Ion^{TM} System Control
Version 4.31 Release Notes
December 12, 2022

Contents

General

This document is provided in conjunction with the "hex" file BINF0431.hex, which comprises the executable code for the following Ion^{TM} System Control model numbers:

- SYST0101CW

This software is ONLY compatible with these model wall controls.

Detailed instructions on uploading this software into the Ion^{TM} System Control are included in this document. The software release package is available through this link:

http://cacbdpapps.net/marketing/eula/ICP_Ion_V0431_EULA.html

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

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Revision History

Version 4.31 (December 2022)

Version 4.31 software includes the following updates to the Ion^{TM} System Control:

- Data rate limiting until app usage is active.
- Reminder alerting homeowners that they must download and use the new mobile app (Pop up message reminding users to transition from the legacy app to the newer app).
- System monitor – feature added to alert any potential issues with temperature control
- Enable/disable for system monitor (provide an option to turn on or off this feature)
- Ability to clear stored Wi-Fi credentials (existing control with new homeowner)
- New Vertex coils added to coil selection screen for refrigerant charging

Version 4.18 (August 2022)

Version 4.18 software includes the following updates to the Ion^{TM} System Control:

- Updated cloud connection interface to improve the response time between mobile app and

Version 4.17 (May 2022)

Version 4.17 software includes the following updates to the Ion^{TM} System Control:

- Updated cloud connection interface to improve the response time between mobile app and
- Added QR code generation & display support for wall control models.
- Added QR Code feature to access consumer site and release notes directly from mobile device.
- Updated UI Help text for Quiet Mode and Capacity Limiting screens.
- Changed reminder Icon to reminders & alerts where the user can now set Low and High temperature and humidity alert (fault codes 187 – 191) this "trip point" will then send a notification to the end user for an out-of-range condition.
- Added ability to reset equipment reminders via mobile app.
- Updated Filter check logic to operate based on pressure monitor status.
- Addressed the issue to report consistent Energy tracking information between wall control display and mobile app.

Version 4.05 (September 2021)

Version 4.05 software includes the following updates to the Ion^{TM} System Control:

- Compliance to 802.11n connectivity standard
- With Proteus FER furnace boards, continuous fan (low and medium) now operates at the minimum CFM if requested CFM is below minimum.

- Updated strategy to distribute additional air flow caused by two consecutive limit 33 faults by fully opening dampers for calling zones and distributing any excess airflow to non-calling zones based on the size of the zone.

- With ULN-2 Stage Furnace, a fault 34 results in a high heat cycle lockout for one heating cycle.

- Addressed airflow limited stage downs that occurred with older 2-stage ODUs and v3.94 system control software.

Version 3.94 (July 2021)

Version 3.94 software includes the following updates to the Ion^{TM} System Control:

- Addressed issue where a restart causes BING to lose the equipment configuration for the 2-TON GS3 with FANCOIL model FE4ANB005 combination

- Energy tracking feature is updated to display daily usage values accurately in respective columns

- Updated the blower motor fault type (Code 41) from System malfunction to System fault

- Added support for 802.11n compatible routers

- Added capability for resetting reminders via mobile application

- Addressed issue where system could operate in the wrong mode set by the user, resulting in possible over-conditioning.

- Track the cycle and hours of the variable speed operations

  Displaying run time hours and Cycles for supported IDU and ODUs is implemented.

- Wall control not clearing the root cause diagnostics on a reset to factory defaults

  When the last 10 faults are specified to be factory reset, the last 10 faults and root cause faults recorded will be restored to factory defaults.

- Add 3 buckets for run times and cycles for 2+ stage furnaces

  Displaying run time hours and Cycles for Modulating furnace is implemented.

- Addressed the issue to report valid ODU model upon new system installation

- Added feature to configure Low/High Temp and high/low humidity alerts.

- Getting Heat and Cool Set points as 0F,0F in utility Event Notification

  If a utility event multi-property with offsets is received, then UI notification will show the actual offsets by which setpoint is being changed.

- Missing parameter log files on cloud

  System control now sets Set To Cloud bit only one time for each data file preventing missing files on the cloud.

- Updated the dehumidification airflow logic so that the dehumidification airflow matches the expected airflow.

- Wall Control software has been updated so that old faults having same fault code number will not be shown as active on UI Screen and equipment events packet

- Added improvements to the GeoHP Windup Control

- For some of the faults the text is trimmed on Home screen

  "Fixed the issue of fault text being trimmed in the Fault Message Box. Reset MAX_MSGBOX_LINE_LEN to 14."

- Account registration with mobile app using QR Code on GUI

  Displays a QR code on the registration info screen. The QR code contains the S/N number, MAC address, and pin number delimited by commas. The code reflects the current screen values. *Note: This feature requires the new mobile app, available soon.*

Version 3.62 (December 2020)

Version 3.62 software includes the following updates to the Ion^{TM} System Control:

- Fixed issue that prevents Wi-Fi connection to certain 802.11n-only routers, and a small subset of routers running in a "mixed mode" (802.11b/g/n). Solution is to enable the High Throughput Rates so the control can communicate via 802.11n.

  If you are not experiencing connectivity problems, then there is no need to install this update.

Version 3.61 (October 2020)

Version 3.61 software includes the following updates to the Ion^{TM} System Control:

- Reduced the Maximum Transmission Unit (MTU) to resolve connectivity issues with certain Internet Service Providers.

  If you are not experiencing connectivity problems, then there is no need to install this update.

Version 3.60 (September 2020)

Version 3.60 software includes the following updates to the Ion^{TM} System Control:

Major updates:

- Some users experienced 3.40 OTA update leading to the screen going blank; wall control then recovers to v3.00 upon forced reboot. The primary cause has been corrected; but additional analysis is in progress to ensure this will not happen in the future.

Minor updates:

- False G-terminal Alerts could be triggered during learning process check, if the system control reads the status inputs from furnace and fancoil before they have been set properly.

- Fix provided in system control, G-terminal status is updated only after reading the control inputs status event from indoor control boards.

- Revised the Capacity Limiting logic to allow for duty cycling the Greenspeed 3 to emulate a capacity lower than the set minimum.

- Resolved issue where cooling demand took a long time (~30 minutes) to start.

- Removed warning for LLV open on Charging screen.

- Help text for cycle counters and run times screens are added for both Air Conditioner and Heat Pump

- Utility Curtailment feature when active will get recorded in Last 10 events screen

- Refrigerant charging - pump down statuses were incorrectly displayed. Changes in pumpdown state typically take 5 seconds to reflect the actual state from the outdoor unit; in rapid state change from the ODU, It can take 10 seconds to reflect that state change.

- Fixes for range and toggle button related issues for capacity limiting screens have been made in the system control.

- Corrections to Capacity Limiting minimum demand calculations; now applies the minimum demand limit as a part of the capacity limiting feature as opposed to the previous behavior where a minimum would not be imposed.

Version 3.40 (June 2020)

Version 3.40 software includes the following updates to the Ion™ System Control:

Major updates:

- Energy Estimate calculation issues, causing. energy estimates to appear to be much higher than expected.

    o Energy usage was displayed incorrectly, giving a false reading of estimated energy used. This change is a modification of the conversion of watts to kilo watt hours (KWH). Under energy tracking, in the view energy usage screens, energy used is now displayed in KWH.

- The system control could update the outdoor unit to the same software version if the SD card was not removed after a successful update.

    o Added a periodic check of the SD card contents to see if the files are still valid for update.

- Service Valve Subcool Value - displayed value accuracy.

    o System control code is changed to display accurate Subcool values.

- Operating status on the home screen is not aligned with the actual equipment operation.

    o Home Screen equipment operation is now aligned to actual operation.

- Blower RPM shows as 0 when the IDU blower is operating.

    o The Blower RPM value was outputting 0 on the AC/HP checkout screen, so the AC/HP checkout screen has been updated to output the actual Blower RPM value.

- During system installation (learning), system control did not correctly discover the 24VNA624 ODU + FE4ANB005 fan coil combination.

    o Corrected a logic error in the learning process that prevented this valid combination from being recognized.

- During checkout mode, received message "Info 104 - Low Indoor Temp Zone 2 Aux Heat" on HP's and AC's, cooling and heating mode.

    o The equipment Firmware update failure fault code has been updated from 104 to 127 on the system control and also a fix has been added in the system control for the issue where the equipment firmware update failure was being raised at startup of the wall control.

- Discharge pressure in shown as "----" in AC Status/HP Status screen when the Discharge pressure is valid.

    o The system control has been updated to fix issue where the valid discharge pressure values were shown as invalid on the AC status/HP Status screens.

- System control was showing improper stages and empty values on the "Cycle Counters" and "Lifetime Hours" screens for a 1 Stage ULN furnace.

    o Adjusted both screen layouts to properly account for a 1 Stage Furnace and Input the proper runtime values to the new design.

- Outside Air Temperature (OAT) value is always -12 F and not able to change in capacity limiting Heating screen.

- o With the capacity limiting feature now enabled in system control, the outside temperature should have defaults values of 55 F in heating and 75 F in cooling, the system control has been updated to fix the issue where on some wall controls out-of-limit values were seen.

- ULN 90 Communicating Furnace Control - Wall control updates

    - o Wall control updated the level of furnace control fault code 26 to malfunction fault and increased the number of re-settable furnace faults from 19 to 20.

- Change default for time synchronization from disabled to enabled.

    - o When connected to the server via Wi-Fi, the system control can automatically synchronize the local time based on date/time stamps received from the server. The system control has been updated to make this automatic synchronization the default, so it does not have to be enabled by the installer or homeowner. It can still be disabled, if desired.

- Update equipment run-time parameters in the checkout mode.

    - o Additional equipment run-time parameters (Blower RPM, Discharge Pressure, Outdoor Fan RPM, Low Ambient Cooling, AC Line Current, DC Bus Voltage, PFCM Temperature, and IPM Temperature) have been added to the AC/HP checkout mode screen to help the technicians evaluate the system's performance.

Version 3.01 (June 2020)

Version 3.01 software includes the following updates to the Ion™ System Control:

Major updates:

- Bug fixes:

Version 3.00 (April 2020)

Version 3.00 software includes the following updates to the Ion™ System Control:

Major updates:

- Improvements to Wi-Fi and general connectivity long-term stability.

- Fixed various minor faults

    - Energy tracking and ENERGY STAR improvements

    - Minor GUI corrections and improvements

    - Fixed GeoHP integration issues

    - Multiple causes of Reboots found and corrected

Version 2.40 (January 2020)

Version 2.40 software includes the following updates to the Ion™ System Control:

Major updates:

- Added support for OpenADR2.0b compliance
- Backward compatibility with OpenADR2.0a
- Added support for FER airflow change requirement
- Added fix for the GeoHP Lake loop lockout feature
- GUI updates to support GeoHP Lake Loop
- Fixed various minor faults

Version 2.00 (August 2018)

Version 2.00 software includes the following updates to the Ion™ System Control:

Improvements to Wi-Fi/server connectivity

Correctly recognizes wired remote room sensor connected to Zone 1 via 4-zone control

Caching of ENERGY STAR data to prevent data loss

Improved validation for US and Canadian postal codes for weather forecast

Corrections to info help text for various screens

Various minor bugs corrected

Version 1.32 (March 2018)

Version 1.32 software includes the following updates to the Ion™ System Control:

Additional furnace coil selection options in learning process when detecting a variable capacity ODU and a furnace.

Added support for variable capacity AC outdoor unit.

Corrected an issue where selecting the furnace coil CHPH**61 when learning with a variable capacity outdoor unit sets the coil factor to 0 instead of 2.02.

Version 1.31 (December 2017)

Version 1.31 software includes the following updates to the Ion™ System controls:

ENERGY STAR® Connected Thermostat (CT) Certification Preparation

Data collection and reporting for ENERGY STAR compliance has been updated.

The EPA requires 12 months of data collection before certification may be applied for. That means that the earliest we expect ENERGY STAR certification is January 2019. Note that data for ENERGY STAR certification is collected on an anonymous basis. No personally identifiable information is included, or sent to the EPA.

Note that the EPA has not finalized the ENERGY STAR CT requirements for multi-stage systems like Ion™ Systems. Therefore, further updates for collecting ENERGY STAR data may be required.

Screen Saver

Corrected a defect where new screen savers were placed on top of old screen savers, creating a double image.

"Phantom" Email Notifications

Configuration change emails associated with daily airflow verification tests, usually occurring around 1pm local time, have been suppressed.

Version 1.30 (November 2017)

Version 1.30 software includes the following updates to the Ion™ System controls:

Internet Connection Improvements

Internet connection to the Ion™ server is more robust, leading to fewer server disconnects.

Connection to local wireless networks is more robust, leading to fewer local network disconnections.

Occupancy Detection

On-board occupancy detection algorithm is more responsive to occupancy changes. Changed default occupancy sustaining time to two hours (once occupancy is determined, it maintains for two hours). Previously, the occupancy sustain time was one hour. Unoccupied overrides have been added. Previously, the occupancy algorithm would only override the Away or Vacation activities to the Home activity when occupancy was detected. Now, when the space is detected to be unoccupied, a comfort activity (Home, Wake, Sleep) can be overridden to the Away activity.

A Hold or Hold Until setting temporarily disables occupancy detection.

More information can be found in these sequence of operation descriptions:

Infinity® System Control Occupancy Operation

Forcing a Reboot

If needed, the homeowner may force a reboot of the wall control by pressing anywhere on home screen and holding for at least 10 seconds.

Improved Temperature Compensations

Corrected a defect in the temperature compensation algorithms causing inaccuracy of up to 3 degrees F.

If an offset has been entered in the field to compensate for this issue, it should be removed when upgrading to Version 1.3 (Version 0130).

ENERGY STAR® Connected Thermostat (CT) Certification Preparation

Data collection and reporting for ENERGY STAR compliance has been implemented. The EPA requires 12 months of data collection before certification may be applied for. That means that the earliest we expect ENERGY STAR certification is January 2019.

Note that data for ENERGY STAR certification is collected on an anonymous basis. No personally identifiable information is included, or sent to the EPA.

Note that the EPA has not finalized the ENERGY STAR CT requirements for multi-stage systems like Ion^{TM} Systems. Therefore, further updates for collecting ENERGY STAR data may be required.

Installation Instructions

Finding the Current Software Version

Before starting the software installation process, the current software version may be determined as follows:

Press **menu** on the Main screen,
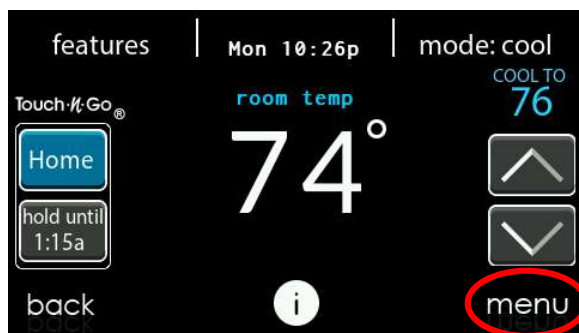
and then the down-arrow to go to the second menu screen.

Touch **service** icon.
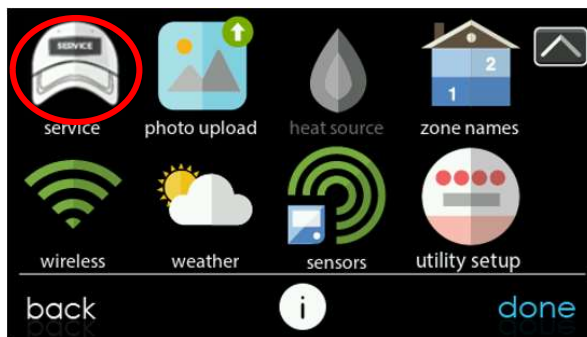
Touch **model/serial numbers** on the resulting screen.
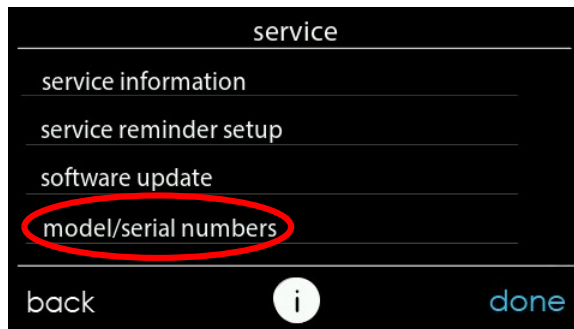
Touch **wall control** on the resulting screen.
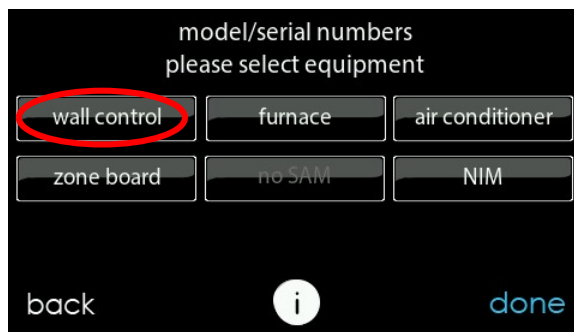
View the Software Version number.

Software Version 131626-04.31, for example, is the production software version 4.31, released in December 2022.
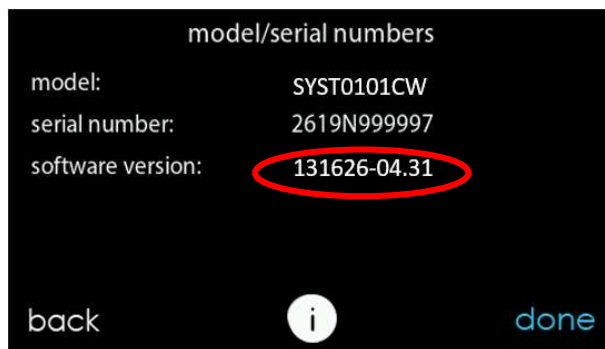
Downloading the Software Update

For Series B controls, software updates are provided over-the-air (OTA), or uploaded manually using a microSD memory device. The following instructions apply to the manual update process.

You will obtain best results using a MicroSD card that is between 4GB and 32GB in size, and formatted as a FAT32 device. Any other formatting (NTFS, exFAT, etc.) will result in an error of "please insert MicroSD card."

To perform a control software update, follow these steps:

- Click on this link to obtain the updated software:

  http://cacbdpapps.net/marketing/eula/Infinity_System_Control_V0431_eula.html

  If the link does not work properly, copy the link into your browser web address window and open the link.

  NOTE: You may NOT distribute the software itself. You may only distribute the link to the software, or this document.

- Read the End User License Agreement (EULA).
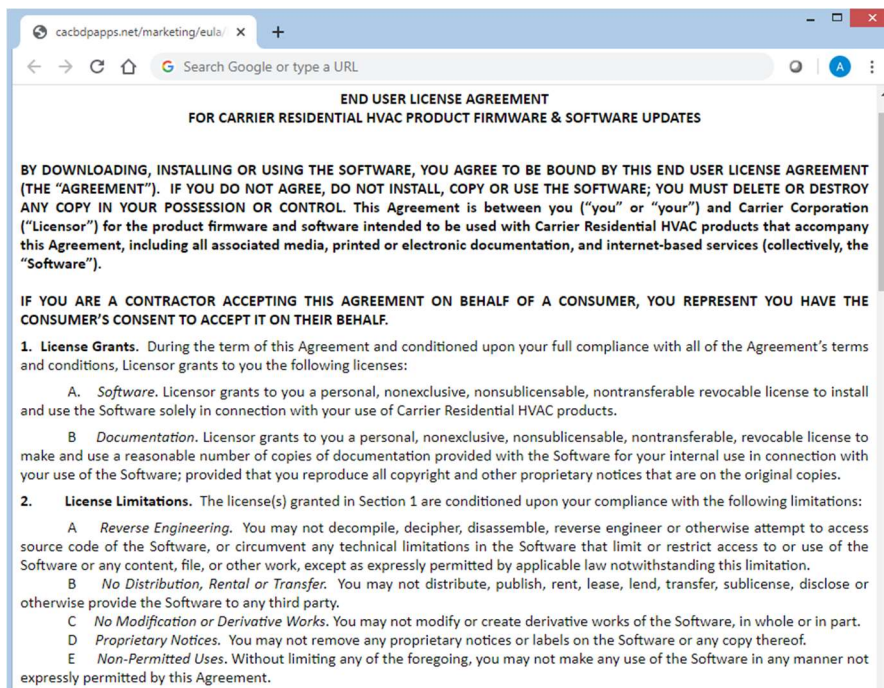
- At the bottom of the EULA, choose "Yes" if you accept the agreement. If you do not wish to accept the agreement, you will not be able to download the software update.

  NOTE: EACH user must accept the EULA each time the software is downloaded. You may NOT distribute the software itself. You may only distribute the link to the software, or this document.
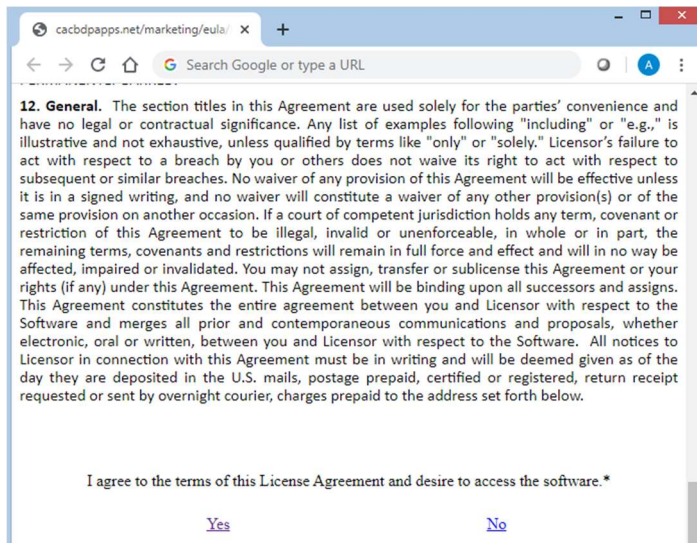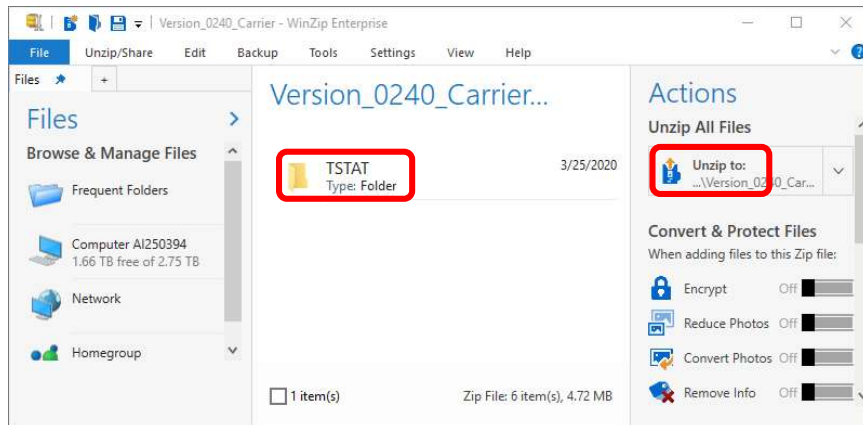
- Use the Download link provided in the EULA document to download the software update package.
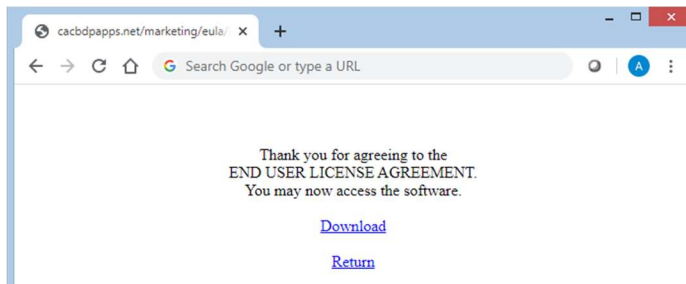
- Once the file has been downloaded, open it in WinZip. Select the **TSTAT** folder, then the **Unzip to** action.

  NOTE: The names of the files in the images below are examples, and will change with the latest version numbers.

- Choose the MicroSD memory device as the location to which to extract the folder from the zip file. This will create a new **TSTAT** folder, or over-write the existing **TSTAT** folder and any files contained within it. Click **Unzip**.
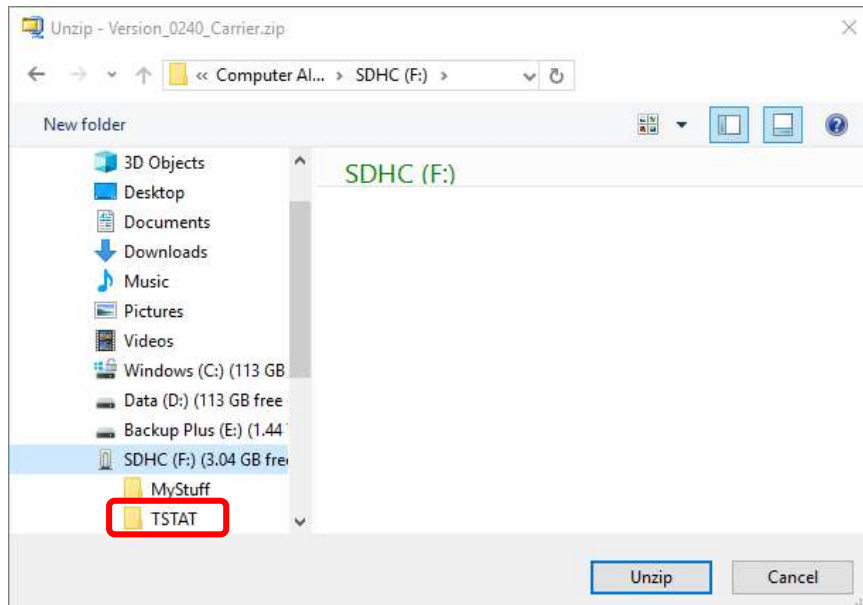
- Verify that the files, including the BINF0431.hex file, have been extracted into the TSTAT folder of the MicroSD device. Note that the "USER" folder is where the photo and schedule files would be stored.

NOTE: *The names of the files in the images below are examples, and will change with the latest version numbers.*
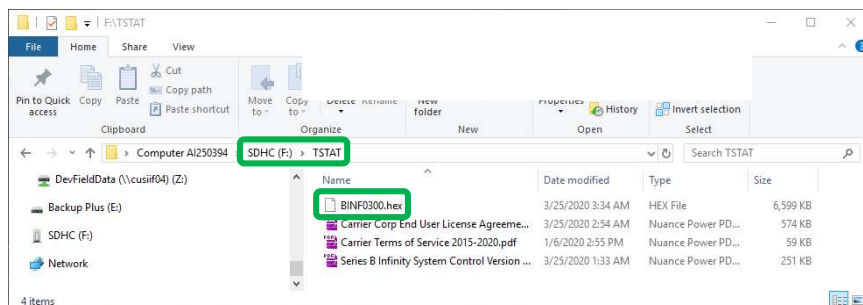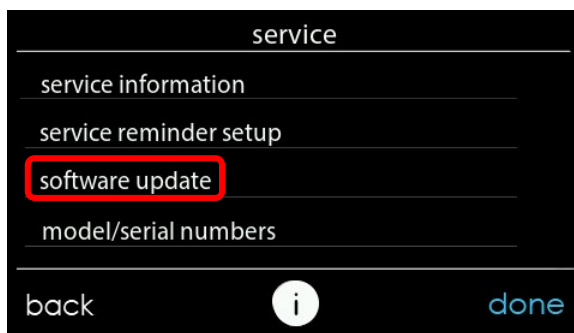
Next, eject the MicroSD from the PC and go on to the installation, below.

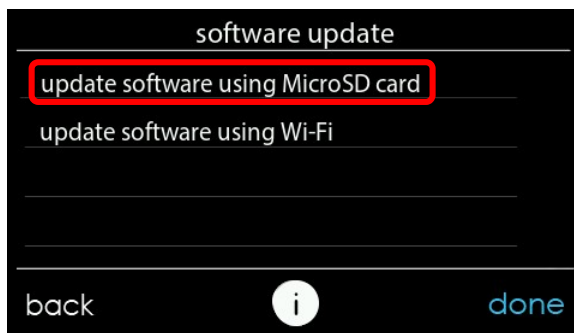**Installing the Software Update**

- From the **MENU** screen, select the **service** icon.
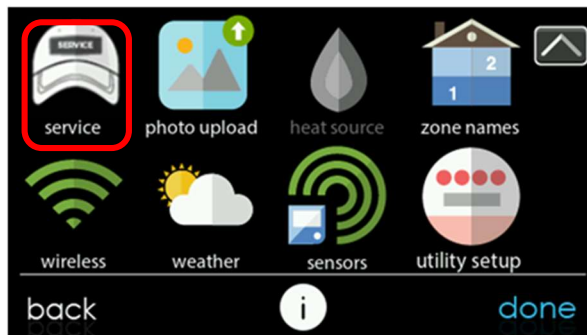
- Select **software update**. If this option does not appear, your dealer will to need install your software. Contact your dealer for assistance.

- Select **update software using MicroSD card**.

- Select **system control software update**.

  Note: Some systems may include HVAC equipment capable of accepting a software update, but that is not covered in this document.

- Plug the MicroSD card into the bottom of the control.

  If this screen continues to appear, recheck the device and formatting. See the download section..

- If the .hex file is stored properly on the MicroSD device, this screen will appear. If the screen says, "Please insert MicroSD Device", remove the MicroSD device and re-insert. If it still does not show the screen, below, go back to the download part and retry.

  NOTE: The names of the files in the images below are examples, and will change with the latest version numbers.
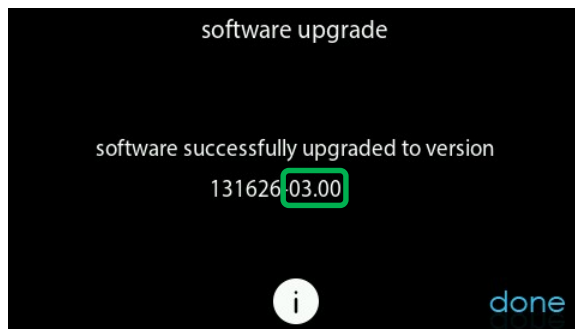
  Press **yes** to continue with the software upgrade. The upload and installation will take several minutes.
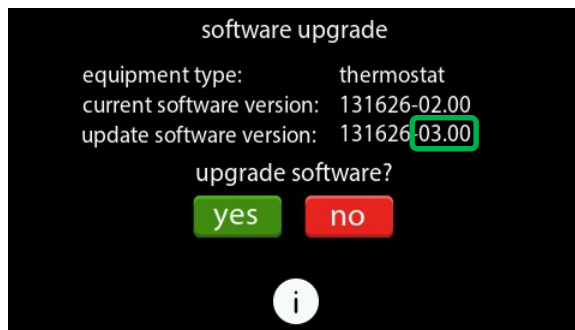
- When the software upgrade is complete, a "successful" message will appear.

- The control will perform a restart after the **done** button is pressed.

  There will be a longer than normal delay for the wall control to restart since part of the process at this time is the completion of the new software installation. Once the control has successfully restarted, the MicroSD device may be removed.

- This completes the software upgrade process.

  You may want to confirm the new software version, as described above.