

Quick Start Manual for the Synergy Nano Temperature Controller for Mechanically Refrigerated Thermal Platforms

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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.

Use caution with the refrigeration hose (models with remote refrigeration). While the internal hoses are designed for many years of service with rugged bellows type stainless steel & over braid, use caution to avoid pinching, twisting, kinking or abrading the hose assembly. Avoid sharp bends, particularly near the ends of the hose.

Always provide minimum of 6" air space to and around refrigeration air inlet and outlet vents.

Powering Up:

The switch on the front powers up the controller which in turn enables the heating, refrigeration and controlling circuits. The circuit breakers at the rear (remote controller systems) protects the heating and cooling circuits. Be certain that these circuit breaker switches 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/switches at the back in the off position.

The two connectors on the controller umbilical (remote controller systems) 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 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'

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 to 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.

Automatic Compressor Control:

The Refrigeration system is managed by the Synergy controller. Note that when refrigeration system is started, there will be a delay of several minutes before cooling will actually start to occur. The interstage heat exchanger on these units must reach temperature of -35°C which requires some time. For programmed operations this can be anticipated by starting the compressor with a bus command. Automatic startup and shut down is controlled by parameters 1L1 and 1L2 in the L-Values folder of the Setup menu. Additionally L15 is the compressor turn-off delay. Under normal circumstances, these parameters should not require adjustment. In some cases, for maintaining temperatures near or slightly below ambient (+25 to +10), you may need to choose if the compressor will be allowed to cycle on and off or not.

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. A small logging icon will appear in the upper right corner when logging is in progress.

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 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, on network 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 and logging functions are included. Web server, Cascade control, and several other options typically are 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 a bus address switch set on the back of the unit. By default, it is set to address 1.

Controlling by DUT temperature requires optional second sensor and terminal block. Additionally, Cascade temperature control requires software key plus the DUT sensor. DUT multi sensor /logging requires hardware for reading additional sensors. Hardware to directly read two sensors is included.

Network printing requires software key, email and test messaging capability requires only Ethernet network access.

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

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