

## Aristat Controller Quad for Multi-Stage TECs

### Overview

This stand alone device is a dedicated solution to power and control multi-stage thermo electric coolers (TECs). The controller can be used to combine independent TECs, temperature sensors and heat-exchangers to build various cooling set-ups. Enabling our patented algorithm, a multi-stage TEC system will perform at a higher coefficient of performance (COP) when compared to traditional control methods. The algorithm enables higher temperature differences at lower power consumptions.

The device can be integrated within another system using the available communication options. It can also be used with our software with a PC for rapid deployment.

### Product Highlights and Features

- Up to 4 stage TEC stack
- Support for 4x single stage TEC stacks
- Optimised power supply for 170W load
- High efficiency supplies - 98% at full load
- Proprietary power algorithm for enhanced performance and efficiency
- Supports up to two fans with PWM control
- Supports up to 6 temperature sensors
- Standalone or PC remote control operation
- Communication via USB 2.0, Ethernet or RS-485
- On board flash storage for data logging
- Dual redundant supply input - ideal for uninterrupted operation
- Integrated real-time clock



- Enclosed with plastic housing and aluminum heat sink
- Spring loaded terminals for quick connection
- DIN rail (35mm) or bench-top configurable
- Technical support for other communication to support HMI's and other integrations

### Applications

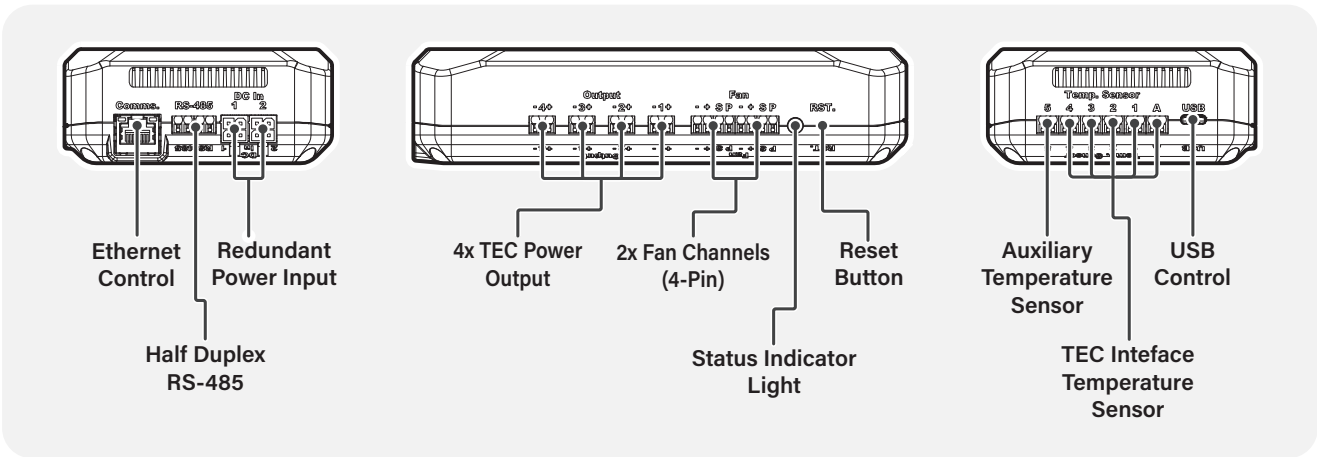
- Cold-chain storage and transport
- High performance instrumentation and sensing
- Industrial process control
- Telecommunications
- Temperature controlled test beds

## Technical Specifications

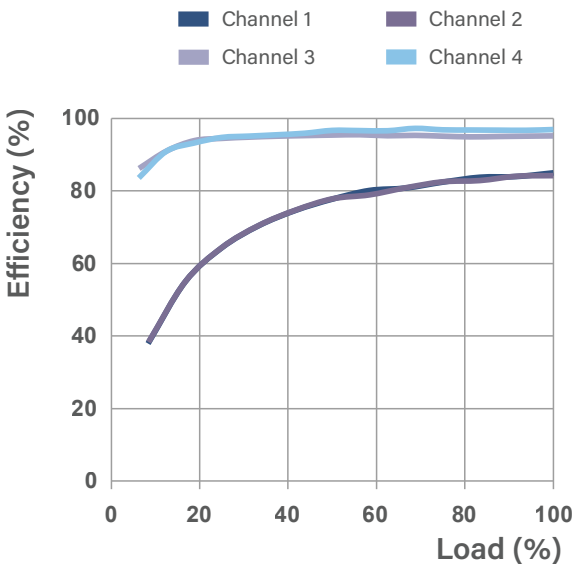
Parameter	Description	Value
<b>Power Input</b>	Supply Voltage	18–26 V DC
<b>TEC Outputs</b>	Number of Channels	4
	Voltage / Channel	2–12 V
	Voltage Set Point Accuracy	± 0.5 %
	Voltage Resolution	4 mV
<b>High Power Channels (Channel 1 &amp; 2)</b>	Max. Continuous Current	8 A
	Efficiency n	97 %
	Voltage Ripple	85 mV
<b>Low Power Channels (Channel 3 &amp; 4)</b>	Max. Continuous Current	6 A
	Efficiency n	95 %
	Voltage Ripple	50 mV
<b>Fan Channels</b>	Voltage	12 V
	Max. Power Output	96 W
	PWM Frequency	20 kHz
	Tachometer	Yes
<b>Temperature Sensing</b>	Range	-100 – 100 °C
	Accuracy	±0.3 °C
	Precision	±0.03 °C
	Supported Sensors	PT1000 RTD (2-Wire); Thermocouple (K-Type, T-Type)
<b>Operation &amp; Control</b>	Control and Measurement Frequency	2 Hz
	Control Method	PID, ICECAP Algorithm
	TEC Configuration	1 Stack, 4 Cascaded Stages
	Operation Modes	Stand-alone (Run on Start) PC Software Control Fieldbus Control
<b>Communication</b>	Communication Interfaces	USB 2.0 Ethernet RS-485 (Half-Duplex)
	Supported Fieldbus	Modbus RTU (On Request) Modbus TCP (On Request)
<b>Connectivity</b>	Power Inputs	2x2 4.2mm Locking Connector
	TEC Outputs	Spring Loaded Terminal (0.13–1.5mm <sup>2</sup> )
	Fan Channels	Spring Loaded Terminal (0.13–1.5mm <sup>2</sup> )
	Temperature Sensors	Spring Loaded Terminal (0.13–1.5mm <sup>2</sup> )
	Ethernet	RJ45
	USB 2.0	USB Type-C
	RS-485	Spring Loaded Terminal (0.13–1.5mm <sup>2</sup> )

<b>Protection</b>	Power Input	Reverse Polarity Protection
	TEC Outputs	Over/Under Voltage Over Current/ Short Circuit
	Device	Over/Under Temperature
<b>Environment</b>	Operational Temperature	0-40 °C
	Storage Temperature	-10-60 °C
	Humidity	5-95%, Non-Condensing
	Ingress Protection	IP40
<b>Physical</b>	Dimensions LxWxH	175x95x40 mm 6.89x3.74x1.57 in
	Weight	0.540 Kg

## Connectivity Overview



## TEC Channel Efficiency by Load



## TEC Channel Efficiency by Voltage

