EMERSON M400 Supervisory Controller Setup User Guide

M400 Supervisory Controller Setup User Guide

Contents

Supervisory Controller Setup

This document will guide you through setting up and commissioning the M400 VFD Drive in Supervisory Controllers (E3 and Site Supervisor).
Complete All Programming Before you set up the M400 Drive.
Note that the M400 Drive requires Supervisory Controller firmware version 2.14F01 and above.
The keypad and display give information about the operating status of the drive and tripcodes. It provides the ability to change parameters, stop and start the drive, and the ability to perform a drive reset.

Figure 1 - Unidrive M400

Figure 2 - Unidrive M400 Keypad Details

Keypad Number	**Keypad Description**
1 (Enter)	The Enter button is used to enter parameter view or edit mode, or to accept a parameter edit.
2 (Navigation)	The Navigation keys can be used to select individual parameters or to edi t parameter values. In keypad mode, the “Up” and “Down” keys are also used to increase or decrease the motor speed.
3 (Start)	The Start key is used to start the drive in keypad mode.
4 (Stop/Reset)	The Stop / Reset key is used to stop and reset the drive in keypad mode. It can also be used to reset the drive in terminal mode.
5 (Escape)	The Escape key is used to exit from the parameter edit/view mode or disr egard a parameter edit.

STEP 1: Configuring M400 VFD Drive

Note: Do not connect the device communications to the E2 controller.

1. Press the right/ left arrow key and go to Pr MM.000 then press . Select Reset 60Hz defs then press .

   Note: Pressing allows you to enter and exit parameter edit mode.
2. Press to return the drive into the No Action display.
3. Go to Pr 00.005 (Drive Config), then press . Select Preset, then press .
4. Set Pr 00.010 (User Security Status), then press . Select All Menus, then press .
5. Set Pr 06.004 (Start/Stop Logic), then press . Select 6, then press .
6. Set Pr 11.023 (Serial Address), then press . Select 2, then press .
7. Set Pr 11.024 (Serial Mode), then press . Select 8 1 NP, then press .
8. Set Pr 11.020 (Serial Reset), then press . Select On to reset communications.

   Note: The device will flash to On and returns to Off, press .
9. Set Pr 12.000 (Parameter mm.000), then press . Select Save Parameters, then press .
10. Press to return the drive into the No Action display.

    Note: The drive is now ready to communicate with the Supervisory controller and is ready for a test/run.

Model		**Max # of Instances**
1	SR	20
2	CXe	16
3	CX	16
4	BXe	16
5	BX	16
6	RXe	16
7	RX	16
8	SMF	No

STEP 2: Setting the Baud Rate in the Supervisory Controller

Gear icon > Configure System Properties > General System Properties

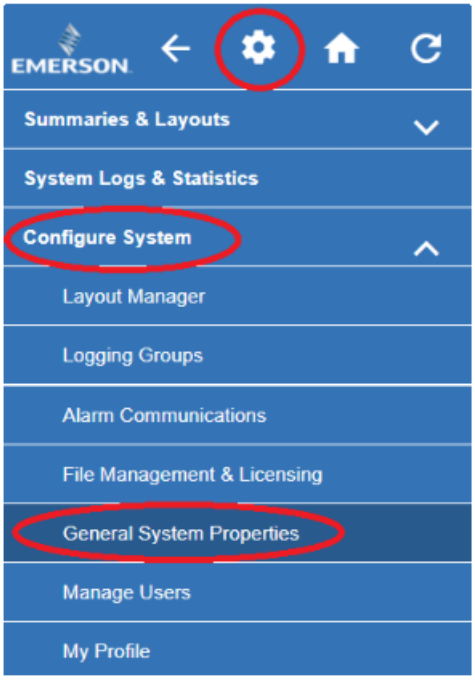

Figure 3 - General System Properties Tree Hierarchy

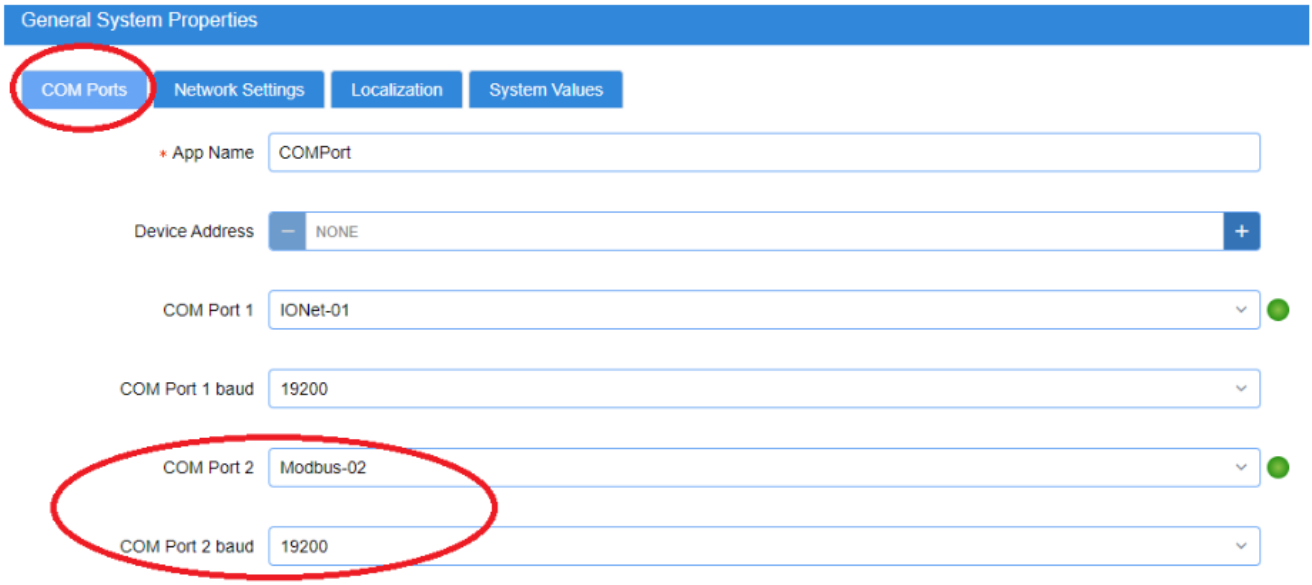

Figure 4 - Set the Baud Rate, Data Size, Parity, and Stop Bits

- Set the Com Port baud to 19.2

STEP 3: Wiring the M400 VFD Device to Emerson Controllers

Wire the device as shown below:

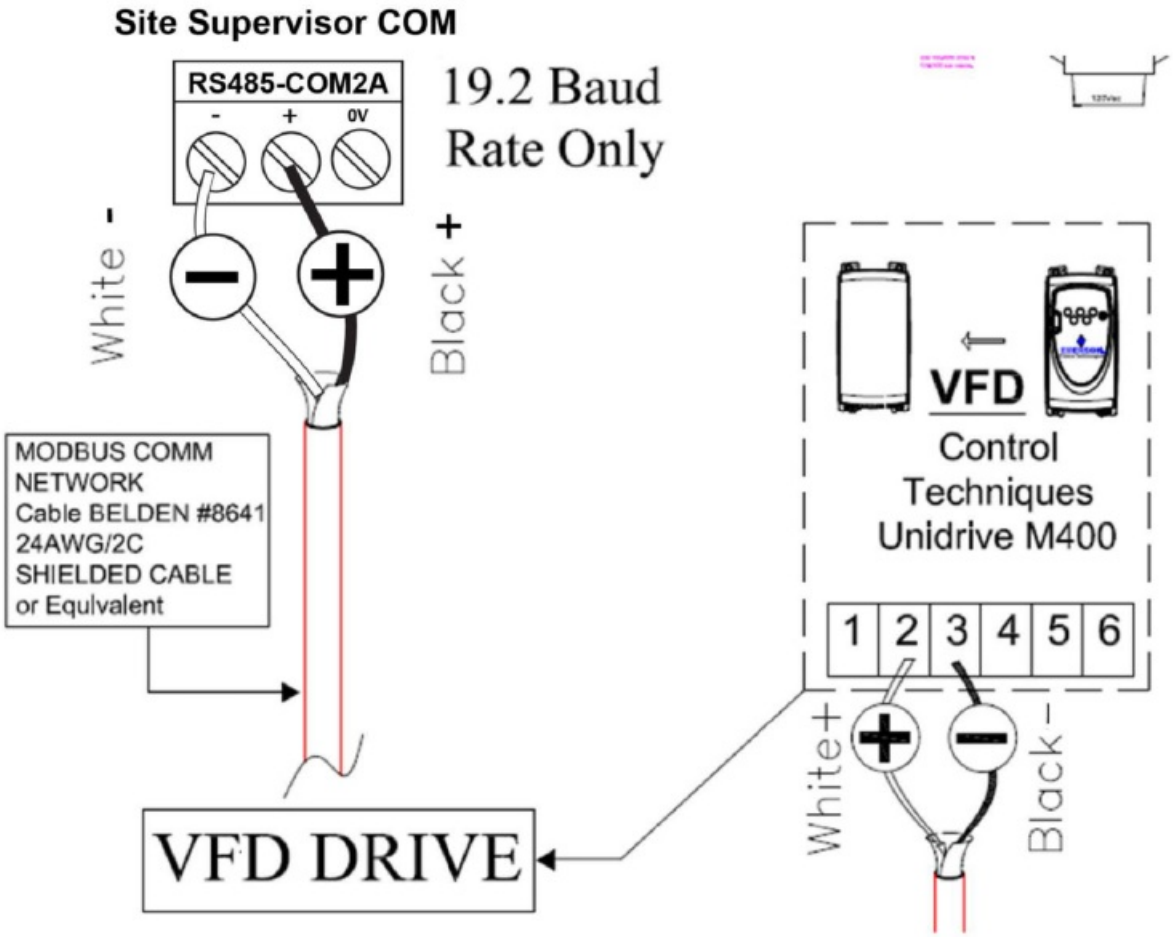

Figure 5 - Wire the M400 VFD Device to Site Supervisor

COM wiring is the REVERSE polarity of the Site Supervisor.

- + On the Com port goes to – on the VFD.
- – On the Com port goes to the + on the VFD.
- Do NOT connect the shield to any terminal on the controller or VFD. Connect the shield directly to Earth Chassis at the controller; clip and insulate the shield at the VFD end of the cable.
- If VFD is the last device at the end of the Com segment, terminate with 150 ohms between terminals 2 and 3.

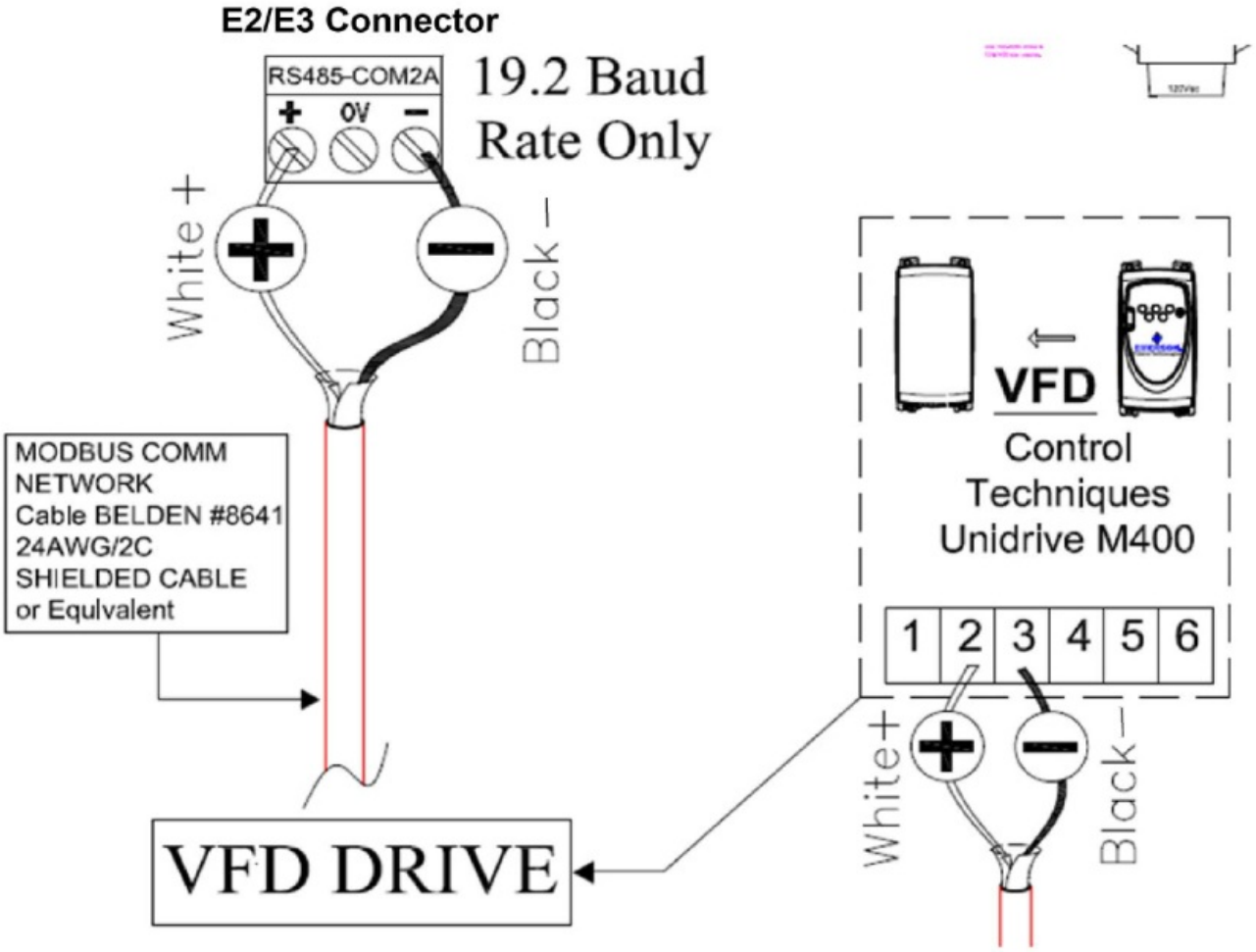

Figure 6 - Wire the M400 VFD Device to E2/E3

COM wiring is the same polarity as E2 and E3.

- + On the Com port goes to + on the VFD.
- – On the Com port goes to – on the VFD.
- Do NOT connect the shield to any terminal on the controller or VFD. Connect the shield directly to Earth Chassis at the controller; clip and insulate the shield at the VFD end of the cable.
- If VFD is the last device at end of the Com segment, terminate with 150 ohms between terminals 2 and 3.

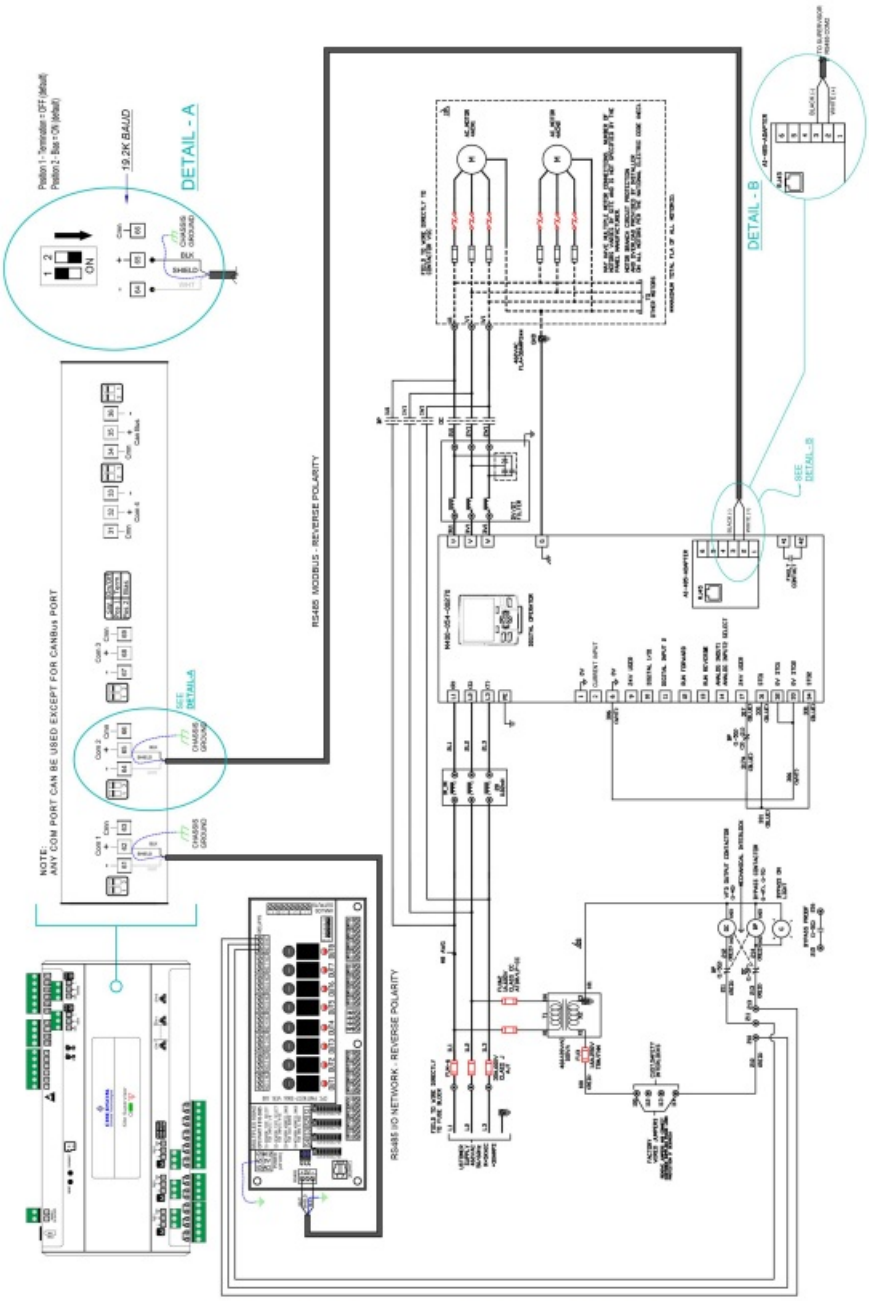

Figure 7 - Site Supervisor to M400 (MODBUS)

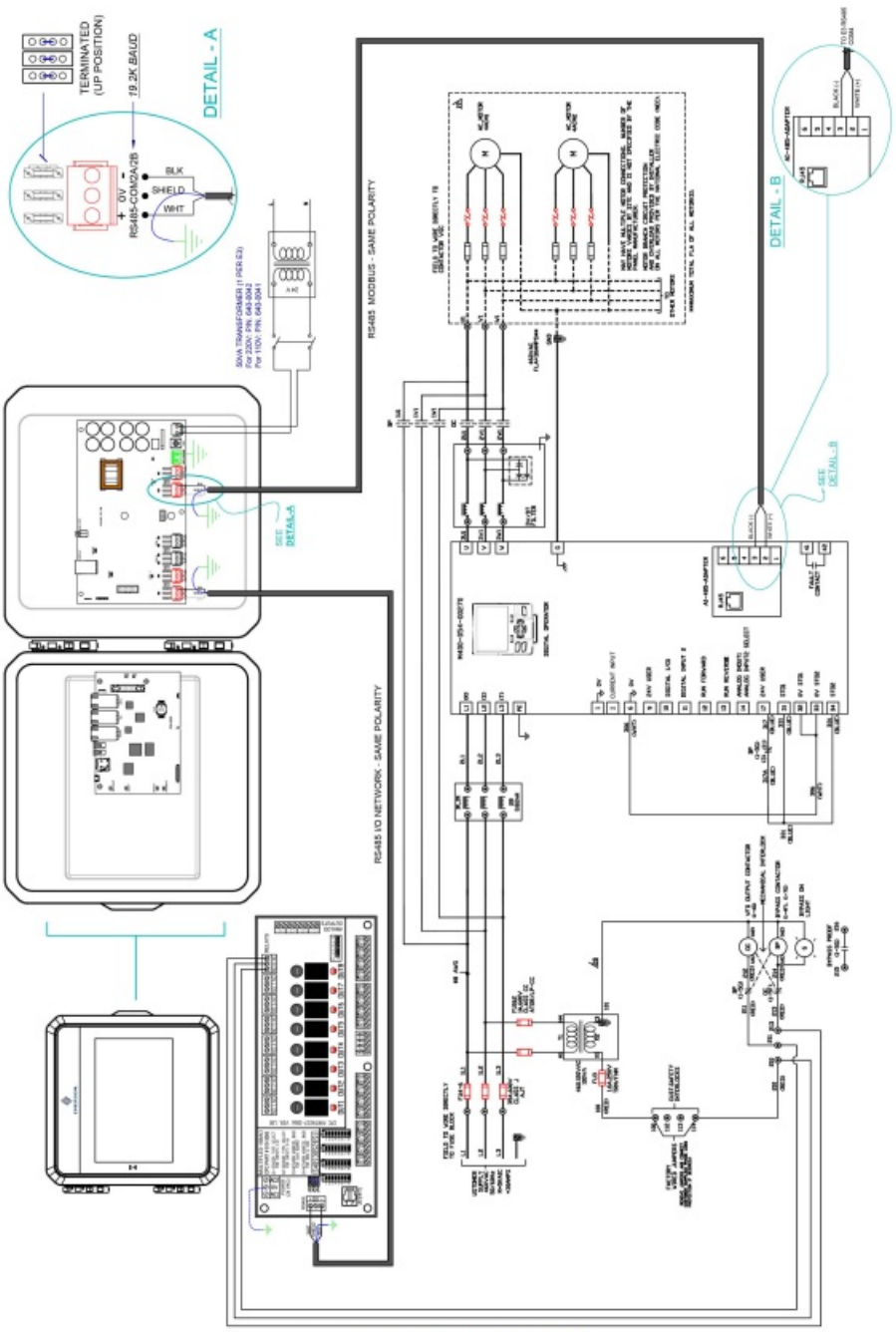

Figure 9 - E3 to M400 (MODBUS)

STEP 4: Adding the Device to the Supervisory Controller

1. From the home page click the control inventory icon  to go to the Control Inventory page.
2. From the HVAC drop-down list, select M400 from the list.

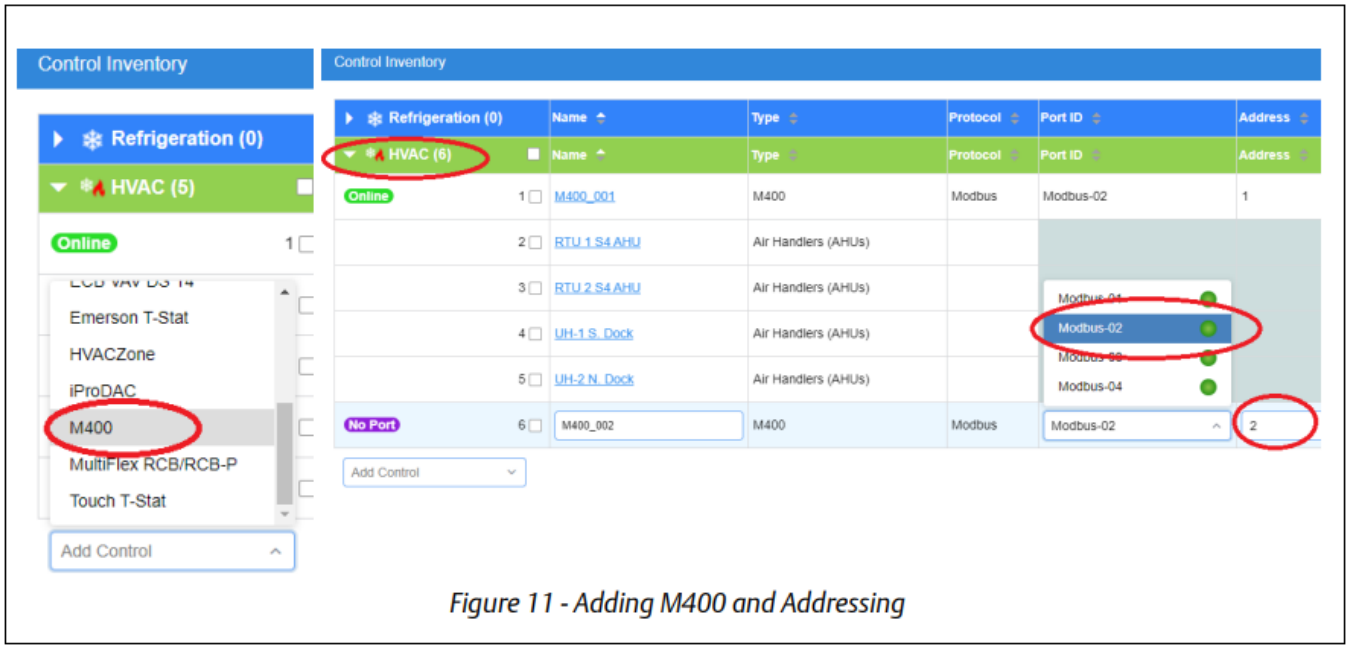

Figure 11 - Adding M400 and Addressing

STEP 5: Commissioning the Device to the Supervisory Controller

From the Control Inventory screen select the Modbus address for the M400 and click the checkmark  to save and start commissioning. (Best practices tip: set the Modbus number to match the connected Com Port and the Address to match the M400 addressing in STEP 1).

Drive Setup:

1. Click the M400 to go to the M400 setup page.
2. Go to the General tab.
3. Set CfgSyncAction on the to Write to Device.
4. On the Inputs tab, set DIRECTION to forwarding or Reverse. This verifies that the drive should run correctly.
5. Set RUN to OFF. This verifies that the drive should inhibit.

6. Inputs tab on the Details screen:

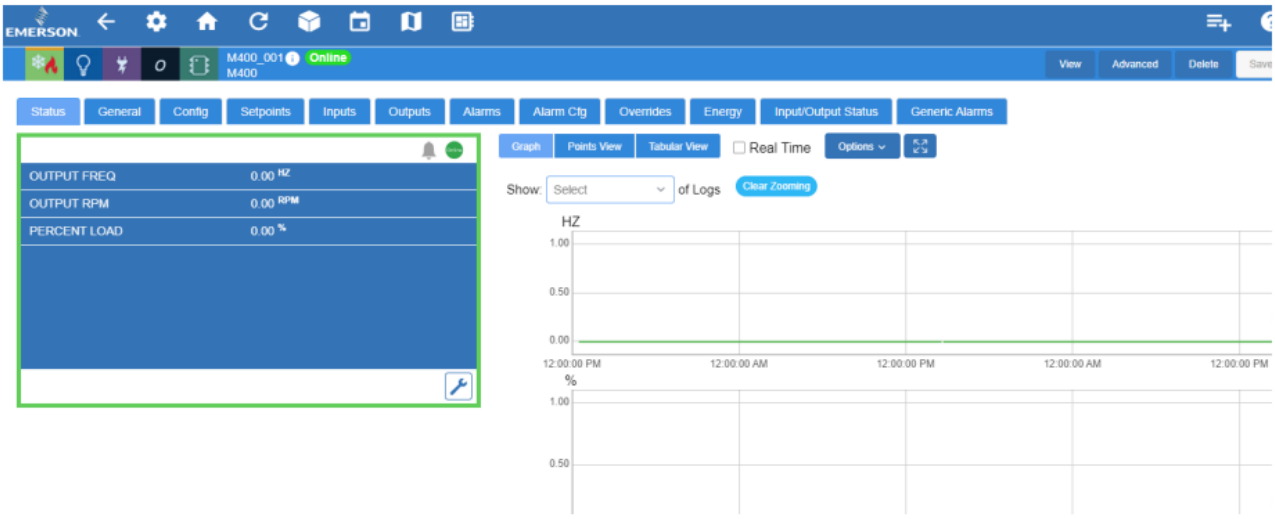

Figure 12 - Details Screen

7. Inputs tab on the Details screen:

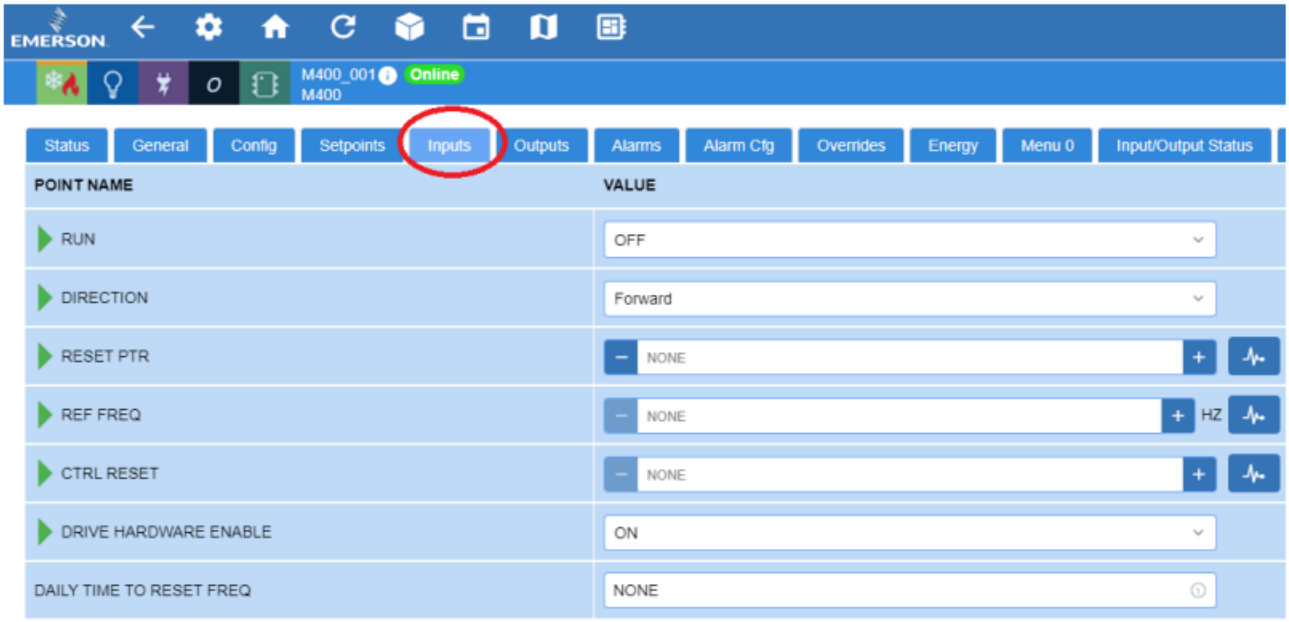

Figure 13 - Inputs Tab

8. Go to the Setpoints tab to set the values for MOTOR VOLT, MOTOR RPM, and MOTOR FLA from the motor plate of the device.

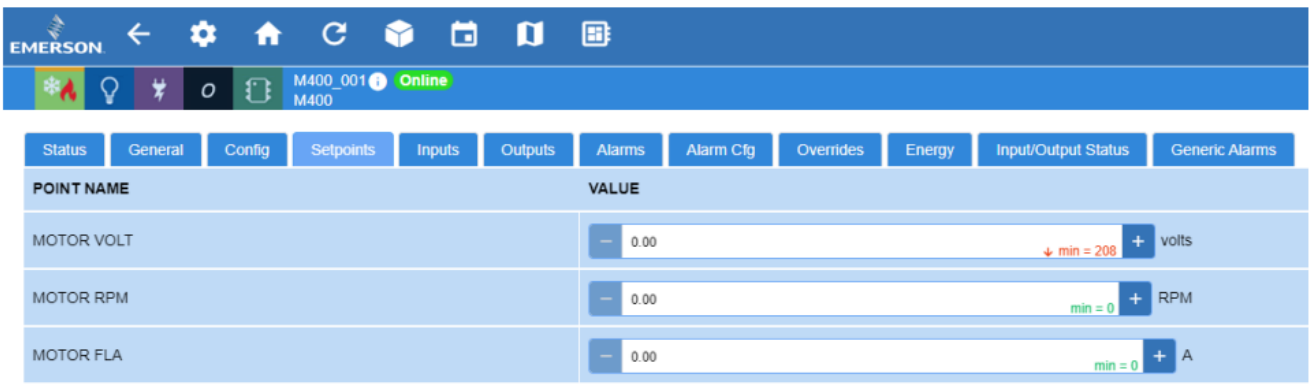

Figure 14 - Setpoints Parameters

9. Go to the Status screen and the device will appear online:

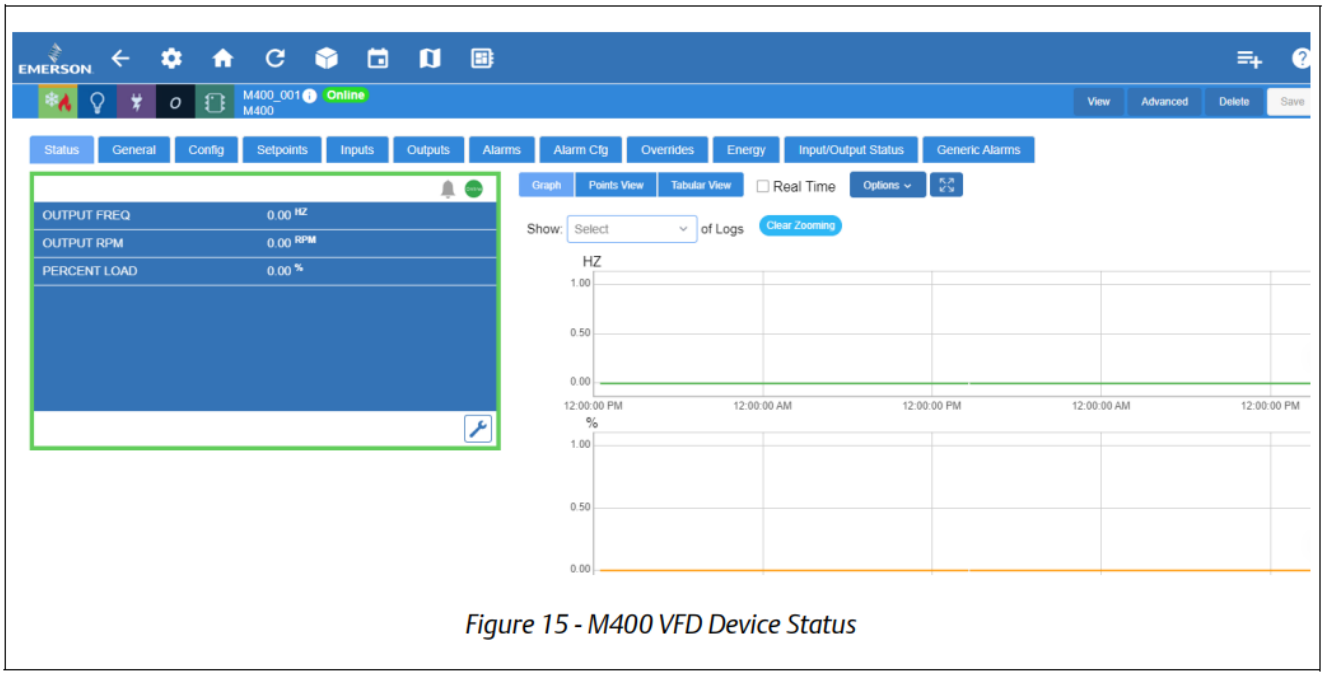

Figure 15 - M400 VFD Device Status

10. General tab screen Verify Write to Device is set (default).

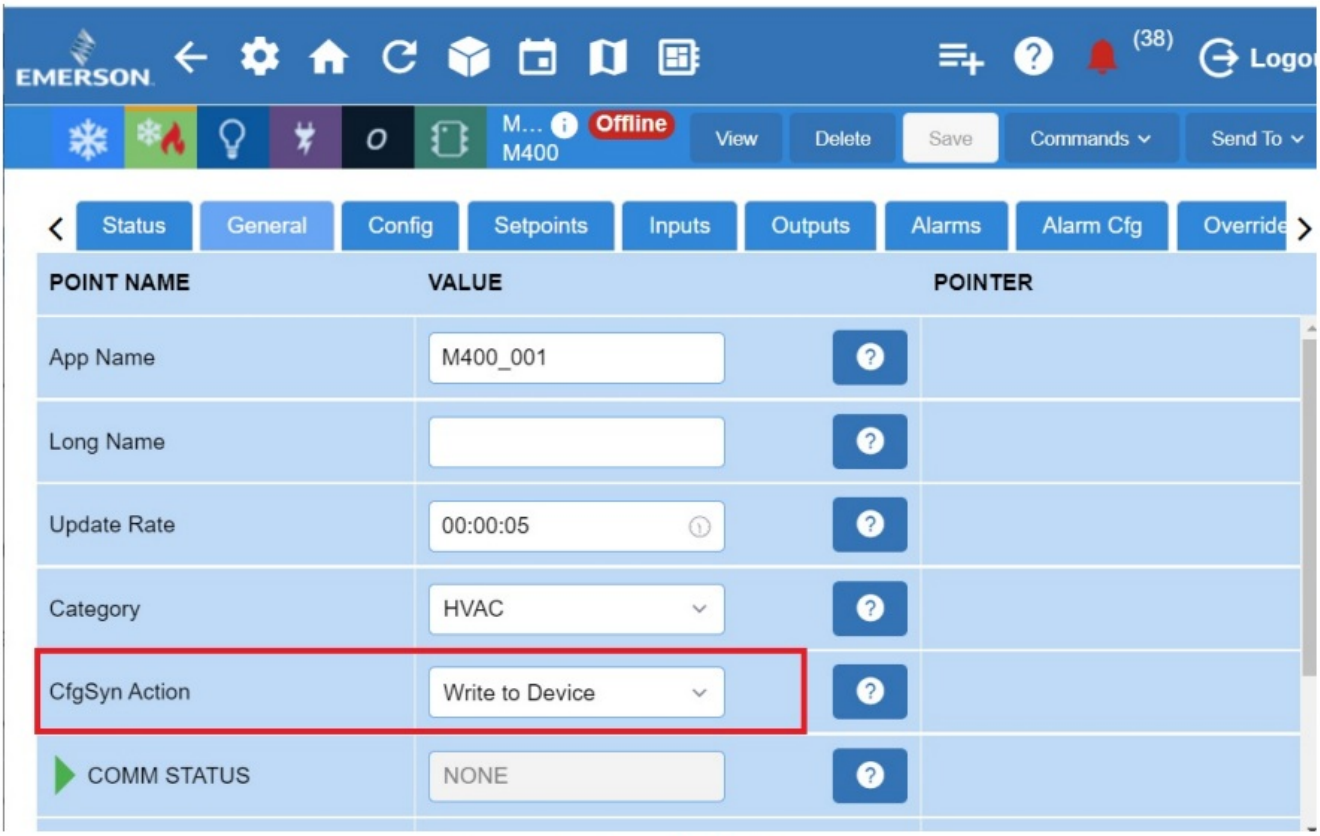

Figure 16 - General Tab Screen

11. From the Details screen, click Commands on the far right and select NVM_SAVE:

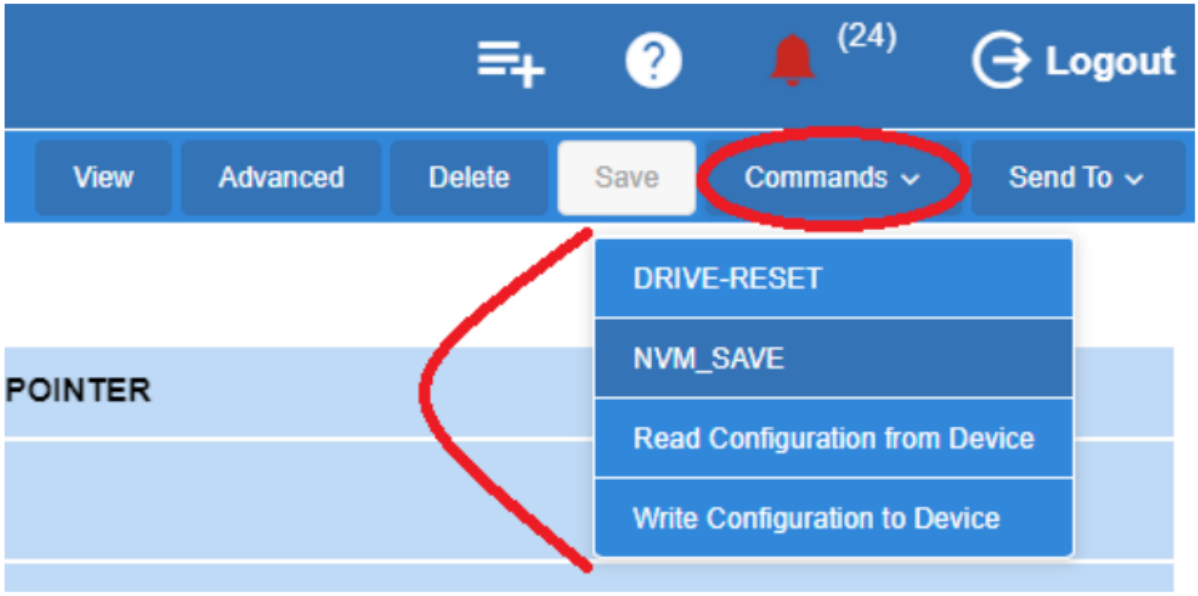

Figure 17 - Application Commands - NVM_SAVE

12. From the Details screen, click Commands on the far right and select DRIVE-RESET. The drive is now reset with the needed configuration.

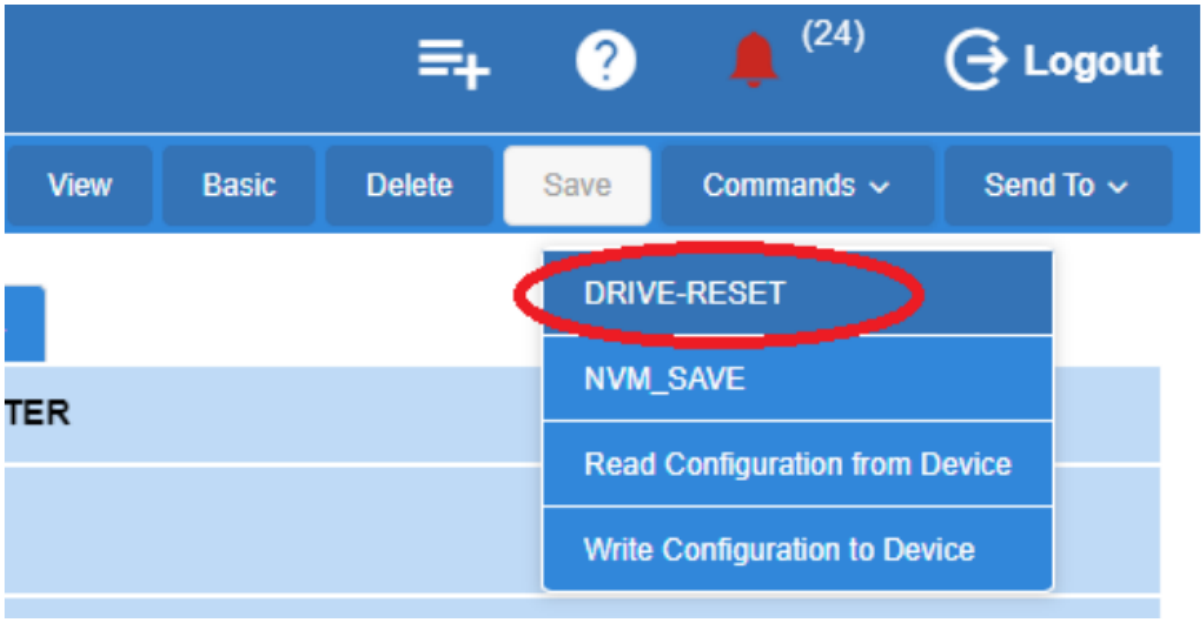

Figure 18 - Application Commands - DRIVE-RESET

STEP 6: Verification of Settings

1. After commissioning the new device, verify that the following values are set in the drive:
   - 0.009 (MOTOR_PWR_FACTOR) = 0.85 or the value that you set
   - 6.004 (Start/Stop Logic) = 6
   - 8.023 (Digital input 3) = 0.000

   The following parameters must be set up in the Inputs tab to run the drive.
   - RUN (ON)
   - DIRECTION (FORWARD, REVERSE)
   - REF FREQ (the speed setting of the motor)

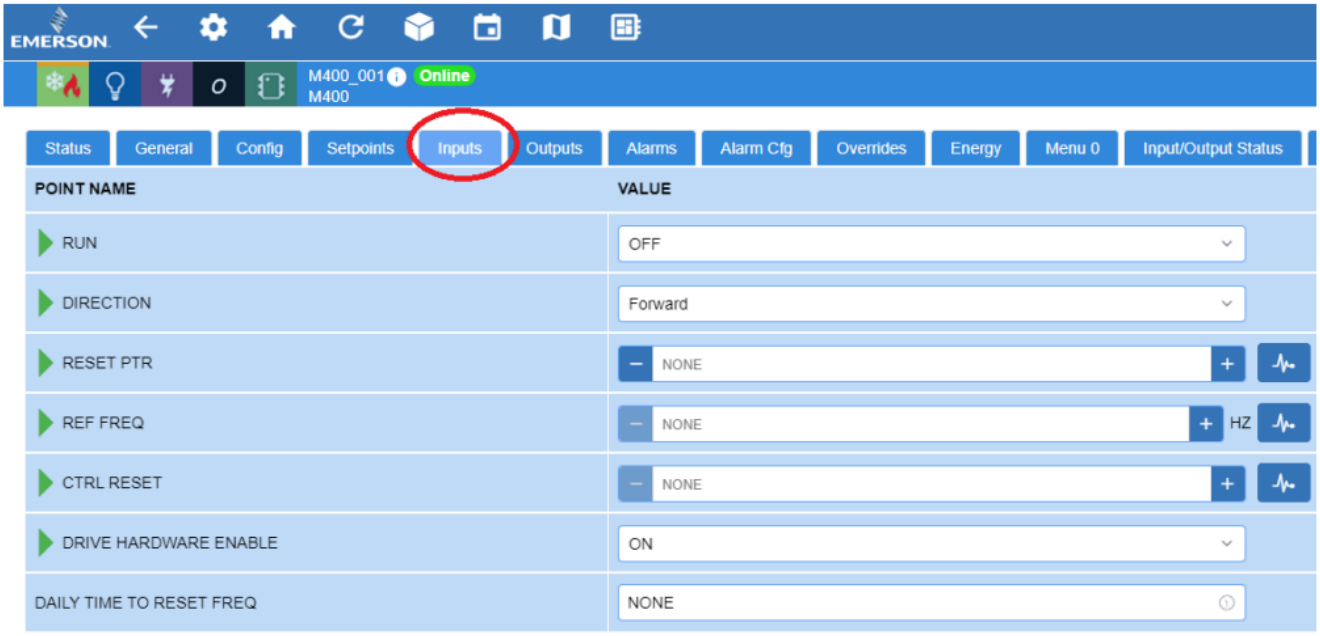

Figure 19 - Setting Up Inputs Tab

2. Use Table 1- Menu 0 Guide to verify values set in the M400 drive.

   Note: Table 1- Menu 0 Guide gives diagnostic information about the system. It allows you to double-check to make sure that the E2 controller sent the correct parameters.

   Table 1 – Menu 0 Guide

Menu 0 Pr	Description	Value to Write	Comments	Parameter	Type
1	Drive Configuration	Preset	Sets drive mode to Preset	11.	Mode
2	Serial Baud Rate	19200	Sets baud to 19200	11.	Mode
3	Serial Address	2	Set the address for each drive on the network.	11.	Mode
4	Serial Mode	81 NP	Set to match the mode of E2E	11.	Mode
5	Reset Serial Communications	Toggle ON/	Set this to ON / OFF to reset communications. Connects	11.	Mode
6	Motor Rated Current	See Motor	Set from the motor nameplate.	5.	Motor
7	Motor Rated Speed	See Motor	Set from the motor nameplate.	5.	Motor
8	Motor Rated Voltage	See Motor	Set from the motor nameplate.	5.	Motor
9	Motor Power Factor	See Motor	Set from the motor nameplate. (Use 0.85 if absent.)	5.010	Motor
10	Security / Parameter Access	Set to All Menus	Set to all Menus to see access Menu 1 to 22	11.	Access
12	STO 1 State	RO	0=disabled, 1=enabled	8.	Info
13	STO 2 State	RO	0=disabled, 1=enabled	8.040	Info

14	Reference Selected	RO	Shows reference selected. Hz desired.	1.	Info
15	Value of reference in rpm	RO	Shows reference in rpm.	1 1.069	Info
16	Hz sent from the controller	RW	Can see the speed sent from the controller here	1.	Info
20	Preset Speed 2 (Manual)	RW	Use this to set manual f-test speed.	1.	Manual
21	Preset Selector	0 or 2	Use this to turn on the manual f-test speed.	1.	Manual
30	Current Trip (Trip 0)	RO	Gives a code for the current trip. (Trip 0)	10.020	Trip
31	Trip 1	RO	Previous trip – before Trip 0	10.	Trip
32	Trip 2	RO	Previous trip – before Trip1	10.	Trip
33	Trip 3	RO	Previous trip – before Trip 2	10.	Trip
34	Trip 4	RO	Previous trip – before Trip 3	10.	Trip
35	Trip 5	RO	Previous trip – before Trip 4	10.	Trip
36	Trip 6	RO	Previous trip – before Trip 5	10.	Trip
37	Trip 7	RO	Previous trip – before Trip 6	10.	Trip
38	Trip 8	RO	Previous trip – before Trip 7	10.	Trip
39	Trip 9	RO	Previous trip – before Trip 8	10.	Trip

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Documents / Resources

	EMERSON M400 Supervisory Controller Setup [pdf] User Guide M400 Supervisory Controller Setup, M400, Supervisory Controller Setup, Controller Setup

References

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- Climate Technologies Worldwide | Emerson US
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