Quick start manual for the Synergy Nano Temperature Controller

6/5/15

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

The TotalTemp Technologies thermal platform is 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.

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. 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. 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 optional redundant failsafe if specified. If the smaller controller becomes disconnected, the "open sensor" ALARM must be cleared from the display per below. Additionally if the system is equipped with a high-low failsafe system, the failsafe controller will indicate FAIL and must manually reset as well. Repeatedly pressing the green "circular arrows" button cycles through the selected display screens. The LL.S display on the failsafe controller indicates the low limit setpoint, the Lh.S display indicates high limit set point. Ca is calibration offset. The up and down arrows can be used to adjust the Hi / Lo limits or offset to values appropriate for your use.   Once the temperature within the limits has been established, pressing the 'RESET' button on the failsafe limit controller will restore operation and within a couple seconds the display will indicate 'SAFE'

Basic operation:

Press the MAIN button on the front panel then touch the 'set point' window to change the set point temperature. The New Set point screen allows entry of the new set point. Then press Accept. Press the Start button and the green 'LED' should come on indicating system is controlling temperature.

TouchScreen Note:

The touch screen can be mouse operated at any time by simply plugging any standard USB mouse into the front panel. If touchscreen seems on occasion unresponsive to touch, moistening user fingertip will improve responsiveness.

When altering parameters in the menus on screen, be sure to select the parameter of choice by touching it until it is highlighted in **Dark Blue**.   When it is highlighted in grey it is not selected and the system will alter the default parameter on the given page which is likely not be the parameter you wish to alter.

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 temperature value 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. Controllers are initially set up to not resume operation at last setpoint at power up.

Exceptions:

If the word ALARM shows on the upper right header of the screen, typically this indicates that the probe is disconnected, temperature out of acceptable range 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" or other 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.

Web Server,Network Printing/Plotting, Synergy Server and E-mail functions are optional features that require an access code to enable functionality. Web Server can be activated on a No-Charge basis, other features are available for nominal fee. Contact TotalTemp Support or Tidal Engineering for access codes.

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 on the keypad allows for running of stored programs.

Basic Ethernet or serial control is included, Web server, Cascade control, and several other options typically is 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 1.

Exhaust Fitting:

Do not apply torque to the exhaust fitting. It is well supported but not designed for rough handling. Gently slide exhaust hose on outlet nipple and tighten without twisting. It is recommended to avoid making or loosening any coolant inlet or outlet fittings when plumbing is very cold with Liquid Nitrogen.

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