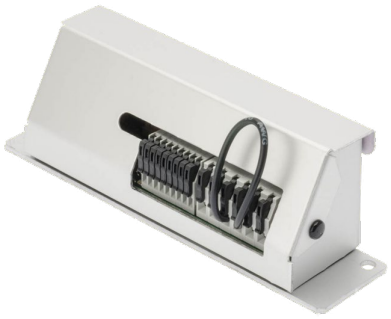
Laird THERMAL SYSTEMS

Q Series
TC-18-QC-50
Temperature Controller



The Q Series thermostatic controller is a microcontroller-based device that can be incorporated into a thermoelectric assembly (TEA) to add integrated temperature control. This controller functions as a cooling control device and features an adjustable temperature set point range from 0°C to 10°C. The Q Series controller provides a single directional temperature control for standard or custom thermostatic control with several input and output options. Custom configurations are available, however MOQ applies.

FEATURES

- Operation in cooling mode
- Regulation mode is ON/OFF at the programmed set point and hysteresis
- Input power range can accommodate 11 to 58 VDC, nominally 12 to 48 VDC
- Outputs are available for fan, thermoelectric module, NTC thermistor, tachometer sensor, overheating thermostat switch, alarm, and LED. Some features sold on custom configurations only

APPLICATIONS

- Medical diagnostics
- Analytical instrumentation
- Photonics laser systems
- Electronic enclosure cooling
- Chillers (liquid cooling)

BENEFITS

- The controller's temperature set point can be adjusted with an internal potentiometer in the internal range of 0°C to 10°C
- Tachometer sensor inputs provided to measure the speed of two fans. Feature sold on custom configurations only
- Overheating thermostat switch input available to sense an over temperature condition and will turn off power to the thermoelectric cooler assembly. A thermostat is required for operation
- Alarm and LED outputs available to indicate functional status of controller

TECHNICAL SPECIFICATIONS	
Power	
Voltage	11 to 58 VDC
Current	8 A without added cooling / 16 A with added cooling
Power	786 W @ 48 VDC Max, 384 W @ 24 VDC Max, 192 W @ 12 VDC Max
User Interface	
	Onboard Potentiometer
Sensors	
Temp Sensor	NTC Thermistor 1
Fan Tachometer 1	Use with fans w/ an open collector tachometer
Fan Tachometer 2	Use with fans w/ an open collector tachometer

Outputs	
Thermoelectric Module	Supply voltage @ ≤16 A
Fan 1	Supply voltage @ 2 A
Fan 2	Supply voltage @ 2 A
Alarm Relay	Open collector, Opto-isolated
Overheating Thermostat	Overheating protection
LED	Status/Errors

Alarms	
Low Voltage	If voltage is lower than programmed minimum level the outputs are shut down after a programmed time
High Voltage	Outputs are shut down instantly
Tachometer 1 & 2*	If the RPM signal is lower than the programmed minimum level, error is indicated.
Max Voltage	VCEO = 35V, VECO = 6V
Max Current	Ic = 50 mA
Note: All programming of parameters is conducted by Laird Thermal Systems	

Temperature Regulation	
ON/OFF mode	Controller switches the thermoelectric cooler output between full power and zero power at the programmed set point and hysteresis
Programmed Control Set Point	Cooling at 5°C, Off at 2°C
Trim Range	± 5°C
Accuracy	± 1°C

Protection	
	Over and under voltage
	Reverse polarity

*Feature sold on custom units only.

INSTRUCTIONS

Connection instruction and functional overview

Power: DC voltage input. Polarity protected

OHT: If an overheating thermostat is used, it shall be connected here. If no OHT is used, the OHT outputs must be jumpered with a wire. Note that the OHT and wires must be able to carry the TEM current.

TEM: Output to thermoelectric cooler modules (TEM). Output is turned on when power voltage is within operating range and sensor temperature is higher then set temperature.

Maximum output current is 16A when controller is cooled and 8A without cooling. Current must not be exceeded. Example of cooling is when the controller is mounted on a heat sink.

Fan1: Mainly intended to be used on the internal, cooled, side of a thermoelectric assembly TEA.
It is on when power voltage is within operating range.
Output current is 2A and must not be exceeded.

Fan 2: Mainly intended to be used on the external, warm side of a TEA.
It has one output for positive and two outputs for negative. Choose which negative output to use depending on if Fan 2 shall have the same functionality as Fan 1 or as the TEM's.
Note that Fan 2 current is added to Fan 1 or TEM's, depending on the choice.

Tacho inputs: Not activated.

Temp sensor: Temperature sensor.

Temperature setting is changed with the on board trim potentiometer.

ISOMETRIC DRAWINGS