

# Q Series TC-18-QC-50





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	
User interface	Onboard Potentiometer
	Official de Potentionneter
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	
	If yeltage is layer than programmed minimum layel the cutruits are shut dayin ofter a
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	s conducted by Laird Thermal Systems
Tomporature Population	
Temperature Regulation ON/OFF mode	Controller quitable the thermoelectric engler output between full never and zero never et
ON/OFF Mode	Controller switches the thermoelectric cooler output between full power and zero power at
D	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

<sup>\*</sup>Feature sold on custom units only.

## **INSTRUCTIONS**

Protection

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.

Over and under voltage Reverse polarity

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.

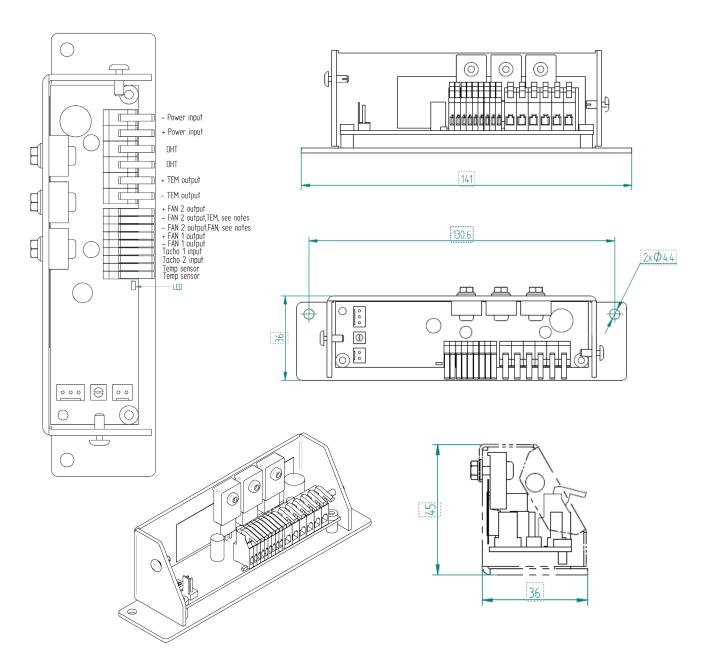
Tacho inputs: Not activated.

Temp sensor: Temperature sensor.

Temperature setting is changed with the on board trim potentiometer.



#### ISOMETRIC DRAWINGS



### www.lairdthermal.com

LTS -TC-18-QC-50-Datasheet-050521

Any information furnished by Laird and its agents, whether in specifications, data sheets, product catalogues or otherwise, is believed to be (but is not warranted as being) accurate and reliable, is provided for information only and does not form part of any contract with Laird. All specifications are subject to change without notice. Laird assumes no responsibility and disclaims all liability for losses or damages resulting from use of or reliance on this information. All Laird products are sold subject to the Laird Terms and Conditions of sale (including Laird's limited warranty) in effect from time to time, a copy of which will be furnished upon request.

© Copyright 2019-2020 Laird Thermal Systems, Inc. All rights reserved. Laird™, the Laird Ring Logo, and Laird Thermal Systems™ are trademarks or registered trademarks of Laird Limited or its subsidiaries.