

**Subject:** Instructions for User Interface (UI) Firmware Updates – TSX505 Undercounter Refrigerators

**Firmware Revision:** FW v1.3.00

**Description:** The TSX505 undercounter refrigerator has a new firmware update to address the lines through the display (red/orange displays). It has been determined that the previous 1.1.03 firmware update did not fully address red/orange screen issues. This UI firmware update release is to address different anomalies periodically seen on the touchscreen color display (see models impacted, Table 1)

*Models produced from June 2017 to July 2019 (TR17152xxx thru TR19212xxx) should be updated*

**Table 1:**

Models Impacted	
TSX505GA	TSX505SA
TSX505GC	TSX505SC
TSX505GD	TSX505SD
TSX505GV	TSX505SV
TSX505GW	TSX505SW
CAX505GA	CAX505SA
CAX505GD	CAX505SD

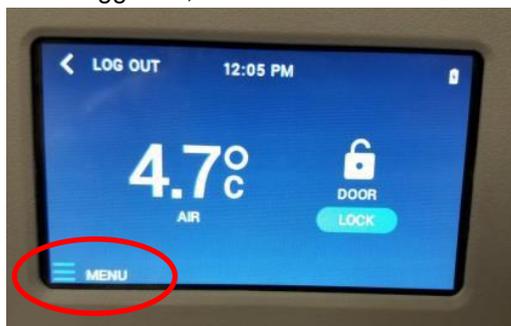
Steps to Update Firmware (*Please follow the sequential steps outlined in the order below*)

- 1) Download firmware from [thermofisher.com/tsx505software](http://thermofisher.com/tsx505software)

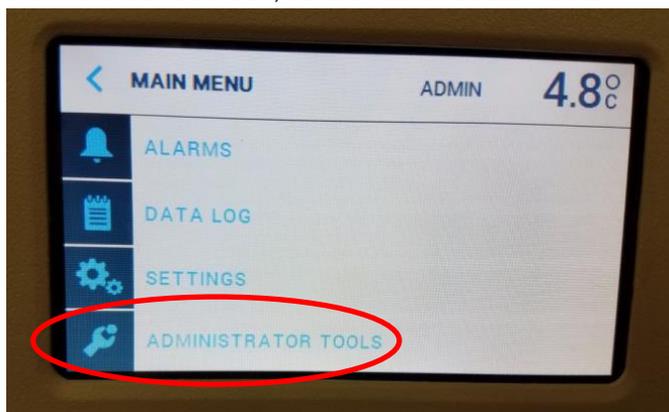
*Note 1: A small capacity USB storage device MUST be used (4-16 GB max, FAT-32 formatted, no encryption software should be on the USB storage device. The firmware should be saved to the “root folder” of the USB storage device)*

- a. For units with FW v1.0.00, download FW v1.1.03 and upload to unit
    - i. Once FW v1.1.03 is loaded, download FW v1.3.0 and upload to unit
  - b. For units with FW v1.2.16, first download FW v1.1.03 and upload to unit
    - i. Once FW v1.1.03 is loaded, download FW v1.3.0 and upload to unit (do not reinstall FW v1.2.16)
- 2) Installation Instructions (please refer to *Note 1* and confirm the selected USB storage device meets the requirements)
    - a. Select the appropriate FW version to load to the USB storage device (refer to Step 1a and 1b for recommended loading order)
      - i. *Please load only one FW version onto the USB storage device*

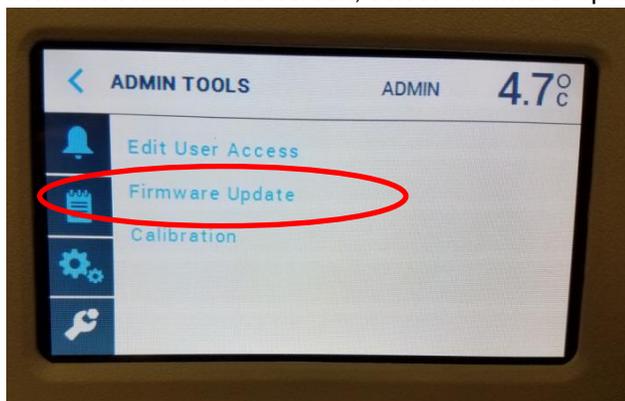
- b. Ensure the TMO\_HP\_Firmware\_update\_v1.3.00.zip file is expanded in the root directory of the USB drive. You should see two files – Bmplmage.bin and TMO\_HP\_UI.bin (*These files should not be inside any folders on the USB drive as the TSX505 unit will not search folders*).
- c. To install the update, login to the TSX505 with the “3265” admin code. If the customer has changed the admin code, the new code for admin is required (*“sub-admin” and “user” access levels will not allow you to update the firmware*).
- d. Once logged-in, select “Menu” in the lower left corner



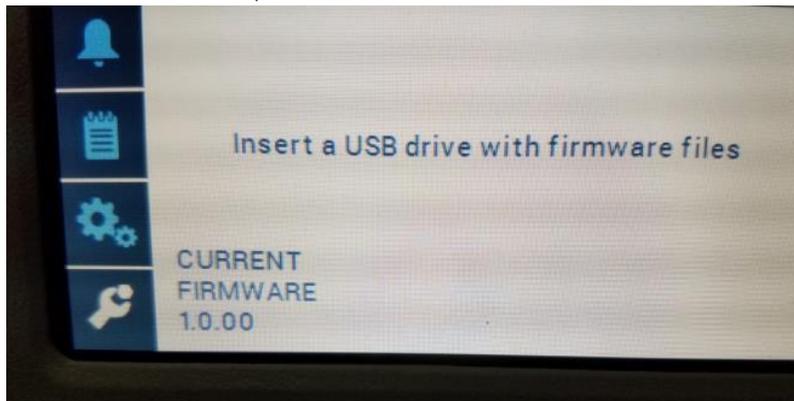
- e. From the Menu screen, select “Administrator Tools”



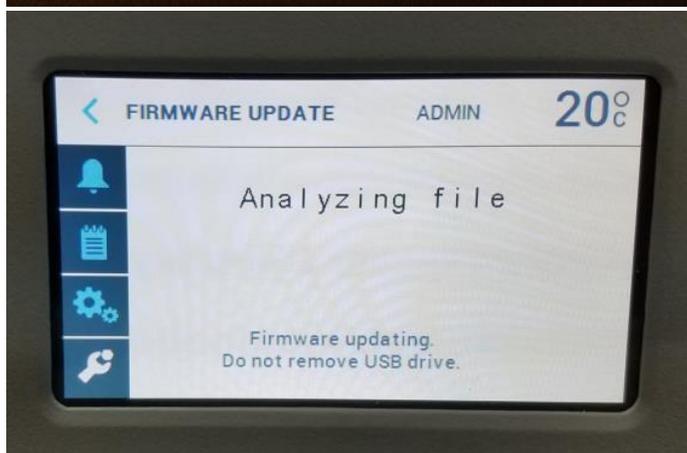
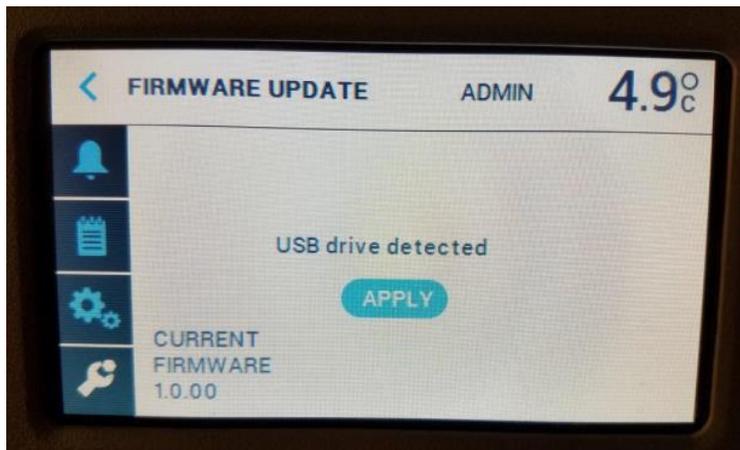
- f. From the Admin Tools screen, select “Firmware Update”



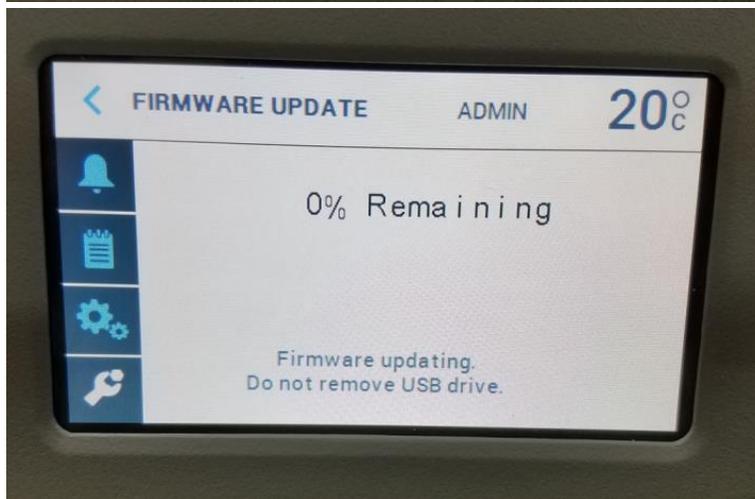
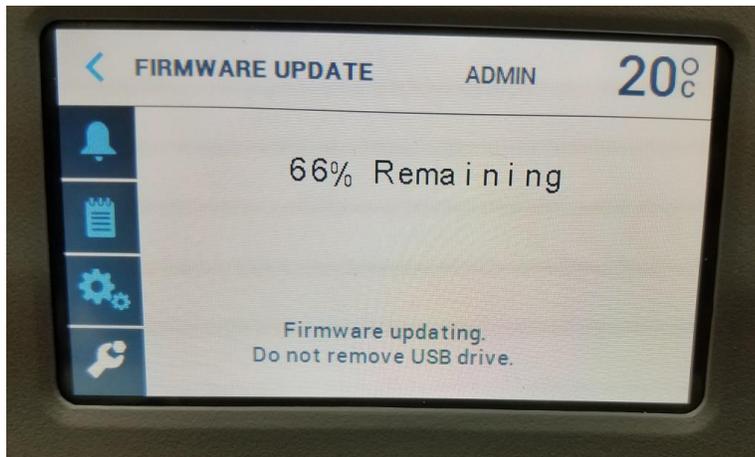
- g. Insert the USB drive (*note current firmware level in lower-left corner of display*)



- h. Once the USB device is inserted a "USB drive detected" message appears. Press the "Apply" button. The "Analyzing file" message appears, followed by a percentage count down

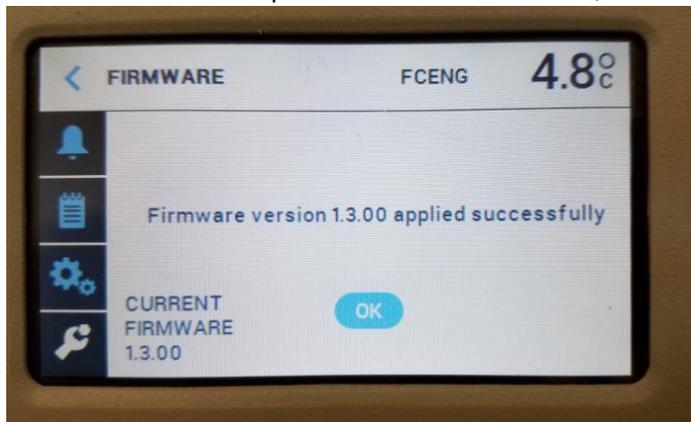


*After the "Analyzing file" screen loads, a file load percentage notification appears (see next page)*



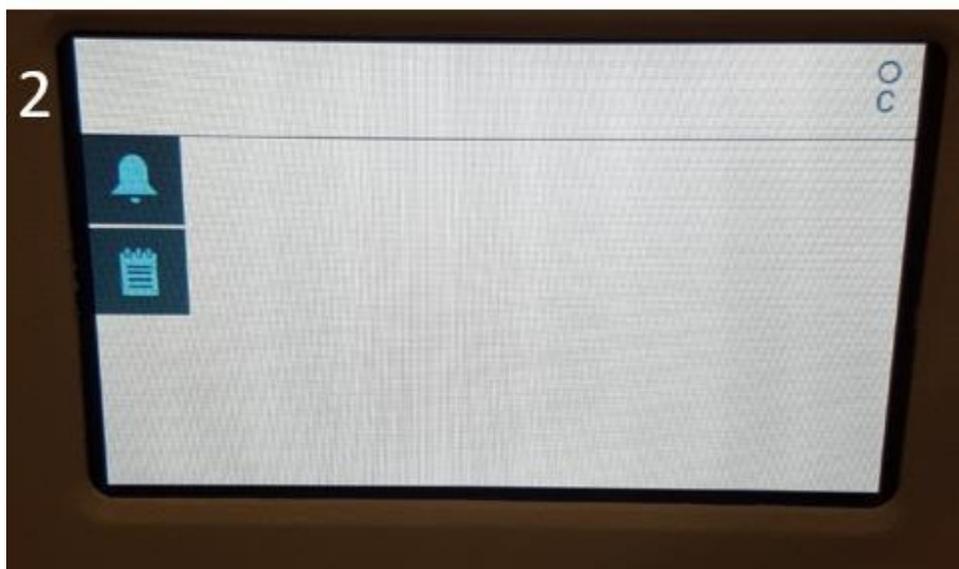
Once the screen shows “0% Remaining”, the unit will perform a reset: internal fans and cooling stop, the door lock will fall back to its locked state if it is not already locked, then the unit will restart.

- i. Once the firmware is updated and the unit restarts, the following screen appears:



Note 2: Elapsed time from the USB detected to upgrade to restart should be less than one minute. If the update "hangs" at 0% remaining for more than 30s, hit the reset button and the firmware update will continue. This hanging behavior is caused by some USB stick brands and is resolved starting in version 1.2.16

Note 3: Blank Screen Issue after UI firmware update – Blue Screen Blue/White/Blank Screen seen on TSX units with image and/or characters. Images 1 and 2 below:



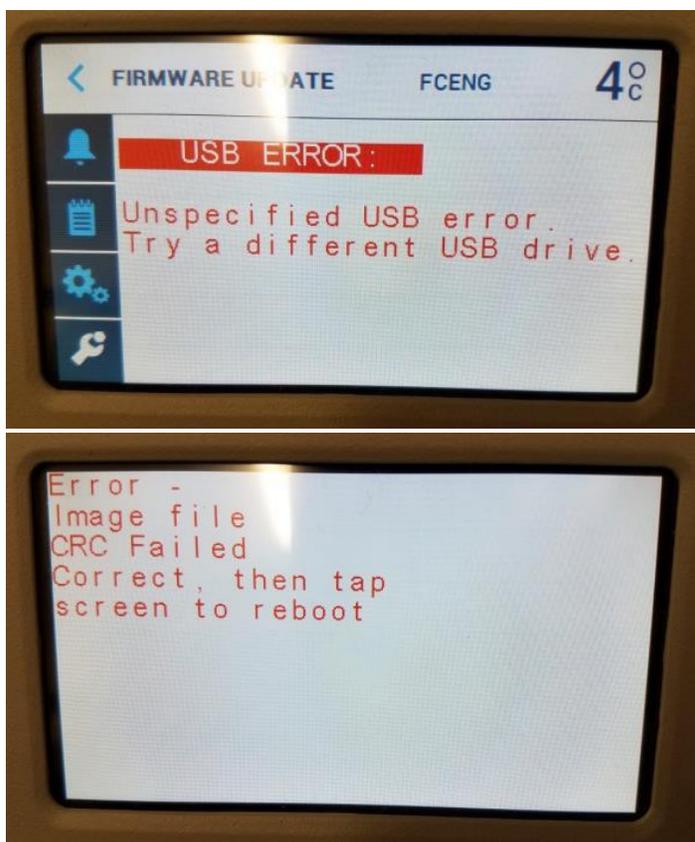
Can be caused by Improper Firmware upgrade procedure: For example, removing USB during firmware update, or not following the procedure for firmware update.

The fix if the two screens above are seen: Re-Flash Firmware by re-inserting USB, hitting the middle blue button that appears on the screen, letting the USB run for 20 seconds, then hitting reset. This will then cause the screen to return to a normal state.

*Note 4: USB Error message during UI firmware update*

*If the Firmware files were loaded into a folder instead of the root directory of the USB drive, when the "Apply" option is selected, the following two screens appear and the unit will reboot. Tap the screen to reboot. The unit will operate normally under the original firmware and show a power fail alarm.*

**Solution:** move the two files to the root directory of USB storage device and start the process over.



If the solution in *Note 4* does not resolve the issue, please contact Thermo Fisher Scientific Technical Support at the following numbers:

**North America:** 866-984-3766

**Europe:** France +33 2 2803 2180 Germany +49 9184 90 9640 UK/Ireland + 44 870 609 9203

**Asia:** China +86 21 6865 4588 India 1800 22 8374 Japan +81 45 453 9220

Appendix 1 of 2: Firmware Revision Descriptions

Resolution: Software Release 1.0.00 to 1.1.03 features	
1.0.00	1.1.03
Screen does not refresh without activity	Automatic screen refresh after each 60 minute block of inactivity
Faulty PHP failure system alert	Updated test values and limits to accurately determine PHP status
Diagnostic data file included basic system temperature performance data	Updated diagnostic file includes basic performance data as well as the following component data to improve remote field service: TEC MODE, TCHA1, TGLY, TREJ1, TCHA2, TREJ2 V PHP1, I PHP1, IPHP1LIM, IPHP2LIM, V PHP2, I PHP2 Defrost last run, Min. reject temperature, Max. reject temperature

Diagnostic Key Terms	
TEC MODE	Cooling Algorithm State
TCHA1	Chamber Temperature Sensor 1
TGLY	Glycol Temperature Sensor
TREJ1	PHP 1 Reject Temperature
TCHA2	Chamber Temperature Sensor 2
TREJ2	PHP 2 Reject Temperature
V PHP1	PHP1 Voltage
I PHP1	PHP1 Current
IPHP1LIM	PHP1 Alarm Limit >1.0
V PHP2	PHP2 Voltage
I PHP2	PHP2 Current
IPHP2LIM	PHP1 Alarm Limit >1.0

Appendix 2 of 2: Firmware Revision Descriptions

Resolution: Software Release 1.1.03 to 1.2.16 features	
1.0.00 - 1.1.03	1.2.16
Upon returning from power outage > 2 hrs, UI screen displays inaccurate temp reported from TEC causing the unit to lose temp control (either not cooling or bottoming out.)	A reset of the UI and TEC automatically occurs when temperature becomes locked to maintain proper reporting and control.
Firmware update was not clear instructing users not to remove USB during update	During update the user is provided progress screens which guide the user through the update progress
Units were not entering low power mode during battery operation causing batteries to deplete rapidly	Electronics now enter sleep mode when external power is removed.

Diagnostic Key Terms	
TEC MODE	Cooling Algorithm State
TCHA1	Chamber Temperature Sensor 1
TGLY	Glycol Temperature Sensor
TREJ1	PHP 1 Reject Temperature
TCHA2	Chamber Temperature Sensor 2
TREJ2	PHP 2 Reject Temperature
V PHP1	PHP1 Voltage
I PHP1	PHP1 Current
IPHP1LIM	PHP1 Alarm Limit >1.0
V PHP2	PHP2 Voltage
I PHP2	PHP2 Current
IPHP2LIM	PHP2 Alarm Limit >1.0