Quick Start Manual for
Synergy Nano Retrofit Temperature Controller

07/06/2018

It is strongly recommended that the user read and understand the features and potential risks with using this controller with your thermal platform system. Please read the manufacturers platform and product safety manuals. Likewise, in time a more detailed familiarity with the functionality of the Synergy Nano Retrofit Controller will allow safer and more efficient use of the controller's many features.

Thermal platforms are capable of extreme temperatures. "Hands off" should be the general rule. Always be aware of the many potential dangers of extreme temperatures and compressed coolants. Read the more detailed safety warnings in platform manual before using.

Compatibility:

This controller is designed to work as a replacement to an existing Sigma Systems Model C, CC-3, C4 and CC-4 controller. There are many variations of Sigma Systems controllers, some with redundant failsafe systems and some without. If this controller is to be used with a platform that was designed to use a redundant failsafe system and your Synergy Nano Retrofit Controller does not happen to be so equipped with a (Watlow) redundant failsafe system, the controller can still be used, relying on the primary failsafe system(s). A failsafe bypass plug shorting must be inserted into the 2-pin (Jones) connector on the platform in this case. If the Synergy Nano Retrofit Controller is equipped with a redundant (Watlow) failsafe and the platform is not equipped for a redundant failsafe system, an internal jumper is required in the controller box to bypass the redundant failsafe. Be sure to verify that the system you intend to use this controller with **is 20 A. or less** per platform.   The Synergy Nano Retrofit Controller is a universal voltage design that is compatible with systems over the range of 120vac to 240vac.

Powering Up:

The switch on the front powers up the controller which in turn enables the heating and controlling circuits. The circuit breaker at the rear protects the heating and cooling circuits. Be certain that this circuit breaker switch on the rear is ON when you intend to use the system. Generally it should be left on. The controller will power up but no heating or cooling can occur with the circuit breaker/switch at the back in the off position.

The two connectors on the umbilical must be connected to the platform before operation is initiated. (There are three connectors if the system includes a redundant failsafe system.)

The larger connector carries the POWER for heat, cool and bimetal failsafe trip, the smaller connector contains the connections for the temperature sensor(s), including redundant failsafe if specified. If the smaller controller becomes disconnected, the "open sensor" alarm must be cleared per below.

Additionally if the system is equipped with a high-low failsafe system, the failsafe must manually reset as well. The LL.S display on the failsafe controller indicates the low limit setpoint, the LS.S display indicates high limit set point. The up and down arrows can be used to adjust these limits to values appropriate for your use. Once the temperature within the limits has been established, pressing the 'RESET' button on the failsafe limit will restore operation and within a couple seconds the display will indicate 'SAFE'

Note:

The touch screen can be mouse operated at any time by simply plugging any standard USB mouse into the front panel.

Manual Control:

Controlling to a setpoint is very straight forward, if the Main screen is not showing (See title at the top of screen) press the MAIN button below the touch screen.

To change the setpoint, touch the screen in the number area where it says *Setpoint.* The Channel 1 Setpoint screen will come up allowing entry of the setpoint in Celsius. Enter the setpoint and press *Accept.*

Start controlling by pressing the ON/OFF button on the screen or the ON button below the screen. Either operation will result in the same function, you will see the Green "Controlling" indicator on the screen light up.

Exceptions:

If the word ALARM shows on the upper right header of the screen, typically this indicates that the probe is disconnected or other alarm condition exists. Additionally, if the display on the screen will indicate OFF for "Actual" value, this is an indication of loss of the connection to the controlling probe. The "OFF" indication can also be an indication that the control output has been disabled from the setpoint screen.

If the system is operated with the probe connection unhooked, the ALARM indication will flash on the screen per above. As a safety precaution, the alarm condition will persist after connecting the sensor connector. The alarm condition can be cleared by pressing the MAINT button and then pressing the "Alarms" icon on the screen. Touch the "Bad Sensor 1 Connect" message on the screen and then press AckAlarm to acknowledge the alarm. At this point you can continue with use of the system. If the "Bad Sensor" or other alarm condition persists the display will indicate that the alarm has been acknowledged but the error condition has not been cleared. The error condition must be remedied before continuing.

See **Note** above regarding resetting the optional failsafe limit controller(s)

Logging:

Logging functions are located under the SETUP button menu.

Enabling logging, selecting maximum file size, logging interval and data to be logged is easily accomplished by following the menus. Logging occurs when the system is controlling.

Backup and Restore:

Backup and restore of system settings can be performed from the Maintenance\Config Utilities screen. This is a useful and recommended procedure to become familiar with.

Additional Options and Features:

Many other features are available under the respective SETUP, MAINT, and COMM menus which are accessed from the buttons below the touch screen.

EVENTS button shows status of various inputs and outputs.

The PROG button will lead you through the execution and building of programs. The AddStep Wizard will lead you through the process of creating or editing a program. Programs can be easily stored locally or on a USB memory device plugged into the front panel.

The RUN button allows for running of stored programs.

Basic Ethernet or serial control is included, Web server, Cascade control, and several other options can be enabled via software key available from TotalTemp. GPIB option requires additional hardware. If this feature is ordered, there is no additional setup required to communicate with the GPIB. There is an address switch set on the back of the unit. By default, it is set to address 3 or 1.

If DUT thermocouple module is included, Thermocouples must be type 'T'. Thermocouple module must be connected and powered up before powering up the controller.

Please call or email factory for any questions. Enjoy your new TotalTemp System!

TotalTemp Technologies, Inc.
3630 Hancock St. Ste. A
San Diego, CA, 92110
888.712.2228
www.TotalTempTech.com
Support@TotalTempTech.com