

1. Introduction



Warning: Electrical shock hazard. Do not operate this device before reading the entire users' manual. Do not operate this device if it is damaged. Do not attempt to disassemble this device.



ETE's Master Controller MC-1000 is developed to work with our cold plates to provide complete thermal solutions for our customers.

It is designed to be able to house various power supplies to provide a wide range of power, current and voltage combinations such that it can be configured to drive any of ETE's cold plates. It not only provides temperature control, it also provides power to the fans of ETE's cold plates so that our customers will be able to use MC-1000 to drive the cold plates without any other power supplies.

MC-1000 can be configured to accept external power input such as a benchtop adjustable power supply so that users can vary the power to TECs based on the particular TEC configurations.

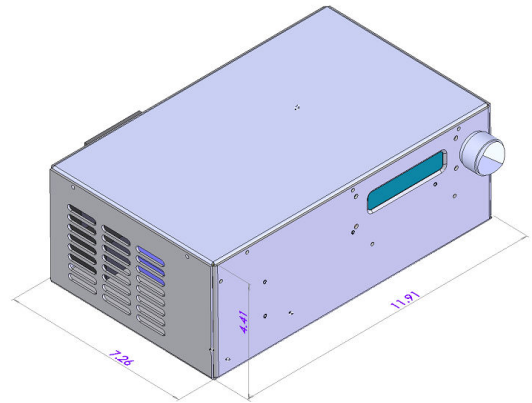
MC-1000 can also be used as a heater controller. Please contact ETE for more details.

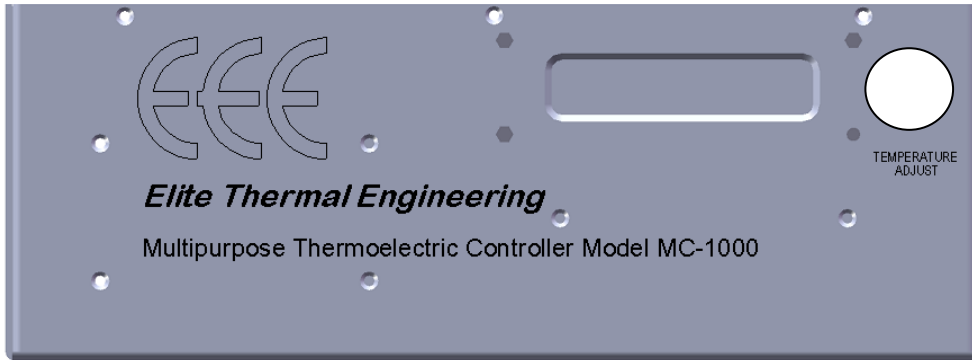
MC-1000 takes standard 85~120AC power input, convert it to power for TECs and fans. 220VAC input option is available upon request.

Shipped with MC-1000 is a digital temperature sensor (by Dallas Semi P/N DS18B20) that will be mounted by the user to the desired location for temperature control. MC-1000 only works with the provided temperature sensor.

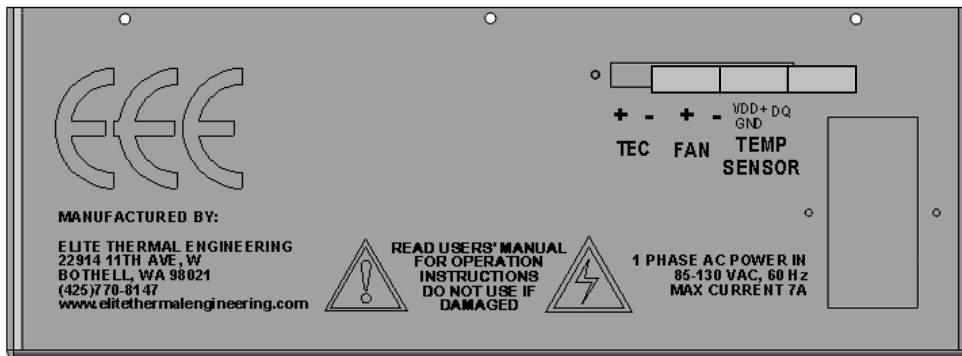
2. Users' interface

MC-1000 has extremely simple users' interface. In the front of MC-1000, there is a LCD display that displays the set temperature and actual temperature, and a temperature adjustment knob for adjusting the set temperature.





In the back of MC-1000, there is an AC power entry module with integrated power on/off switch and fuse holders, and a terminal strip for connecting to TECs, fans and temperature sensor.



3. Specifications and configurations

MC-1000 is developed to work with all ETE’s cold plates. The power output of MC-1000 is defined by the 3-digit suffix that corresponds to ETE’s OCP model numbers. Users who plan to use MC-1000 for other applications are encouraged to talk to our technical support or email us at engineering@elitethermalengineering.com to make sure MC-1000 will work for your needs.

Parameters	Specifications	Comments
Input voltage	1 phase 85 – 120VAC, 60Hz	
Compatible temperature sensor	Digital temperature sensor by Dallas Semi P/N DS18B20 (provided with MC-1000)	
Temperature sensor accuracy	0.5°C	
Temperature adjustment range	-25 to 102 °C	
Temperature adjustment resolution	0.5°C	
Temperature stability	±0.1°C typical, ±0.5°C max	
Operating temperature range	-10 to 50°C	
Operating humidity	0-95% relative humidity, non-condensing	

Storage temperature	-20-65°C non-condensing		
Maximum input current	MC-1000-050	1.5A	For OCP-050, OCP-055
	MC-1000-110	2.5A	For OCP-110 and SCP-130
	MC-1000-150	4.25A	For OCP-150
	MC-1000-300	8.5A	For OCP-300
Maximum output power to TECs	MC-1000-050	36VDC x 4.2A	For OCP-050, OCP-055
	MC-1000-110	24VDC x 8.5A	For OCP-110 & SCP-130
	MC-1000-150	36VDC x 8.5A	For OCP-150, or OCP-150-48
	MC-1000-300	48VDC x 12.5A	For OCP-300
Maximum output power to fans	12VDC x 3.5A		



Caution: Standard MC-1000 does not have options for custom current limit settings. The controller algorithm is based PWM (Pulse-Width-Modulation) that is proportional to the difference between the set temperature and the sensed temperature. Do not use MC-1000 for

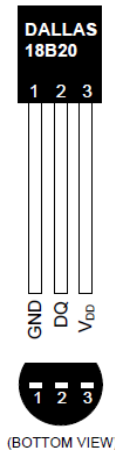
cooling applications where optimum current is lower than MC-1000's rated maximum current. Consult ETE if you plan to use MC-1000 for your own thermoelectric assembly.

4. Digital temperature sensor



Caution: MC-1000 is designed to work with the provided digital temperature sensor by Dallas Semi P/N DS18B20 only. Please do not attempt to use it with thermistors or RTDs.

The digital temperature sensor is packaged in a TO-92 can as shown in the right. Users can go to http://www.maxim-ic.com/quick_view2.cfm/qv_pk/2812 to obtain the complete datasheet. Please wire both GND and V_{DD} of the sensor to the terminal marked Temp Sensor's $V_{DD} + GND$ on the back of the unit, and wire DQ to the terminal marked Temp Sensor's DQ.



(BOTTOM VIEW)

TO-92
(DS18B20)

5. Pricing and Contacts

For pricing and availability, please contact ETE in any of the following options:

Elite Thermal Engineering

22914 11th Ave, W, Bothell, WA 98021

Phone: 425-770-8147

Fax: 425-485-0486

Email: contact@elitethermalengineering.com