

UNIVERSAL ETHERCAT™ TEMPERATURE CONTROLLER



Features

- Up to 64 PID channels
- 2, 3 or 4 wire RTD or thermocouple inputs
- Supports all types of thermocouples
- PID Auto-tuning
- Includes:
 - ▶ 64 Digital OUTs
 - ▶ 8 Analog OUTs
 - ▶ 8 Digital INs
 - ▶ Up to 64 PID control loops
 - ▶ Up to 32 loops can be heat/cool loops
 - ▶ USB Configuration Port
- Custom faceplate with customer-specified connectors
- Configurable filtering window for high speed applications
- Power-on ramping - prevents sudden inrush of current when heaters are turned on
- 50/60Hz Phase Angle Firing supported on all Digital Outs
- PWM or DZC (distributed zero crossing)
- Analog or digital PID outputs
- Low price per channel
- High accuracy (TC: +/- .2° C, RTD: +/- .05° C)
- Thermocouple resistance measured for failure prediction

Flexible Configurations

The Universal Temperature Controller (UTC) provides 64 full-featured PID loops to tightly control every temperature point in your process. Sensor types, control outputs and PID parameters can be separately programmed for each channel. Many I/O and feature configurations are possible with a single unit by selecting desired Resolution, Filtering, Speed (update rate) and Number of Channels.

For example, the UTC could be configured to provide 64 PID heat loops using digital heater control. Another configuration, might use 32 PID heat loops, 8 analog out control loops, 8 digital cooling loops, with 16 extra digital outputs. As a bonus, any I/O ports not being used by the heat control loops can be utilized for other control requirements.

The Universal EtherCAT Temperature Controller interfaces to the system control application as an EtherCAT slave, but can also be configured to power-up in a predefined state. User configuration parameters are stored in non-volatile memory and programmed using a configuration application.

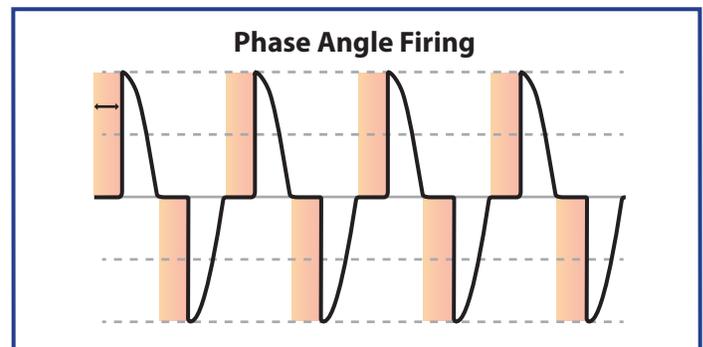
All types of thermocouples are supported (B, E, J, K, N, R, S, T), or choose 2, 3, or 4 wire RTD inputs.

Other standard features include: 50/60 Hz “phase angle firing” on all Digital Outputs, which distributes heater loads across the AC power cycle; PID Auto-tuning; set-point ramping; thermocouple resistance measurement for failure prediction, and more.

Phase Angle Firing

Phase Angle Firing is a method of power regulation which advances or delays the point at which the SCR, Triac or other control device is turned on within each half cycle. This method provides high speed precise power resolution and helps prolong heater life.

The phase angle firing feature allows the load to be distributed evenly when using 3-phase power.



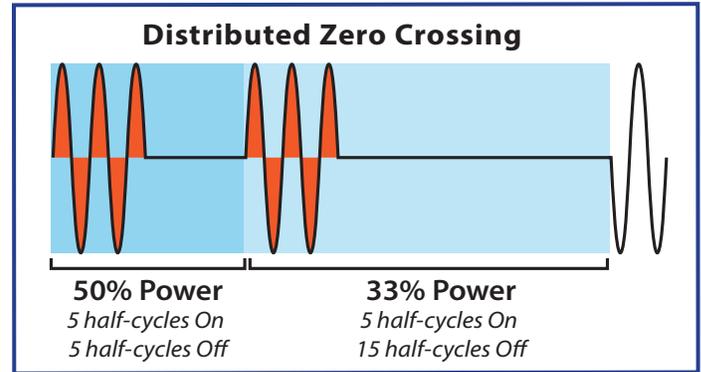
Distributed Zero Crossing

The Distributed Zero Crossing feature applies the load power by varying the the ratio of ON cycles to OFF cycles, but always switching on a zero-crossing point in the waveform. Sophisticated software algorithms are used to provide fine control of temperature.

Distributed zero crossing produces very low EMI, while providing fast, responsive control over the heating element.

Ultimate Flexibility and Precise Control provides:

FEATURE	BENEFIT
Flexible Sensors	Reads 2, 3, or 4 wire RTD sensors and all types of thermocouples (B, E, J, K, N, R, S, T).
Low Cost Per Channel	Combining all your temperature control into a single unit results in cost savings over multiple temperature controllers
Multiple Channels:	Up to 64 PID control loops allow you to replace many other temperature controllers.
Accurate Measurement:	Low-noise input stages and 24-bit ADCs allow high accuracy 4-wire RTD temperature measurements, resulting in improved process control and higher product yields.
Flexible Output Control:	PID outputs can be either digital or analog. Supports SCR, SSR, GTO or relay power switching.
PID Auto-tuning:	Makes it easy to optimize the PID loop parameters for your heating/cooling elements.
50/60Hz Phase Angle Firing:	Allows power balancing for improved power factor, high speed response and prolonged heater life.
Power-on Ramping:	Protects heating elements from high inrush current and prevents tripping of circuit breakers when powering up the system.
Customer-specified Connectors:	Cable interconnection boards are customer-specified to exactly match your interface requirements, reducing or eliminating custom cabling.



FEATURE	BENEFIT
Small System Footprint:	Compact, high-density system components save valuable space. W: 7.23", H: 8.1", D: 1.2"
Industry Standard Interface:	The system communicates with the host computer via high-speed EtherCAT or Ethernet.
Custom Faceplate	Connectors and labeling on the steel faceplate are custom-er-specified to simplify assembly and reduce connection errors.
Bonus I/O	Unused analog or digital inputs and outputs can be used for other measurement & control purposes.
Built-in Failure Prediction	Thermocouple resistance is measured for failure prediction.
Configurable data filtering	Several data filtering options allow you to pre-condition your temperature data to reduce noise and improve accuracy.
Designed for Industrial Use:	High integrity circuitry ensures reliable and repeatable control in large, complex embedded applications.