Symbio210 or UC400 Field Application for FC/BC/UV with CSTI FAQ

Note: The instructions below are for converting a Symbio 210 to use with UC400 configurations for FC/BC/UV. If you are field installing a UC400 on a unit with CSTI, the same wiring requirements apply for ECM fan control.

Where do I get FCU/BC factory style programming?

- You will need to first create an offline configuration for a UC400 and select all pertinent drop downs as is traditionally done for the unit type. (NOTE: not all unit configurations will be supported by the Symbio210 due to hardware limitations)
- For more details see: How to Convert a UC400 Configuration to Symbio 210 Configuration

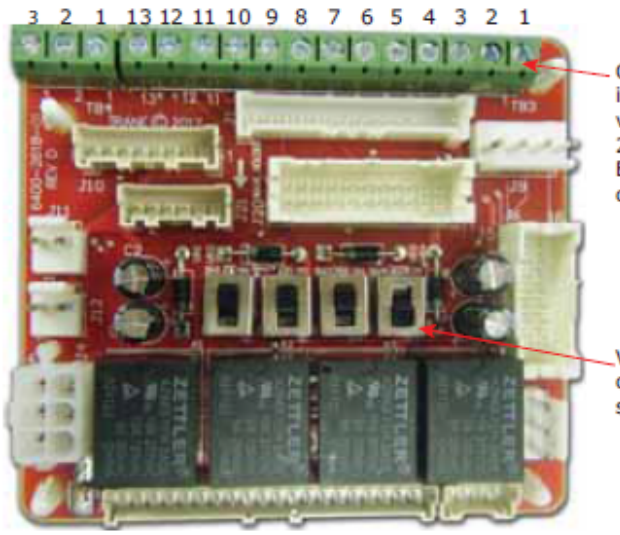
Why doesn't my fan turn off when using IMC control with a S210?

- The S210 IMC link currently handles data a little differently than the UC400 IMC comm does which does not allow for an AO value of -1 to be used for off. Instead a value of -.01 must be used to signal an off state.
- When utilizing the IMC link for fan control replace the factory "ECMFanOutput" TGP2 routine in your configuration file with the one that is attached to this HUB. This change can be made within the .UC400config or the .S210Config

How do I wire a Symbio210 to a CSTI board?

- For binary outputs going to the CSTI only wire to the BO and not to the 24V pin on the Symbio210.
- CSTI board will be added to a future release of CSET for wiring details.
- CSTI, Terminal block

Figure 56. CSTI adapter board and field connections



1. VSP 10V
2. VSP 0–10V
3. VSP DC COM

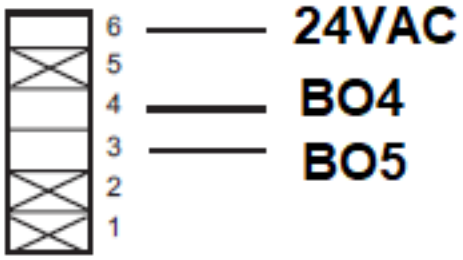
1. 24 Vac B (hot)
2. 24 Vac Y (gnd)
3. High
4. Medium
5. Low
6. V1Op/Cooling
7. V1Cl (not std)
8. Not used
9. Not used
10. V2Op/EH1St/Heating
11. V2Cl/EH2St (not std)
12. Damper Open
13. Dmp Cl (not std)

Refer to *Symbio 210 and CSTI wiring deatil.pdf* for specific details. **How do I utilize all 5 BO?**

- The field supplied Symbio210 includes the actuator wiring harness that will be required to be used as a pigtail to utilize BOs 4 and 5.

BO Triac max load is 0.5A @ 24VAC = 12VA

Triac switching to Ground



How many expansion modules can I have?

Tracer TU V11.5 will increase the Symbio 210 terminations to 58 (14 onboard + 44 additional via XMs = 58 total)

- The table below is the number of hardware points added by each expansion module and will count against the "44 additional"

Expansion Module	Hardware Points
XM30	**4**

XM32	**4**
XM70	**19**
XM90	**32**

- Note: Total software points remains unchanged: What is the Maximum Number of Points in a UC210/400/600 and Symbio210
- This capability was added in Tracer TU V11.5 Tracer TU v11.5 SP1 Release Notes

What is the power budget for field applied controls on a CSTI unit?

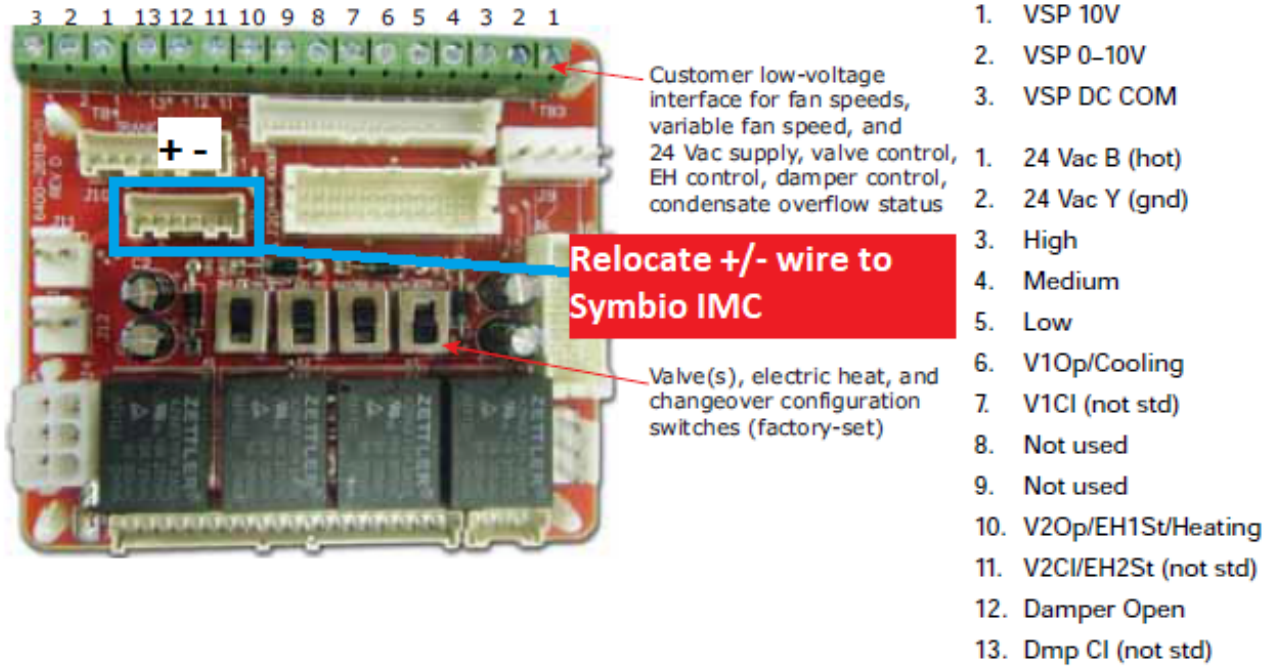
FCU/BC units are provided from the factory with a ***50VA transformer***. (Is a transformer provided when selecting a CSTI?)

- If the unit includes factory installed electric heat the unit will instead have a 75VA transformer.
- The ECM engine module installed for fan control ***requires 7.2VA to be budgeted for it.***
- For calculating Symbio210 VA requirements see tables 5 and 6 on pages 14 and 15 of the attached Symbio210 IOM.
- IMC power is still the same as the UC210 and will only support 2 XM30/32 modules without the addition of a DC power supply. XM70 and XM90 should have their own transformer.

How is the ECM module controlled on FCU/BC?

- The Symbio210 will connect to the ECM engine module VIA the **+/- comm wires of the IMC link only**. **(Important: The Engine Module is powered via the CSTI board)**
- **The wire attached to the ground spade on the CSTI must be relocated to TB3-1. See attached Symbio 210 and CSTI wiring detail, notes 2 and 4.**

Figure 56. CSTI adapter board and field connections



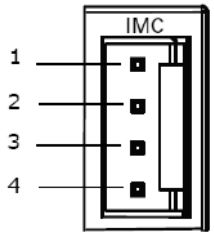
Note: If factory wiring harness can't be repurposed, chose **one** of the following wiring harnesses (the IMC connections can remain on CSTI if a new harness is added):

- 502629800001 - 9" HARNESS,ECM IMC LINK UC400B, 4 conductor (need to remove power)
- X19070636020 - 3" wire harness double housing, 3 conductor
- X19051430020 - Voyager III 44", 4-wire cable harness, remove the 5 pin connector and replace with a phoenix connector (need to remove power)
- X19051278010 - Voyager II, Odyssey, and Precedent 44", 4-wire cable harness, remove the 5 pin connector and replace with a phoenix connector (need to remove power)

IMC Harness Pins

The IMC harness connector provides communication and power among devices on a link. It is important to know the function for each of the IMC pins. In some cases, the red +24 Vdc wire that provides power may need to be removed.

Figure 6. IMC Harness Pins



IMC Pin	Function	Wire Color	IMC Terminals
1	Comm (–)	Gray	–
2	Comm (+)	Blue	+
3	Ground	Black	⏚
4	+24 Vdc	Red	+24 Vdc

- For any custom programmed application utilizing a Trane ECM motor and module both TU and the PPS configurator tool have been modified to allow these points to be configured for a Symbio210.
- Upon initial connection of the S210 to the Engine Module the comm will show to be down on the "Controller Status" tab in Tracer TU. To correct this the engine module address will need to be softset. Information on how to do this can be found here: ECM module is not communicating with UC400 or Symbio 210. IMC comm down. Unable to Softset ID
- For more information on the ECM Engine Module see the attached IOM (UNT-SVX19A-EN 2011 03 ECM Motor).

  Alternatively, you can select fan type as Non-Trane ECM:

  Use an AO (2-10 VDC) for fan speed which is wired to the CSTI VSP 0-10 V. Do not move IMC +/- wiring from CSTI to Symbio 210 in this case.
  - The ground spade on CSTI must still be moved to TB3-1. Symbio 210 power can be provided from CSTI. TB3-1 to ground, TB3-2 to 24 VAC
  - Note: Below 2 VDC is OFF on CSTI
  - non-Trane ECM can be selected in TU Equipment/Configuration.
  - For non-Trane ECM, the Supply Fan Motor Signal Output point reference must be changed from IMC/99 to an available analog output (AO2), change type to voltage (2-10)
  - Also note that with factory programming, supply fan output value of 0% reflects fan low speed (2 VDC), -0.1% reflects Off.
  - 0% value at the output will result in the Supply Fan Speed Status reporting 33% (configured Fan Capacity Low Limit)
  - Supply fan speed range is 33% to 100%. Overriding Supply Fan Speed Request to 66% will result in an output voltage of about 6 VDC
  - 20 second ramp rate can be selected when configuring AO to slow down fan ramp up.
- Use a field supplied CT (current transducer) wired to a BI on the Symbio 210 for fan status.

How do I mount the Symbio210?

- The field supplied Symbio210 with no actuator is NOT DIN mountable and will not fit inside the the Units factory controls enclosure.
- Potential enclosure options:

A. Trane VAV Enclosure 501897940100 (see page 4 of VAV metal enclosure attachment):
   1. No DIN
   2. Top and Bottom are open when cover removed
   3. Wiring only comes in from sides
   4. Basic sheet metal finish (generic)
   5. 12"X7"X4.5"

B. Trane Small Enclosure X19091354010:
   1. Cleaner Look (Trane branded)
   2. More knockout options (top, bottom and sides)
   3. Has DIN that would need to be removed
   4. 10"X7"X4"

- Duct or ceiling mount per local codes.

Attachments

1. Symbio 210 IOM BAS-SVX084B-EN_11242021.pdf.
2. Expansion Module IOM BAS-SVX46E-EN_03182020.pdf.
3. Small Enclosure X19091354010.pdf.
4. VAV Metal Enc BAS-PRD043A-EN_06152021.pdf.
5. Symbio 210 and CSTI wiring detail V2.pdf.
6. UNT-SVX19A-EN 2011 03 ECM Motor.pdf.
7. ECMFanOutput.tgp2.zip.