

## Trilogy<sup>®</sup> Service Tool

#### 97B0106N13

#### Installation & Operation Instructions

Rev.: May 23, 2023



T2° Humidity 50%					Current Mode: Standby				HW Mode: Off DHW SP: 125'F ZXM Fault: No Faults		(	COM3 Open COM3 V Open Close				
iagr	nostics	ettings		Fault	11	Fault	H2	Fa	ault H	13	Fault	-14	FaultH	15	System	Flov
ain	Component De	tails M	Aiscella	aneous	Configur	ation	Fault	Zoning								
F	Refrigerant Temp Discharge				Syster		p. Spe	ed 🗌	0	Hz	E		ower (Air) get Airflow	0	cfm	
	Dis. Saturation	58.8	°F		Disc	charge	Pressu	ire 1	67.4	psi			Speed	0	rpm	
	Dis. Superheat	1.5	۴F		S	Suction	Pressu	ire 1	65.9	psi		Er	ntering Air	70.0	۴F	
	Suction	70.8	°F		W	CEEV	1 Positi	on	109			Le	eaving Air	72.3	۴F	
3	Suc. Saturation	58.5	۴F		A	C EEV2	2 Positi	on	109		-	lomeet	tic Hot Water	(DHM)		
1	Suc. Superheat	12.3	۴F		Water	Loop							mp Status	0	%	
	Subcool	0.0	۴F			Pun	np Stati	us	0	%				_	1	
	WC Vapor	77.0	°F		F	oump F	low Ra	ite	0.0	gpm			Flow Rate	NA	gpm	
	WC Liquid	62.3	°F			Enteri	ng Wat	er 7	1.2	۴F		Ent	tering HW	57.0	'F	
	AC Vapor	70.6	°F			Leavi	ng Wat	er 7	3.6	°F		Le	aving HW	58.2	۴F	
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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).



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.

Humidity			System Mode: Off Current Mode: Standby Fan Mode: Auto Humidity Mode: Dehumi Operating Cap: 0%		C	W Mode: Off DHW SP: 125'F M Fault: No Faults		COM3 COM3 COM3 Oper Close
agnostics Set	ttings	Fault	tH1 FaultH2	Fault H3		Fault H4 Fault	H5	System
in Component Deta	ails Mis	cellaneous	Configuration Fault Zo	ning				
Refrigerant Tempe	ratures		System			ECM Blower (Air)		
Discharge	60.4	'F	Actual Comp. Speed	0	Hz	Target Airflow	0	cfm
Dis. Saturation	58.8	*F	Discharge Pressure	167.4	psi	Speed	0	rpm
Dis. Superheat	1.5	*F	Suction Pressure	165.9	psi	Entering Air	70.0	°F
Suction	70.8	°F	WC EEV1 Position	109		Leaving Air	72.3	'F
Suc. Saturation	58.5	°F	AC EEV2 Position	109		Domestic Hot Wat	(0) (0)	_
Suc. Superheat	12.3	'F	Water Loop			Pump Status		%
Subcool	0.0	'F	Pump Status	0	%			_ %
WC Vapor	77.0	'F	Pump Flow Rate	0.0	gpm	Pump Flow Rate	_	gpm
	62.3	1E	Entering Water	71.2	F	Entering HW	57.0	°F
WCLiquid		*F	Leaving Water		F	Leaving HW	58.2	۴F
WC Liquid	70.6		200 mig mater		5 E		440.0	1 'F
WC Liquid AC Vapor AC Liquid	70.6	'F	Water Pressure	17.8	osi	Upper HW Tank	112.2	

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.

Humidity 50%		( Hu	ystem Moo Current Moo Fan Moo Imidity Moo perating Ca	le: Standby le: Auto le: Dehumi		DHW Mode: ( DHW SP: 1 ZXM Fault: 1	22'F		COM3 Open COM3 ~ Open Close
agnostics Settings	F	ault H1	Fai	ult H2	Fault H3	Fault H4	-		ystem Flo
in Component Details M	iscellane	eous Co	onfiguration	Fault Zo	ning				
Other Information				Output St	tatus	Firm	ware Version	1	
Spare T1 Temp	NA	°F		RV1	OFF	Ð	KM U1, U2	2.00	2.00
Spare T2 Temp	NA	۴F		RV2	OFF		MIM	1.00	
HW T3 Temp	0.0	°F		ACC1	OFF	Wa	ter Heater	1.00	i l
HW T4 Temp	0.0	*F		ACC2	OFF	70	one Board	0.00	1
Cabinet Temp	75.4	'F		CC	OFF	A	ir Handler	NA	i l
Indoor Temp	71.5	۴F		ССН	OFF		tStatus		1
Outdoor Temp	0.0	°F		ACC K7	OFF	on	HE/HR	0	BTU/hr
Humidification Setpt	40	%		EH1	OFF		Voltage	NA	V
Dehumidification Setpt	60	%		EH2	OFF		Power	NA	w
Control Voltage	26.2	V					Current	NA	A
Entering Air	73.5	°E					formance	NA	

Set the Zone Size (CFM) determined for each zone per the manual J/D calculation.

Humidity 50%	Curr 73* F 70* Humin	em Mode: Auto rent Mode: Standt Fan Mode: Auto dity Mode: Dehun ating Cap: 0%	·	DHW Mode: Off DHW SP: 122' ZXM Fault: No I		COM3 Op COM3 Open Close	en V
agnostics Settings	Fault H1	Fault H2	Fault H3	Fault H4	Fault H5	System	Flow
uipment Thresholds Conf	fig Service Mode Zo	one Config					
Service Mode	A.C		Zone D	Data	Positio	an (%)	
Service Mode Active  Warning: Deactivate Service Mode before				MAIN HOUSI		~	
exiting the a				MASTER BEI		Open (100) 🗸	Zo
Manual Operation				Zone			_
				Zone	3 0		
Operating Mode	OFF ~			Zone			
ECM Target Airflow	0 cfm				4 0		
ECM Target Airflow Loop Pump Speed	0 cfm 0 %			Zone	4 0 5 P		
ECM Target Airflow Loop Pump Speed DHW Pump Speed	0 cfm 0 % 0 %			Zone Zone	4 0 5 <i>p</i> 6 0		
ECM Target Airflow Loop Pump Speed	0 cfm 0 %			Zone Zone Zone	4 0 5 9 6 0 7 0		
ECM Target Airflow Loop Pump Speed DHW Pump Speed	0 cfm 0 % 0 %			Zone Zone Zone Zone	4 0 5 <i>p</i> 6 0 7 0 8 0		
ECM Target Airflow Loop Pump Speed DHW Pump Speed Valve Position	0 cfm 0 % 0 %			Zone Zone Zone Zone Zone	4 0 5 9 6 0 7 0 8 0 9 0		
ECM Target Airflow Loop Pump Speed DHW Pump Speed Valve Position Reset \ Clear	0 cfm 0 % 0 % NA V			Zone Zone Zone Zone Zone Zone	4 0 5 2 6 0 7 0 8 0 9 0 0 0		

One of the first items to check before adding the zone panel to the Trilogy<sup>®</sup> 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.



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".

<ul> <li>Trilogy Bootloader v2.0</li> <li>File Go To Help</li> </ul>	.1	-	- 🗆 X
Available Available Control's	ontrol Board e U1 Version: e U2 Version: s U1 Version: s U2 Version:	Open C COM3 Op Cic	en
Update Cont	rol Cancel		
🔥 Open COM port	Open a Hex file	Bootloader	6:34:20 AM

#### 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.

<ul> <li>Trilogy Bootloader v2.0.1</li> </ul>			- 🗆 X
File Go To Help			
EX		Open C COM	COM port
Available U1 V			
Available U2 V Control's U1 V			pen ose
Control's U2 V			050
Update Control	Cancel		
🔥 Open COM port	EXM files open	Bootloader	6:37:31 AM

Choose "Update Control". Status will be displayed during update. The update typically takes about 4 minutes for the EXM.

Trilogy Bootloader v2.0.1			-		×
File Go To Help					
E Available U1 Available U2 Control's U1 Control's U2 Updating U1 Update Control 2% complete.	Version: 2.0 Version: 1.7		COM3 Op COM3 Open Close	~ <sup>-</sup>	
🖶 Busy	EXM files open	Bootle	oader	7:10:03	3 AM

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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