

Upgrading a VersaTenn III controller with the Synergy Micro 2 Controller



Introduction

Synergy Controller is Tidal Engineering's® line of Environmental I Test Chamber Controllers which and are designed to provides state-of-the-art usability and operating efficiency.

Synergy Controllers Feature:

- > Color touch screen
- > Ethernet, RS-232 and GPIB communications
- > Built in Data logger and Data Acquisition, Up to 64 T-type thermocouples
- > Built in Web Server for remote control
- > Compatible with LinkTenn32 software
- > Built in USB port compatible with USB Disk drives for data logging and program transfer.

The Synergy Micro 2 was specifically designed to field retrofit a VTIII equipped test chamber. This Synergy Controller application note describes the retrofit.

Application Note 123 describes the installation of the Synergy Nano in a VersaTenn III equipped environmental test chamber.

The three installation steps are as follows

- I. Removing the existing VersaTenn III (VTIII) Controller (See Figure 1)
- II. Installing the new Synergy Controller (See Figure 2).
- III. Configuring the Synergy Controller
- IV. Performance Verification and Controller Backup

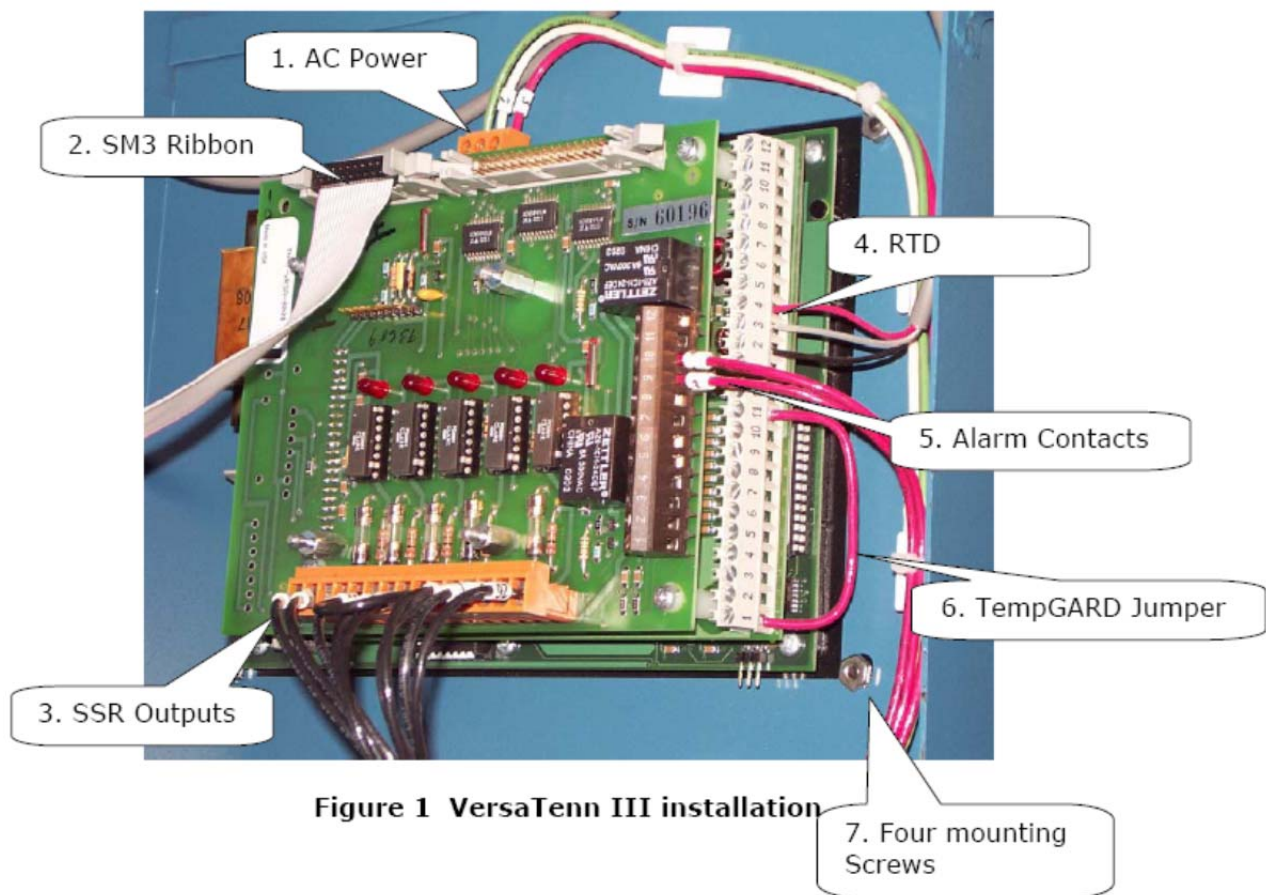


WARNING! Dangerous Voltages

Make certain power has been disconnected from the chamber before performing any of these steps.

Step I - Removing the existing VersaTenn III Controller

1. Remove the cables from the back of the VTIII.
2. Remove the four screws holding the controller in place.
3. Pull the VTIII out the front of the chamber.



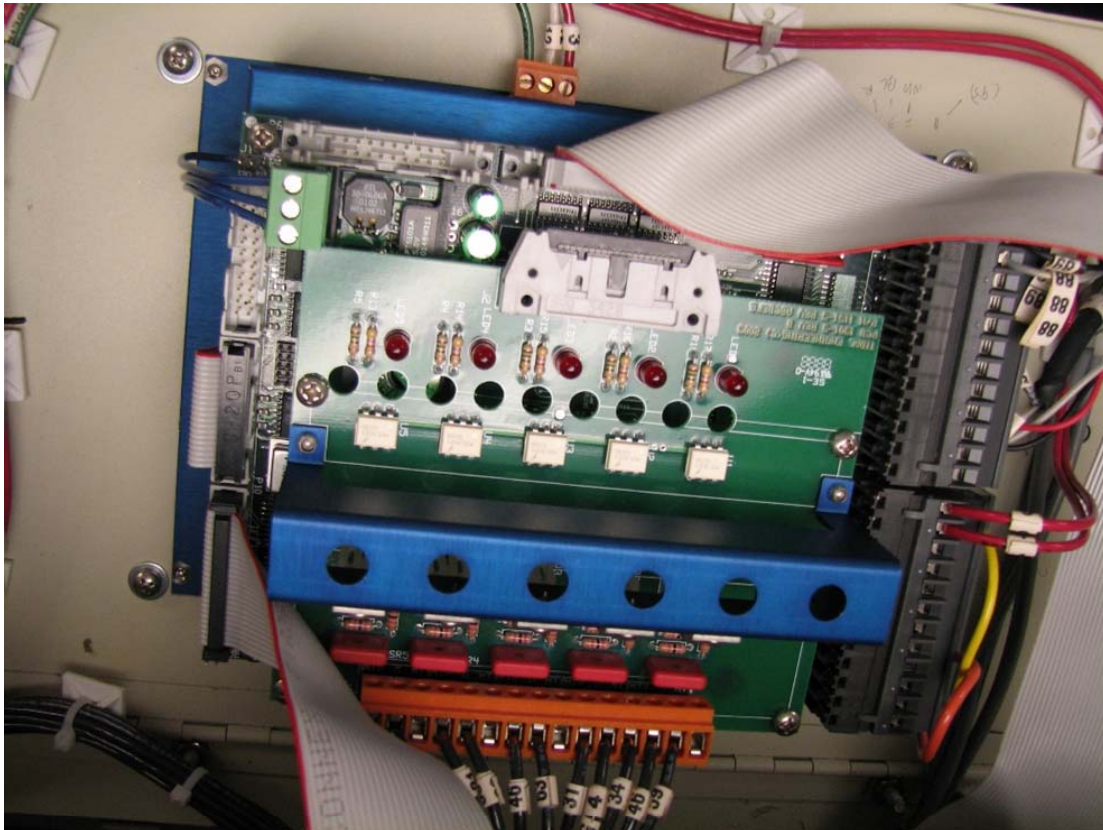
Step II - Installing the new Synergy Controller (See Figure 2).

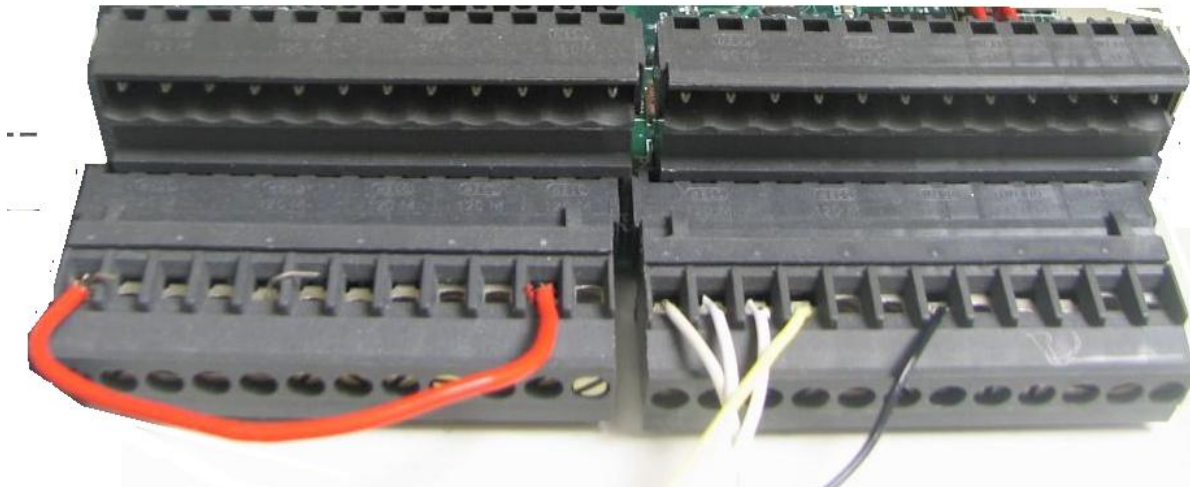
1. Place the Synergy Controller bezel on the Synergy Controller on the front panel from behind the panel.
2. Place four 8-32 X 1/2" mounting screws from inside the chamber into the four threaded holes in the back of the controller (Item A).



Figure 2 Synergy Micro 2 Installation

3. Plug the Solid State relay connector into the back of the Synergy Controller, Triac board J1 connector.
4. Connect the 34-position ribbon cable from the 12-Channel Triac board 1SM to Olympic Board connector P5.
5. Connect the optional Event board to the Olympic Board connector P6
6. Connect the GPIB cable to the Olympic Board connector P10
7. Connect the RS-232/RS-485 communication cable to the Olympic Board connector P8





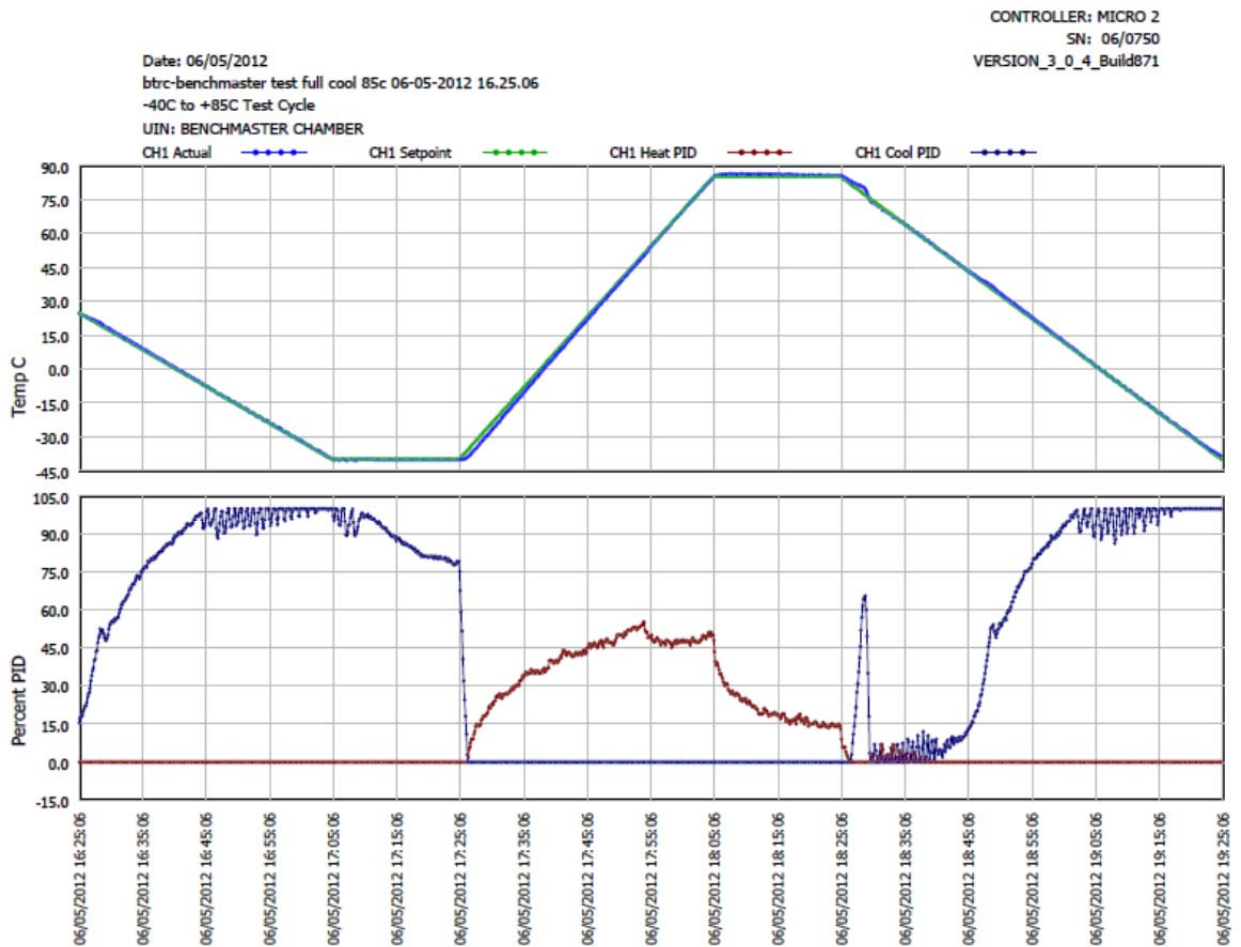
8. Connect the RTD Temperature sensor to the Olympic Board connector P2.
P2-Pin 2 White
P2-Pin 3 White
P2-Pin 4 Red
9. Wire the Humidity sensor (optional) to the Olympic Board connector P2 .
P2-Pin 1 White (signal 0-5 VDC, 0 - 100% RH)
P2-Pin 7 Black Ground
10. Jump the Temp Guard input to the Olympic Board connector P1.
P1-Pin 1 to P1-Pin 11
11. Wire the Alarm wiring to the Olympic Board connector P3.
Connect the Wire marked 3 to P3-PIN 8.
Connect the Wire marked 4 to P3-PIN 9.
12. Plug the AC Power connector into the Synergy Controller.

Step III - Configuring the Synergy Controller

1. Confirm all connections are correct and secure.
2. Connect power to the chamber.
3. Confirm that the Synergy Controller LCD displays the boot process, the Synergy logo and finally the MAIN screen.
4. Go to the SETUP screen and select the Chamber Setup folder.
5. Select change and select the chamber configuration. For VTIII Temperature/Humidity Chambers, select the Generic Temperature-Humidity Selection. For VTIII Temperature only configurations select the Retro Temp Only configuration.
6. Press Apply.
7. Press the reset button on the front of the Synergy controller.
8. When the controller reboots, select OK at the first window and select OK at the second window.

Step IV – Performance Verification and Backup

1. Setup the logging system to record the transient performance of the chamber and then chart the data to evaluate the tuning. Take a look at page 25 of the application note “App_Note_85_Synergy_Controller_Logging_Features_A.pdf” for our logging system setup recommendations. See the example plot below.
2. It’s good practice to backup the controller settings to the controller’s local Flash Disk and to keep a copy in a safe place off the controller in case you want to audit the controller settings or configure another identical chamber. Application Note 88 that describes this procedure.
“App_Note_88_Synergy_Controller_Backup_Restore_and_Disaster_Recovery_Features_B.pdf”



CONTROLLER: MICRO 2
SN: 06/0750
VERSION_3_0_4_Build871

Date: 06/05/2012
btrc-benchmark test full cool 85c 06-05-2012 16.25.06
-40C to +85C Test Cycle
UIN: BENCHMARKER CHAMBER

Name _____ Signature _____ Date _____

Appendix A Troubleshooting

If the controller shows the following Alarms when started, follow these steps to correct them.

1. TempGard.
Connect a jumper or a normally closed external alarm contact (Contact opens on fault) between P1, Pins 1 and 11.
2. Bad Sensor Channel 2
Connect a 0-5 V humidity Signal or a jumper if humidity is not monitored between P2, Pins 1(Input 1) and 7(gnd).
3. Bad Sensor Channel 1
Connect a three wire 100 Ohm pt. RTD on P2 Pins 2,3 and 4. 2 and 3 are common.

Once these inputs are connected, you can select each alarm from the \Alarms list and press the Ack Alarm button to clear the alarm.

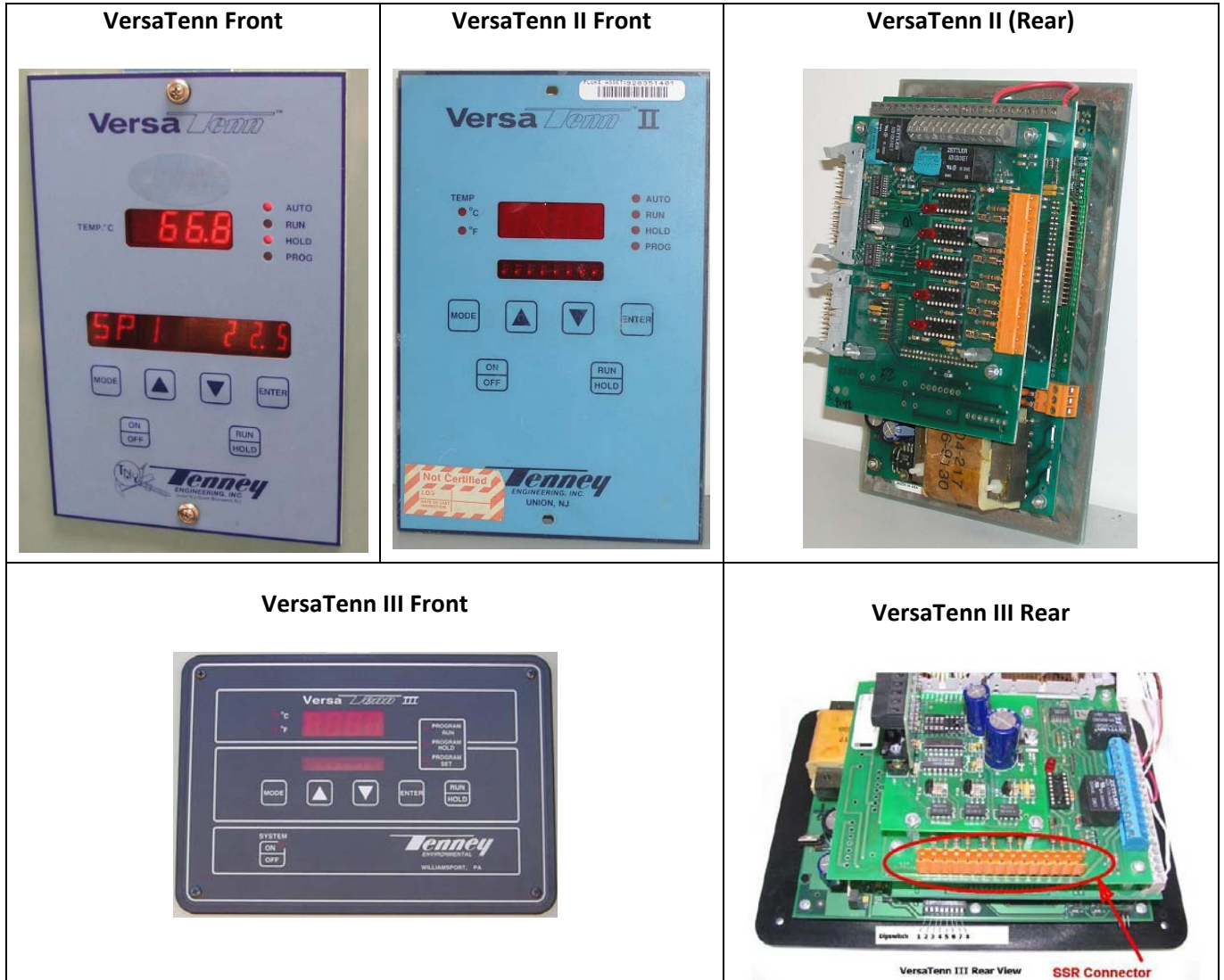
Time	Alarm	Ack	Cleared
11:26:26 AM	TempGard	No	No
11:26:32 AM	Bad Sensor Channel 2	No	No
11:26:33 AM	Bad Sensor Channel 1	No	No

Alarm, Multiple Alarms 30.5 C 31.4 %

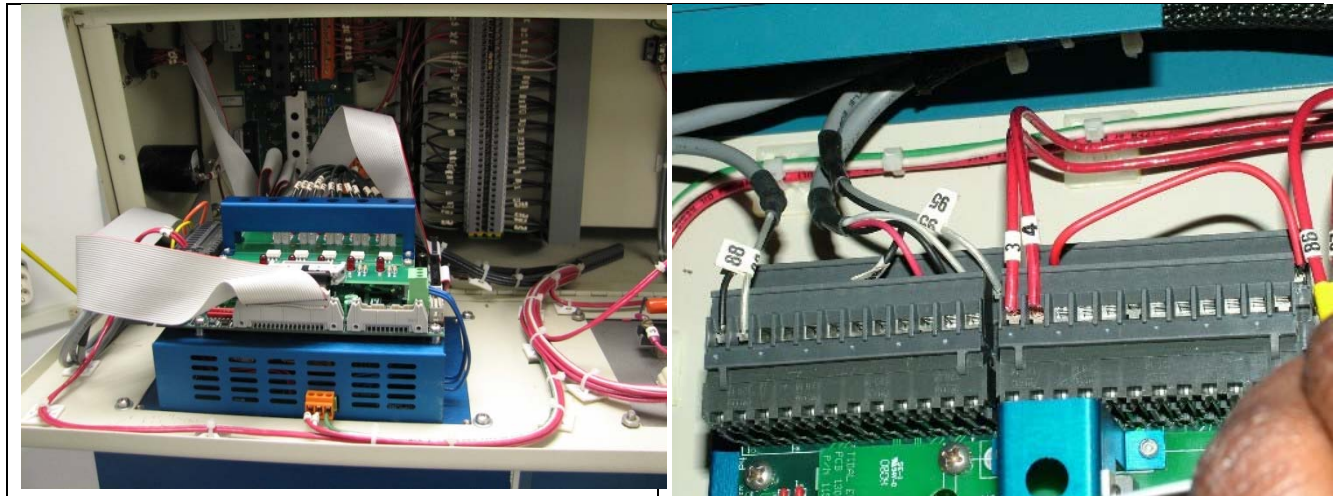
4. Verify that the correct humidity channel calibration is set on Analog input 1. Select VSLA-CH1 for HMM30C sensors. Select Other for HMM100 Sensors and other temperature compensated sensors.

Appendix B Photos

Identifying your controller



Additional Photos

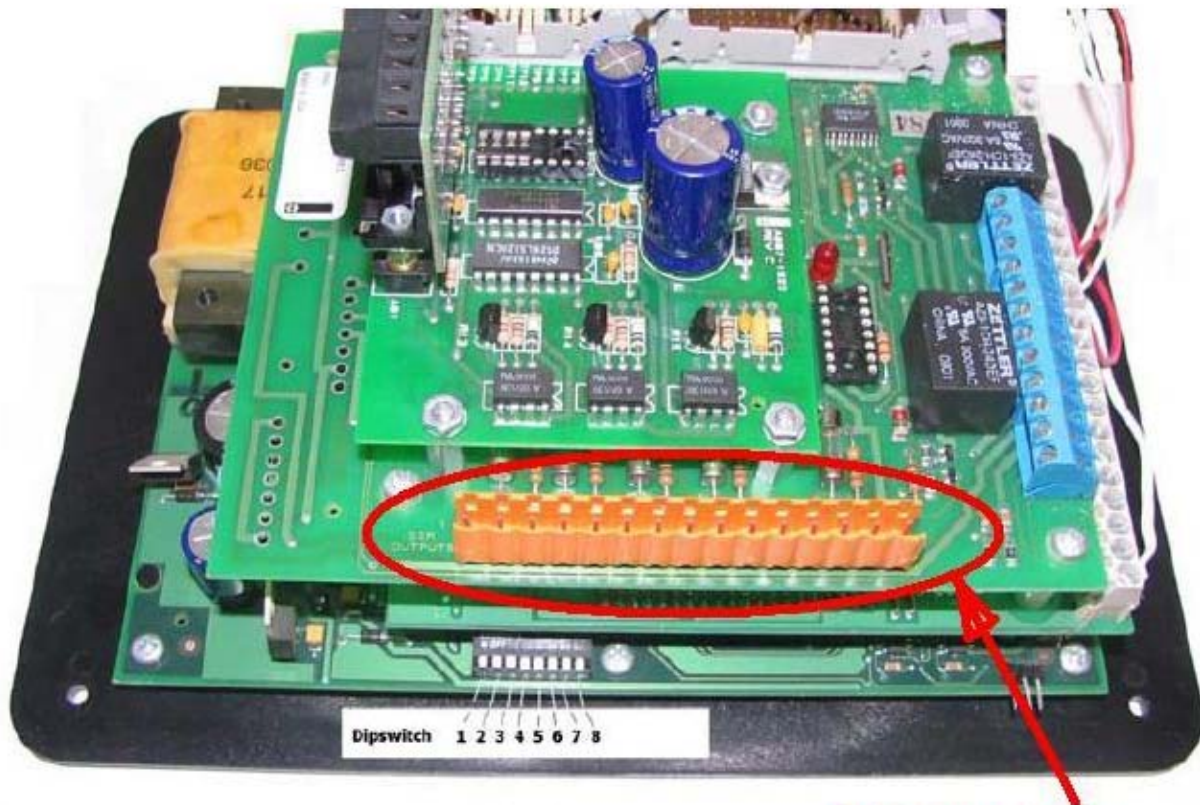


Appendix C VersaTenn III SSR Outputs

In addition to the Synergy Controller, a 5-Channel output board (P/N TE1151-5) may be required for a Temperature/Humidity retrofit. The 5-Channel Triac SSR Board is required if the legacy controller's humidity outputs are currently connected directly to the VersaTenn.

See the digital photo below to locate the SSR connector on the VersaTenn III.

If this connector is wired in your installation, the TE1151-5 output board can be mounted on the back of the Synergy controller to accommodate the SSR connector without any wiring changes.



VersaTenn III Rear View

SSR Connector

Appendix D Synergy Controller Features and Benefits

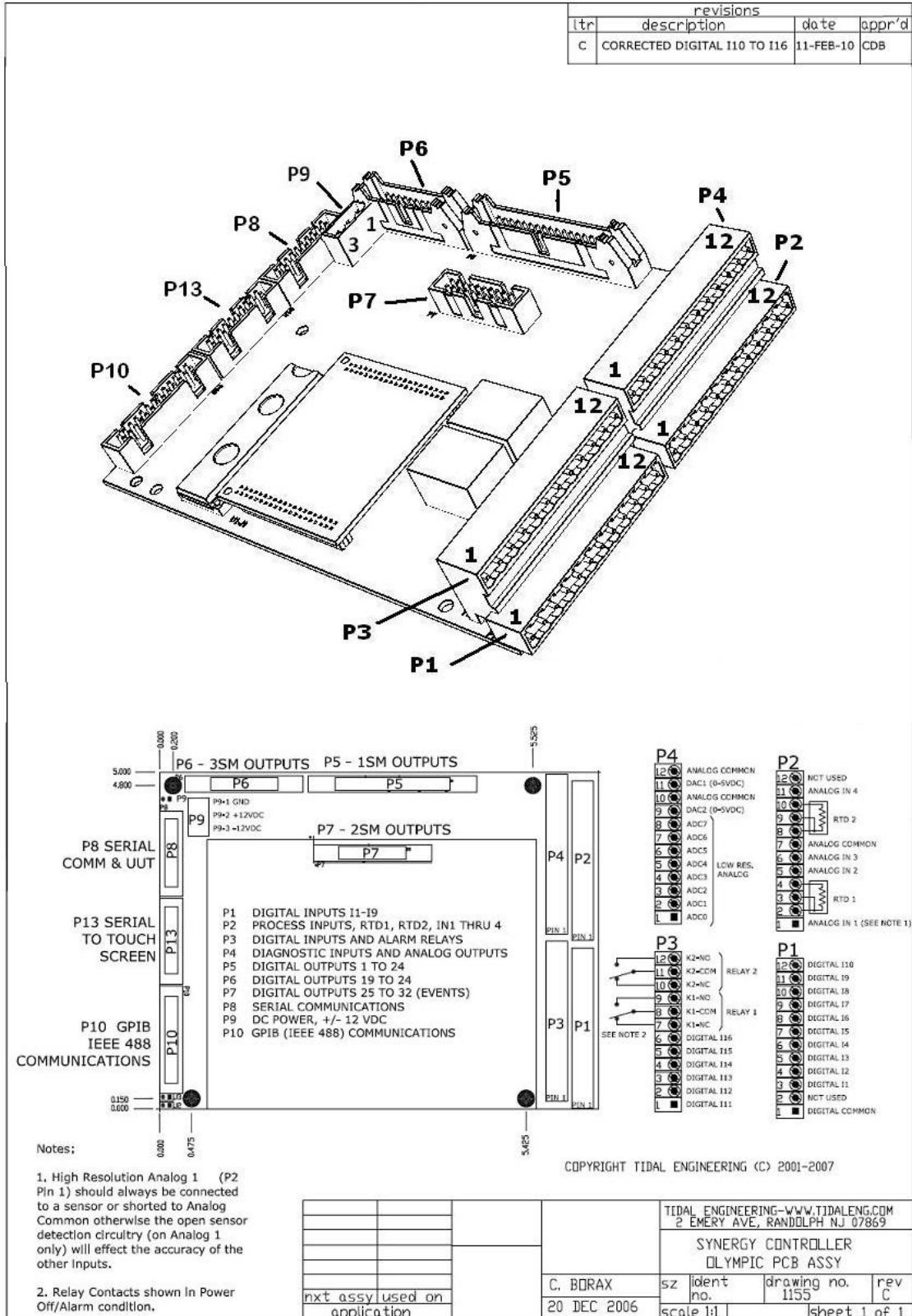
You can access our YouTube channel to see some of the unique features and benefits of our controllers here: <https://www.youtube.com/channel/UCxJF1O5aUDzcpdICCoCKh6w>

In addition, use the links below to download information regarding these other unique and powerful features:

- Generate consistent plots with Synergy Log Files using these Excel Shortcuts.
<http://www.tidaleng.com/appnotes/SCAP60.pdf>
- Setup multilevel passwords to control access to your Synergy Controller touch screen
<http://bit.ly/1gCGJZZ>
- "Drag and Drop" programs and logs between your PC and your test chamber w/Synergy Controller FTP server <http://bit.ly/I6DzEO>
- FREE! WebTouch Remote(tm) - Remote control your test chamber's Synergy Controller Touchscreen with a web browser. <http://bit.ly/1eiTET1>
- Want e-mail and text messages from your environmental test chamber? Stay on top of your tests w/Synergy Controller. <http://bit.ly/HWpU3n>
- Replace chart recorders with our Network Printing features; print on a low cost printer or e-mail PDF results automatically. <http://bit.ly/1aGdZTc>
- SimpleComm can be used to verify connections to the Synergy Controller and as a simple remote control program for use with Ethernet, GPIB and serial connections.
- Use Synergy Manager to write temperature profiles for the controller on the PC as well as collect data, chart and log the Synergy Controller's operation.

For additional information regarding the operation of the Synergy Controller please consult the Tidal Engineering website at <http://www.tidaleng.com>.

Appendix E Synergy Controller Olympic Board Layout



About the Synergy Controller Family

Tidal Engineering's Synergy Controllers, both the Synergy Micro 2 and the ¼ DIN Synergy Nano provide state-of-the-art usability and connectivity for environmental test control and data acquisition and combine the functions of a chamber controller and a data logger and are designed to improve test efficiency by supporting both factory automation and test and measurement protocols and standards.

Synergy Controller feature highlights includes:

- ➔ Color touch screen
- ➔ Ethernet, RS-232 and GPIB communications
- ➔ Built in 100 MB Data logger with USB drive support
- ➔ Data Acquisition, up to 64 T-type thermocouples (Optional)
- ➔ Built-in Web Server for remote control; WebTouch Remote™
- ➔ Compatible with Synergy Manager for PC based control, monitoring and programming.
- ➔ Built-in FTP Server for factory automation and test and measurement applications

For more information regarding these controllers please see the full Synergy Controller Technical Manual on our website at <http://www.tidaleng.com/synergy.htm>

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems.

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