Trilogy®
Service Tool

97B0106N13

Installation & Operation Instructions
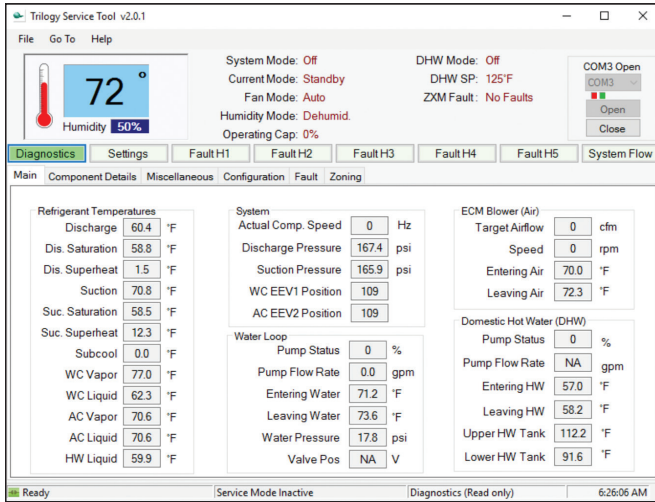
Rev.: May 23, 2023

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Installing the USB-CM Driver and Cable

> ## ⚠ WARNING! ⚠
> **WARNING!** DO NOT plug the USB dongle until instructed.

Plug the thumb-drive into an available USB port. A window with the drive contents should open.

BEFORE BEGINNING THE INSTALLATION PROCESS, make sure that you are logged in as administrator or have the administrator credentials handy for installation.

To install the USB dongle driver, extract the contents of the "CP210x_Universal_Windows_Driver.zip" file. Open the folder, right-click the "silabser.inf" file, and choose "Install". Restart your host machine to make sure the driver is applied.

At this point, you will plug the white USB dongle into an available USB port (this port should remain the same each time you plug the USB dongle in or the port number might change).

Your computer will recognize the USB dongle automatically and prepare it for use. You should see a notification once the cable installation has completed. Note the COM port number assigned to the dongle.

If your computer did not display the COM port number, click on "Start" then **Right-click** on the "My Computer" icon and choose "Manage". For Windows 8 users, hold down the Windows key and press X, this will bring up a system menu. From this menu, choose Device Manager.

When the Computer Management window opens, locate the "Device Manager" in the left pane of the window and click on it. In the right pane, locate and click the arrow next to "Ports (COM & LPT)".

Under the "Ports (COM & LPT)" section, locate the "CP210x USB to UART Bridge Controller" and double-click on it; this will open the properties window for the dongle.

At the top of the Properties box, click on the "Port Settings" tab, and then click on the "Advanced" button.

Locate the COM Port Number section at the bottom of the window and write down the COM port number that is assigned. This will be the COM port number you will use when connecting the Service Tool for use.

Click "Cancel" twice to close the Properties boxes and close the Computer Management window.

Service Tool Installation

Browse to the thumb-drive and locate the TSTSetup_ V120.exe file and double-click on it. This should start the installation process. **NOTE: if your computer displays a User Account Control warning, click Yes to proceed with the installation.**

Click "Next" three times, leaving the default installation location and Start Menu folder name. You can check the box next to "Create Desktop" icon if you wish to add the icon to your desktop for easy access. Click "Next" again and choose "Install".

Click "Finish" when the installation is complete. This will start the Service Tool application (unless you've unchecked the box to start the software).

Starting and Using the Service Tool

NOTE: The connection order is very important. You might have unintended issues if these instructions are not followed.

Separate the 5 ft cable from the white dongle.

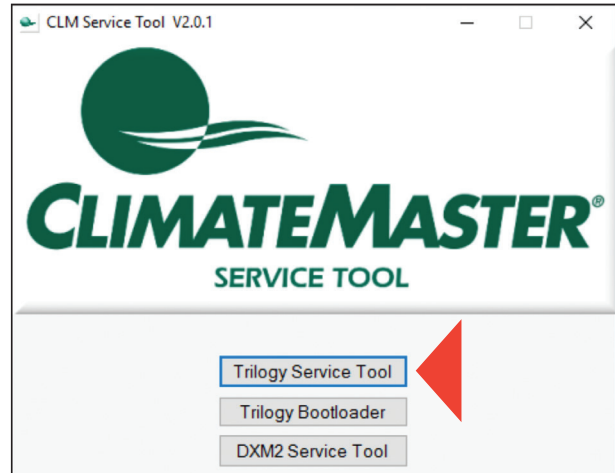Connect the 5 ft cable to the EXM STAT port (pictured below).
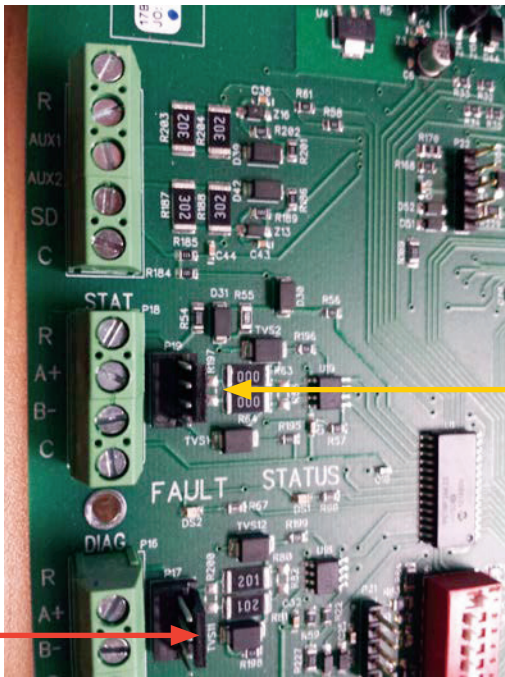
This is the STAT port connection. Connect the service tool cable here.

This is the DAIG port connection. Do not connect to this port.

Connect the white dongle to the USB port on your computer but DO NOT connect the cables together yet.

Open the Service Tool software and click on the "Service Tool" button.

Locate the "COM port selection" in the upper-right corner of the application and use the drop-down list to select the COM port of the dongle. Then choose "Open".
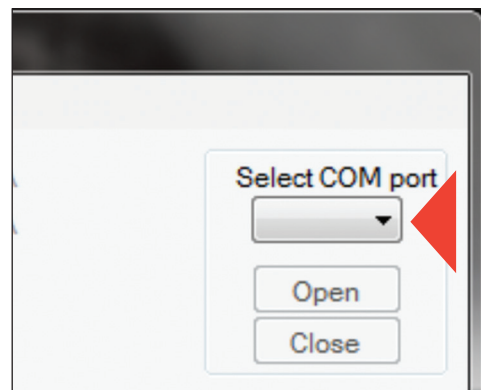

After the COM port opens successfully, connect the cable to the dongle. If you notice "Communications Error" on the status bar flashing red, ignore this until the cables are connected together.

Starting and Using the Service Tool, Cont'd.

When the COM port opens AND the cables are connected together, green and red indicators will appear.
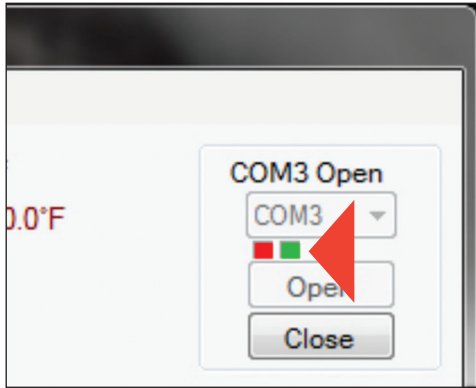
The Service Tool will begin downloading the initial data. The information bar at the bottom of the application will display this information. The left section will blink yellow while the initial download is active. This takes approximately 30-45 seconds. Once it has completed, the information bar will display, "Ready." Be patient while the information is downloading. Proceeding through tabs or buttons before the information is completely downloaded will display 0 values, but will update as the information is populated.
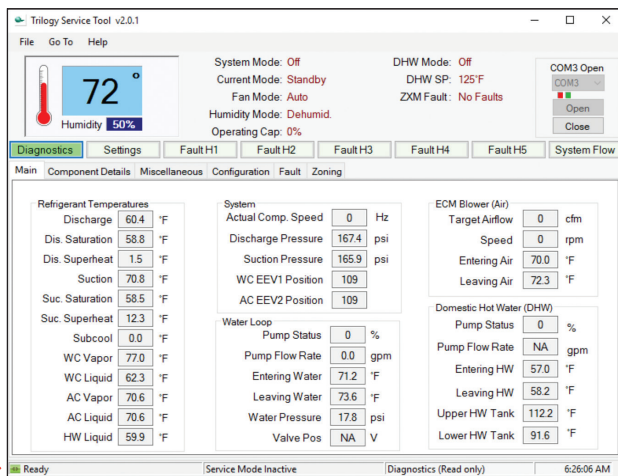
The **NAVIGATION** buttons will allow you to view and change different aspects of the unit operation and function.

The **DIAGNOSTICS** button has menu tabs that contain all of the current information regarding unit operation; Main, Component Details, Miscellaneous, Configuration and Fault.

The **MAIN** tab contains useful information on the various components and temperatures.

The **COMPONENT DETAILS** tab contains specific details for the various components

The **MISCELLANEOUS** tab contains software versions of the board set, extra temperature information, output status and unit status.

The **CONFIGURATION** tab shows the current DIP Switch settings for the EXM.

The **FAULT** tab shows any current Fault or Warning that the system is experiencing.

The **SETTINGS** button has menu tabs that allow configurable options.

The **EQUIPMENT** tab displays the current settings for the unit configuration. These are modifiable values.

The **THRESHOLDS** tab allows the user to change the adjustable offsets, deadbands and cutouts.

The **SERVICE MODE** tab allows "Manual Mode" operation for testing the various operational modes of the unit. This tab also allows the user to reset the fault history.

Starting and Using the Service Tool, Cont'd.

The **FAULT H1 THROUGH FAULT H5** buttons display the last five faults in memory. These buttons capture the unit operational conditions at the moment the fault occurred. The time/date stamp is noted with the fault condition. The tabs contain the "snapshot" of the unit information at that time and date. These tabs are essentially the same as the Diagnostics tabs in layout and order.

The **SYSTEM FLOW** button displays the refrigerant and water circuits with live data so that you can view the temperatures and pressures in real-time.
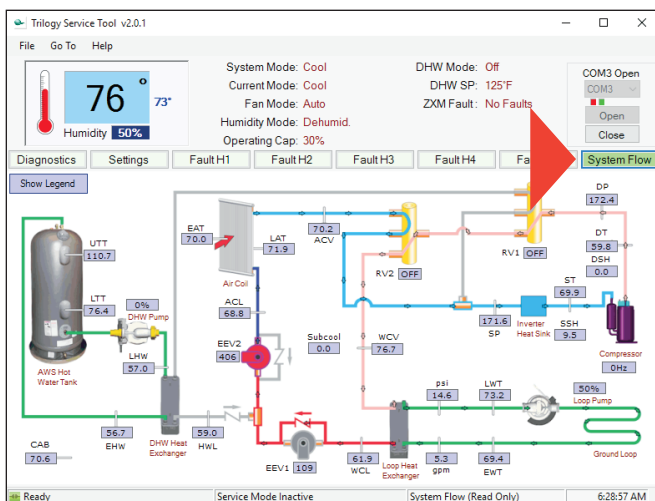
Zone Configuration

Select the "Diagnostics" button, and then select the "Miscellaneous" tab.
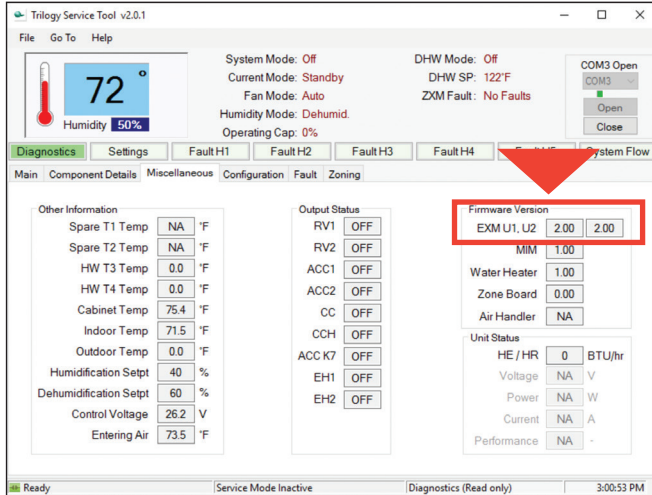
One of the first items to check before adding the zone panel to the Trilogy® system is to check the firmware version on the Trilogy EXM board. This board contains two microchip processors and both must be, at a minimum, version 2.00. If the version is 1.xx, the technician will be required to update the board firmware using the BootLoader portion of the service tool. Please refer to the Service Tool instruction sheet for BootLoader information and directions.

Select the "Settings" button, and then choose the "Zone Config" tab.
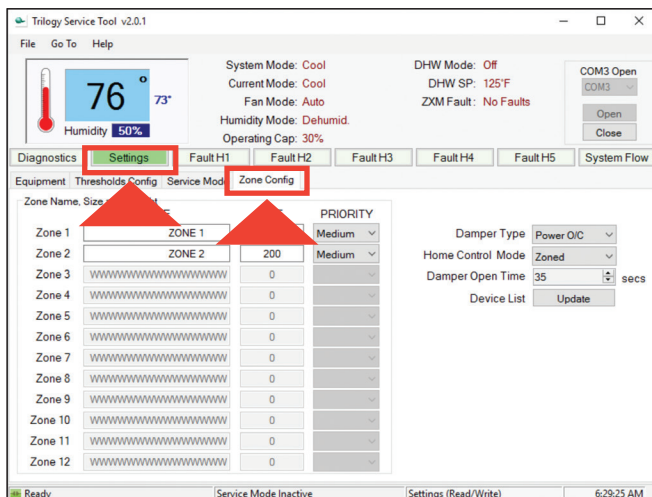
Set the Zone Size (CFM) determined for each zone per the manual J/D calculation.
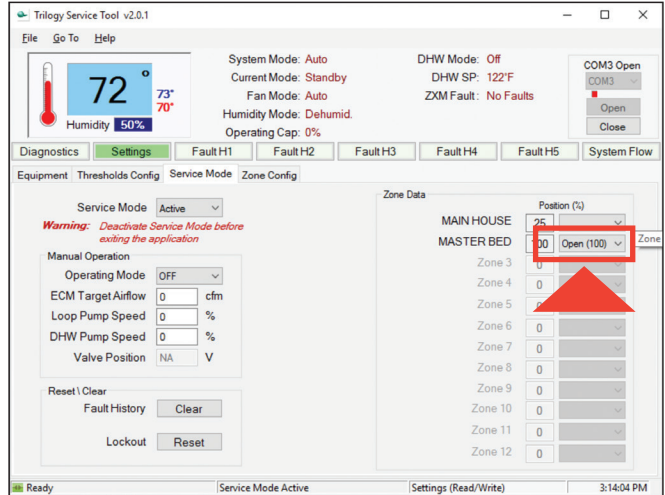
Damper timing must be set in order for the zone panel to properly open and close the dampers for each zone. The technician must activate "Service Mode" and open or close a damper, timing it with a stopwatch, to get the actual time it takes to fully actuate the damper.

Dampers MUST have similar open times in order for the system to operate correctly. The individual damper timings must all be within 5 seconds of one another for the average to be accurate.

** The zone priority is only used for zones have opposing demands (heating vs. cooling). We recommend leaving all of these at medium. The zone sizes are used in conjunction with deviation from setpoint to determine priority.

NOTE: Setting any zone priority to HIGH will, effectively, shut down hot water production. This is due to space prioritization.

Zone Configuration, Cont'd.

STATUS LED INFORMATION

Flash Type	Description
ON	Normal operation
OFF	Control is non-operational
FAST	Control is in Non-Zoning Mode

## FAULT LED INFORMATION

Flash Type	Description
OFF	Normal operation
SLOW	Control has an active alert
FAST	Control is locked-out

ZONE THERMOSTATS/ MAIN COM LED INFORMATION

Flash Type	Description
OFF	Control is non-operational
SLOW	Zone STAT is Connected

ZONE DAMPER LED INFORMATION

Flash Type	Description
OFF	Damper is fully closed
SLOW	Damper is partially open
FAST	Damper is opening/ closing
ON	Damper is fully open
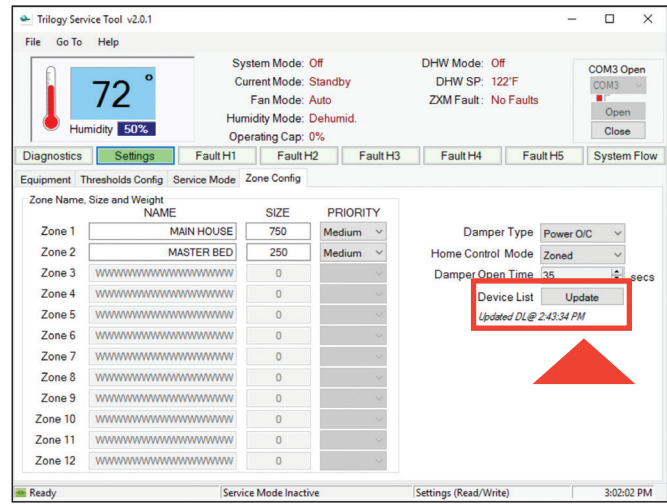
The zone panel will automatically recognize the addition of a thermostat zone. However, the system will not recognize the removal or movement of a zone. If a zone is removed, or is moved to a different zone tap, the technician must press the **"Device List Update"** button in order for the new zone configuration to be updated and saved.
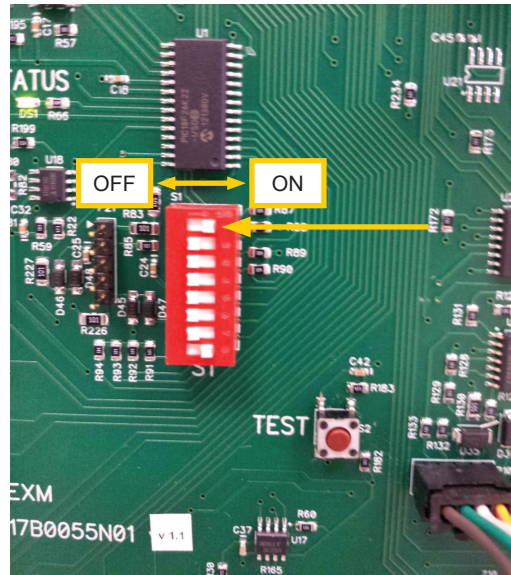
Bootloader Instructions

As alterations and/or enhancements to the EXM, ZXM and WXM functionality are made, there may be occasional updates to the firmware on the board. Bootloader allows a technician to update the board's firmware rather than replacing the board.
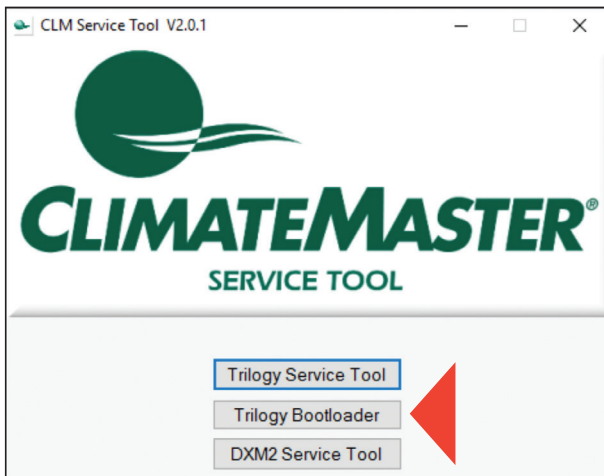
Notifications of any updates would be sent via a Technical Service Bulletin and updates would be available for download from the GeoElite Trilogy website. These updates come in the form of a HEX file.

Save the HEX file(s) to a location easily found (such as the desktop or a Bootloader folder created in the "My Documents" folder). Once the HEX file(s) have been downloaded, open the Service tool software and click on the "Bootloader" button.

Or, from the Service Tool screen, choose "Go To" from the menu bar and then choose "Bootloader".

The Bootloader program requires the EXM to be placed into "Slave" mode before it will connect. You will need to flip DIP Switch 1 to the OFF position while using Bootloader.


NOTE: Make sure to return the DIP switch to the ON position when you've finished using Bootloader or the unit will not operate.

Connect the cable and dongle together and connect to the EXM STAT port and insert the dongle into the USB port.

Locate the COM Port selection in the upper-right corner of the application and use the drop-down list to select the COM port of the dongle. Then choose "Open".
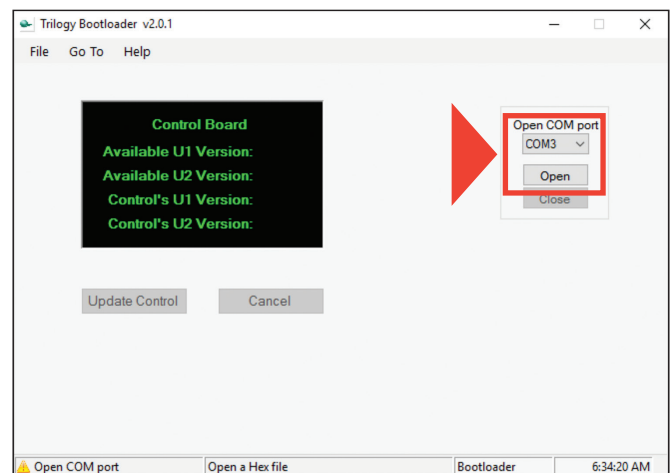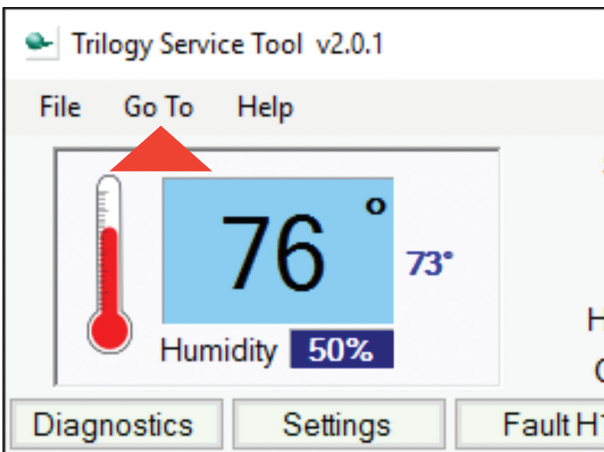
Bootloader Instructions, Cont'd.

The Red and Green indicators will appear when communication is established (similar to the Service Tool).

At this point, you will need to locate the HEX file(s). To update the EXM, there will be two HEX files, EXM_U1_vXXX.hex and EXM_U2_vXXX.hex. These files are for each of the microprocessors on the EXM board. Go to "File" then "Open EXM U1" and locate the HEX files, choose the EXM_U1_vXXX file and click "Open".
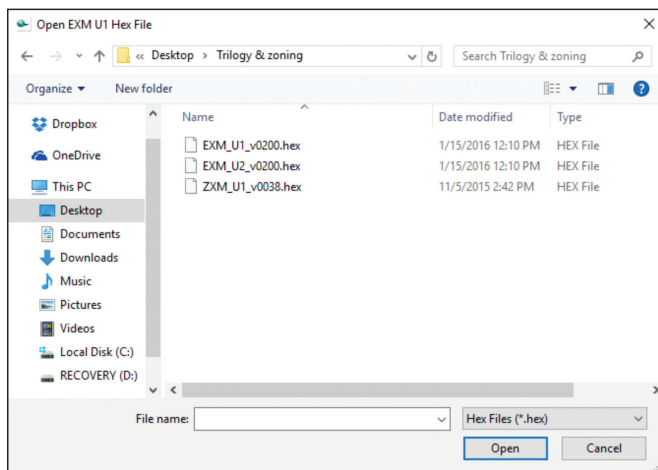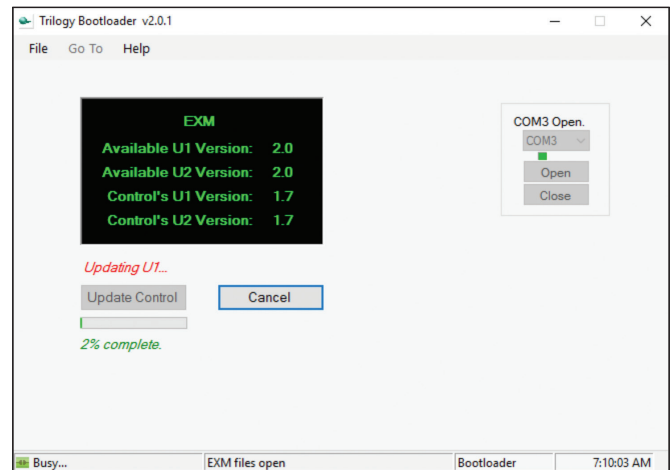

Go back to "File" then "Open EXM U2", choose the EXM_U2_vXXX file and click "Open".

Both versions should be displayed on the Bootloader screen.
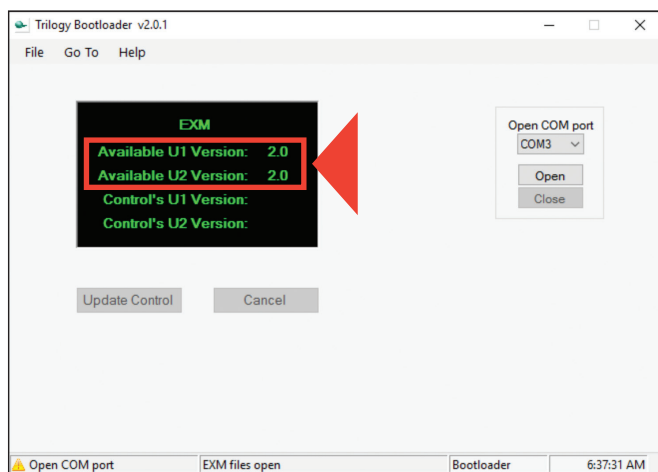
Choose "Update Control". Status will be displayed during update. The update typically takes about 4 minutes for the EXM.

When the update completes, the COM port will close automatically. At this point, if you have completed the download process, **MAKE SURE to flip DIP Switch 1 back to the ON position.**

TO UPDATE THE ZXM, there will be one file, ZXM_U1_vXXX.hex, but the process is similar. Choose "File" then "Open ZXM". Select the appropriate HEX file and perform the update. The ZXM update will typically only take about 60 seconds.

TO UPDATE THE WXM, there will be one file, WXM_U1_vXXX.hex, but the process is similar. Choose "File" then "Open WXM". Select the appropriate HEX file and perform the update. The WXM update will typically only take about 30 seconds.

If, at any point during the update process, communications are lost and the update process stalls or fails, cycle power to the board. You should also close and re-open the Trilogy bootloader software and restart the process.

Revision History

Date	Page #	Description
May 23, 2023	ALL	Updated formatting
	3	Updated driver information
December 8, 2014	ALL	Last revised
March 20, 2014	All	First published

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