

AC-series: Thermoelectric Coolers

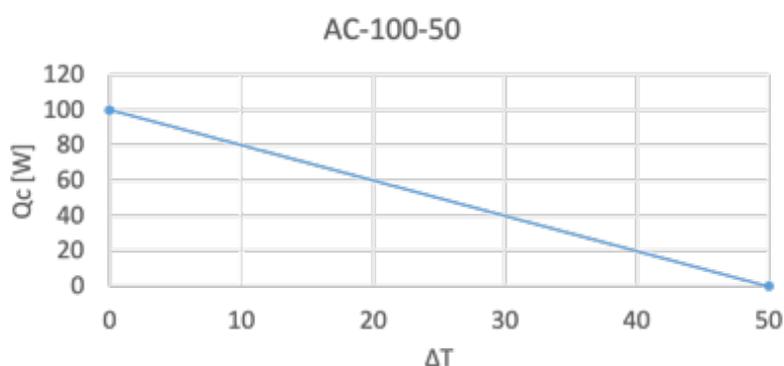


AC Series

Revised October 2020

AC-100-50

100W Air-to-Air Thermoelectric Cooling System



Quick Description

The AC-100-50 is a compact air-to-air thermoelectric cooler with integrated hot and cold-side fans. The unit is formed around a 250mm x 125mm x 50mm dense fin aluminium heatsink extrusion. The cold side has a 120mm x 120mm x 38mm fan blowing air at the fins. On the opposite side the Peltier module is held on the extrusion by an aluminium heatsink (250mm x 100mm x 26mm) and a 92mm x 92mm x 20mm cooling fan. The rear face of the extrusion is covered with a layer of closed-cell neoprene. The unit has a cooling capacity of 100W and a $\Delta T(\text{max})$ of 50°C and is particularly well suited to applications where a very low temperature is required with a modest overall heat load. The 92mm fan input power is 3.5W.

Notes:

- Both fans and the Peltier module are electrically isolated from the extrusion.
- The cooler can be used as a heater by polarity reversal of the Peltier module current.
- ΔT is $T_{\text{ambient}} - T_{\text{cold}}$. Where $T_{\text{ambient}} = 41^\circ\text{C}$

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Thermal Performance

Operating Parameters: AC-100-50

Qc [W]	100	0
ΔT	0	50
TEC V [V]	12 / 24	
TEC I [A]	20 / 10	
TEC P [W]	240	

**Measured at ambient temperature of 41°C*

This unit is designed for indoor use. Higher IP ratings are available upon request.

Hot Side Fan

Voltage [V]	6 – 14 / 10 – 26
Current [A]	0.3 / 0.15
Power [W]	3.5
Wiring: Red	Power +12 / +24V
Wiring Black	Negative/Ground

Cold Side Fan

Voltage [V]	6 – 14 / 10 – 26
Current [A]	0.9 / 0.45
Power [W]	12
Wiring: Red	Power +12 / +24V
Wiring Black	Negative/Ground

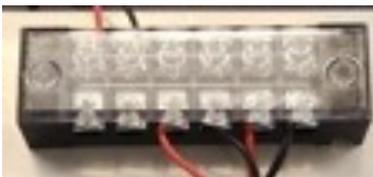
- The cold side fan can be used over the voltage range 10V to 26V. This gives a speed range of approximately 4:1. ΔT(max) is measured with a fan operating voltage of 10V. A slightly lower temperature is available from the unit if the fan is switched off entirely.
- NOTE: Providing there is no condensate build-up on the cold side extrusion the unit can be operated in any orientation. If there is a possibility of condensate forming then the unit should be mounted in such a way that condensate cannot fall on to the cold-side fan. If the unit is to be operated below 0°C for extended periods it is recommended the TCS thermoelectric de-humidifier unit is used in conjunction with the AC-100-50 to prevent excessive frost build up.

Wiring Diagram

Terminal numbering as shown in picture.
Reading Left to Right: 1->6

Terminal:	1 Hot Side Fan	2 Hot Side Fan	3 Cold Side Fan	4 Cold Side Fan	5 TEC	6 TEC
Colour:	Red	Black	Red	Black	Red	Black

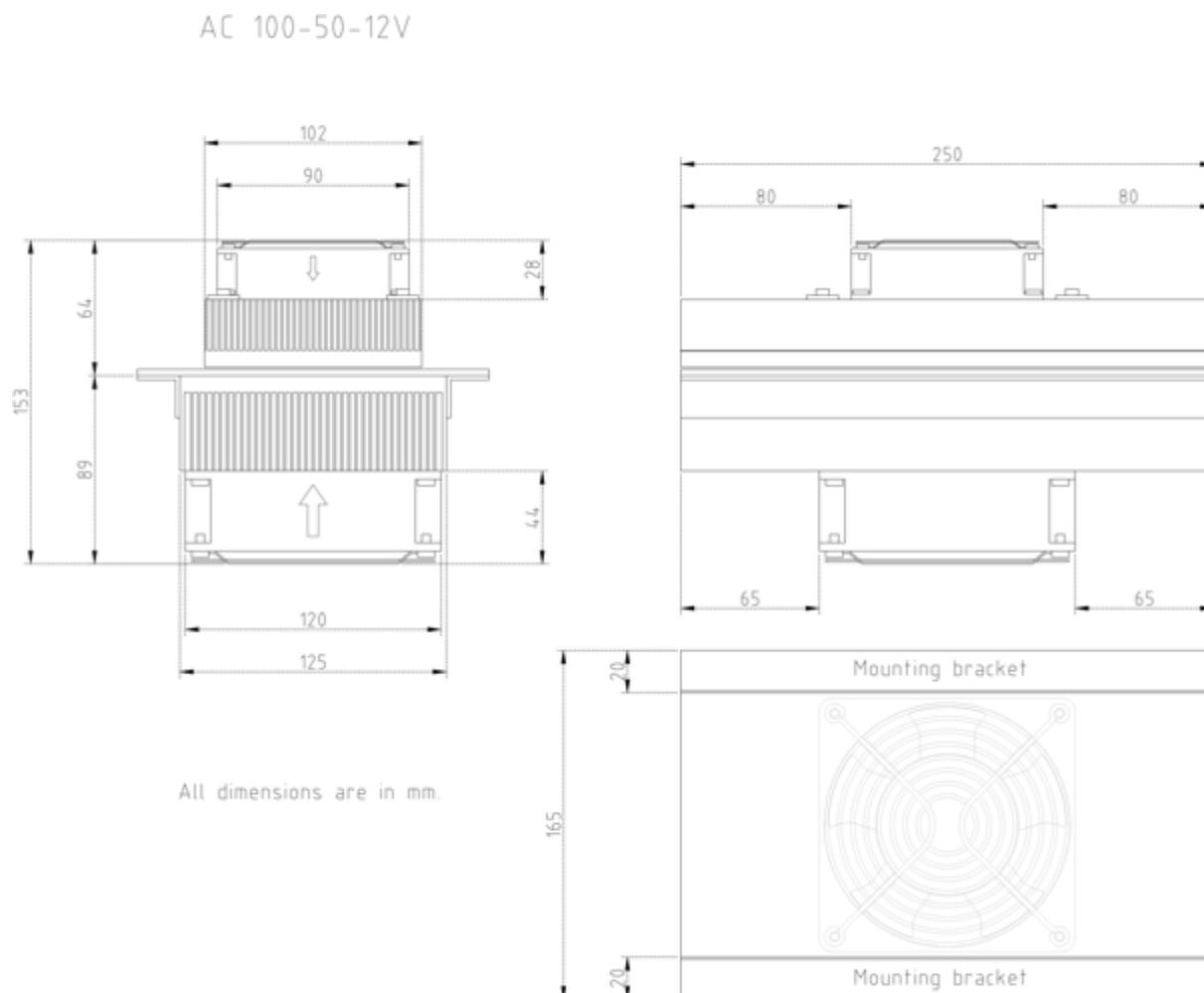
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Voltage:	12V	0V	12V	0V	12V	0V
	24V		24V		24V	

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Mechanical Drawings



Notes:

1. Cutout for cold side TCS AC-100-50 Cooler assembly to be 250mm x 110mm.
2. TCS AC-100-50 Cooler mounted in chassis using 4 x 4.0mm self-tapping screws.
3. Hot side of extrusion covered with a layer of closed-cell neoprene.
4. The initial current drawn by the unit is ~ 20% higher than the operating current.

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This TCS product is not authorised for use as critical component in life support devices.

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