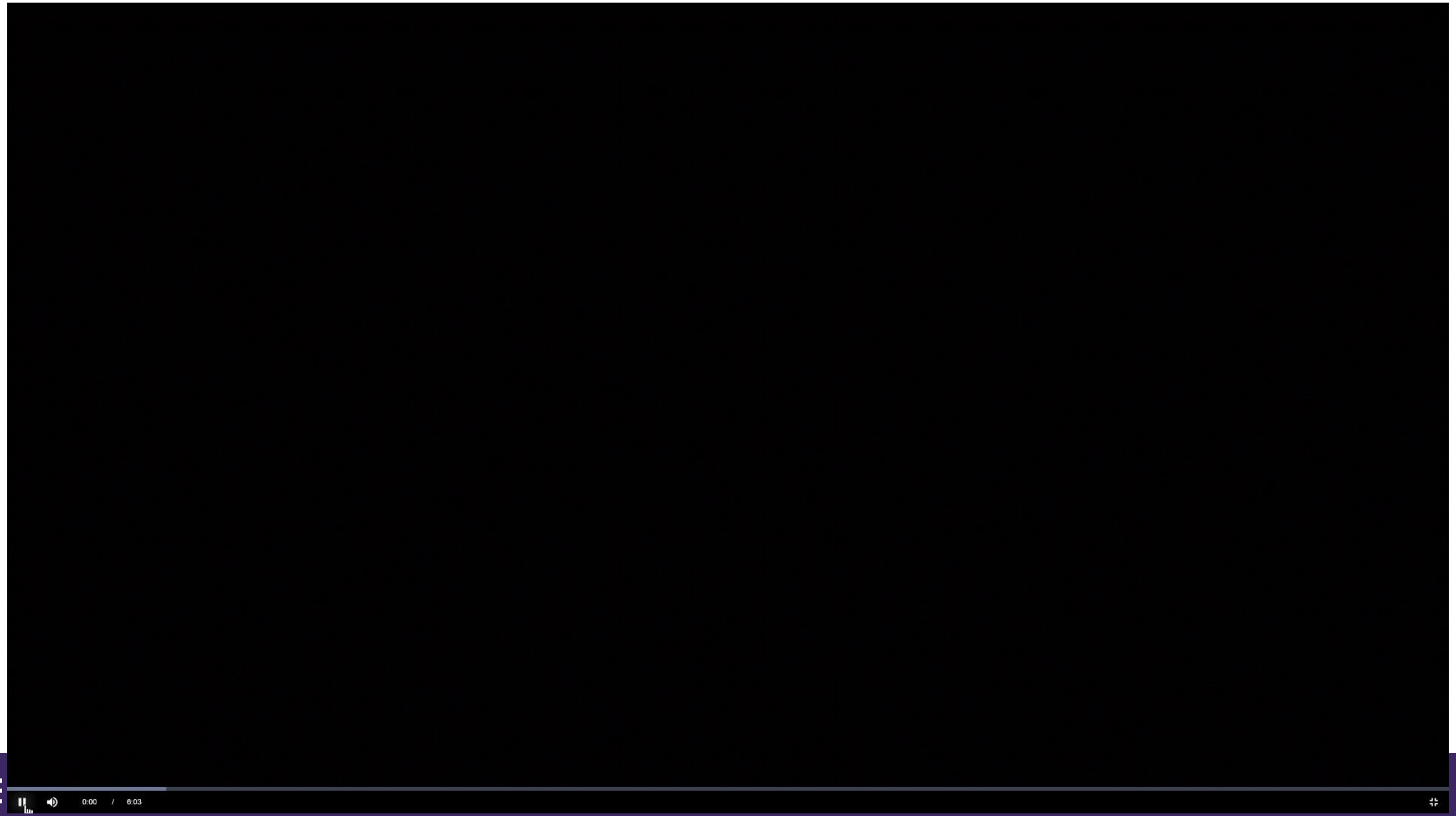
Outdoor Air Temperature Sensor

- **OAT Sensor provided with Evolution/Infinity and Preferred/Performance Series outdoor units (Communicating Units),**
- **All Other Condensing units (Non-Communicating Units) *REQUIRE* the OAT Sensor be field installed.**
- **If OAT is connected to Indoor section directly, it takes priority over all other OATs, including the factory-mounted one in the outside unit.**



TSTATXXSEN01---B

Equipment Setup & Commissioning



Power Up Sequence

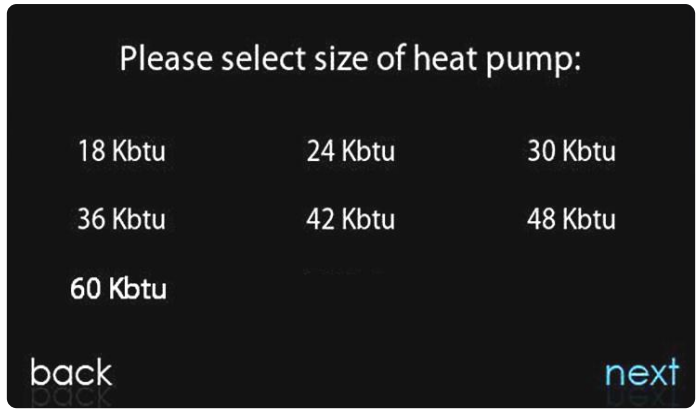
On power up

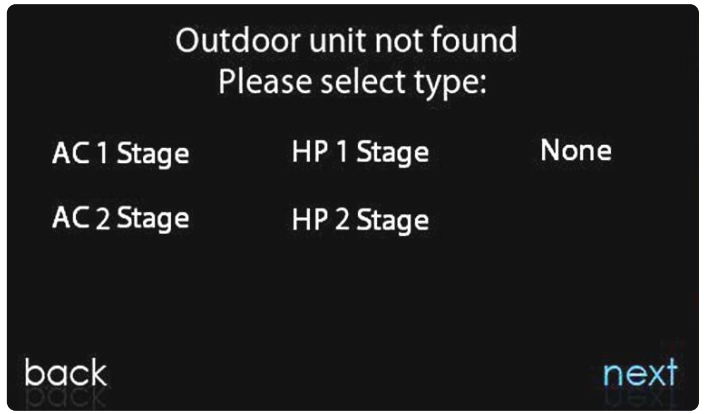
- User interface:
  - Scans ABCD bus
  - Identifies indoor unit
  - Identifies communicating outdoor unit
  - Identifies self-identifying electric heat

Selecting Outdoor Unit

If outdoor unit can’t be found:

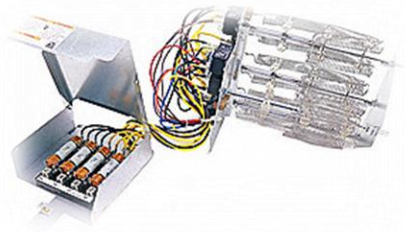
- Non-communicating equipment requires NIM
- User interface displays “OUTDOOR UNIT NOT FOUND”
- Select the unit size from the list displayed
- Select NEXT
- User interface displays:
  - HP1 Stage = Single-Stage Heat Pump
  - HP2 Stage = Two-Stage Heat Pump
  - AC1 Stage = Single-Stage Air Conditioner
  - AC2 Stage = Two-Stage Air Conditioner
  - NONE = No Outdoor Unit Installed
- Select the unit type and stages from the list displayed
- Select NEXT





Selecting Electric Heat

- User interface locates self-identifying heater KW
- Enter heater KW for non-self-identifying heaters
- Touch MORE for additional heater sizes
- Touch NONE for a unit without an electric heater
- Select NEXT

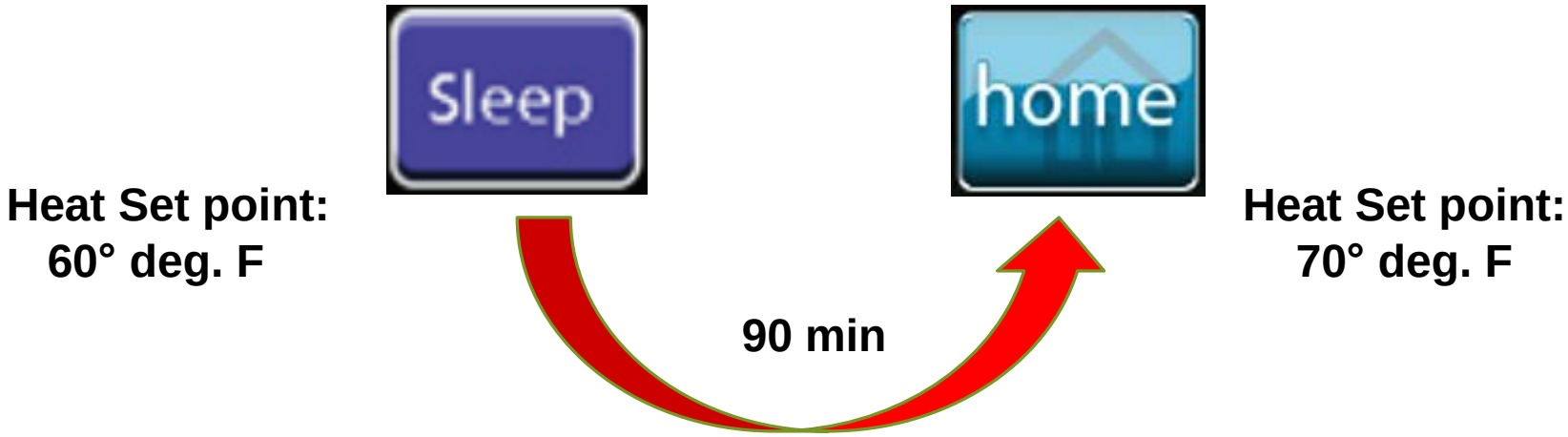


Self-identifying heaters will have a resistor between pins 5 & 8 in the Molex connector

You can utilize electric heat with a temporary heat thermostat if you have a 9KW heat kit installed or if the heat kit is larger you will need to install the Infinity/Evolution Controller first and identify the heat kit, then you can remove the Infinity / Evolution Controller and install the temporary thermostat.

Smart Recovery

Smart Recovery causes the system to ramp the system target set points to those for the next programmed schedule period to help save energy during period transitions. Smart Recovery will start recovery 90 minutes prior to schedule change in both heating and cooling mode.

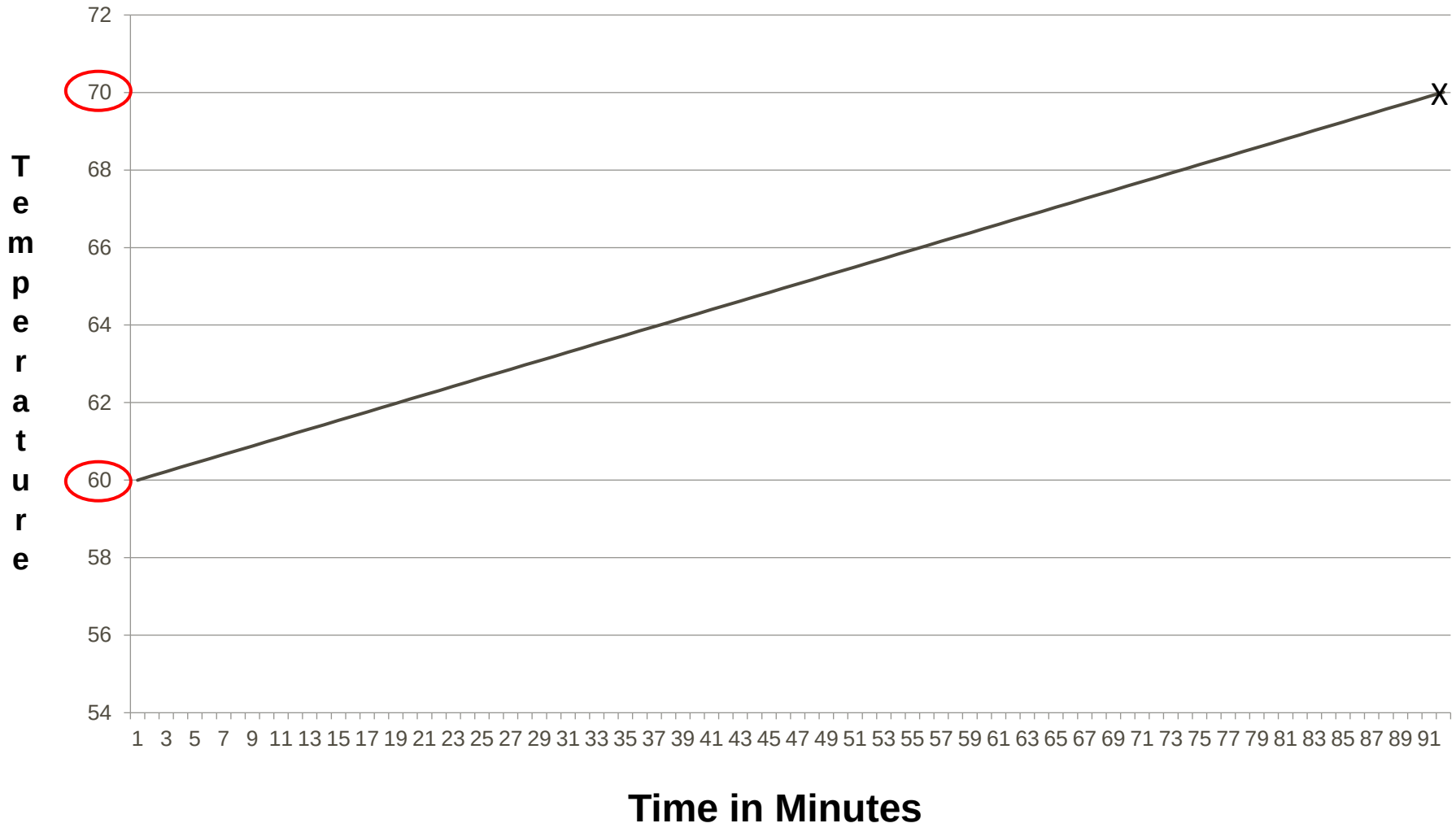


Smart Recovery

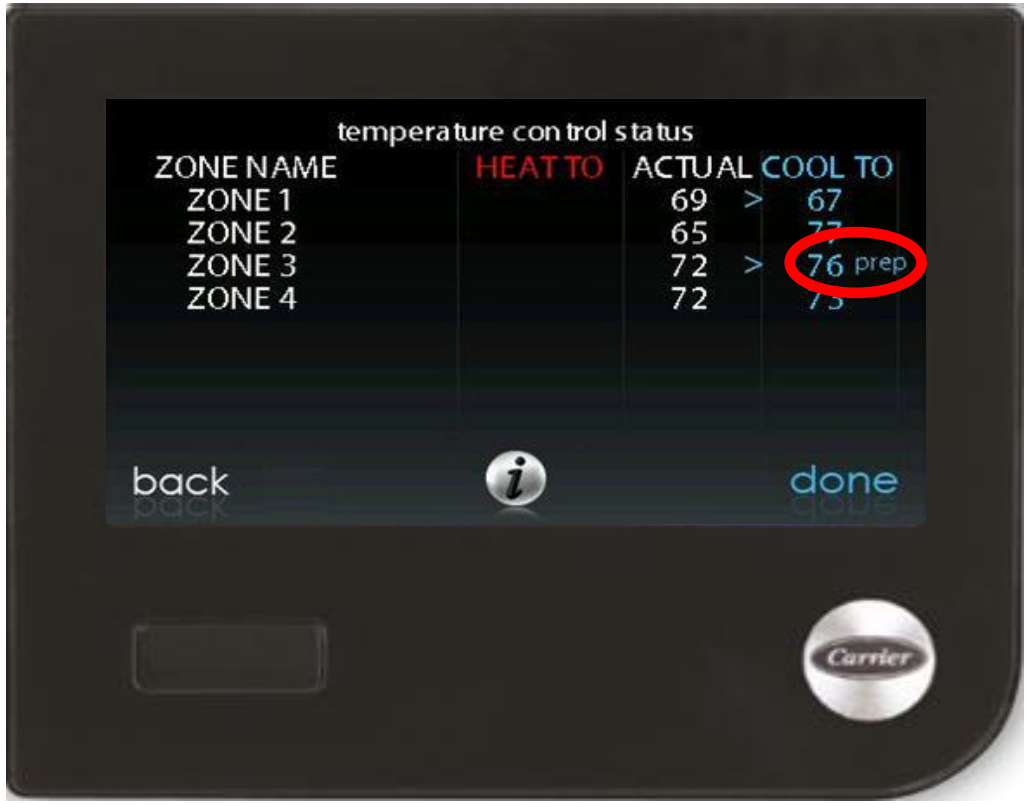
- During Smart Recovery, the temperature set point may be observed to change.
- For example: The current set point is heating 60 degrees and the next set point is 70 degrees. During the 90 minutes before the next program period, the set point will move by 0.11 degrees per minute.

  (10 degrees/90 minutes) In this example, about every 9 minutes, you'll see the temperature set point change 1 degree.
- See the graph on the next page.

Smart Recovery Cont'd



Smart Recovery



Warn Your Customer: This is the default setting. System will come on 90 minutes before programmed period to get space to next period's set point. There will be no indication on display that this is happening. (In a zoning application it can show in the Temperature Control Status Screen as Prepxx<<< or >>>xxPrep depending on a heating or cooling call.

Smart Setback

- Smart Setback tries to determine the best setback temperature. It uses the rate of temp drift and the OAT to determine this value.

This is found in the Menu, Comfort Profiles, Temperature and Fan Profiles, Away.

If you notice you are setting a temperature range and not a specific setpoint.

The Away setting is also used as the Unoccupied or Dump Zone in a Zoning Application.

BREAK TIME

10

MINUTES

Infinity/Evolution Controls

-B Controller

Carrier
turn to the experts

Infinity® Touch
User Interface

-C Controller

bryant
Heating & Cooling Systems

EVOLUTION® CONNEX™
User Interface

Configuration

Home Display Screen

Main Display Screen

System Mode

features
Tue 2:50p
system: auto
HEAT TO
61
COOL TO
81
Touch-N-Go
living room
home
hold until
1:15a
51°
back
menu
Carrier

Service Setup

Second Menu Display Screen

Installation & Service

Setup

setup
thermostat
furnace
ac/heat pump
heat source lockouts
back
done
Carrier

setup
zoning
accessories
utility curtailment
hydronic airflow
back
done
bryant

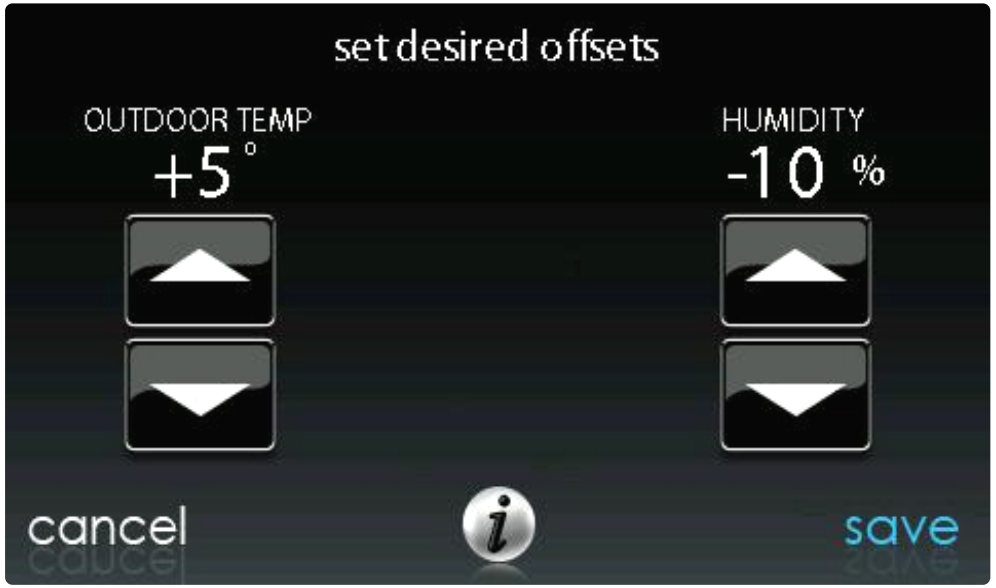
Thermostat – Setup

Thermostat – Auto Mode And Deadband

- Enable/Disable Auto mode
- 5 through 120 minutes changeover time
- Deadband = 0° F to 6° F in 1° increments
- 2° F minimum difference between heating and cooling setpoint temperatures

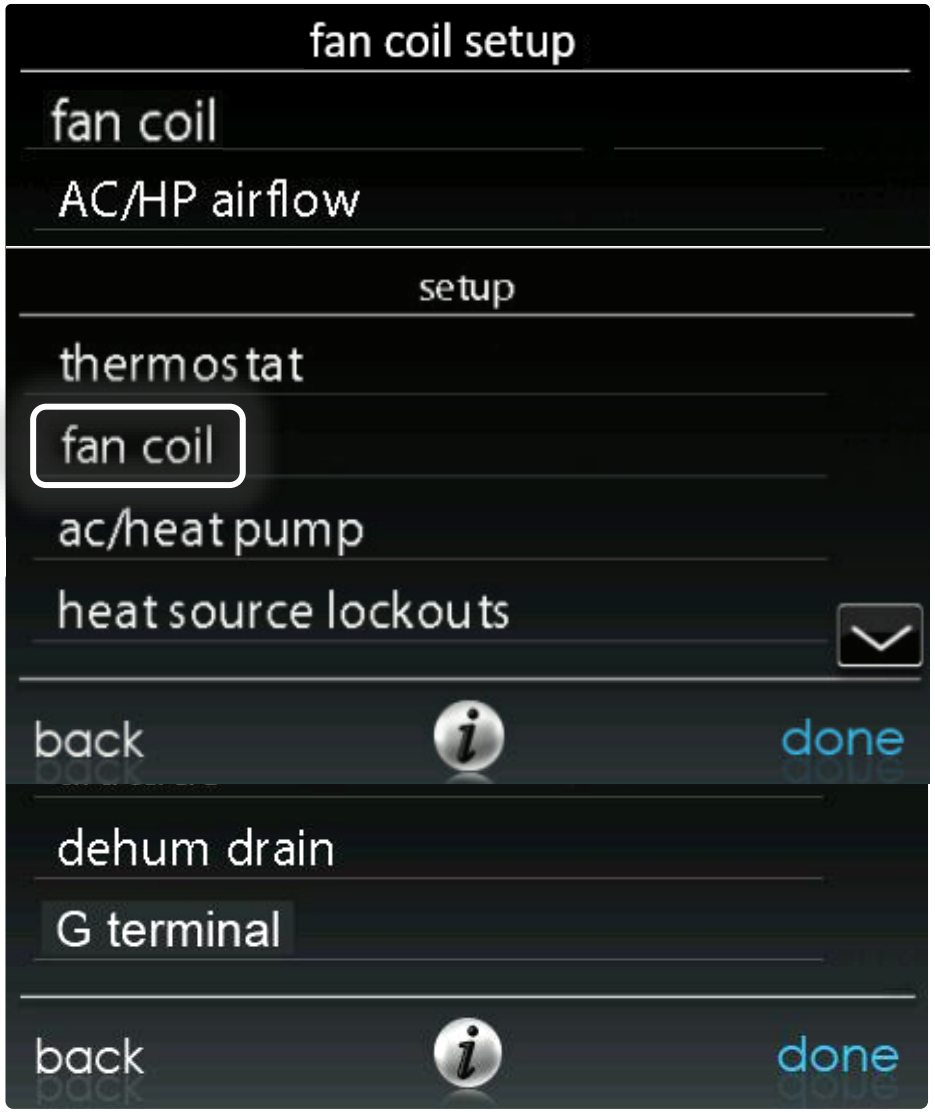
Thermostat – Offsets And Reset

- Temperature Offsets
  - -5° F to +5° F, 1° F increments
- Humidity Offset
  - -10% to +10%, 1% increments



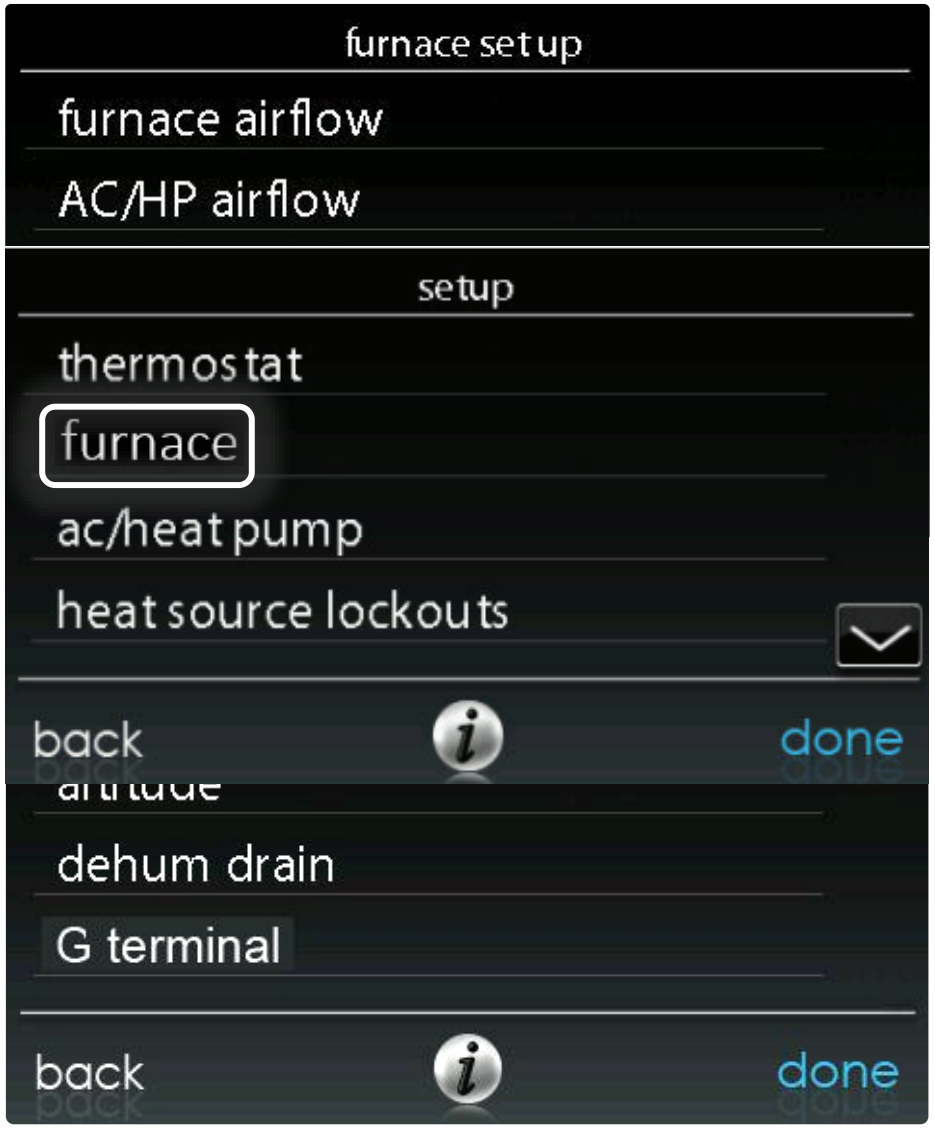
Set Up Fan Coil

- Fan Coil Airflow Limits
  - Comfort or Efficiency
- Elect. Heat Staging
- Air Conditioning & Heat Pump Cooling Airflow
  - Comfort, EFF325, EFF350, Maximum, and Quiet
- Heat Pump Heating Airflow
  - Comfort, EFF325, EFF350, and Maximum
- Dehumidification Airflow
  - High and Normal



Set Up Furnace

- Furnace Airflow
  - Comfort or Efficiency
- Low Heat Rise ON/OFF
- Air Conditioning & Heat Pump Cooling Airflow
  - Comfort, EFF325, EFF350, Maximum, and Quiet
- Heat Pump Heating Airflow
  - Comfort, EFF325, EFF350, and Maximum
- Dehumidification Airflow
  - High and Normal



Airflows

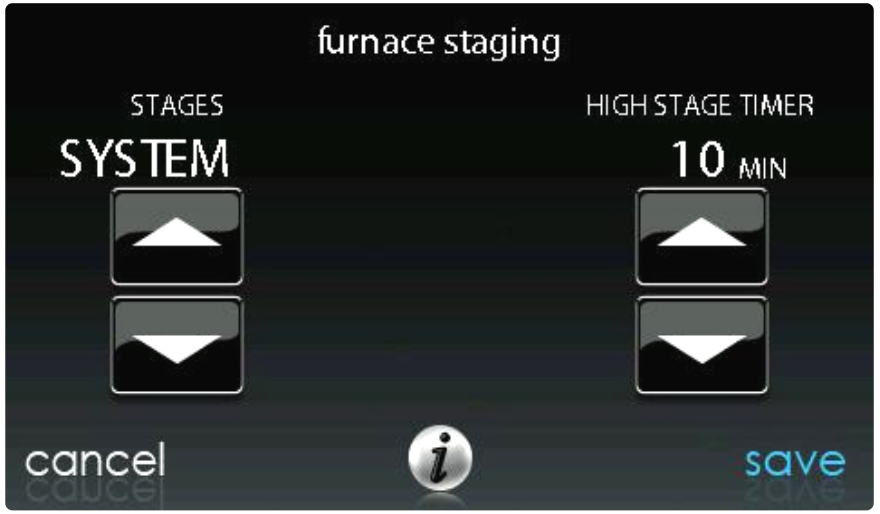
furnace airflow
furnace airflow
low heat rise
comfort
efficiency
on
off
cancel
save
Carrier

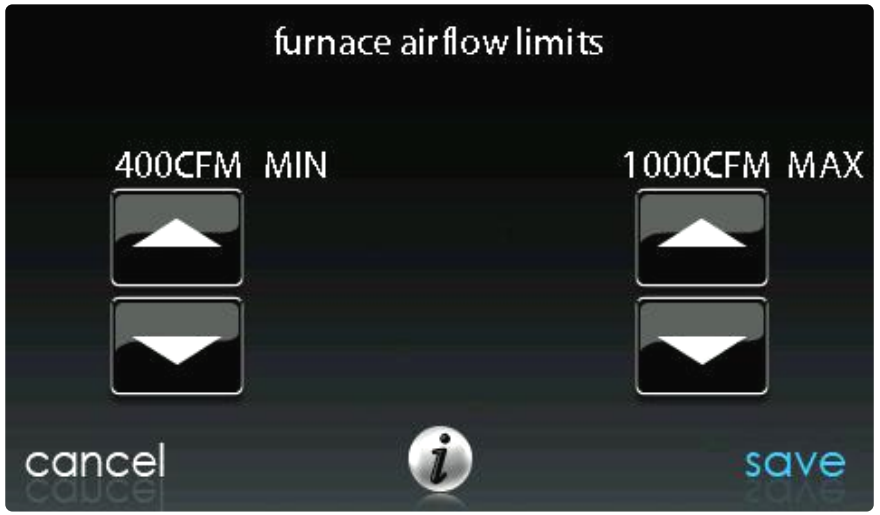
AC/HP airflow
COOL
HP HEAT
DEHUMIDIFY
MAX
EFF
NORMAL
cancel
save
bryant

Furnace Staging

- Staging
  - Low, *Low-Medium, *Low-High, Medium, *Medium-High, High, Furnace, and System
- Airflow Limits*
  - *MIN - . Modulating limits increase minimum capacity
  - *MAX – Modulating limits decrease maximum capacity
- Off Delay
  - 90, 120, 150, and 180 seconds
- Altitude
  - Installed elevation
- Dehum Drain
  - Fan OFF at end of cooling (Continuous Fan Application)

* These only apply to modulating furnaces

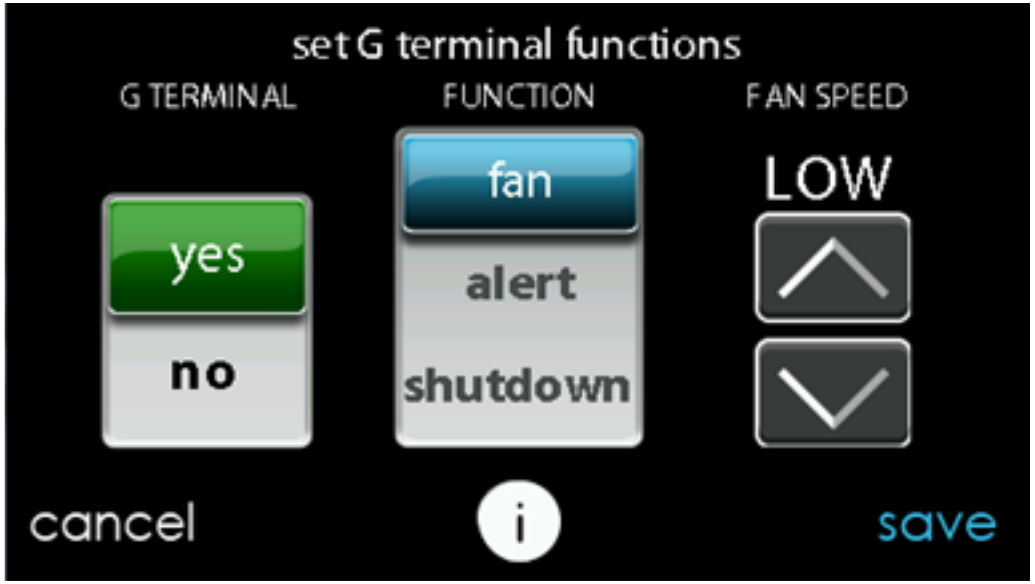




“G” Terminal

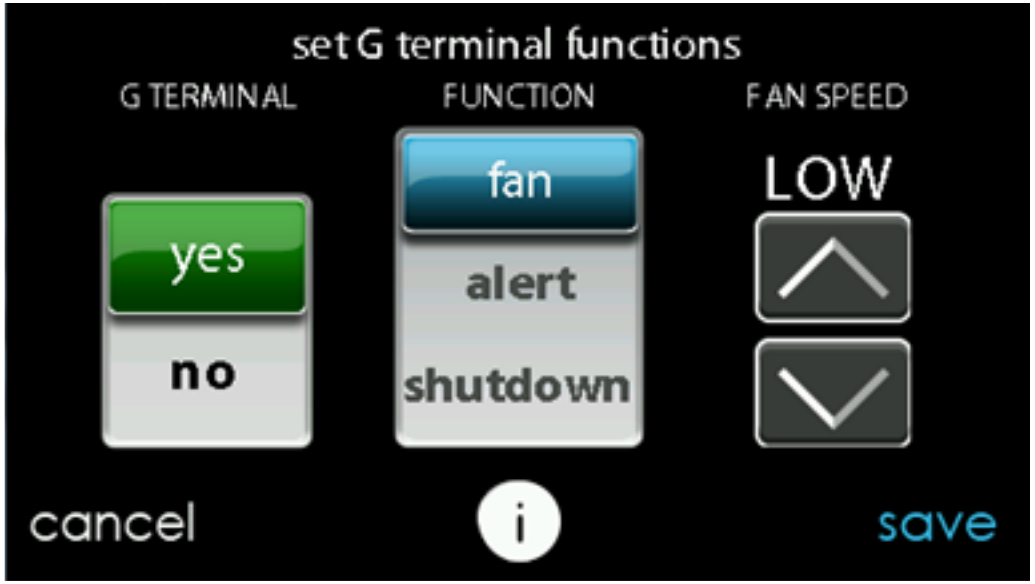
The detailed instructions on how to perform the task of turning on the “G” option is in the User Interface Installation Manual.

You can only use the “G” fan function for the fresh air.



“G” Terminal

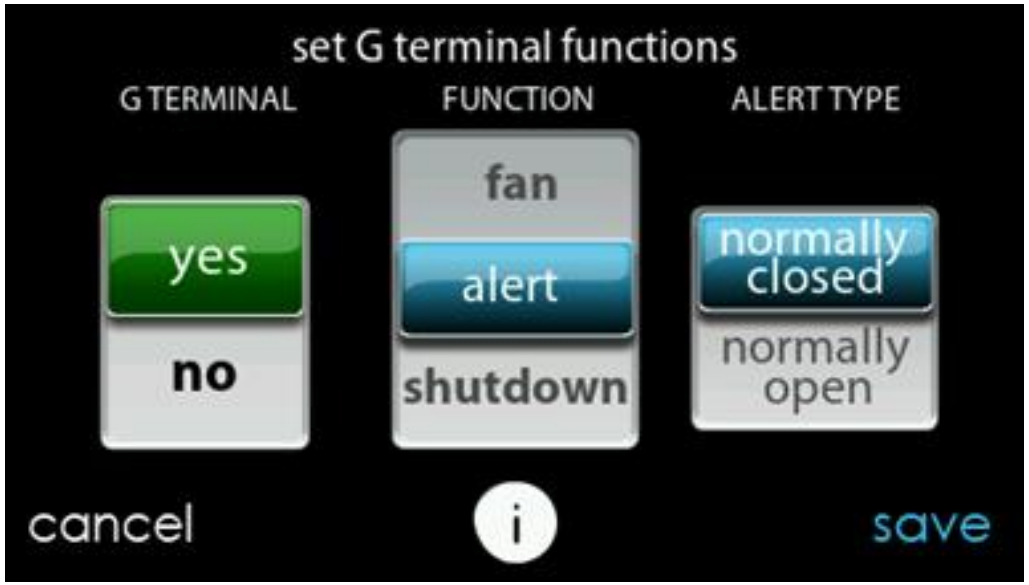
- G Terminal (Furnace and Fan Coil)
  - Switch or relay between “R” and “G” terminal
- Fan Speed
  - Low
  - Medium
  - High



“G” Terminal

The detailed instructions on how to perform the task of turning on the “G” option is in the User Interface Installation Manual.

Use the alert function to select the contact state for an alert. Select Normally Open or Normally Closed, and then save your selection.



“G” Terminal

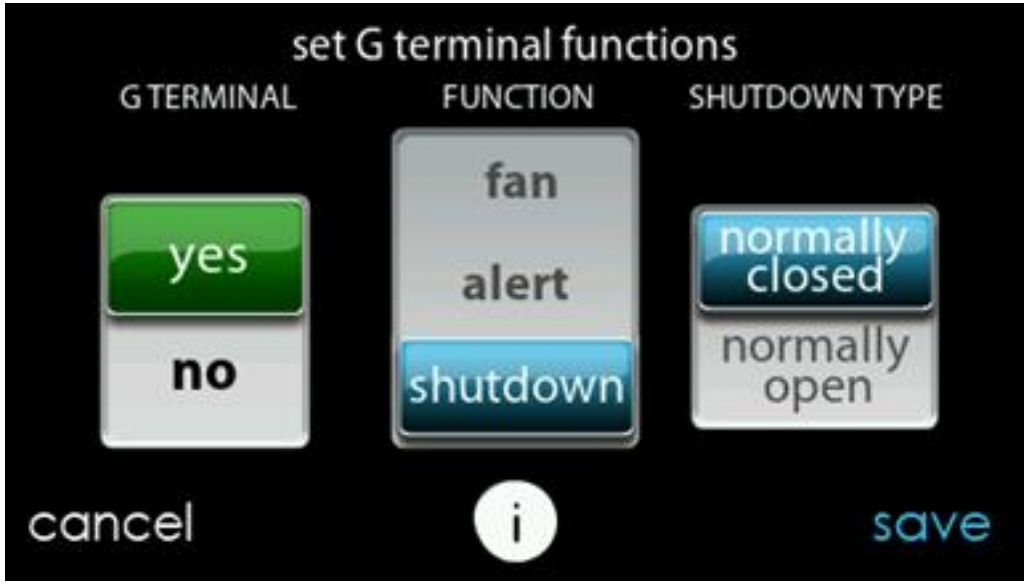
The detailed instructions on how to perform the task of turning on the “G” option is in the User Interface Installation Manual.

Once the G Terminal Alert label has been entered, it is shown both on the main screen and in the notification email when the alert becomes active. You can edit the message in these boxes.

“G” Terminal

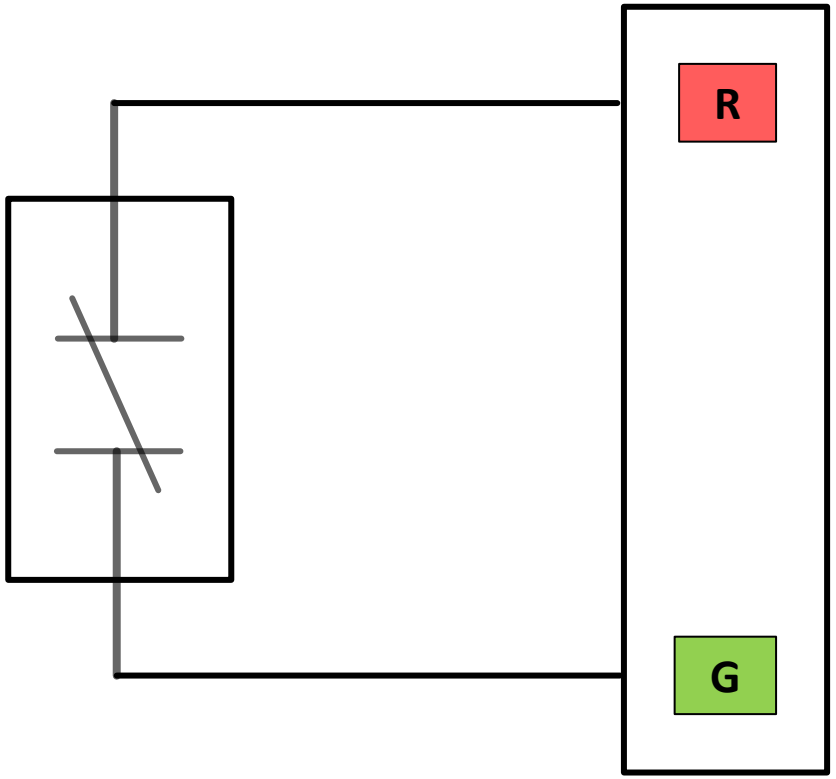
The detailed instructions on how to perform the task of turning on the “G” option is in the User Interface Installation Manual.

You can only use the “G” function for either the fresh air under the fan selection or the float switch under the shutdown selection but not both. If you have both it is recommended that you break “R” for the float switch.



“G” Terminal

Float Switch



FE Fan Coil or Variable Speed Furnace

G Input Wiring for Shutdown Operation
Select contact type either (N.O. / N.C.)

Outdoor Unit Setup – Display 1

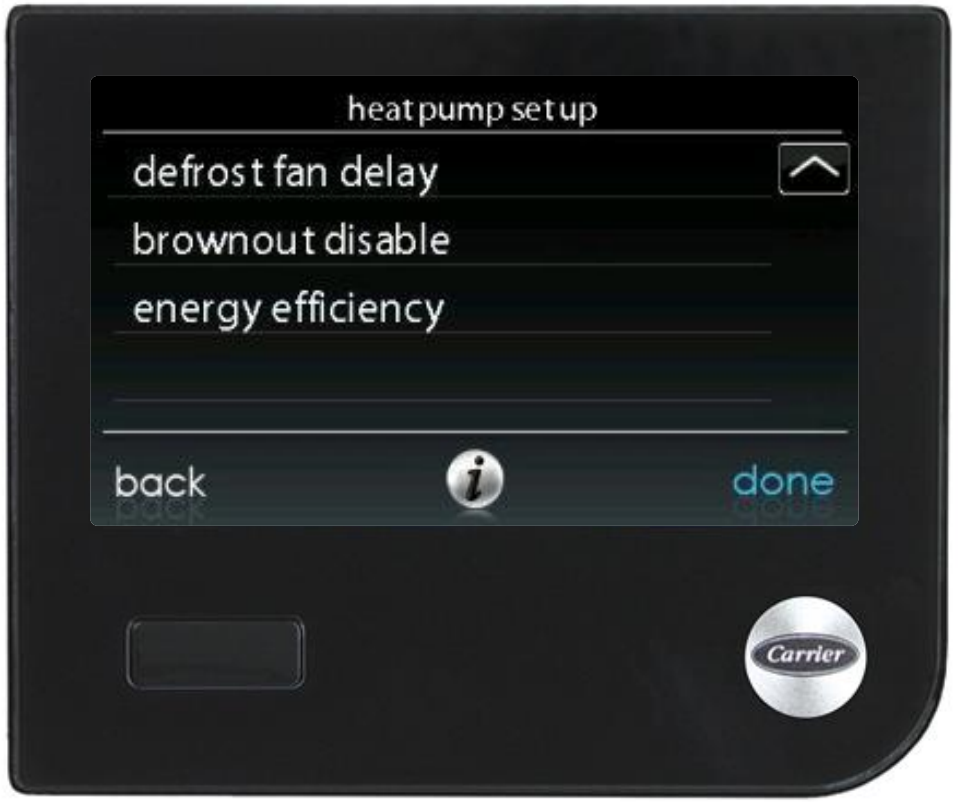
- Cooling Lockout
  - None, 45, 50 or 55° F
- Defrost Interval (Heat Pump)
  - 30, 60, 90, 120 minutes and Auto
- Low Ambient Cooling
  - Yes or No
  - Cooling Lockout

Outdoor Unit Setup – Display 2

- Quiet Shift
  - On or Off
- AC/Heat Pump rpm max
  - Only functions with variable-speed compressor
- High Heat Latch
  - Select outdoor temperature and speed/stage
- High Cool Latch
  - Select outdoor temperature and speed/stage

Outdoor Unit Setup – Display 3

- Defrost Fan Delay
  - With accessory electric heaters
  - Shown only if entered
  - Not shown if self-identified
- Brownout Disable
  - Voltage detection feature
    - Must have HK38EA015 defrost control board or greater outside
- Energy Efficiency
  - Off, On
    (Temperatures between 20°F to 50°F)



Heat Source Lockout

Accessories

Selecting Filter Type

- Change Service Interval Notification To User
  - Replace or Clean Filter
    - 1 to 18 months
    - Default 3 months

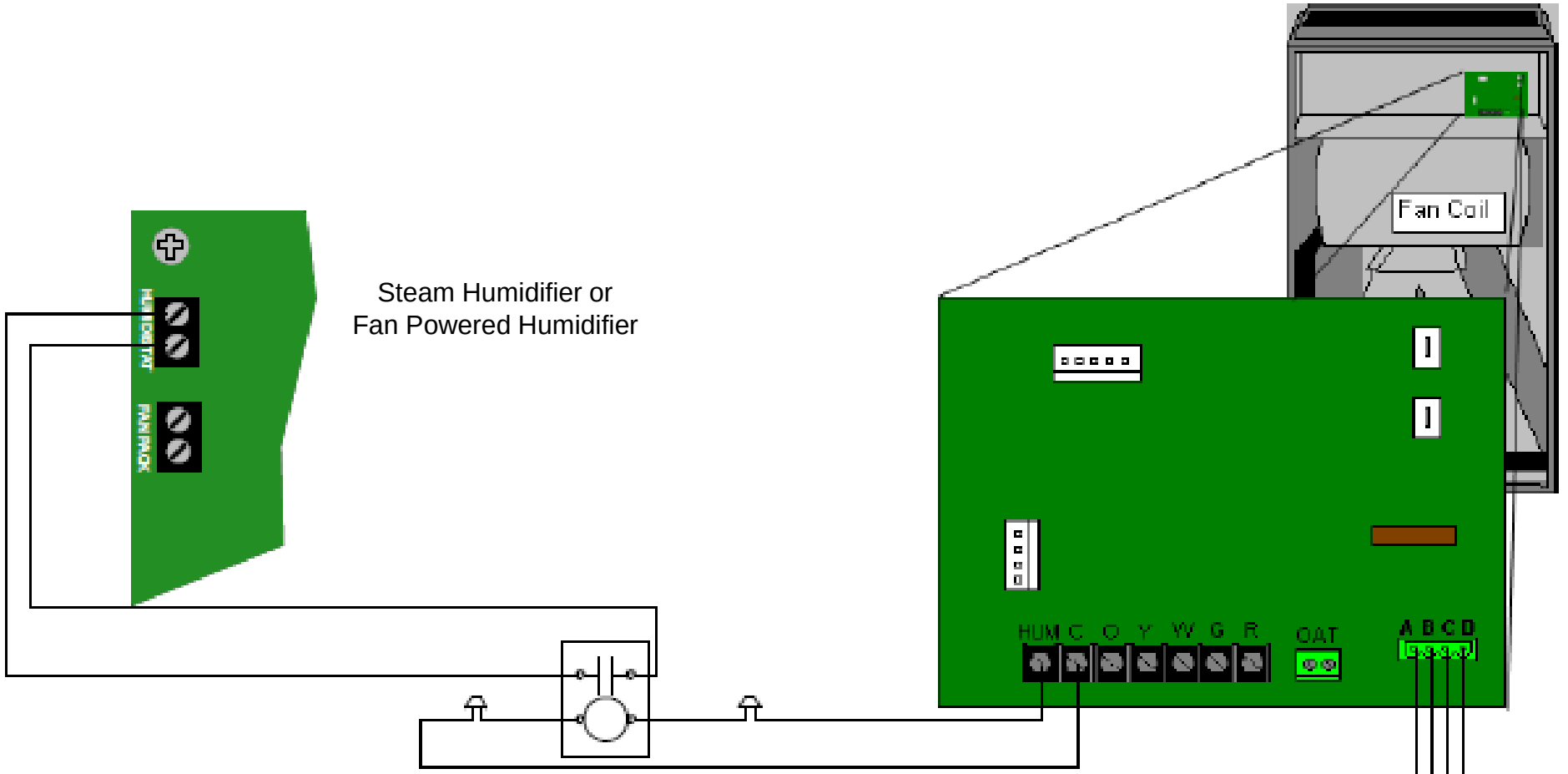
- Pressure Monitoring (not available or effective with air cleaners that do not use filter media, such as Electric Air Cleaners):
  - Enable or Disable. Default = Enable

Installed Filter	vs.	**Menu Selection**
1-inch to 4-inch media	=	AIR FILTER
Electronic Air Cleaner	=	EAC
Air Purifier	=	AIR PURIFIER

Humidifier

- Humidifier Installed:
  - Yes or No. Humidifier selection made during installation; otherwise, default = No
- Change Pad:
  - Selectable from 1 to 24 months. Default = 12 months
- Humidify with Fan:
  - Yes or No. Default = No

Steam/Fan Powered Humidifier Wiring



Carrier/Bryant
FE4 Fan Coil

Steam Humidifier or
Fan Powered Humidifier

24vac Isolation Relay
(Field Supplied)

ABCD To Other
Infinity Devices

UV Lights

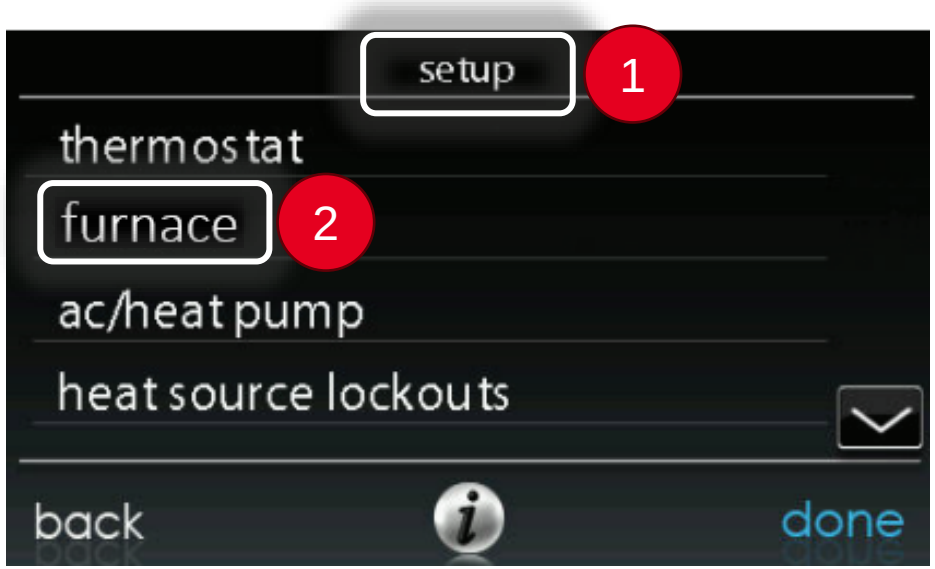
UV Lights:

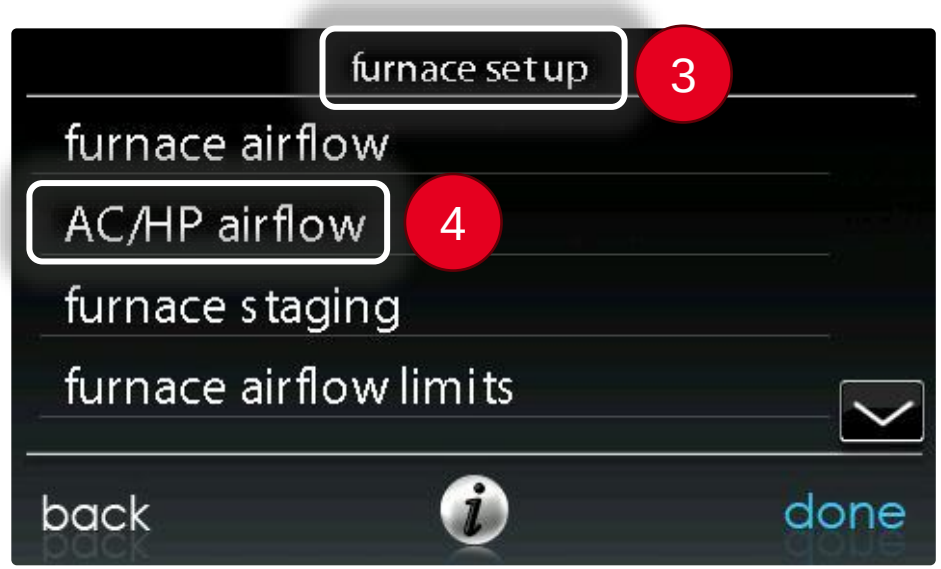
- Touch either YES or NO symbol
- YES - if a UV light is in system
- Select SAVE
- Change service interval notification to user
  - Change UV lights
    - 1 to 48 months
    - Default 12 months

Ventilator

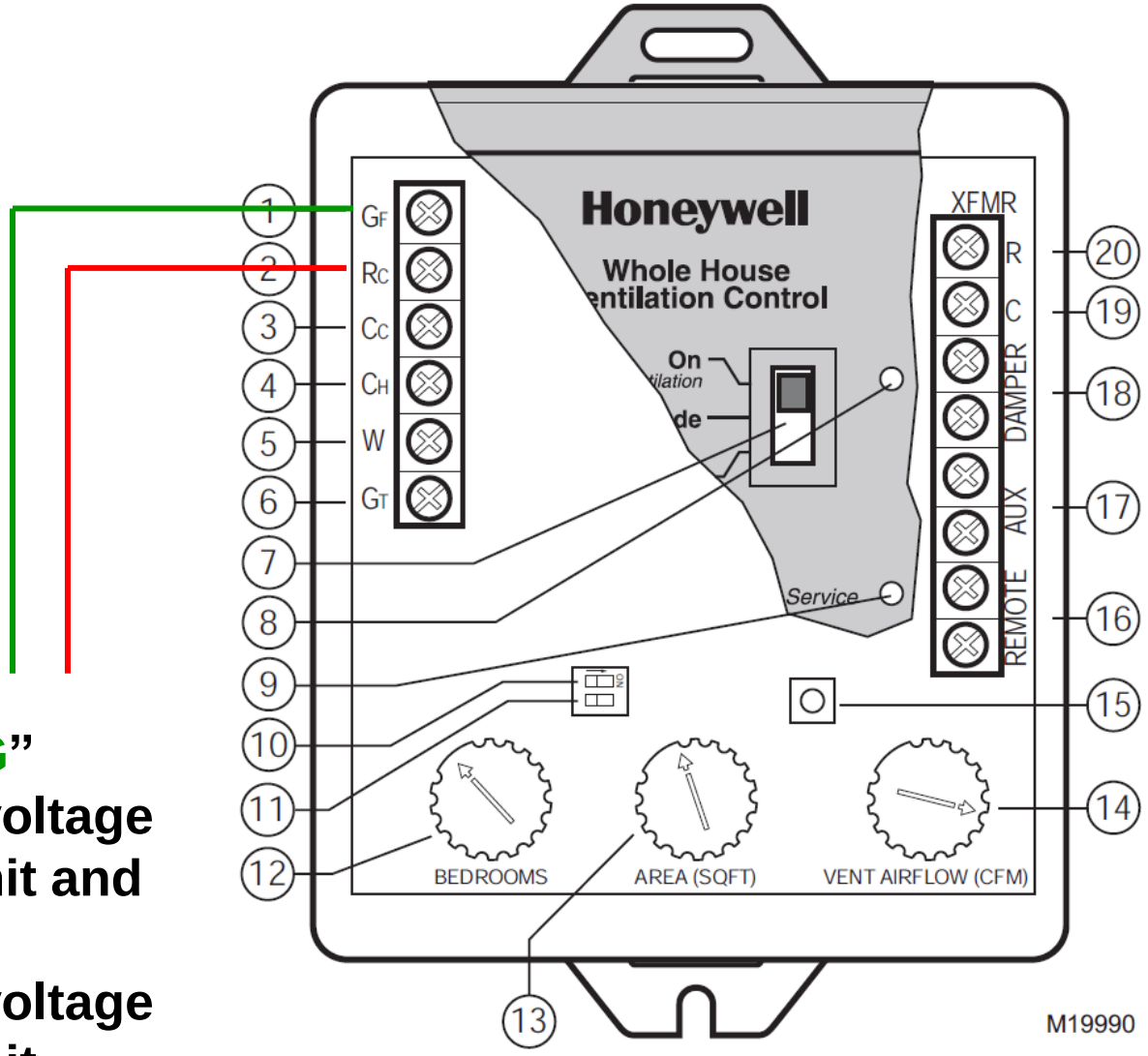
- Change service interval notification to user
  - Clean ventilator pre-filter
    - 60, 90, 120, 150 or 180 days
    - Default 90 days

Where do you set the AC/HP airflow?



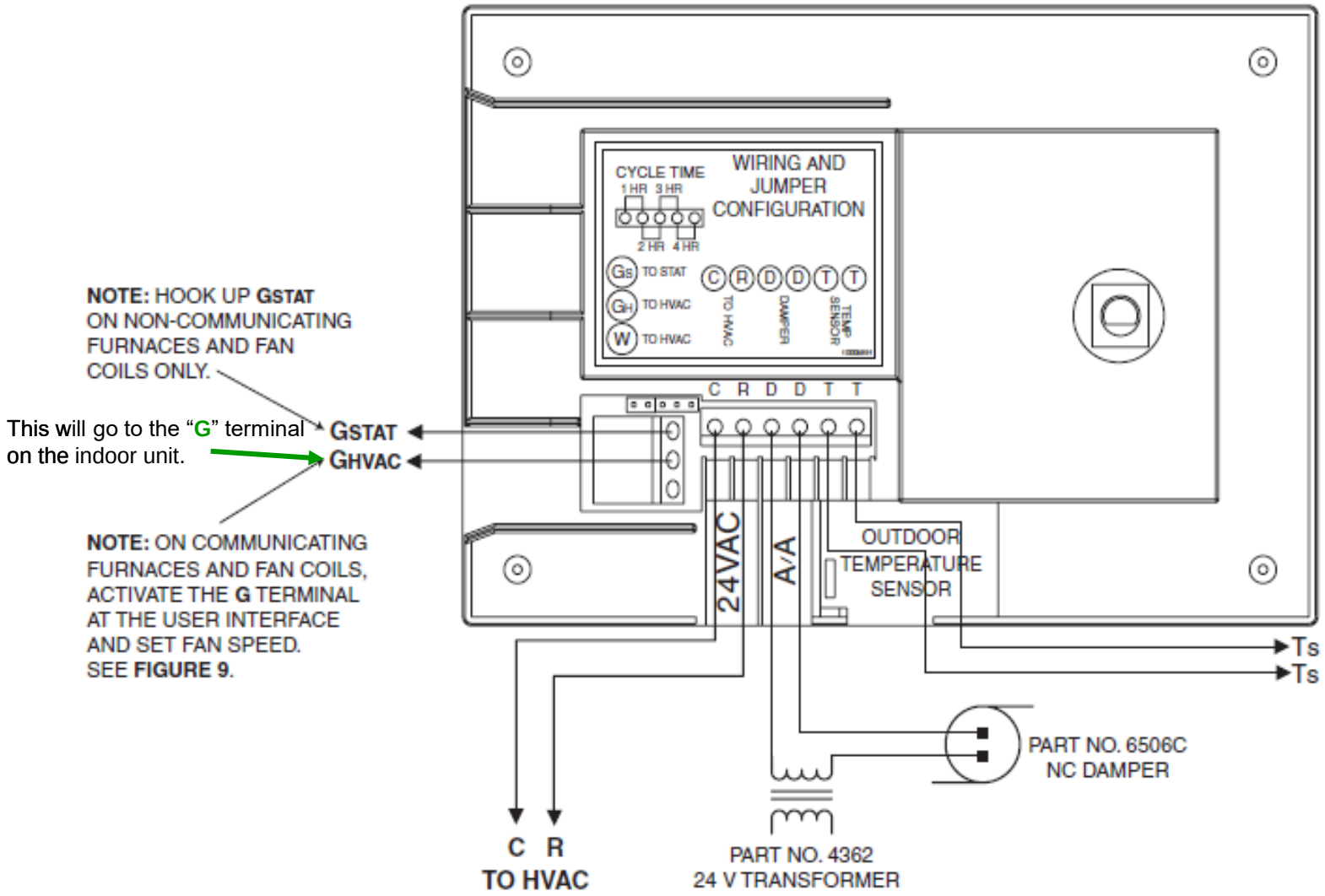


Honeywell Y8150 Ventilation Control



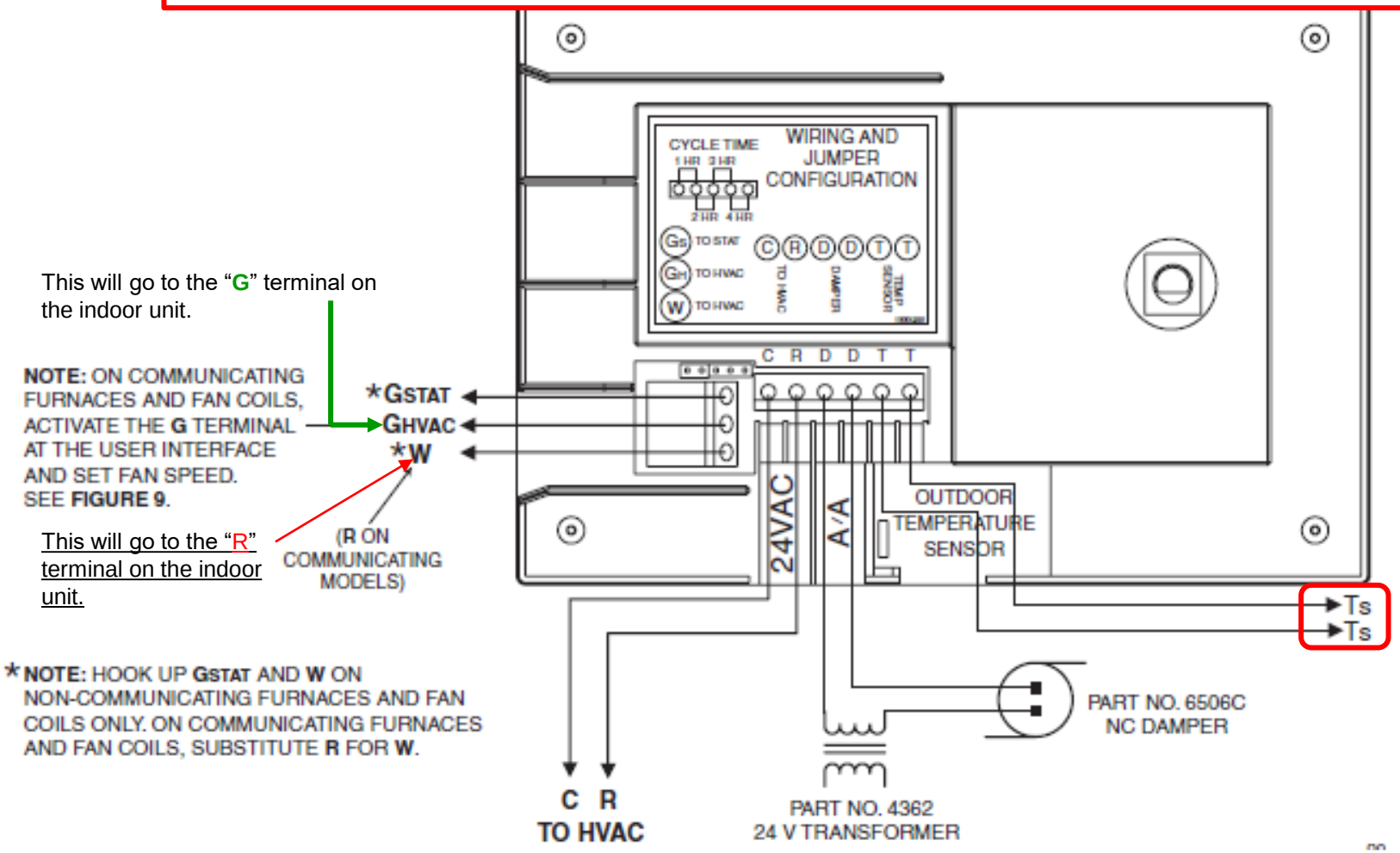
Green goes to the "G" terminal on the low voltage strip in the indoor unit and Red goes to the "R" terminal on the low voltage strip in the indoor unit.

Carrier Fresh Air Damper and Control Kit



Carrier Fresh Air Damper and Control Kit

If fresh air ventilation is required below 20°F db outside, then wire controller as shown



Hydronic Heat

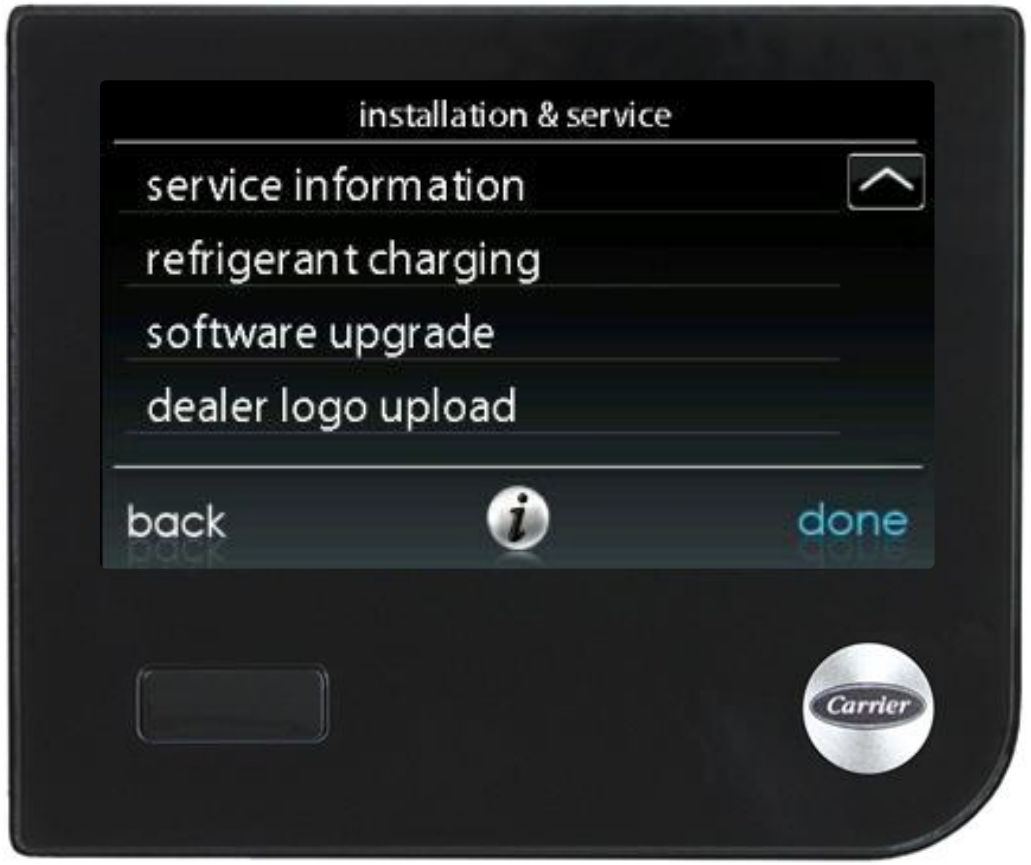
Hydronic Heating

- Hydronic Heat Kit: KFAIF0101HWC
- Consists of a circuit board, relay, and wire harness
- Relay wires into Hydronic Heat System
- Recognized by Communicating Control as Hydronic Heat
- Displays HYDRONIC HEAT
- Requires fan coil board HK38EA012 or newer

Hydronic Heat Setup

- Hot Water Lockout – YES or NO
  - YES, 5 to 55° F
- Heat Pump Lockout – YES or NO
  - YES, 5 to 55° F
- Defrost with Water – YES or NO
- Heating Airflow
  - Off, 500 CFM (MIN) to 400 CFM/TON
- Blower On Delay
  - 0 to 240 seconds
- Blower Off Delay
  - 0 to 240 seconds

Variable Speed Heat Pump (VSHP)

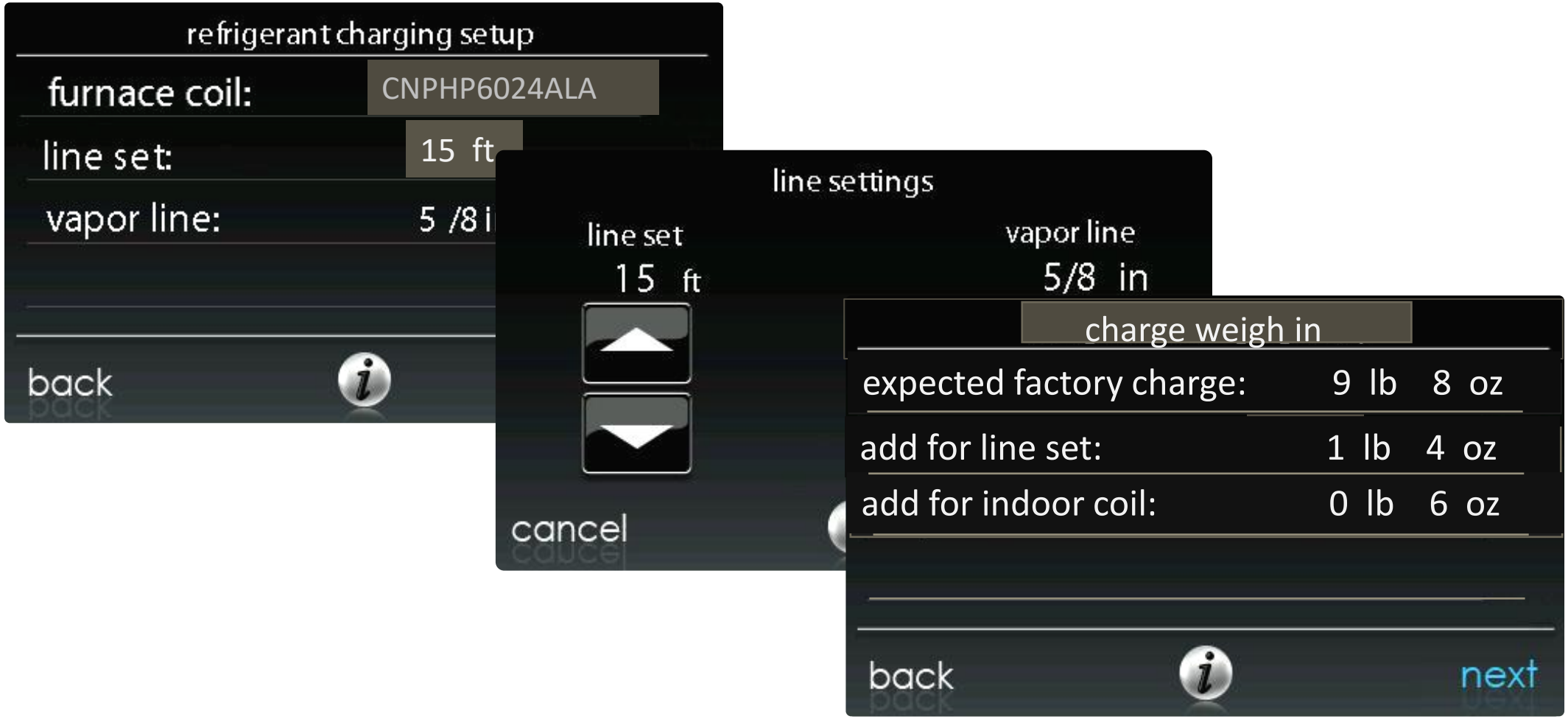


Refrigerant Pumpdown

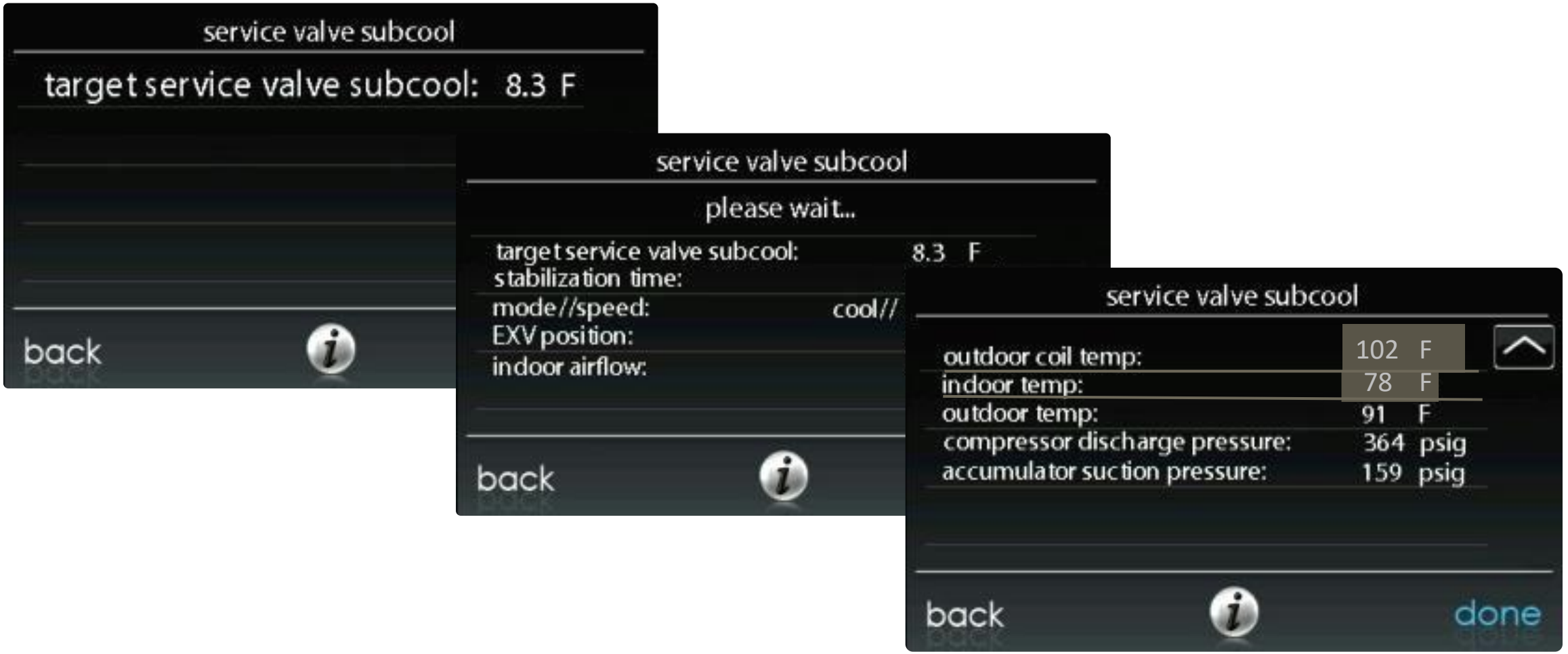
Evacuation and EXV Check

Refrigerant Charging Check

Refrigerant Charge Calculation



Service Valve Subcool Charging



Start Up

May 2, 2017 9:40a
room temp
74°
71°
clear
bryant

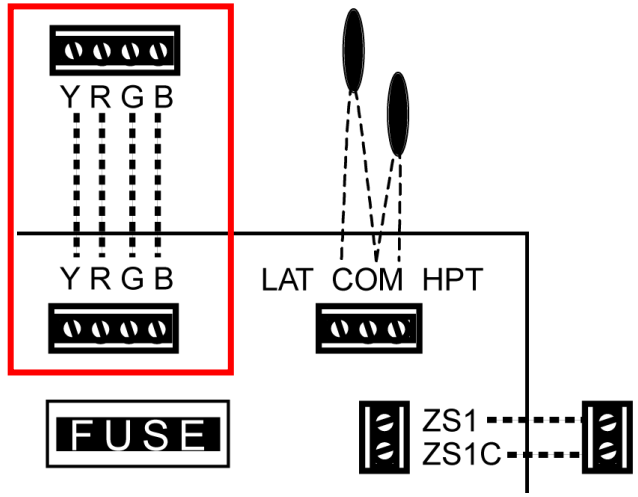
May 2, 2017 9:33a
room temp
74°
71°
clear
Carrier

Check Before Starting Unit

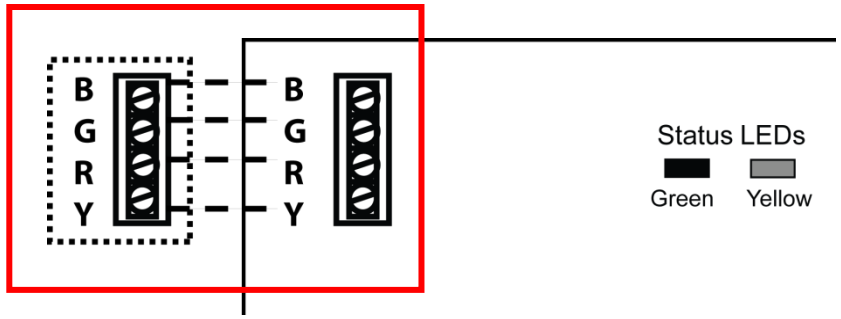
- With the power off, check all electrical connections to ensure that they are correct and tight.
- Make sure all filters, panels, and covers are in place.
- Turn on the power at the breaker box and at the unit disconnects.
- Energize the crankcase heater for 24 hours before starting the system. To energize the crankcase heater only, set the indoor UI to the OFF position and close the power disconnect to the unit.
- Check that the condensate system drains properly, and that any condensate pump (if used) is working properly.
- Check that the system is properly charged with refrigerant.

ERV/HRV Not Recognized by System

- Check wiring:
  - Ventilator wired to YELLOW, RED, GREEN, and BLUE terminals of ZDM or NIM
- Check for 12 volts between Y(+12 vdc) and B (ground) on ventilator
  - Make sure ventilator powered



ZONE DAMPER MODULE (ZDM)



NETWORK INTERFACE MODULE (NIM)

Equipment Summary

- Touch INSTALLATION in the SERVICE menu to change choices
- Touch the word DONE to save choices and return to Main display screen

Mistake on Start-up Screen

- **Change ventilator from NO to YES**
- Touch DONE to return to main display screen
- Touch the word MENU
- Touch the SERVICE symbol and hold for 10 seconds
- Touch the word INSTALLATION then NEXT
- Make corrections

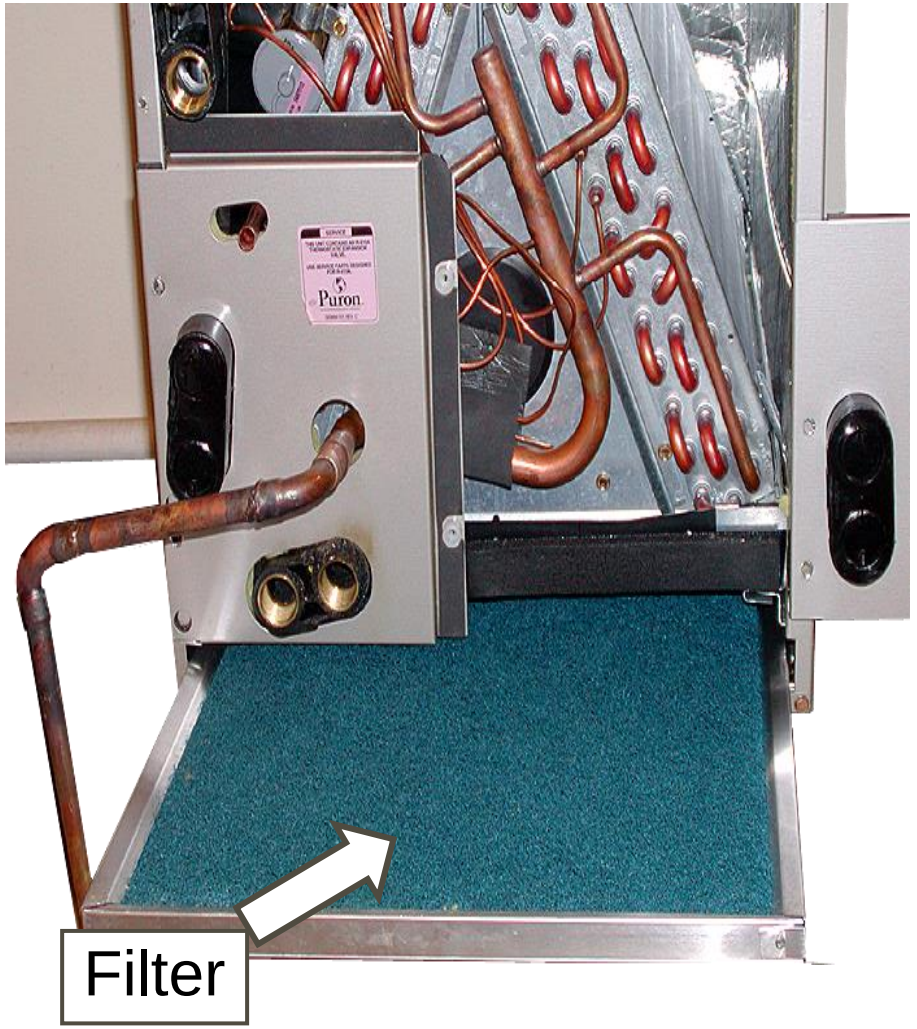
System Static Pressure

At the desired airflow, the controller measures:

- Duct static pressure, system cfm, and motor rpm

Clean or Replace Filter

- CLEAN OR REPLACE FILTER is displayed after a short period of time:
- Probable cause:
    - System static pressure approaching equipment capability
        - Check/replace filter
        - Evaluate ductwork for lower system static pressure
        - Disable pressure measurement in filter setup screen



Infinity / Evolution Control TrueSense™ Filter Detection

At 1:00 PM each day, or when the user switched the system from OFF to any operating mode, the fan will run at either 233 CFM X ton of cooling capacity or (90% High Heat Airflow X 1.5), whichever is higher for one minute after heating/cooling is turned off (A heating or cooling call will be interrupted if in progress at 1:00 PM). If the furnace staging is set to LOW, then use the low furnace airflow X 1.5 or cooling airflow (233 CFM X ton), whichever is highest. Blower RPM measurements are then taken, and a static pressure is calculated.

If the blower has not run in the past 24 hours, the measurement will not be made. If the system is off and the fan is off (or Auto), the current measurement will not be performed.

Infinity / Evolution Control TrueSense™ Filter Detection Current & Past Functionality

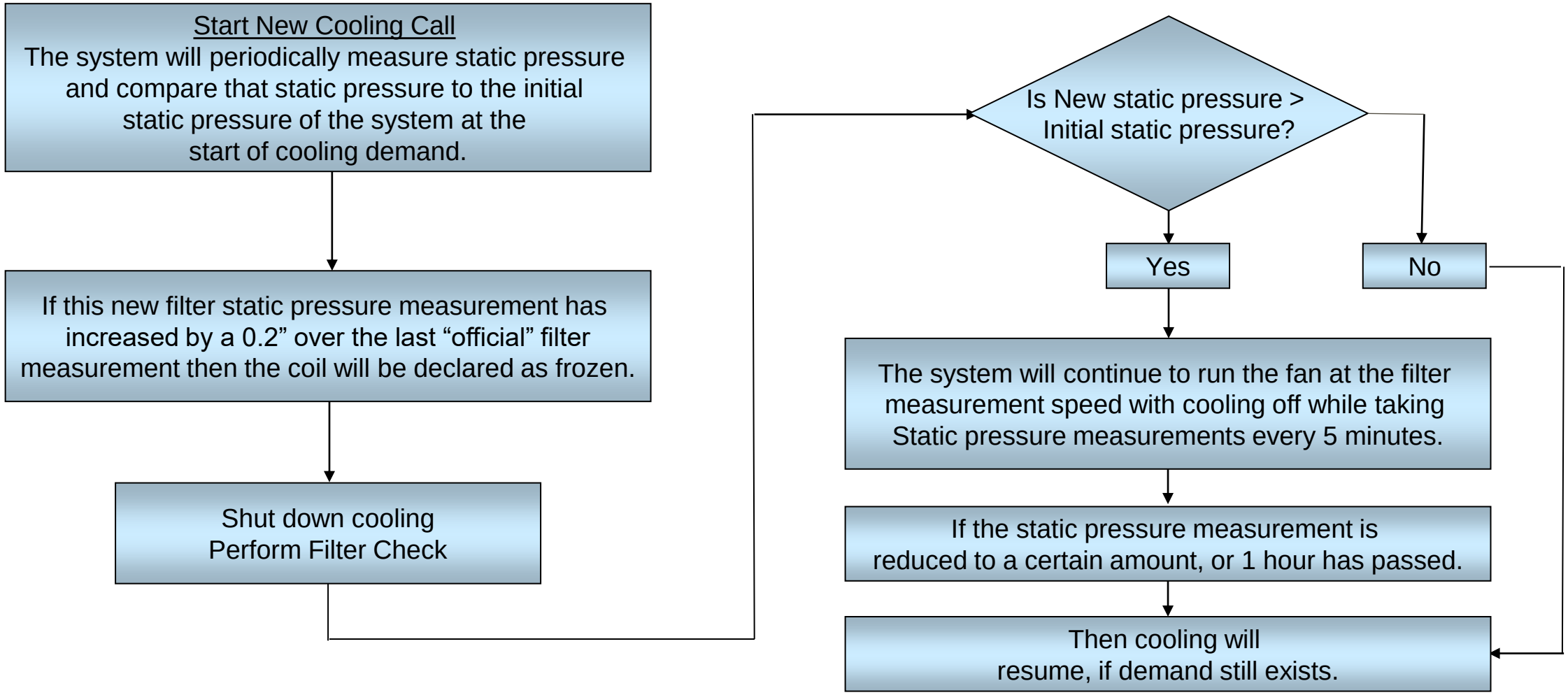
Versions 3,5,6,8 Software (Older UI's)

Initial Static	100% Used
0.1	0.64
0.2	0.68
0.3	0.72
0.4	0.76
0.5	0.80
0.6	0.84
0.7	0.88
0.8	0.92
0.9	0.96

Initial Static	100% Used
0.1	0.64
0.2	0.68
0.3	0.72
0.4	0.76
0.5	0.80
0.6	0.84
0.7	0.88
0.8	1.22
0.9	1.26
1.0	1.30
1.1	1.34
1.2	1.38
1.3	1.42
1.4	1.46

Version 10 Software through (-A) & (-B) Models

Infinity / Evolution Frozen Coil Detection



Checkout

May 2, 2017 9:40a
room temp
74°
71°
clear
bryant

May 2, 2017 9:33a
room temp
74°
71°
clear
Carrier

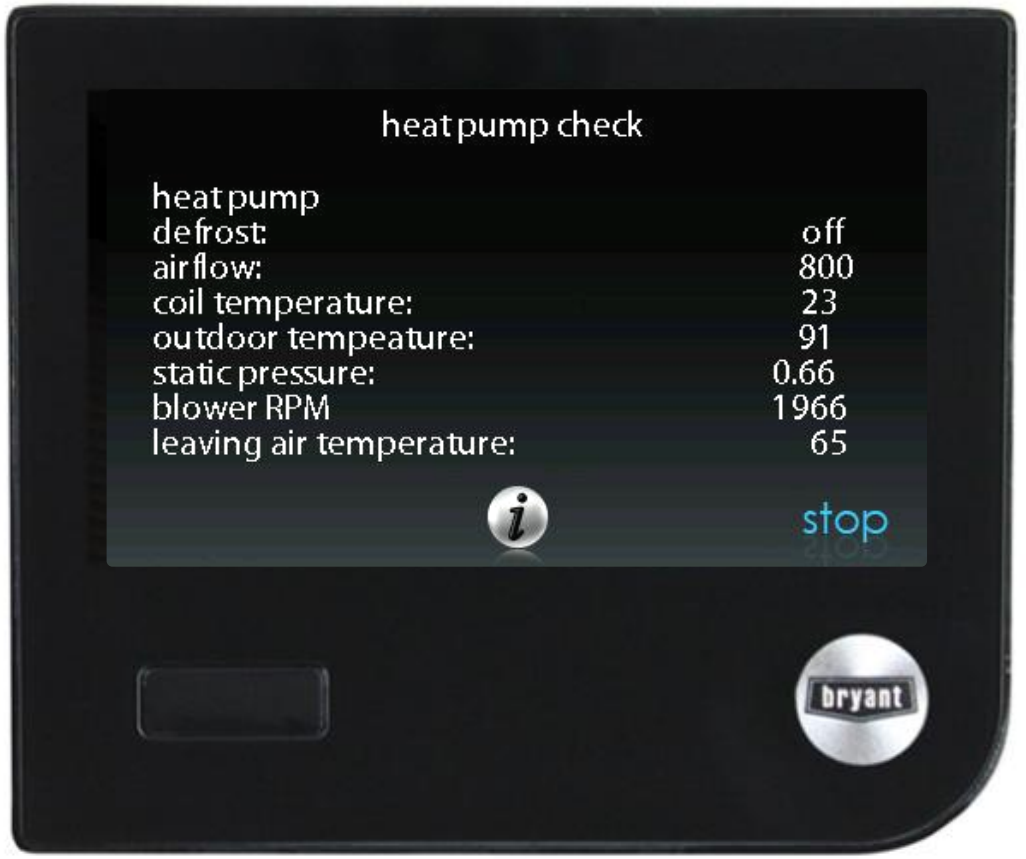
Checkout Menus

- Touch main display screen
- Touch the word MENU
- Touch and hold the SERVICE symbol
- Touch the word CHECKOUT

Checkout Equipment

Furnace Check

Heat Pump Check



Static Pressure Check

When viewing service screen:

- Airflow is *requested* – not actual
- Static pressure is *calculated* on
  - Requested airflow
  - RPM
  - Known system characteristics
- RPM is *actual*

Static pressure accuracy is *limited* when RPM reaches 1250 on some furnaces

  - See product data to determine airflow performance
  - Maximum about 1300 RPM (varies with model)

Humidifier and Ventilator Check

During AC/HP Checkout, what Airflow Should be Delivered with 2-Stage Outdoor Equipment?

- **2-Stage Units run at 367 CFM/Ton on High-Speed Cooling during Checkout Mode and 350 CFM/Ton in Heat Pump Mode.**
- **2-Stage Units run at 228 CFM/Ton on Low-Speed during Checkout Mode and 275 CFM/Ton in Heat Pump Mode.**
- **1-Stage Units run at 350 CFM/Ton during Checkout Mode.**

****** Changes made to airflow settings will NOT be seen in the checkout mode/screen.******

Which means that if you have the airflow set to Comfort, Efficiency or Maximum it will be ignored during checkout mode.

Service Information

Last 10 System Events

- Active = Event currently in effect
- Technician records date and events
- Events stored in memory
- Reset in resettable faults
- Equipment identified by event

Take a Break!

Be back in

04:[redacted]

Minutes

Take a Break!

Be back in

03:[redacted]

Minutes

Take a Break!

Be back in

02:[redacted]

Minutes

Take a Break!

Be back in

01:[redacted]

Minutes

Take a Break!

Be back in

00:[redacted]

Seconds

Troubleshooting

System Troubleshooting

- System tracks malfunctions
  - Equipment circuit boards display fault code sequences
  - System stores malfunctions as fault codes in user interface
- User interface messages and fault codes provide probable cause
- Following user interface screens are helpful

System Malfunction Screen

- Screen shows a system malfunction if a fault occurs that shuts down the equipment
- May clear on its own if it is a 5-minute or 15-minute lockout. 4-hour lockouts will reset after they have timed out the 4- hours or sooner if power is cycled
- Try resetting power to see if the fault goes away, if it does not come back the controller may have just needed to be reset.
- Check the system for the cause especially if the fault reoccurs
- There are three specific types - The Display column indicates if the code is an **Event** (**E**), **Fault** (**F**) or **System Malfunction** (**S**) for display purposes.
- Resettable faults are located under Service Info>Run/Fault History> Indoor Unit or Outdoor Unit. These faults/errors are stored in the indoor or outdoor control boards. The last 10 system faults are stored in the User Interface and can be reset.

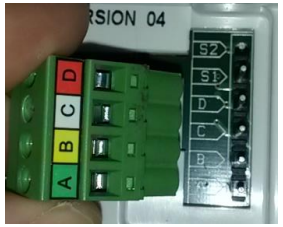
Second User Interface (Checking Communication)

Checking Communication with Outdoor Unit

The purpose of this test is to make sure that the communication wiring going to the outdoor unit is capable of communications.

First make sure that the outdoor unit is powered. You should have 24 vac between UTIL & C on the board. If not, you need to find out why, correct it and try to establish communications.

Remove the User Interface (UI) from it's backplate and take it to the outdoor unit.



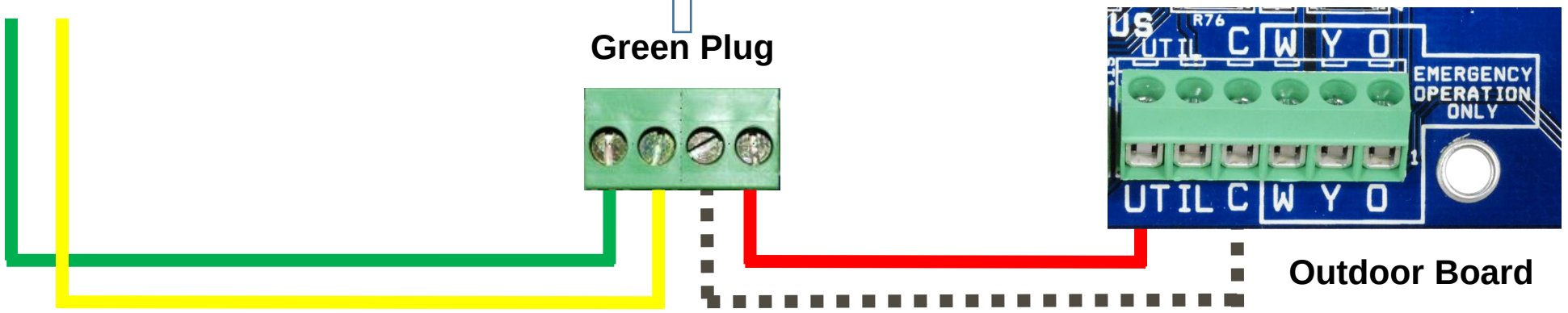
Remove the Green ABCD plug from the outdoor board and push it directly onto the pins on the back of the UI. Add two wires from the outdoor board to the Green plug on C & D.

You should be able to establish communications with the indoor unit from the UI. If not, then there are problems with wiring, and it needs to be fixed. If you can communicate with the indoor unit there might be a problem with the outdoor board.

When connecting to 5 stage units the UI needs version 10 software or greater to communicate if it is a –A UI.

To Indoor Unit

Green Plug



Outdoor Board

Second User Interface (Service Tool)

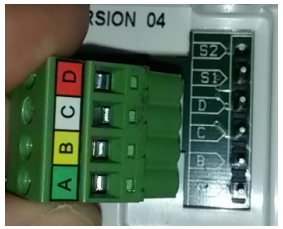
Service Tool connected to the Outdoor Unit

When the 2nd UI starts to communicate with the system, the main UI indoor displays “Service Tool attached” and the UI becomes inactive. The 2nd UI has only the service screen menus.

First make sure that the outdoor/indoor units are powered.

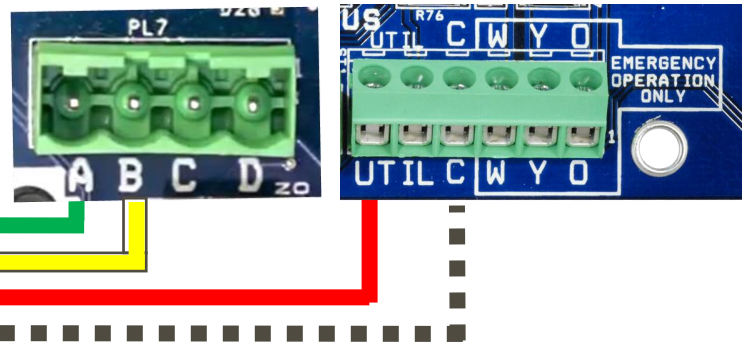
You should connect to the A, B, UTIL & C on the outdoor control board.

Connect the extra Green ABCD plug to the terminals on the outdoor control board with some field supplied thermostat wire (***do not unwire the outdoor unit***) and push the Green Plug directly onto the pins on the back of the UI.



Extra Green Plug

Outdoor Board



You will be able to establish communications with the system from the 2nd UI and control the system from the 2nd UI.

When connecting to 5 stage units the UI needs version 10 software or greater to communicate if it is a –A UI.

Second User Interface (Service Tool)

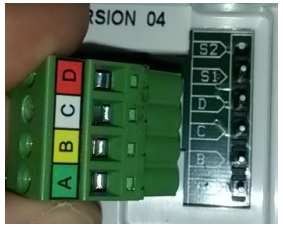
Service Tool connected to the Indoor Unit

When the 2nd UI starts to communicate with the system, the main UI indoor displays “Service Tool attached” and the UI becomes inactive. The 2nd UI has only the service screen menus.

First make sure that the outdoor/indoor units are powered.

You should connect to the A, B, C & D on the indoor control board.

Connect the extra Green ABCD plug to the terminals on the indoor control board with some field supplied thermostat wire (***do not unwire the indoor unit***) and push the Green Plug directly onto the pins on the back of the UI.



Extra Green Plug

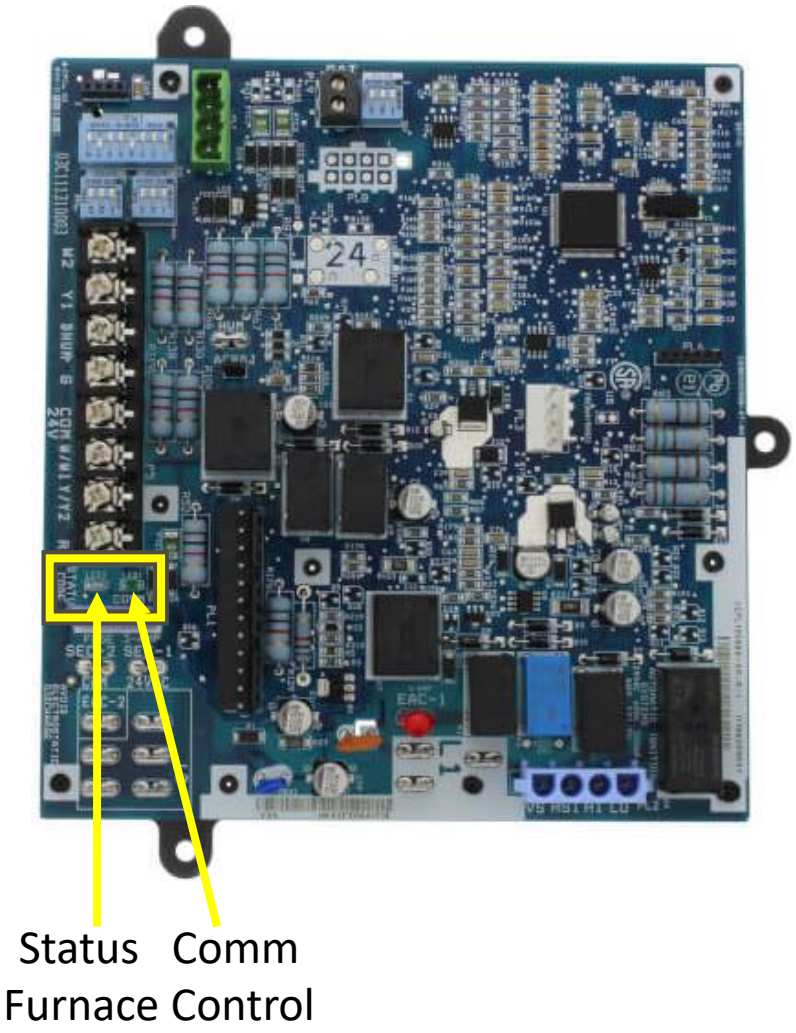
Indoor Board

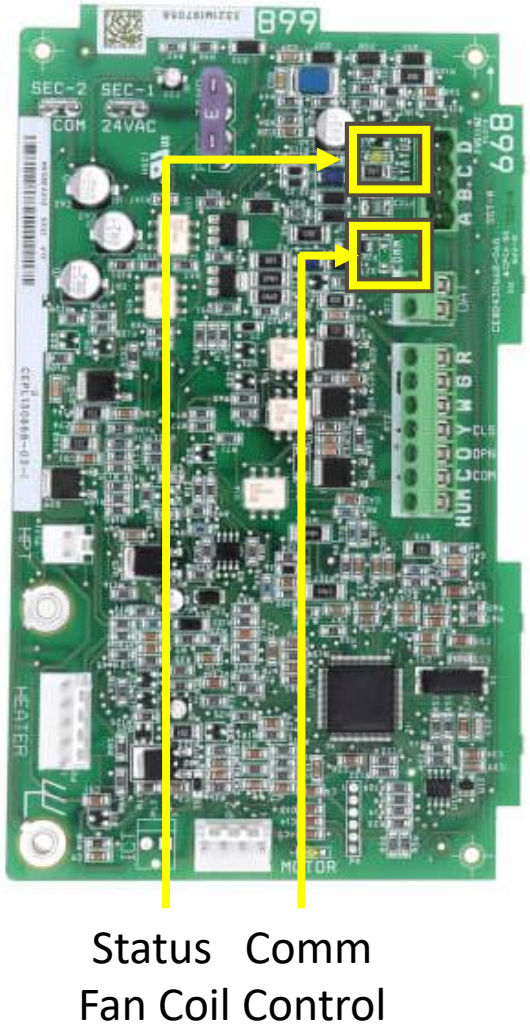
You will be able to establish communications with the system from the 2nd UI and control the system from the 2nd UI.

When connecting to 5 stage units the UI needs version 10 software or greater to communicate if it is a –A UI.

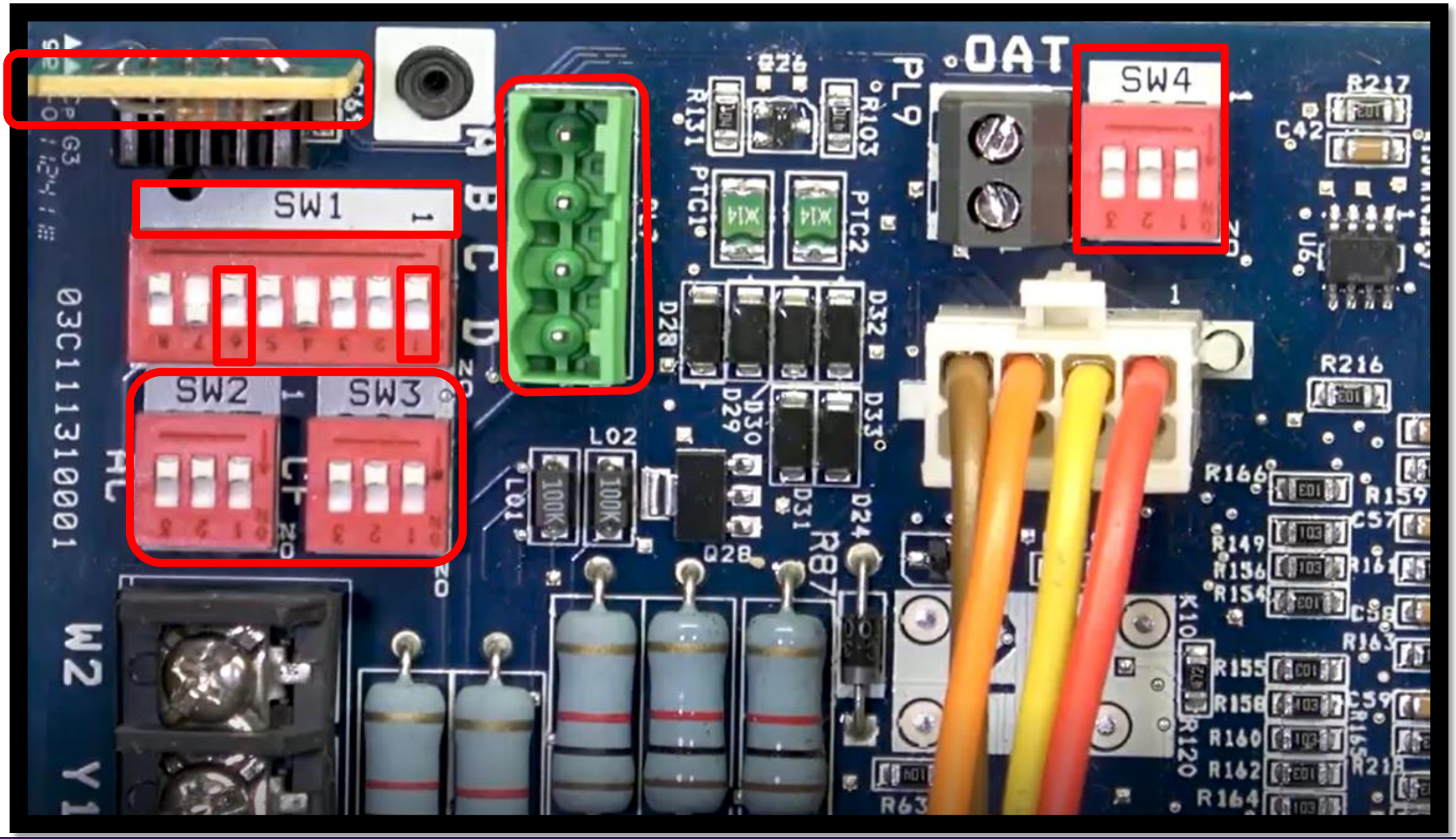
Circuit Board LEDs

- LEDs on all circuit boards
  - Indoor unit
  - Outdoor unit
  - Zone Damper Module
  - Network Interface Module
- Provide fault code when malfunction occurs
- Fault codes provided in the supplements section of the service manual to facilitate troubleshooting





Circuit Board Layout



User Interface Does Not Power Up

- 24 vac at C-D terminals at UI
- 24 vac at C-D terminals at indoor control board
- Indoor unit power on
- Indoor amber LED lit
- Check fuse at indoor unit circuit board
- Check wiring to ABCD terminals
- Match all colors at all terminals

Indoor Unit Not Found

- Display: INDOOR UNIT NOT FOUND
- Check for green LED at indoor unit circuit board
- Check wiring to ABCD terminals
- Match all colors at all terminals
- Avoid communication bus run next to power wiring
- Touch RETRY in lower right corner of UI screen
- If still “INDOOR UNIT NOT FOUND” **enter demo mode**
  - Disconnect electronic devices from indoor unit
  - Leave only indoor unit connected
  - Try again
- If still “INDOOR UNIT NOT FOUND”: **enter demo mode**
  - Connect User Interface direct to indoor unit with short piece of thermostat wire
- If for furnace, CANNOT COMMUNICATE WITH EQUIPMENT:
  - Turn off all DIP-switches at SW-4

Communication Error – No Communication

If you look closely, you will see that the ABCD label was applied to the controller upside down.

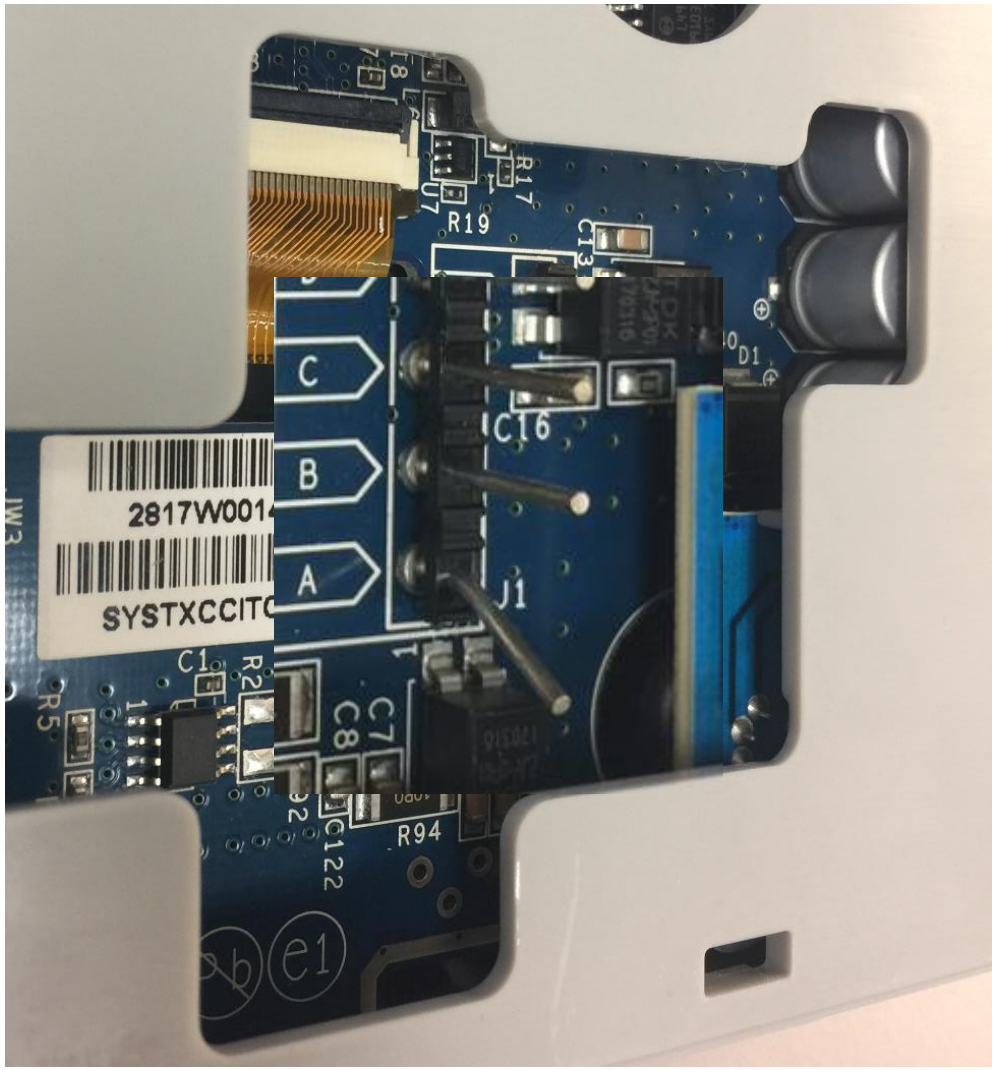
The tech wired the controller based on the label which was backwards.

Remember that ABCD goes from left to right always.

Communication Error – No Communication

If you look closely, you will see that the A pin was bent when the tech applied to the controller to the subbase.

The tech was having difficulties getting the User Interface to lock into the subbase, so he just pressed a little harder and got it to latch but then had no communications.



Outdoor Unit Not Found

Display says outdoor unit not found:
(I have a communicating outdoor unit)

- Recheck wiring to the wiring connector on the outdoor unit
- Make sure all colors match for every terminal
- Check for power to the outdoor unit.
- Check communication voltage on outdoor control board.
- Disconnect green plug from unit and check communication voltage on wires from indoor unit

Troubleshooting the Comm. Bus

TABLE 1 Advance Troubleshooting Fan Coil / Furnace / 2-spd. Communication Bus	
FE Control Board Furnace Control Board Two-Speed Control Board	
-Voltage Readings - With board Power applied, and No U.I. connected	
A to B	4-5 vdc (steady)
A to C	4-5 vdc (steady)
B to C	~.01 to 0.3 vdc (steady)
C to D	24 vac

The above readings are meant to prove that the communication driver is not dead or shorted. It does not guarantee that the unit will communicate. If a communication problem still exists and the voltage readings are good, an external short in the thermostat wire or a miss-applied accessory may be the cause.

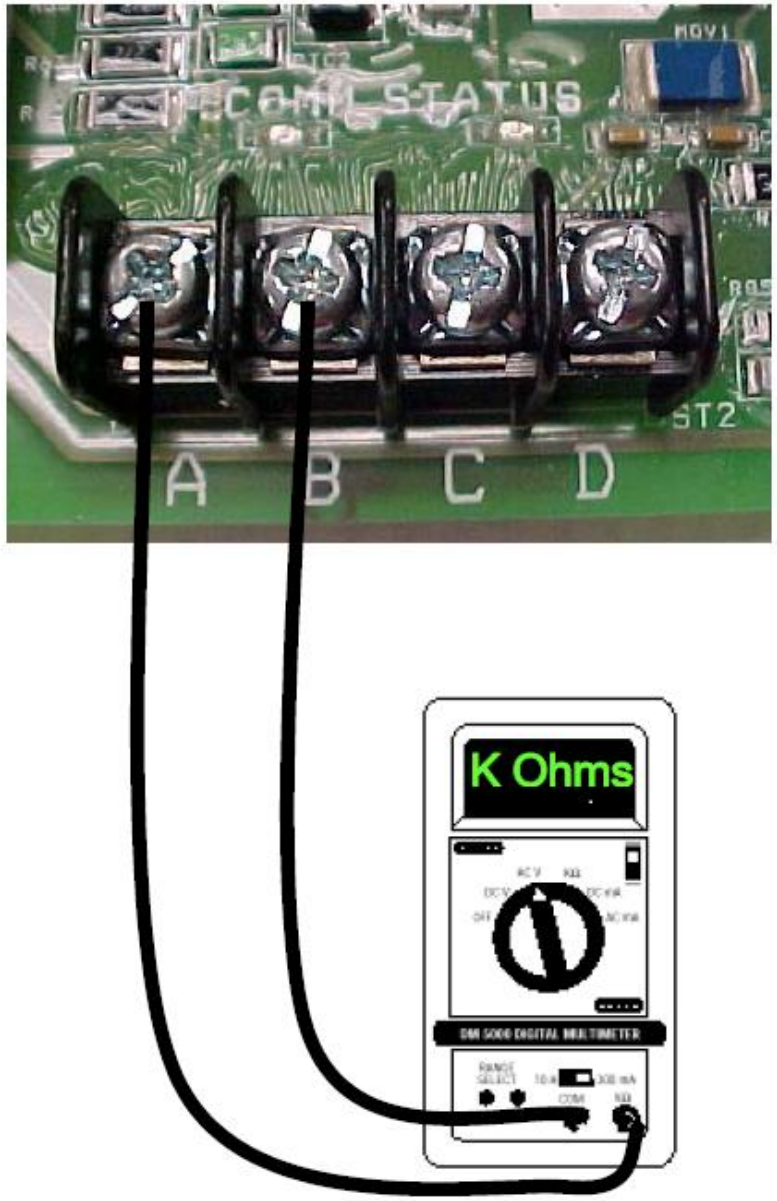
Troubleshooting the Comm. Bus

TABLE 1 Advance Troubleshooting Fan Coil / Furnace / 2-spd. Communication Bus	
FE Control Board Furnace Control Board Two-Speed Control Board	
-Voltage Readings - With board Power applied, and U.I. Applied	
A to B	~2.5 to 5 vdc (pulsating)
A to C	~2.5 to 5 vdc (pulsating)
B to C	~0.1 to 0.9 vdc (pulsating)
C to D	24 vac

The above readings are meant to prove that the communication driver are functioning and not dead or shorted and the wiring between the devices is OK. If voltages check out correct and a communication problem still exists, it could be a bad board failure.

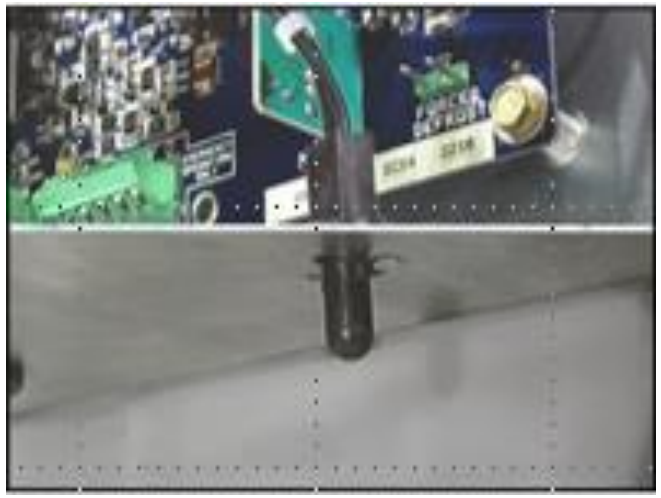
Communication Faults

- NO COMMUNICATION? (Proving if board(s) are good or bad)
- Turn power off and disconnect all the ABCD wires at each board before checking the resistance (K ohms) across the A-B of each board.
- UI, UIZ, Zone Board, Smart Sensor, NIM, Touch UI's = A-B 71-75 K ohms
- Furnace & Fan Coil = A-B 17-19 K ohms
- 1 & 2 Speed & Variable Speed Outdoor Boards = A-B 28-34 K ohms; A-C 16-20 K ohms; B-C 13-15 K ohms
- 5 Stage Inverter AOC Boards =
  - A-B 28-34 K ohms (old versions)
  - A-B 15-17 K ohms (newer versions) *Date code of 141203 on AOC Board*



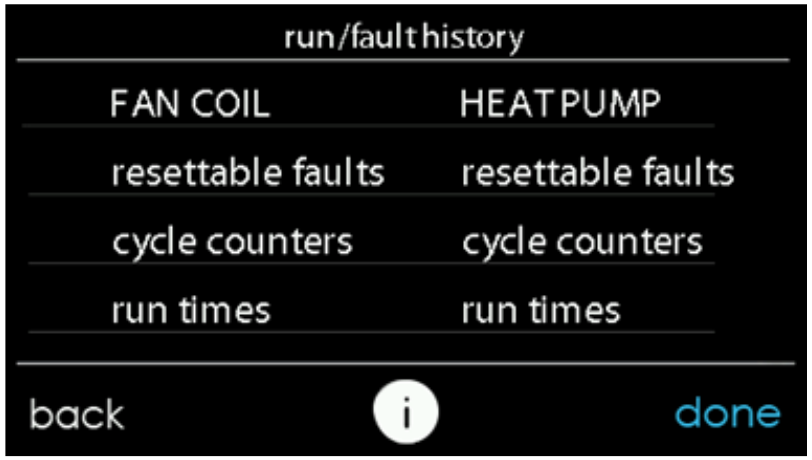
OAT & OCT Sensor Location, Failures, Causes & Fixes

One thing that can cause the OAT sensors to fail is that the sensor is not removed when brazing the refrigerant lines into the service valves directly below the sensor. The OCT can become loose (not tightly secured) or has come completely loose from the line. Both sensors come in one harness with a 4 pin Molex connector. If either sensor should fail the unit (A/C or HP) will continue to operate with default parameters. If the OAT sensor should fail, low ambient cooling will not be allowed and the one--minute outdoor fan off delay will not occur. If the OCT sensor should fail, low ambient cooling will not be allowed, and the HP will use a 30-minute timer for defrost and will exit after 5-minutes.



System Fault Reset Locations

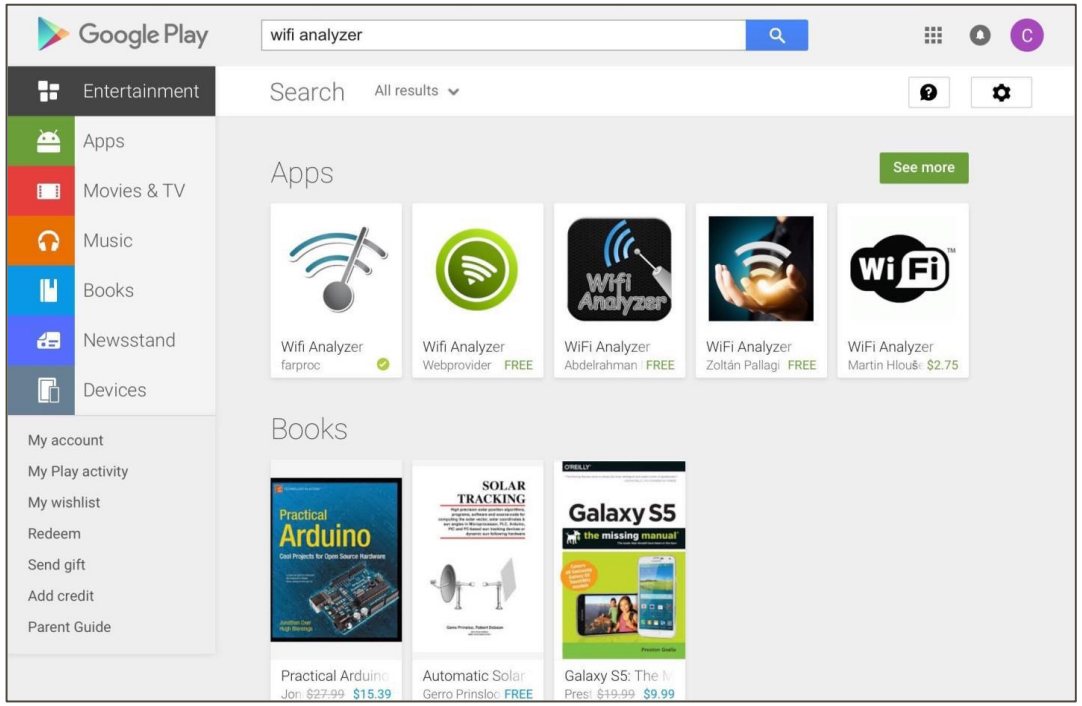
- Resettable faults are located under Service Info>Run/Fault History> Indoor Unit or Outdoor Unit.
- These faults/errors are stored in the indoor and outdoor control boards.
- The last 10 system faults are stored in the User Interface and can be reset by going to the Installation & Service screen>Setup>Thermostat>Reset Factory Defaults [which brings up 4 choices.



Local Wi-Fi Connection Troubleshooting

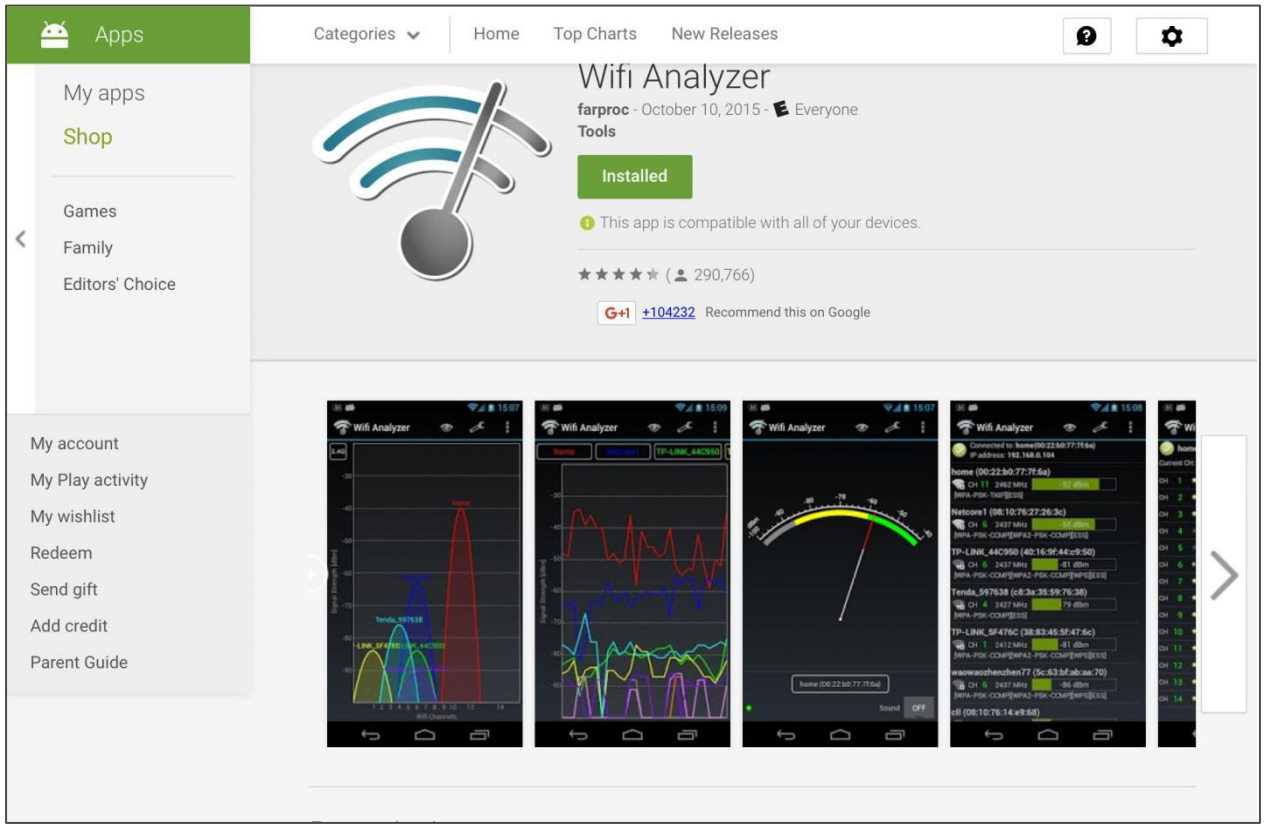
Busy/Congested Network Assessment:

If you have an Android device, there are several apps you can use to help “see” what the network climate looks like around you. If you have an Apple device, I have yet to find a free app that works as well.
Below you can see the search criteria and the app that I prefer, **Wi-Fi Analyzer by Farproc**. It’s free and it provides the type of information that we want to know. (Google Play Store)



Local Wi-Fi Connection Troubleshooting

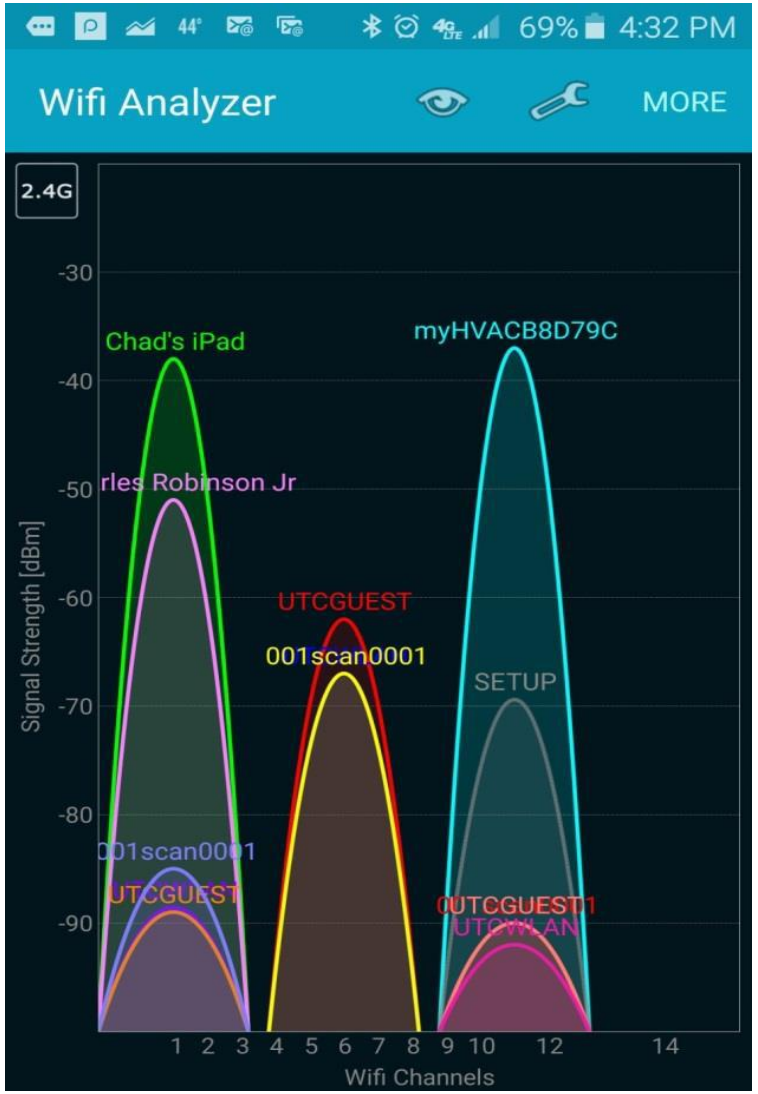
Below, you can see the Google Play Store info about the Wifi Analyzer app. The graphs are particularly helpful in determining where the congestion lies.



Local Wi-Fi Connection Troubleshooting

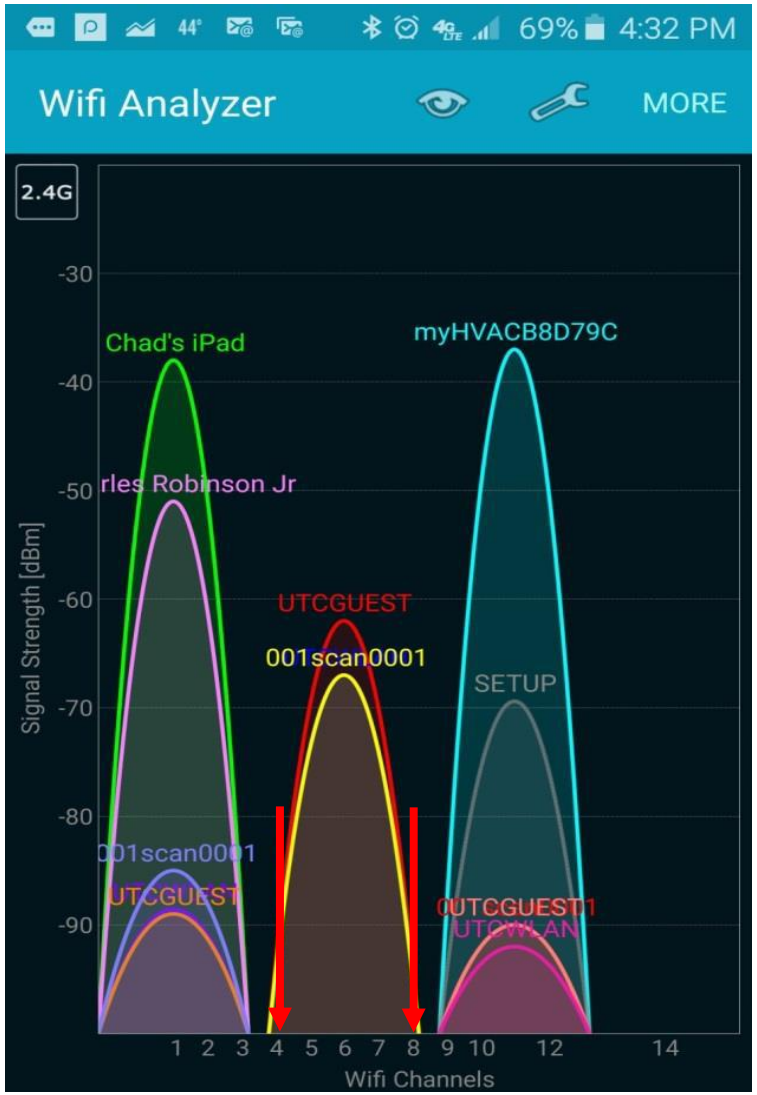
- Network
  - Some networks have a lot of radio chatter. This app can help us to see this.
  - Our radio doesn't compete well on very busy networks.
  - Some of this competition can be from neighbor's networks.
  - Changing the channel on the router can help.
  - You could use Wi-Fi Analyzer (Android® only) to help identify a congested network.

- TP-Link ® Routers
  - The TP-Link is used as a 2nd or dedicated network for the UI.
  - It can help a situation where the UI is having trouble staying connected to the homeowner's network, or if there seems to be a compatibility issue between the homeowner's router and the UI.



Local Wi-Fi Connection Troubleshooting

- Here is a screen shot from our local network.
- From this screen, its evident what channels are the busiest and what networks have the highest signal strength.
- Typically, signal strength is an indication of how close physically, the router is to you. In the example above, it would be a good idea to change your router channel to 4 or 8 to get into a clearer area of wireless bandwidth.



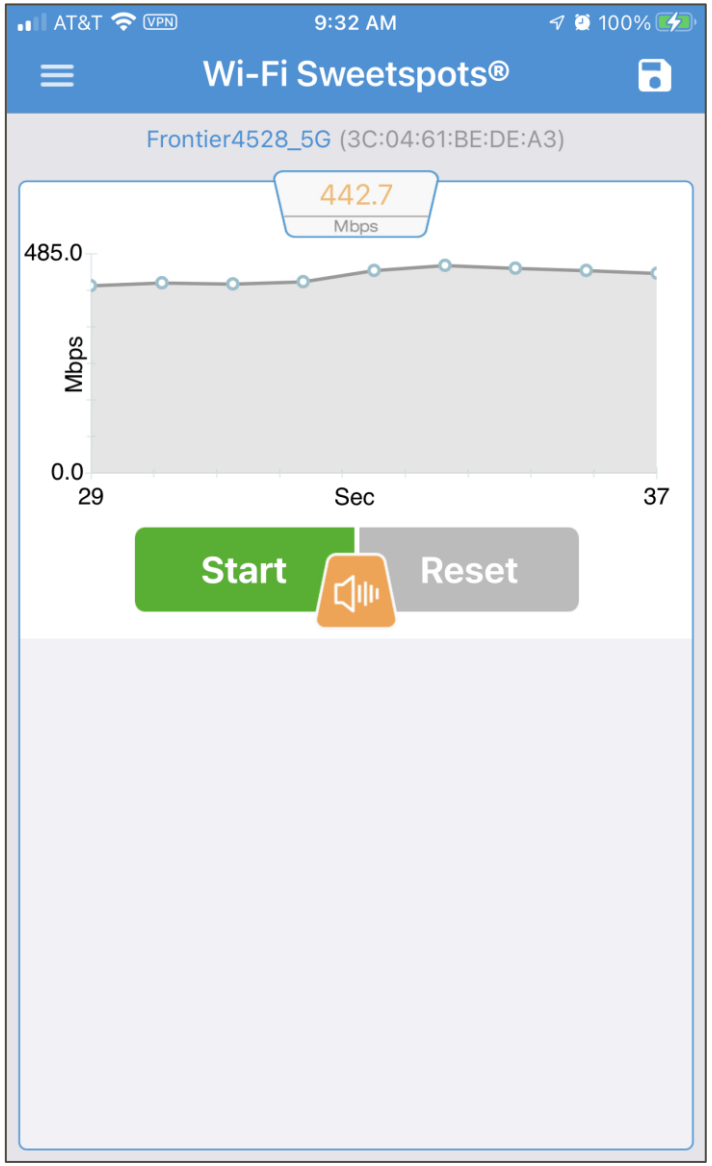
Local Wi-Fi Connection Troubleshooting

Busy/Congested Network Assessment:

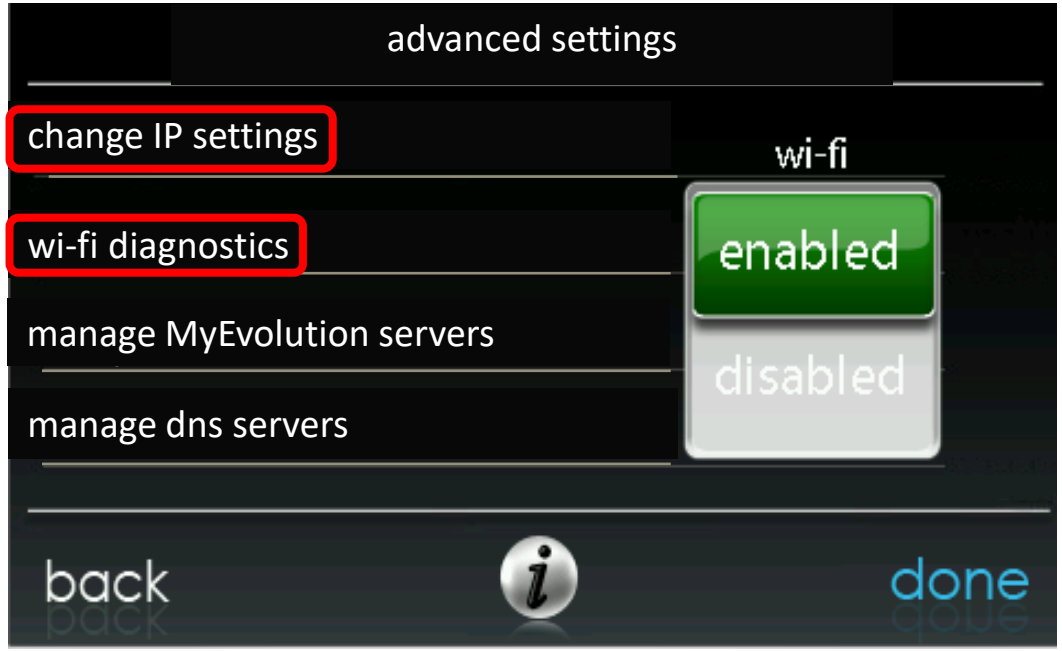
If you have an IOS device, here is another app you can use to help “see” what the network climate looks like around you.

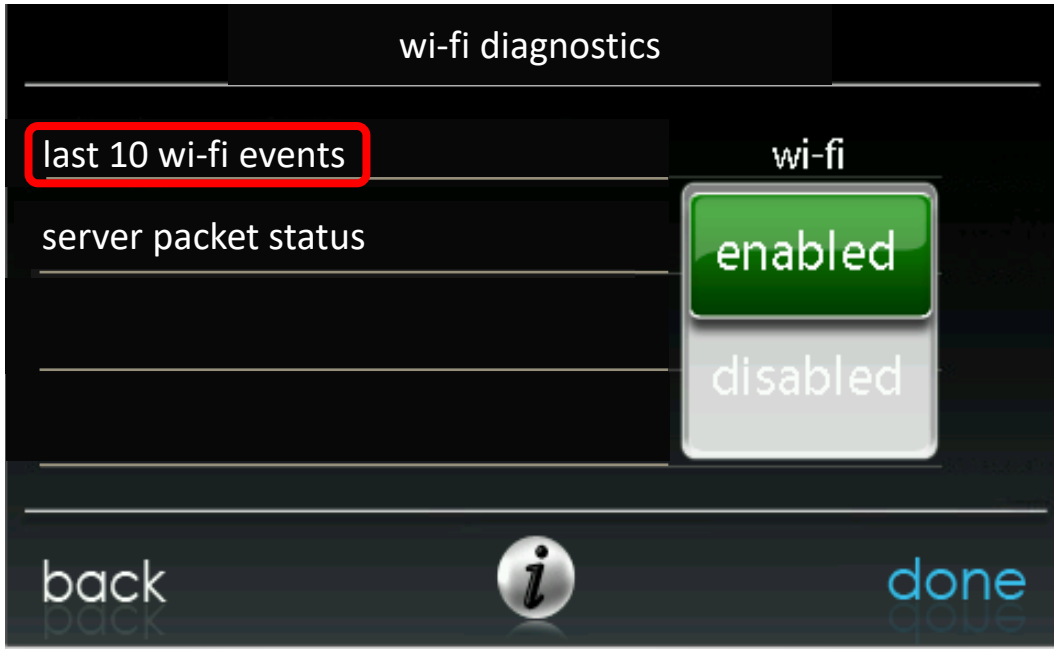
You can see the signal strength that the app shows for the network you are connected on. It does not show all the devices connected to the homeowner's network, but it will allow you to see the signal strength which is a good indication on how busy the network is and its signal strength.

Let’s say that the router was across the house or on a different floor, this could tell you if installing signal repeaters might help boost the signal.



Local Wi-Fi Connection Troubleshooting





Last 10 Wi-fi Events

- Below is an example of what the last 10 Wi-Fi events would look like for a UI present on a busy/congested network. You can see that it is connecting and disconnecting from the local network often ~ every few minutes. This short connection time is not long enough for the UI to transmit the necessary information to the server, and will appear as a server connection issue, when it really can be traced back to the local network.

Menu>Wireless>Advanced Settings>down arrow>Wi-Fi Diagnostics>Last 10 Wi-Fi Events

- **Time Event Type**

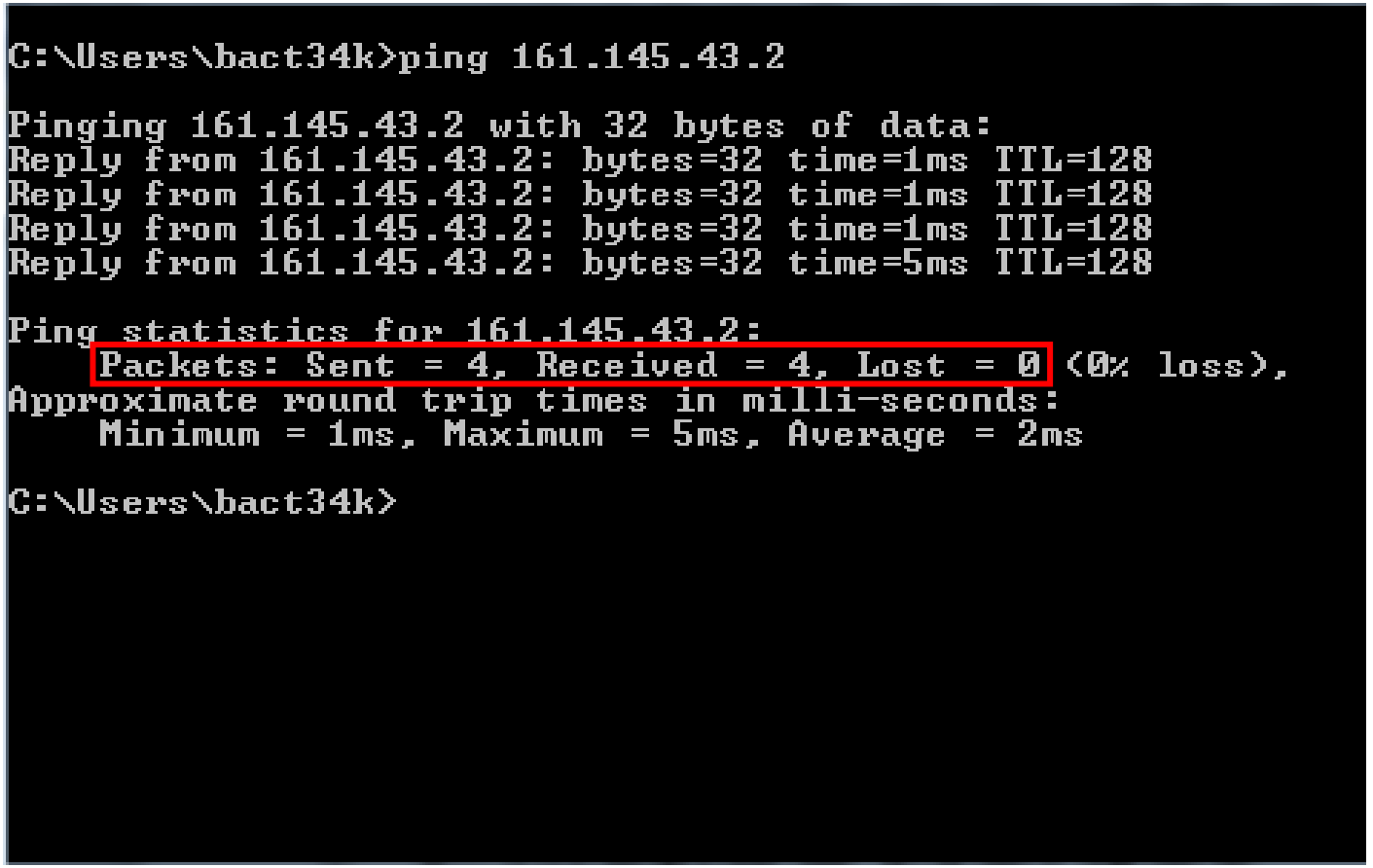
12/06/15 16:16:23 connected to remote server
12/06/15 16:16:08 connected to local Wi-Fi network
12/06/15 16:14:22 lost connection to local Wi-Fi network
12/06/15 15:46:07 connected to local Wi-Fi network
12/06/15 15:44:01 lost connection to local Wi-Fi network
12/04/15 22:11:45 connected to remote server
12/04/15 22:07:18 lost connection to remote server
12/04/15 21:43:45 connected to remote server
12/04/15 21:38:23 lost connection to remote server
12/04/15 19:41:00 connected to remote server

Local Wi-Fi Connection Troubleshooting

One way to determine if the router and UI are compatible is to try pinging the UI. You will need the UI's IP address, found on the Wireless menu, under IP Settings. To ping, your computer/phone/tablet must be connected to the same router that the UI is connected to. With a windows pc, you can use the ping command through the command prompt to reach the UI. Ping 192.168.1.171, for the UI below, for example. If you get a response from the UI, the router is allowing its communications to go through. If not, the router is not allowing its communications to go through.

Local Wi-Fi Connection Troubleshooting

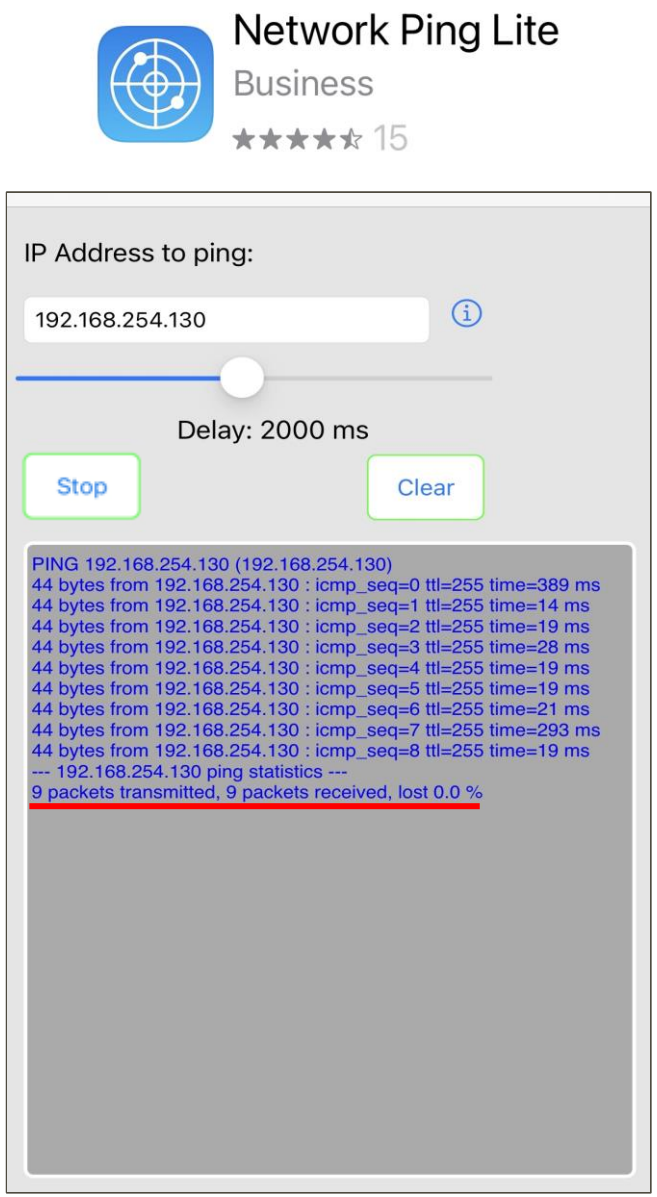
Example of ping command on a PC.



Local Wi-Fi Connection Troubleshooting

There are smart phone apps, like Network Ping Lite that can be downloaded and used on a jobsite to ping the UI. An example screenshot is shown.

If the router is denying communication, what now?
You may be able to get things working by simply installing the TP-Link and connecting to the homeowner router. If it's a router compatibility issue, it may only affect the wireless communication between the homeowner router and UI when talking wirelessly. The TP-Link is one way of bypassing the wireless communication problem with the homeowner UI. You may also be able to use a Wi-Fi range extender (repeater), which would also accomplish the same thing.



Dealer Information

Dealer Contact Information and Logo Upload Instructions

<u>There are three ways to upload the Dealer Information into the new Touch Controllers</u>.

1. You can manually load the information into the Touch Controller using either a **<u>USB Drive</u>** or a **<u>Micro SD Card</u>** depending on the Touch Controller using the **<u>Export Tool App</u>** you downloaded on your computer.

2. You can add your Dealer information into the Touch Controller when you set up the homeowners **<u>Online Account</u>**.

3. The new –B Touch Controllers have the ability on the –B Touch Controller to **<u>Manually</u>** type the information in the Touch Controller using the onboard keypad. (You can't add a logo this way though).

How to Upload a Screen Saver, Schedule, Dealer Info/Logo to a USB or a Micro SD Card

You can add a Screen Saver, Schedule, Dealer Info/Logo and Software Updates into the Touch Controller by using a USB or A Micro SD Card. We have already covered how to upload software so let's discuss how to upload a Screen Saver, Schedule, Dealer Info/Logo into the Touch Controllers. Download the Export Tool Application from either the www.myinfinitytouch.carrier.com or www.myevolutionconnex.bryant.com website, the Export Tool is the same for both brands.

Once you download the Export Tool, I recommend placing it on your desktop for easy access. If the homeowner wanted to add a Screen Saver or a Schedule to the User Interface, there are instructional videos located in the www.myinfinitytouch.carrier.com or www.myevolutionconnex.bryant.com web pages under the **"Learn More"** tab. This is also where the homeowner will download the desktop application to their computer under the **Upload Application > PC Application or MAC Application**.

***Note:** The Photo Export and Schedule Export features are only available in the desktop Export Tool.

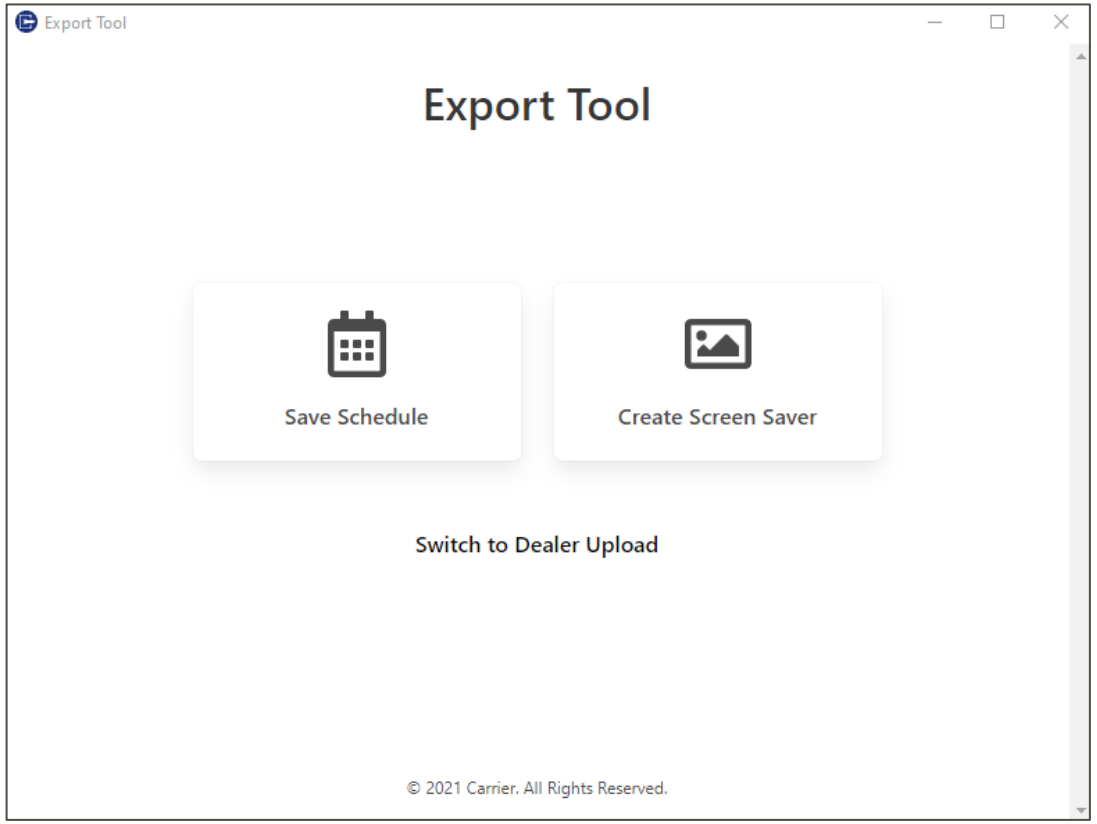
Knowledge Check 4
Communication Voltages

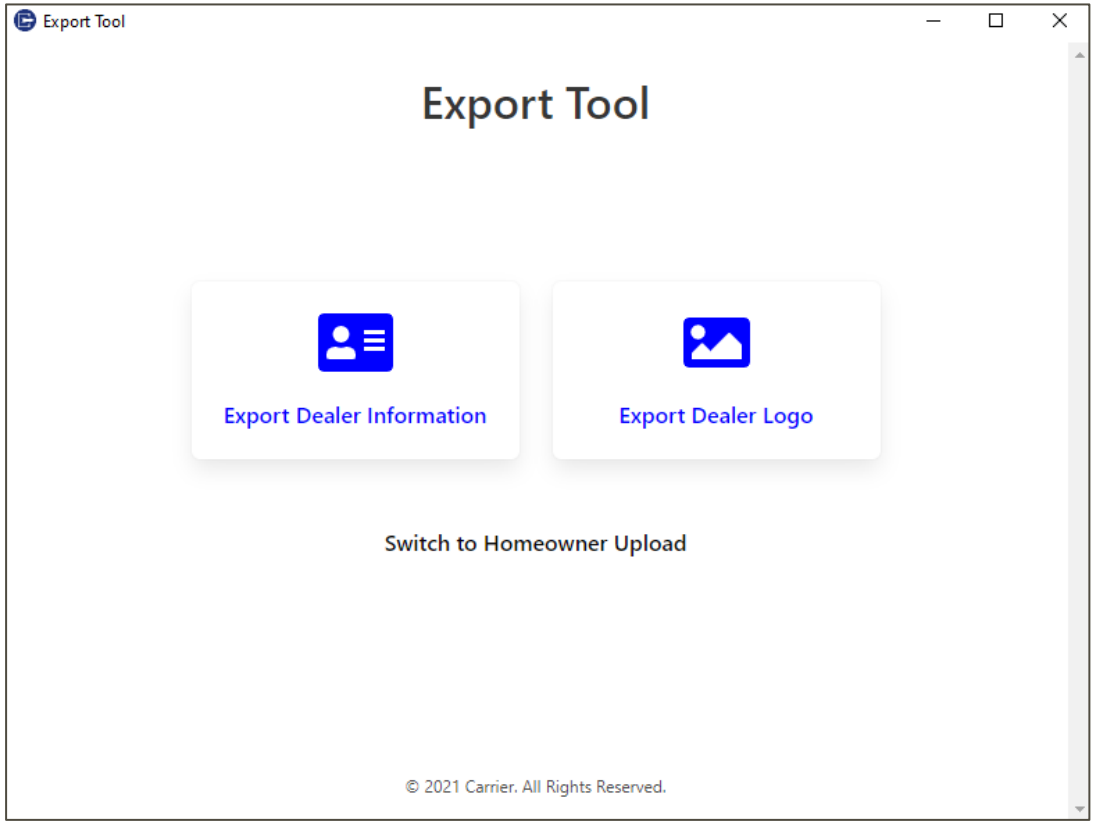
What voltages should you see at the indoor unit control board between A & B with everything disconnected?

-Voltage Readings - With board Power applied, and No U.I. connected	
A to B	4-5 vdc (steady)
A to C	4-5 vdc (steady)
B to C	~.01 to 0.3 vdc (steady)
C to D	24 vac

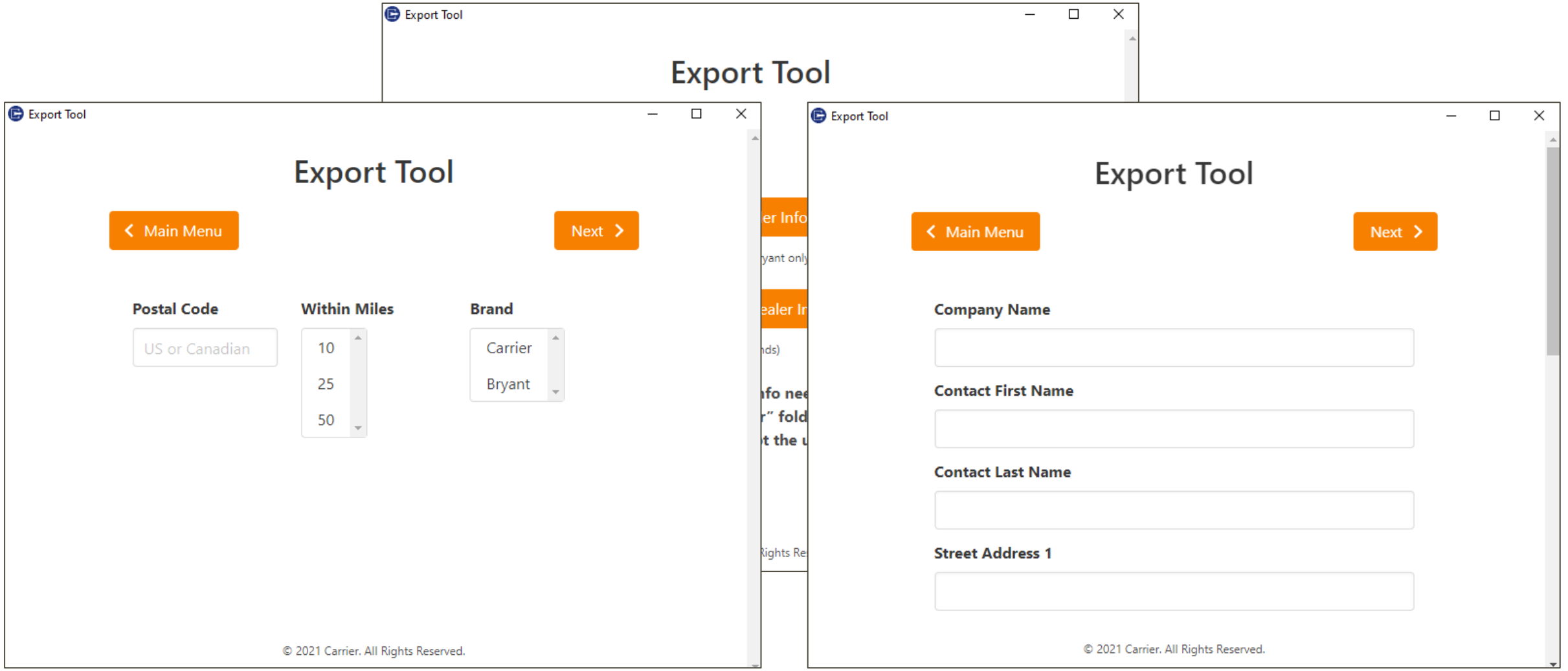
Export Tool Instructions

Once you open the application you will have two choices. Either the Homeowner Upload screen or the Dealer Upload screen.

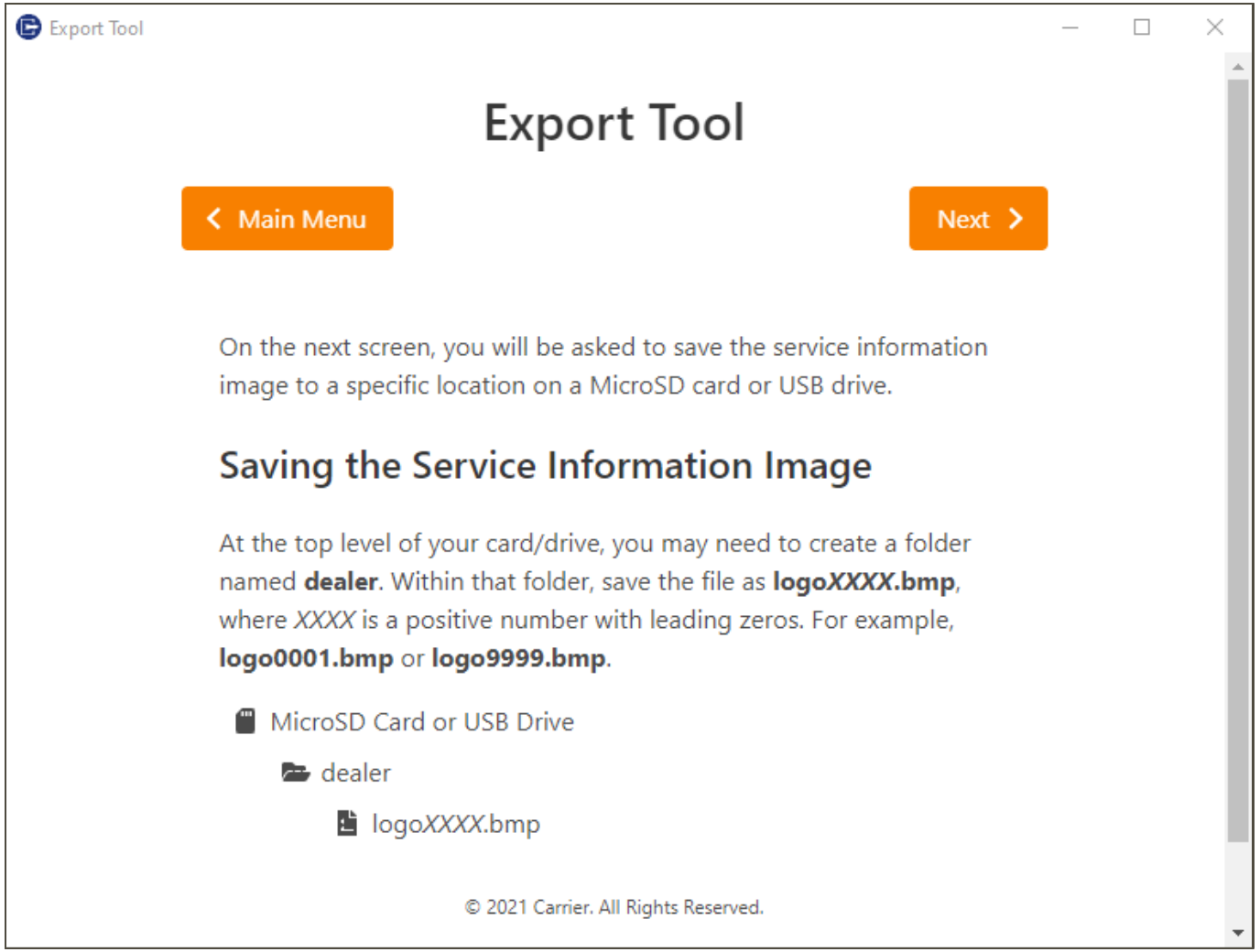




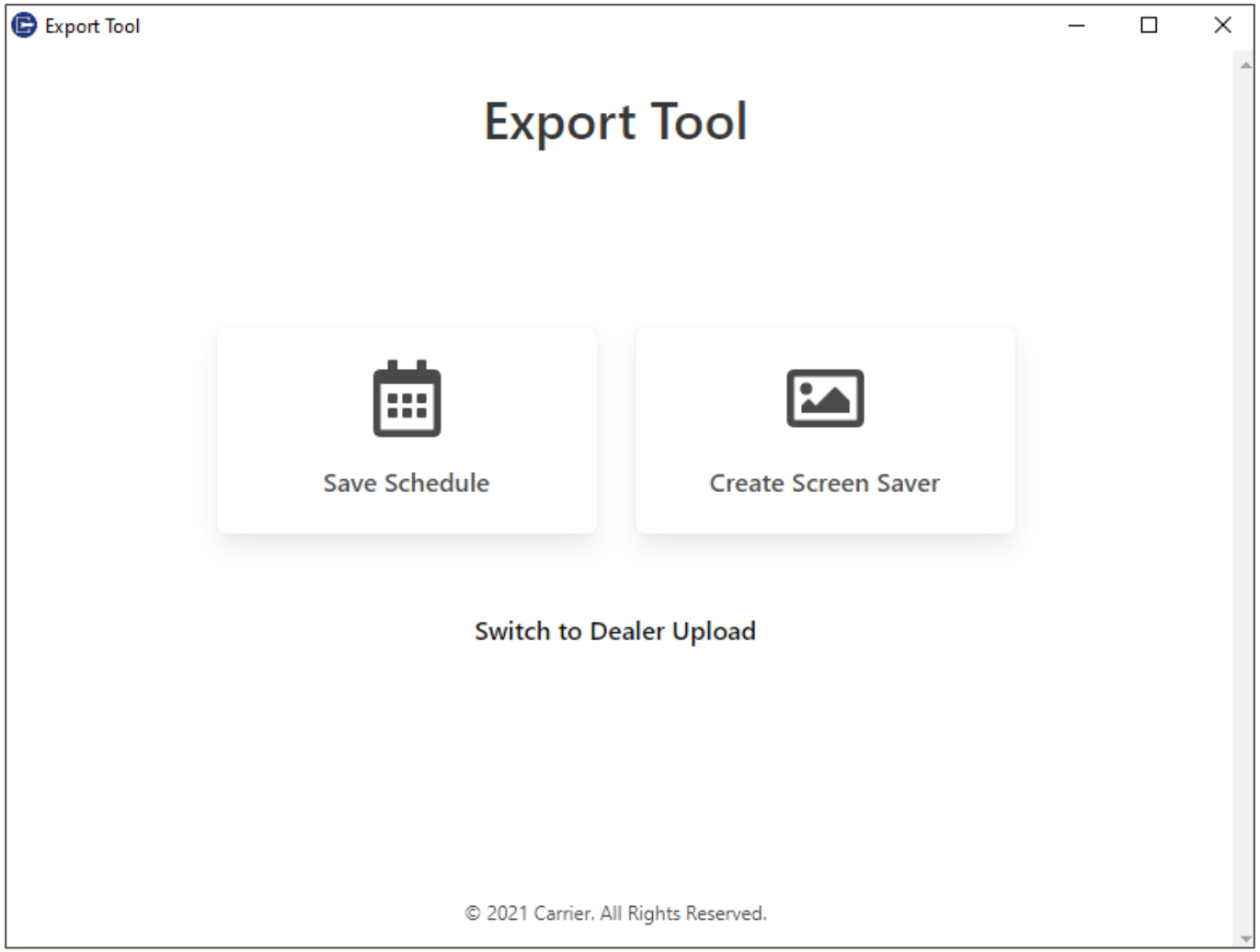
Dealer Export Tool Instructions



Dealer Export Tool Instructions



Homeowner Export Tool Instructions

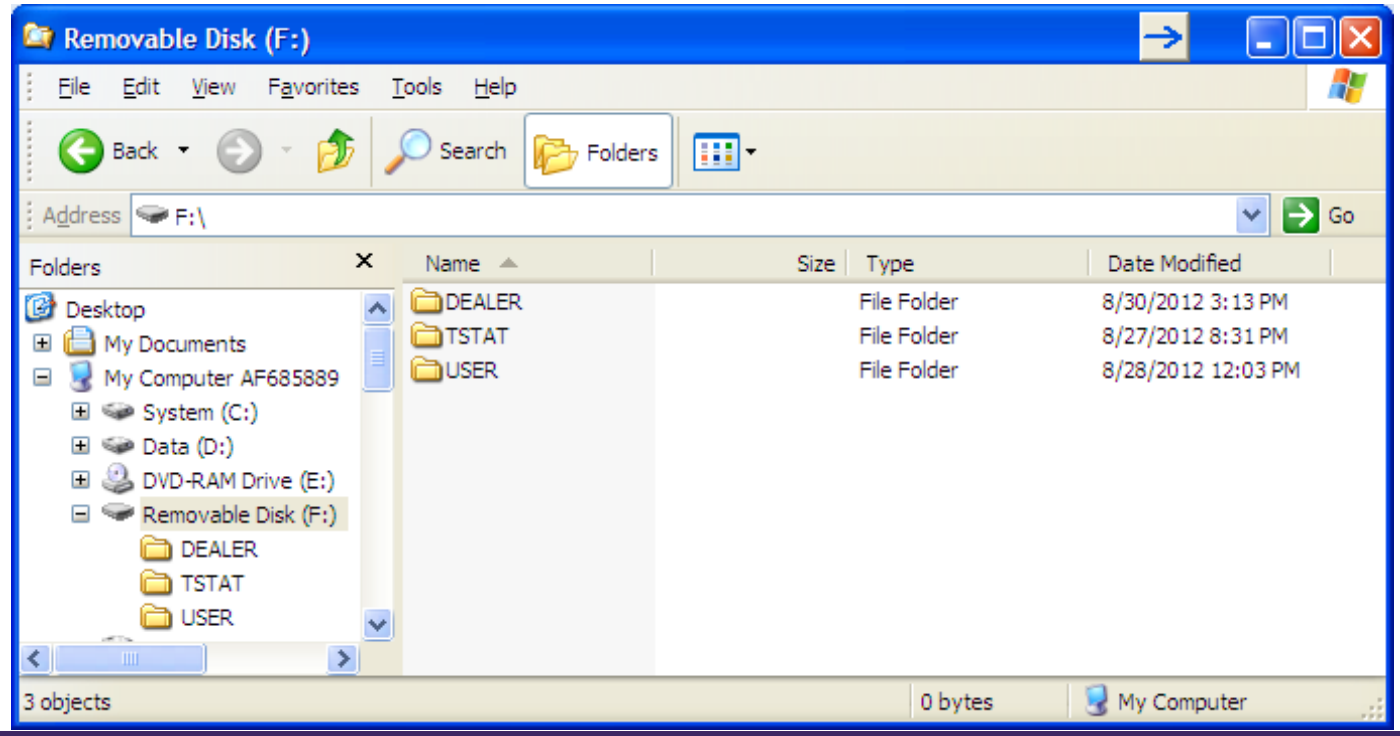


Dealer Contact Information and Logo Upload Instructions

In the top level of the USB or Micro SD Card directory, add a folder named **“DEALER”**. This is the location where the dealer contact information and logo will be stored.

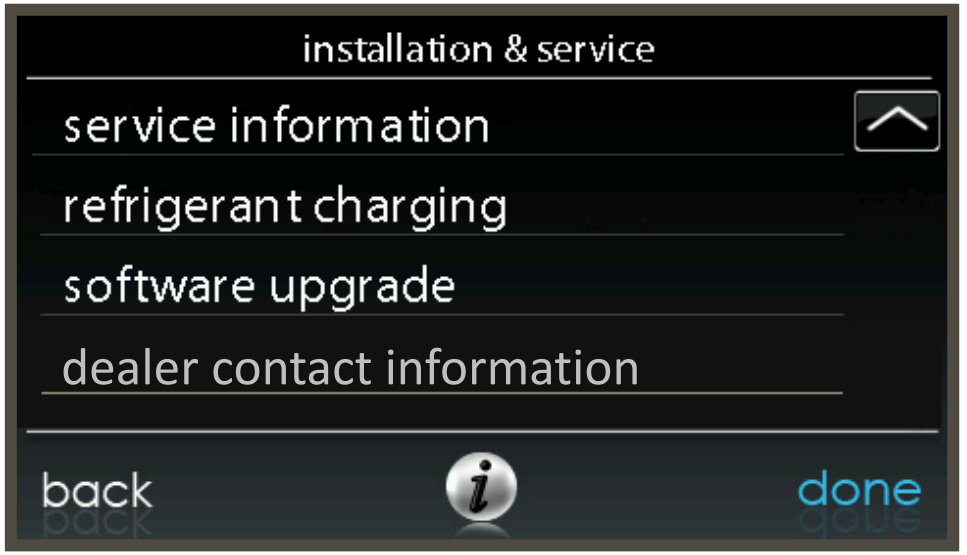
For your information, the **“TSTAT”** folder is used for software updates for the Touch Control.

The **“USER”** folder is used for uploading user photos and comfort schedules.

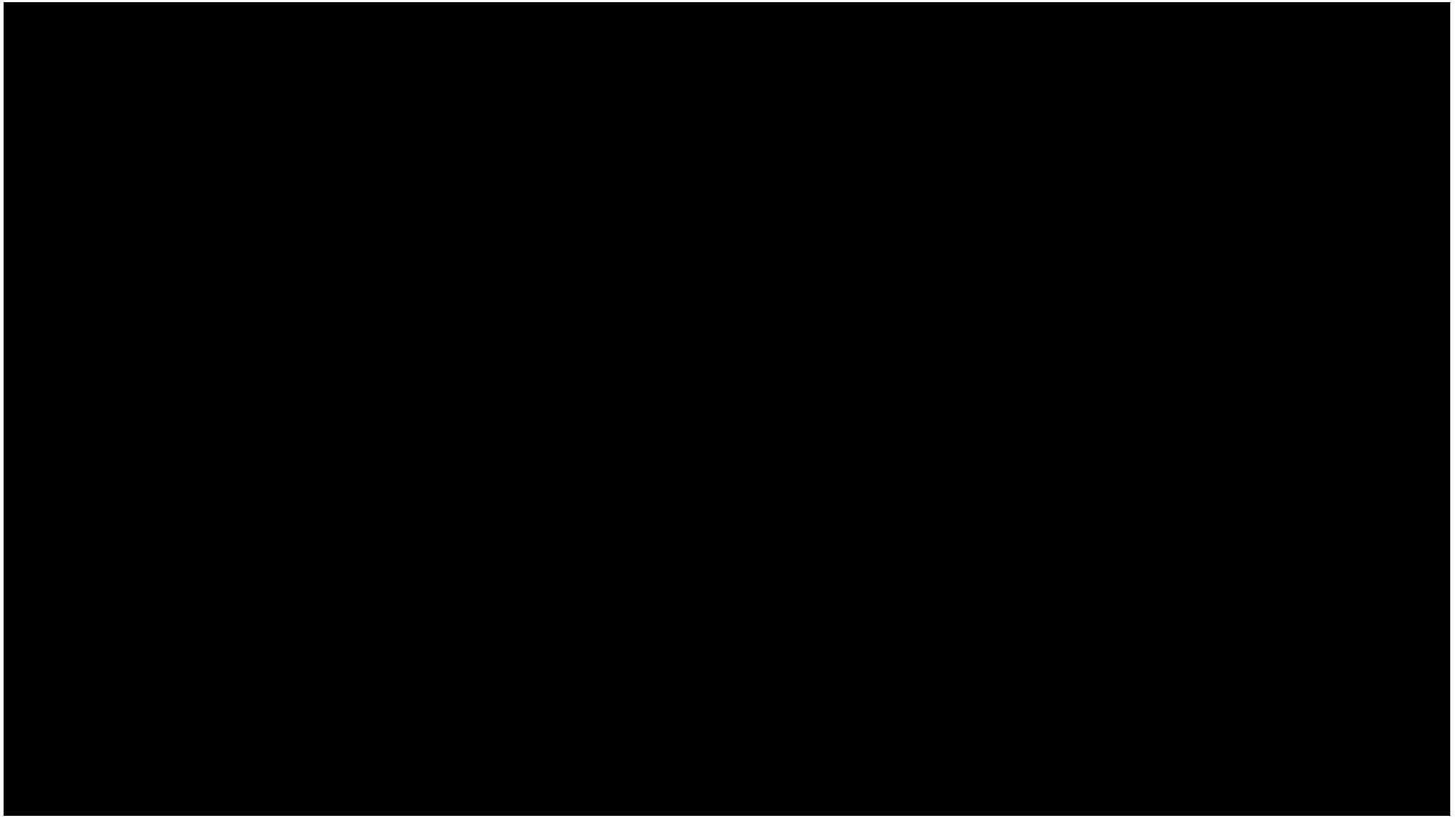


Dealer Contact Information and Logo Upload Instructions

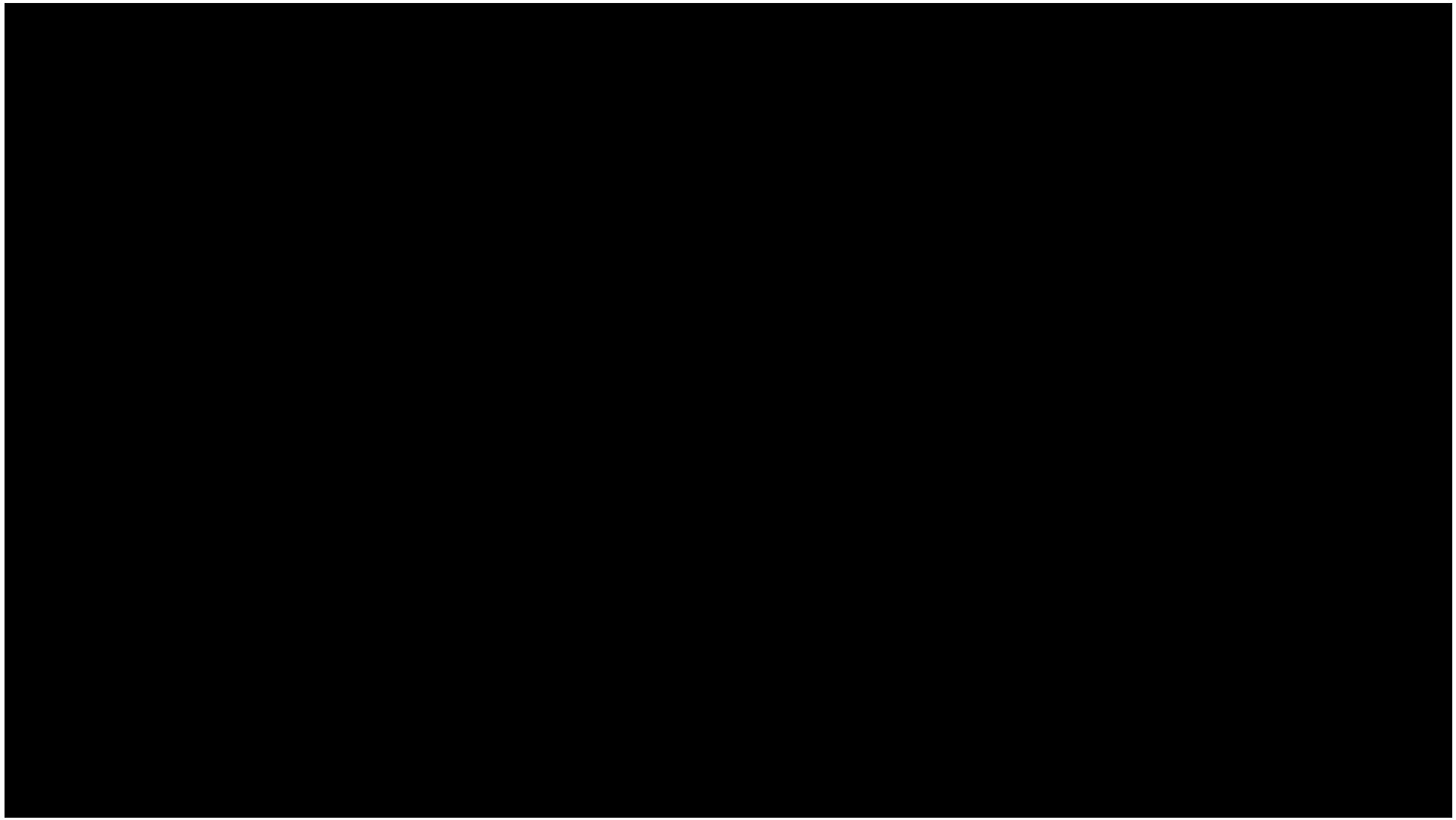
Safely remove the USB or Micro SD Card from your computer and plug it into the bottom of the Touch Control. Touch and hold the Service icon on the wall control Menu for about ten seconds until it turns green, and the Installation and Service screen appears. Select Dealer Logo Upload option.



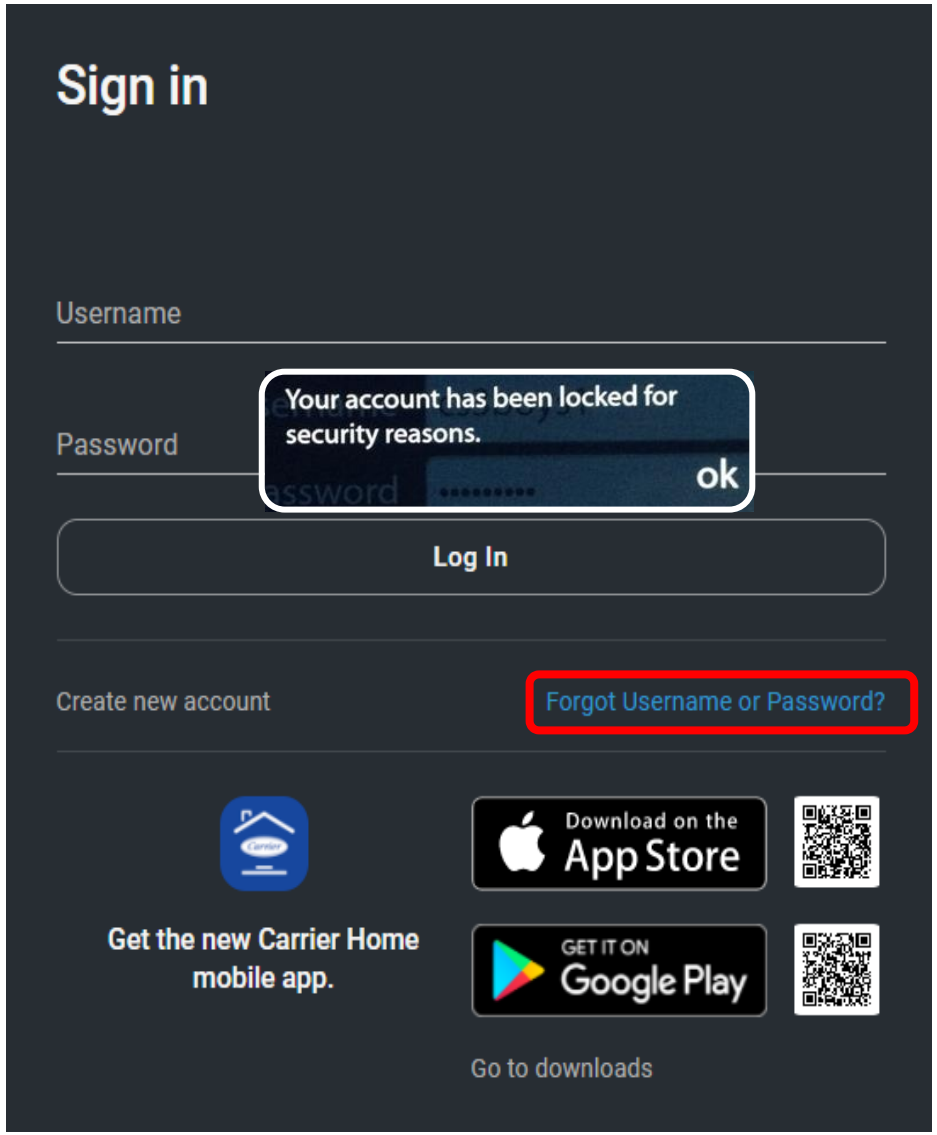
APP Usage - Using the Infinity® Touch Control App

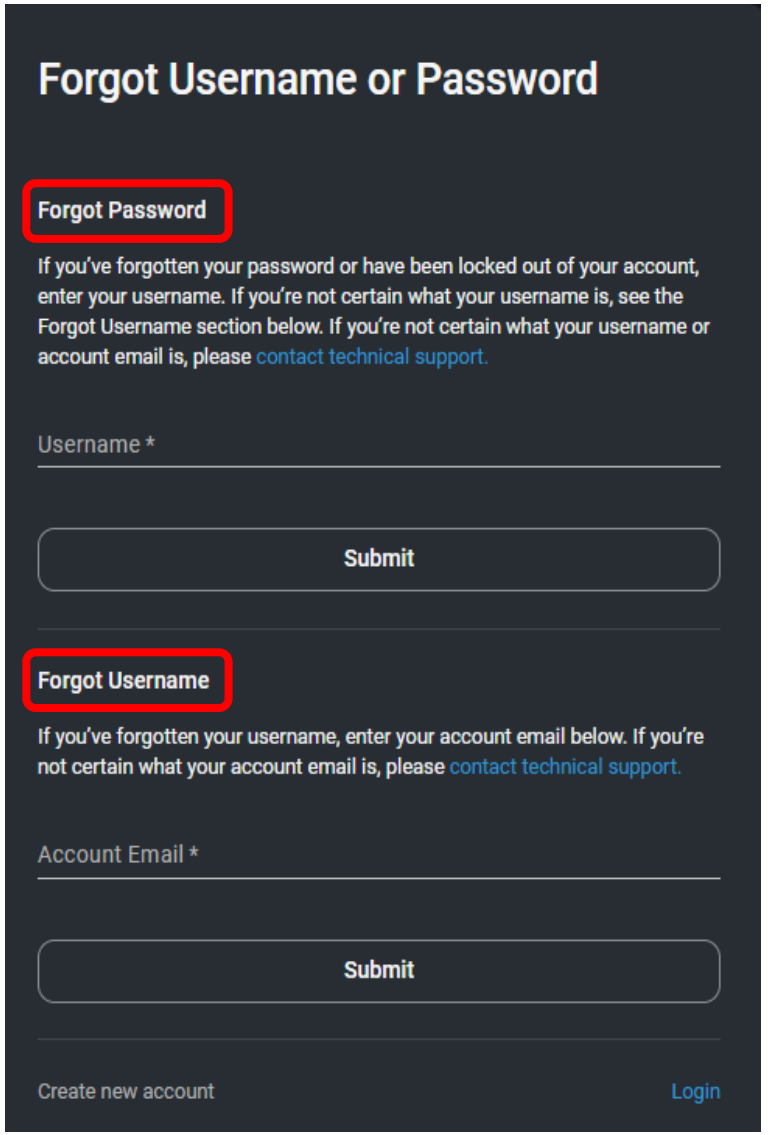


Managing an Infinity® Touch Control Account



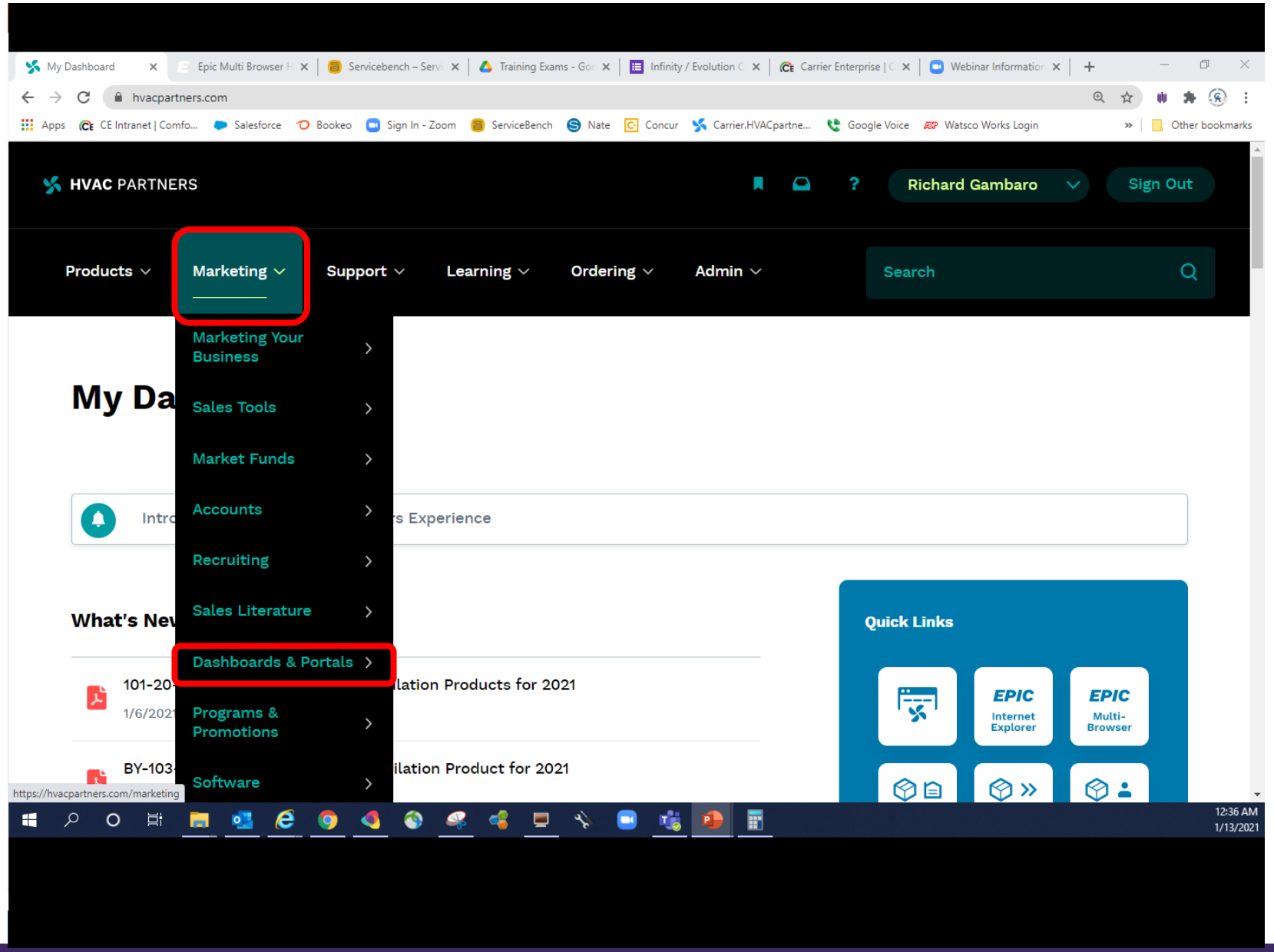
Password Reset



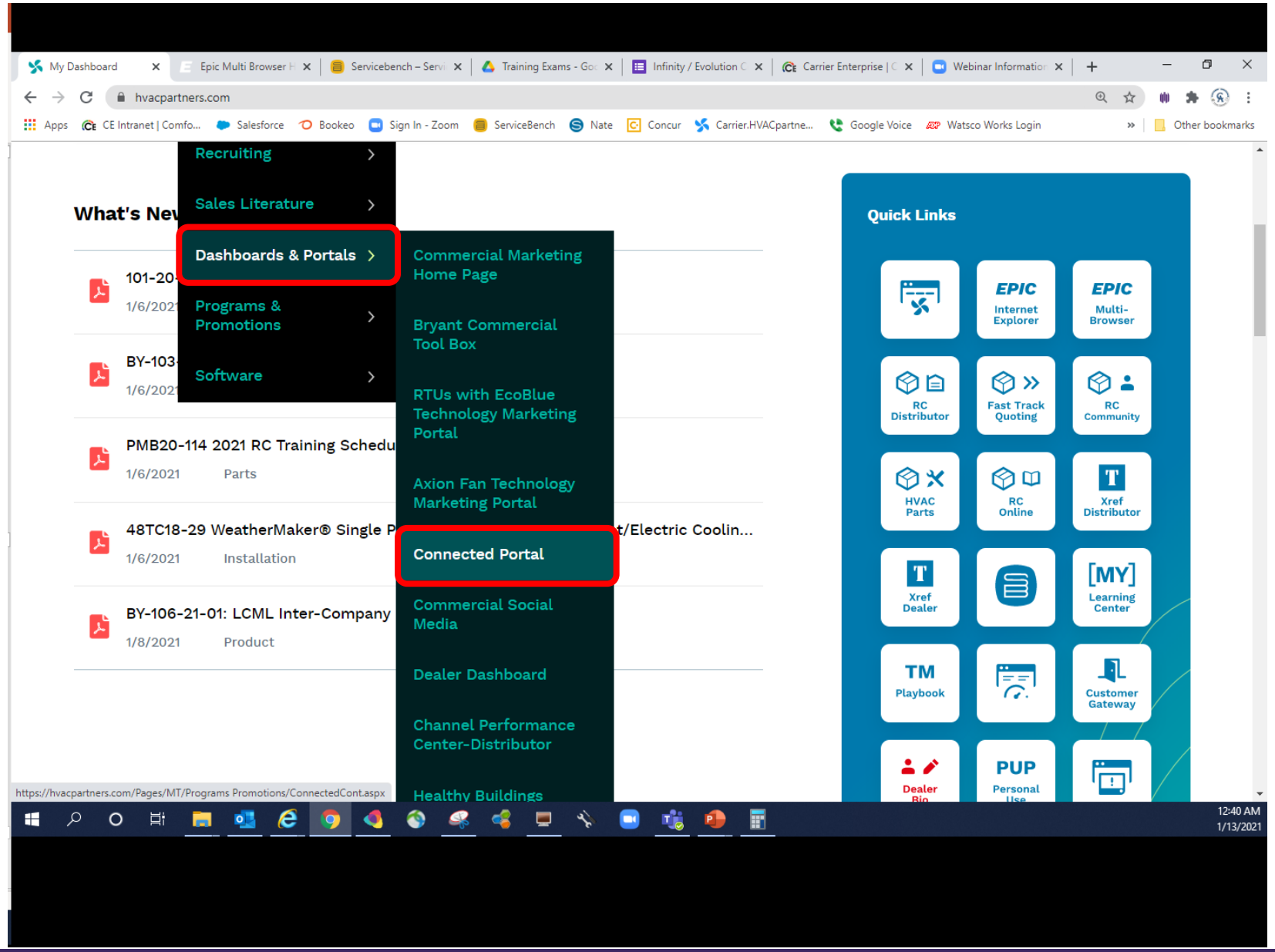


If the homeowner has forgotten their password, they can go to the webpage www.myinfinitycarrier.com or www.myevolution.bryant.com and go to the Login in tab and click on the forgot password tab. If they can't remember their username, they can enter their email address and reset their password still.

Dealer Portal



Dealer Portal



Dealer Portal

HVAC PARTNERS

Richard Gambaro | Sign Out

Products | Marketing | Support | Learning | Ordering | Admin | Search

CONNECTED PORTAL

Carrier turn to the experts — Connected Portal

bryant Heating & Cooling Systems — Connected Portal

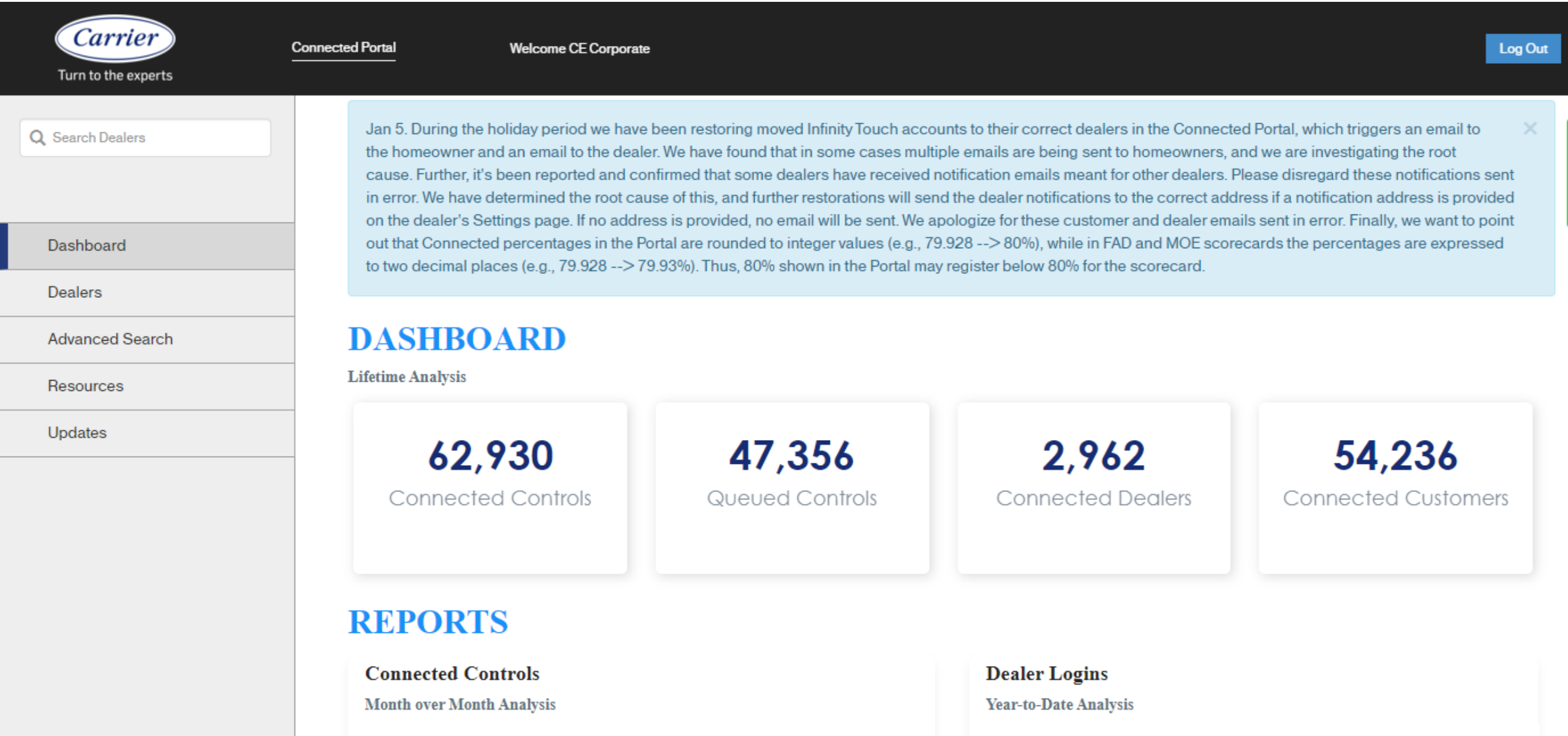
RESOURCES

Title	Print Date
Carrier® Connected Home Diagnostic Portal	11/01/2019
Bryant® Connected Home Diagnostic Portal	10/10/2019

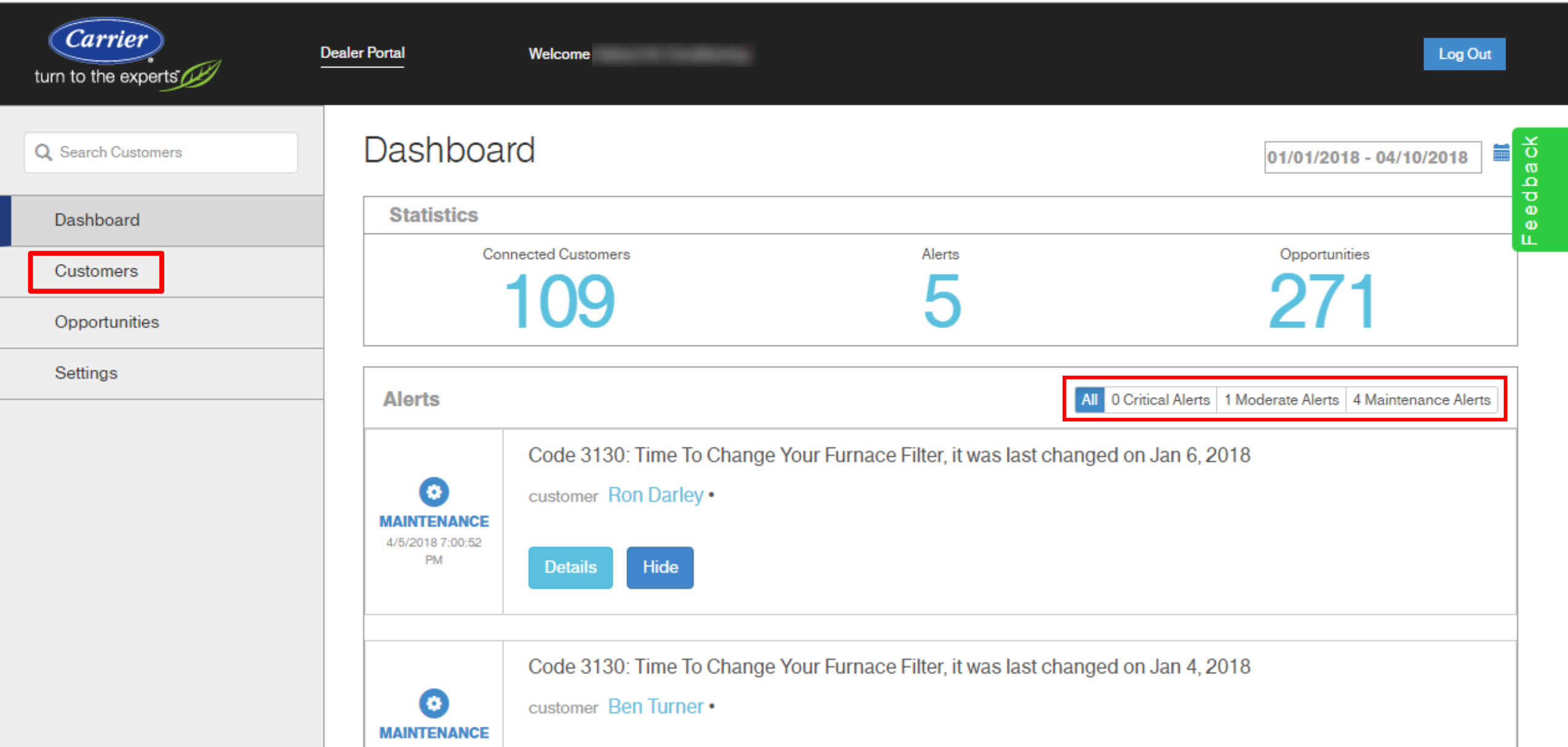
Showing 1 to 2 of 2 entries

Competitive Comparison Tool

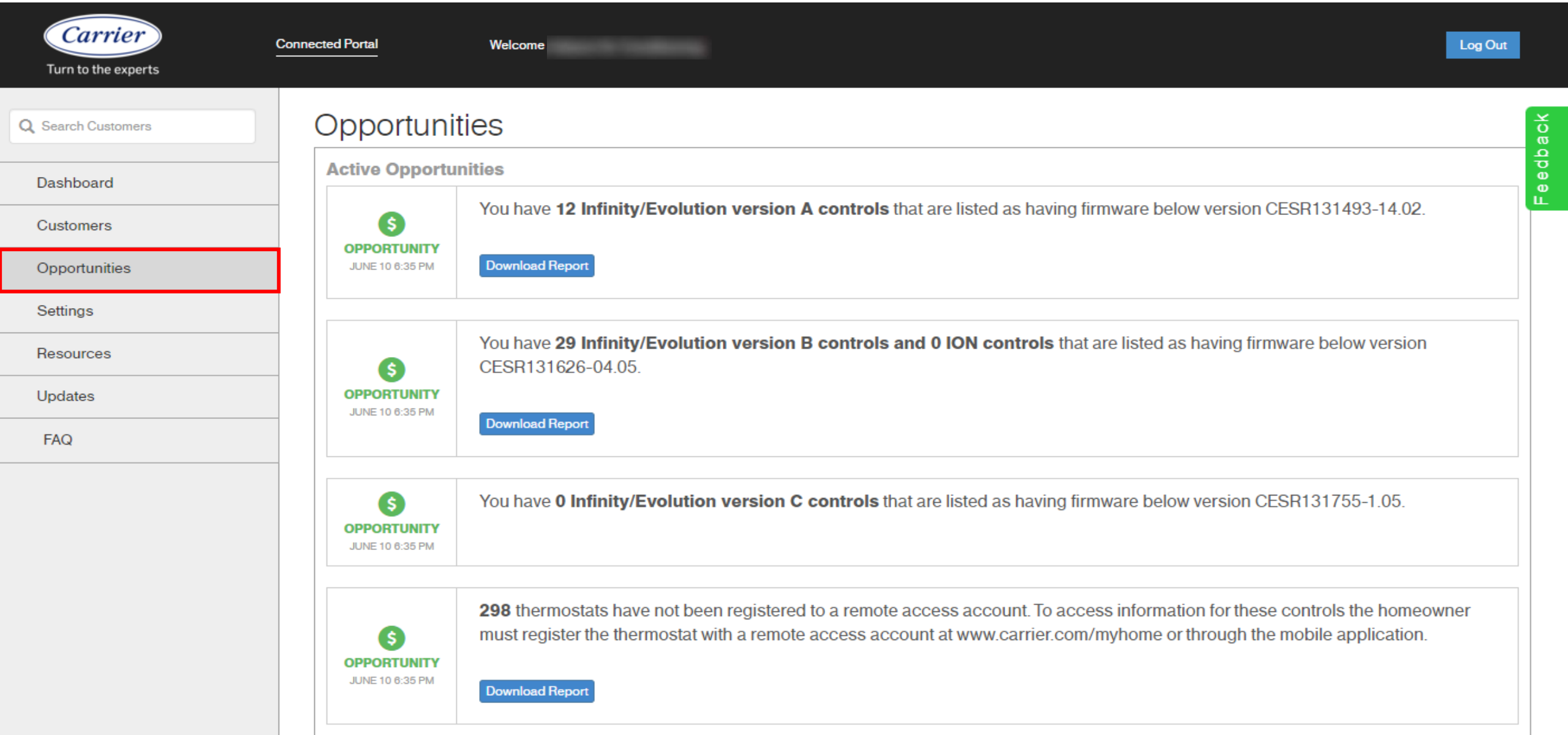
Dealer Portal



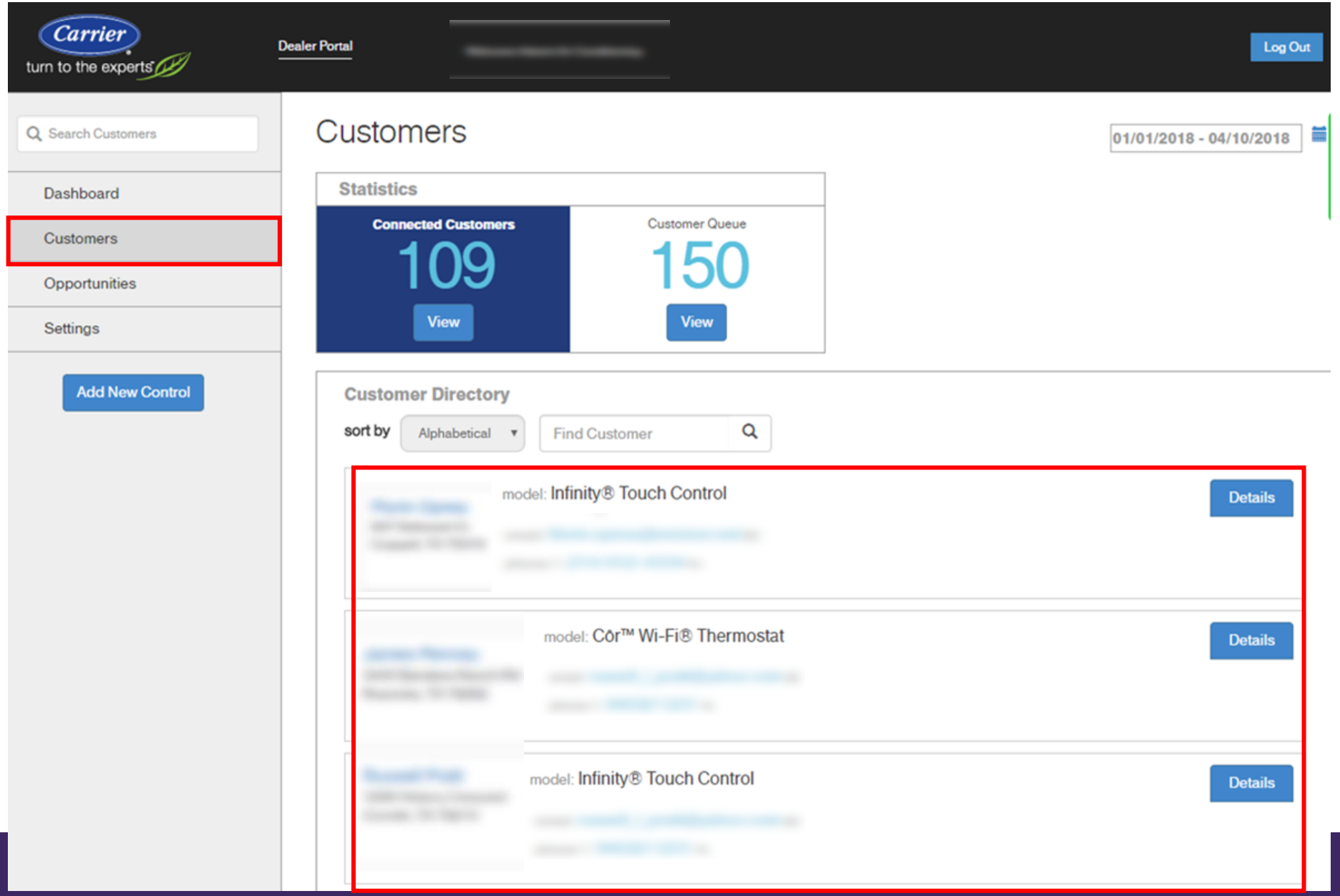
Dealer Portal



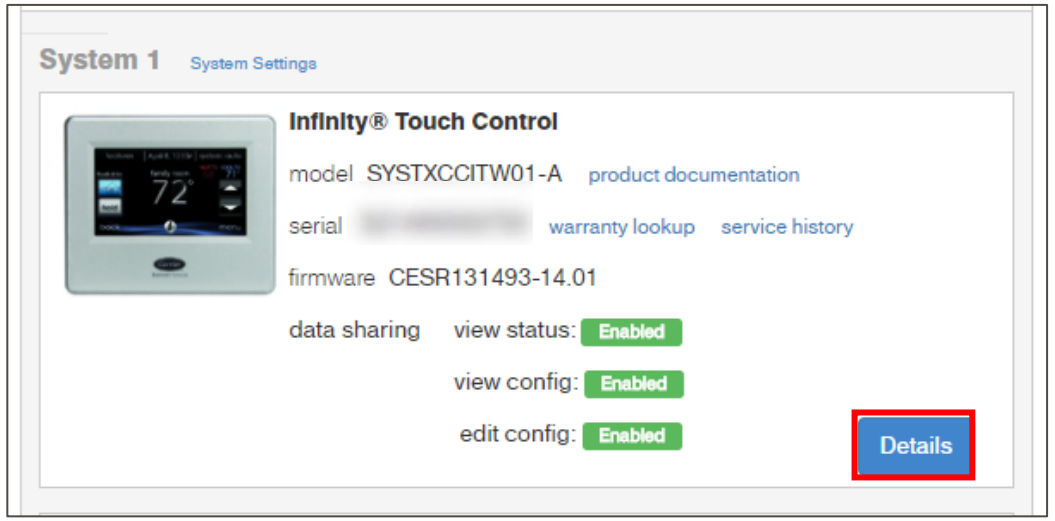
Dealer Portal



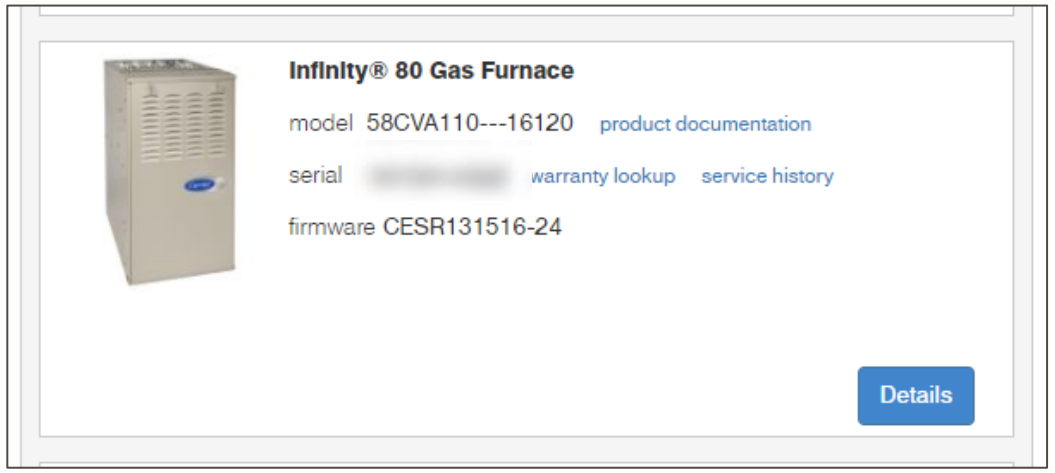
Dealer Portal

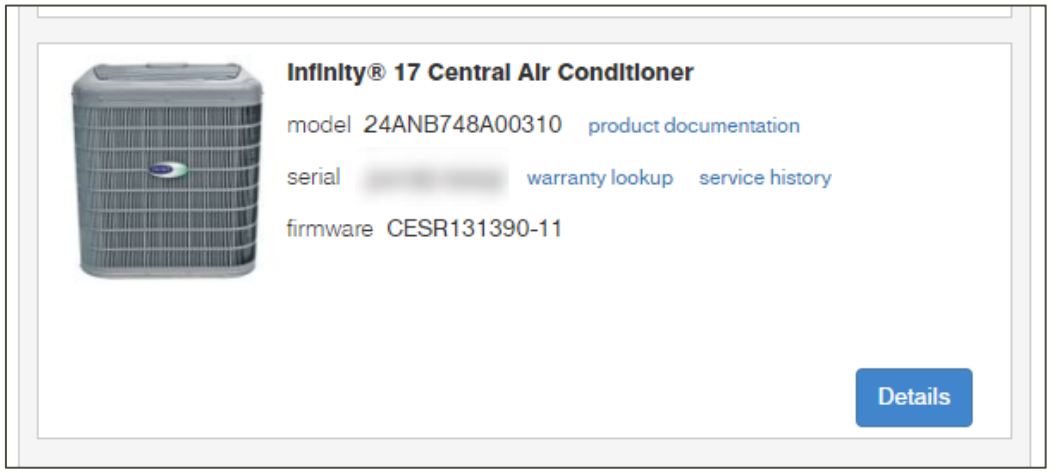


Dealer Portal



You can see that we can look at the equipment and different values like status, configuration and we can even edit some configurations. We can also look up documents, warranty ad service history.





Dealer Portal

Control Details

Infinity® Touch Control

model SYSTXCCITW01-A product documentation

serial [redacted] warranty lookup service history remove dealer

Print

Status as of Tuesday, April 10, 2018 12:44:49 PM ET

Zone 1

73° Indoor Temp	62° Outdoor Temp	81° Cool To	70° Heat To
38% Indoor RH			

SYSTEM ACTIVITY

Fan	OFF
Air Conditioner	OFF
Heat	OFF
Auxillary Heat	OFF

PROGRAM SETTINGS

Wake	SET	06:30 AM	S M T W T
Away	ACTIVE	09:30 AM	S M T W T
Home	SET	08:30 AM	S M T W T
Home	SET	06:00 PM	S M T W T
Sleep	SET	09:15 PM	S M T W T

- Notifications
- Event Log
- Detailed Status
- System Information

Dealer Portal

My home

Côr™ WI-FI® Thermostat

model TP-WEM01 product documentation

serial [redacted] warranty lookup service history

esn [redacted]

firmware 4.0.0.653

data sharing view status: Enabled

view history: Disabled

Details

Unknown

model 25HCB648A003 product documentation

serial [redacted] warranty lookup service history

firmware - -

Service Notes

+ new entry

No service logs exist

Full Log

Dealer Portal

Control Details

Côr™ Wi-Fi® Thermostat

model TP-WEM01 product documentation
serial [redacted] warranty lookup service history remove dealer

Print

Status as of 2018-04-10 11:47:57 ET

68° Indoor Temp	**75°** Cool To	The homeowner has not enabled this feature. In order to view this information the homeowner must enable the notification preference in their web portal to allow the dealer to view program schedule & configuration.
37% Indoor RH	**68°** Heat To	

Event Log ›

Questions?

Carrier Enterprise

Carrier Enterprise

South Central

Thank you for ATTENDING!

DON'T LEAVE JUST YET!!!

End

Important Test Taking Information

If you already have a login and the class is showing up in you account

1. Scan the QR Code to go to YOUR ACCOUNT login page.
2. Navigate to “Purchased Zoom Meetings”
3. Select today’s course
4. Complete your final test