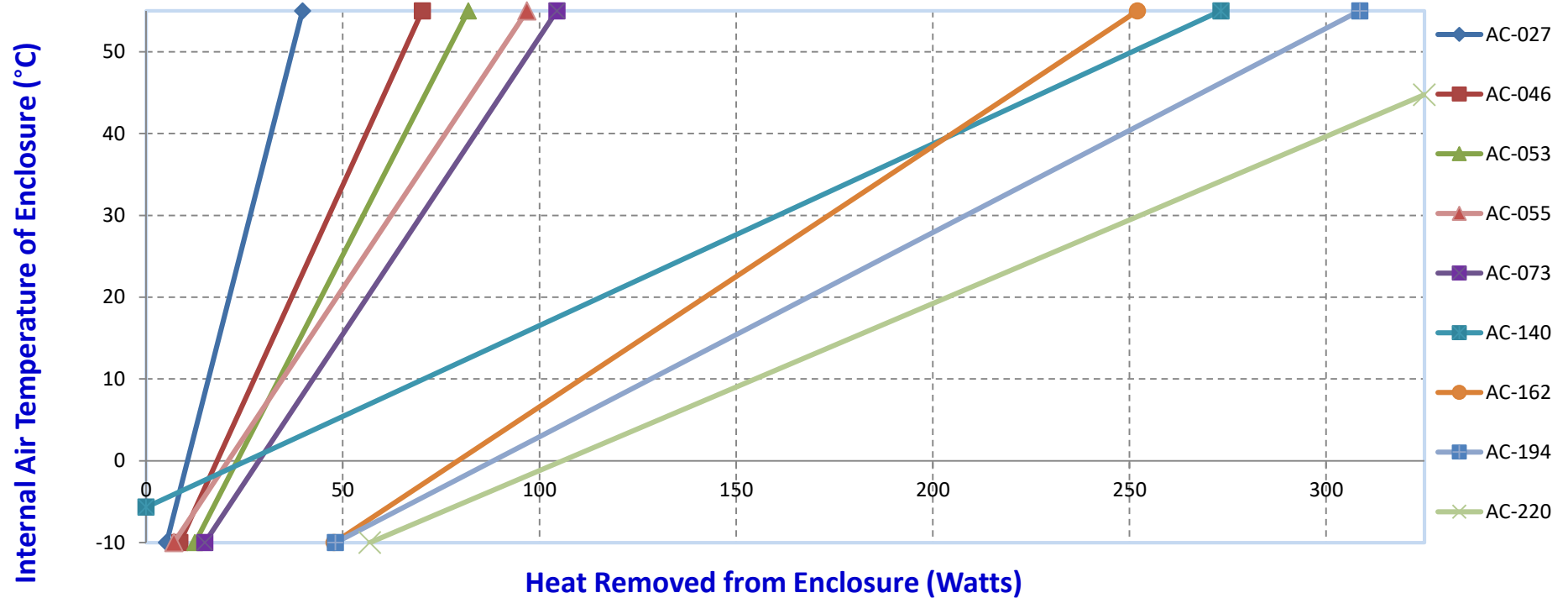


Air Cooler Performance in a 25 °C Ambient Environment



How to use the Performance Graph:

1. Select Performance Line.

The diagonal lines shown represent cooling performance at the indicated ambient air temperature. Performance lines at other ambient temperatures can be seen on the data sheet for each specific cooler.



2. Select Desired Temperature.

Draw a horizontal line on the graph corresponding to your desired enclosure temperature until it intersects with the performance line corresponding to the ambient temperature at which the cooler is to operate.

NOTE: heating performance is not shown. Contact TE Technology, Inc. if you require this information.



3. Determine Cooling Capacity.

The maximum amount of heat that the cooler can remove is determined by the intersection point (determined in the previous step).

If the heat load exceeds the cooling capacity, then the cooler will not be able to maintain the desired temperature. If the heat load is less, then the cooler can operate with less input power.

TE TECHNOLOGY, INC.®

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Cold Plate Coolers

Heat Pumping (Watts), $\Delta T=0^{\circ}\text{C}$, 35 °C Ambient
 Heat Pumping (Watts), $\Delta T=0^{\circ}\text{C}$, 25 °C Ambient
 Operating Voltage (Volts)
 Operating Current (Amps), Typical
 Hot-side Fan Current (Amps), Maximum
 Overall Dimensions (mm) length X width X height
 Can be Customized with Large Orders
 Can be Used for Cooling and Heating*
 Weight (Kg)
 Heat Sink Airflow Parallel/Vertical
 External Fan Noise (dBA)
 TC-24-10
 TC-36-25 RS485
 TC-36-25 RS232
 TC-48-20 OEM
 TC-48-20
 TC-720 OEM
 TC-720
 PS-12-8.4A
 PS-24-6.5
 PS-24-12.5
 PS-24-25

Model	Heat Pumping (Watts), $\Delta T=0^{\circ}\text{C}$, 35 °C Ambient	Heat Pumping (Watts), $\Delta T=0^{\circ}\text{C}$, 25 °C Ambient	Operating Voltage (Volts)	Operating Current (Amps), Typical	Hot-side Fan Current (Amps), Maximum	Overall Dimensions (mm) length X width X height	Can be Customized with Large Orders	Can be Used for Cooling and Heating*	Weight (Kg)	Heat Sink Airflow Parallel/Vertical	External Fan Noise (dBA)	TC-24-10	TC-36-25 RS485	TC-36-25 RS232	TC-48-20 OEM	TC-48-20	TC-720 OEM	TC-720	PS-12-8.4A	PS-24-6.5	PS-24-12.5	PS-24-25	
CP-031	30	28	12	4.5	5.5	0.24	102 X 80 X 91	•	•	0.9	V	35	•	•	•	•	•	•	•				
CP-031HT	30	28	12	4.5	5.5	0.24	102 X 80 X 91	•	•	0.9	V	35	•	•	•	•	•	•	•				
CP-036	33	32	12	4.7	5.7	0.58	152 X 127 X 114	•	•	1.8	V	44	•	•	•	•	•	•	•				
CP-036HT	32	31	12	4.7	5.7	0.58	152 X 127 X 114	•	•	1.8	V	44	•	•	•	•	•	•	•				
CP-040HT	41	40	24	2.7	3.3	0.24	140 X 67 X 89	•	•	0.8	V	47	•	•	•	•	•	•		•			
CP-061	65	62	24	4.6	5.7	0.23	198 X 194 X 127	•	•	2.3	P	39	•	•	•	•	•	•		•			
CP-061HT	59	56	24	4.5	5.4	0.23	198 X 194 X 127	•	•	2.3	P	39	•	•	•	•	•	•		•			
CP-065	60	57	24	4.5	5.5	0.34	178 X 127 X 114	•	•	2.2	V	44	•	•	•	•	•	•		•			
CP-110	105	101	24	9.0	10.9	0.50	203 X 130 X 140	•	•	3.0	V	47		•	•	•	•	•			•		
CP-121	128	123	24	9.2	11.1	0.46	198 X 188 X 119	•	•	4.2	P	42		•	•	•	•	•			•		
CP-200	206	198	24	14.1	17.3	1.00	254 X 176 X 165	•	•	6.3	V	55		•	•	•	•	•				•	
CP-200HT	204	196	24	14.1	17.4	1.00	254 X 176 X 165	•	•	6.3	V	55		•	•	•	•	•				•	
CP-200HTTT	204	196	24	14.1	17.4	1.00	254 X 176 X 206	•	•	6.7	V	55		•	•	•	•	•				•	
CP-200TT	206	198	24	14.1	17.3	1.00	254 X 176 X 206	•	•	6.7	V	55		•	•	•	•	•				•	

Specifications	Temperature Controllers	Power Supplies
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*Requires bipolar (heat/cool) controller.

Visit <http://totech.com/product-category/cold-plate-coolers/> to view our cold plate cooler products & data sheets.

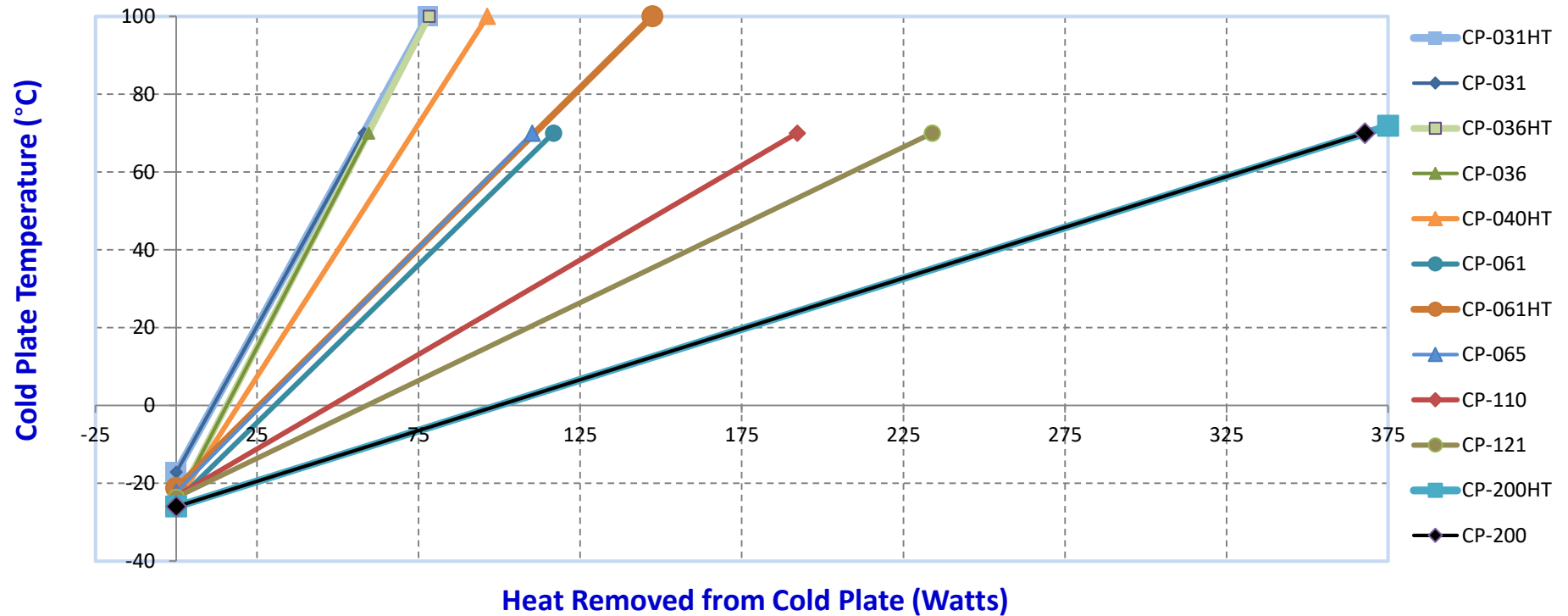


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Cold Plate Cooler Performance in a 25 °C Ambient Environment



How to use the Performance Graph:

1. Select Performance Line.

The diagonal lines shown represent cooling performance at the indicated ambient air temperature. Performance lines at other ambient temperatures can be seen on the data sheet for each specific cooler



2. Select Desired Temperature.

Draw a horizontal line on the graph corresponding to your desired cold plate temperature until it intersects with the performance line corresponding to the ambient temperature at which the cooler is to operate.

NOTE: heating performance is not shown. Contact TE Technology, Inc. if you require this information.



3. Determine Cooling Capacity.

The maximum amount of heat that the cooler can remove is determined by the intersection point (determined in the previous step).

If the heat load exceeds the cooling capacity, then the cooler will not be able to maintain the desired temperature. If the heat load is less, then the cooler can operate with less input power.

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Liquid Coolers

Heat Pumping (Watts), $\Delta T=0^\circ\text{C}$,
 35°C Inlet Water Temperature
 Heat Pumping (Watts), $\Delta T=0^\circ\text{C}$,
 25°C Inlet Water Temperature
 Operating Voltage (Volts)
 Operating Current (Amps), Typical
 Hot-side Fan Current (Amps), Maximum
 Overall Dimensions (mm), length X width X height
 Can be Customized with Large Orders
 Can be Used for Cooling and Heating*
 Weight (Kg)
 Heat Sink Airflow Parallel/Vertical
 External Fan Noise (dBA)
 TC-24-10
 TC-36-25 RS485
 TC-36-25 RS232
 TC-48-20 OEM
 TC-48-20
 TC-720 OEM
 TC-720
 PS-12-8.4A
 PS-24-6.5
 PS-24-12.5
 PS-24-25

	Heat Pumping (Watts), $\Delta T=0^\circ\text{C}$, 35°C Inlet Water Temperature	Heat Pumping (Watts), $\Delta T=0^\circ\text{C}$, 25°C Inlet Water Temperature	Operating Voltage (Volts)	Operating Current (Amps), Typical	Hot-side Fan Current (Amps), Maximum	Overall Dimensions (mm), length X width X height	Can be Customized with Large Orders	Can be Used for Cooling and Heating*	Weight (Kg)	Heat Sink Airflow Parallel/Vertical	External Fan Noise (dBA)	TC-24-10	TC-36-25 RS485	TC-36-25 RS232	TC-48-20 OEM	TC-48-20	TC-720 OEM	TC-720	PS-12-8.4A	PS-24-6.5	PS-24-12.5	PS-24-25	
LC-061	56	54	24	4.5	5.5	0.34	178 X 127 X 97	• •	2.0	V	44	• • • • • • • •	• • • • • • • •										
LC-200	192	185	24	14.1	17.3	1.00	254 X 176 X 155	• •	5.8	V	55		• • • • • • • •										•
CP-061 + SSX1	62	58	24	4.6	4.7	0.23	198 X 194 X 139	• •	2.7	P	39	• • • • • • • •	• • • • • • • •							•			
CP-065 + SSX1	57	53	24	4.5	5.5	0.34	178 X 127 X 127	• •	2.7	V	44	• • • • • • • •	• • • • • • • •							•			
CP-110 + SSX1	99	104	24	9.0	10.9	0.50	203 X 130 X 153	• •	3.4	V	47		• • • • • • • •									•	
CP-121 + SSX1	118	113	24	9.2	11.1	0.46	198 X 188 X 136	• •	4.6	P	42		• • • • • • • •									•	
CP-200 + SSX1	183	176	24	14.1	17.4	1.00	254 X 176 X 178	• •	6.7	V	55		• • • • • • • •										•
CP-200 + 2 SSX1's	193	185	24	14.1	17.4	1.00	254 X 176 X 178	• •	7.1	V	55		• • • • • • • •										•

Specifications	Temperature Controllers	Power Supplies
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*Requires Bipolar (heat/cool) controller

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Visit <http://tetech.com/product-category/liquid-coolers/> to view our liquid cooler products & data sheets.

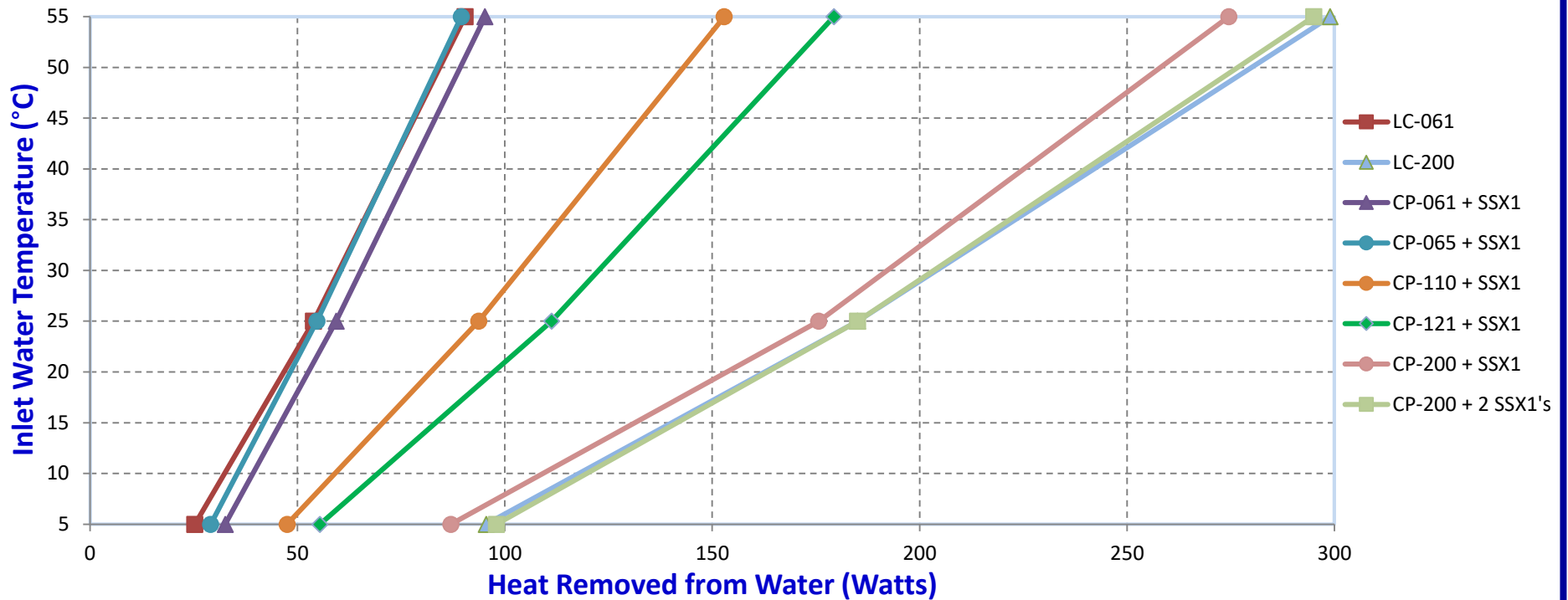


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Liquid Cooler Performance in a 25 °C Ambient Environment



How to use the Performance Graph:

1. Select Performance Line.

The diagonal lines shown represent cooling performance at the indicated ambient air temperature. Performance lines at other ambient temperatures can be seen on the data sheet for each specific cooler



2. Select Desired Temperature.

Draw a horizontal line on the graph corresponding to your desired liquid temperature until it intersects with the performance line corresponding to the ambient temperature at which the cooler is to operate.

NOTE: heating performance is not shown. Contact TE Technology, Inc. if you require this information.



3. Determine Cooling Capacity.

The maximum amount of heat that the cooler can remove is determined by the intersection point (determined in the previous step).

If the heat load exceeds the cooling capacity, then the cooler will not be able to maintain the desired temperature. If the heat load is less, then the cooler can operate with less input power.

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Temperature Controllers

	Maximum Input Voltage (V)	Maximum Output Current (Thermoelectric/Peltier)	PWM Output Frequency (Hz)	PWM Output	Temperature Resolution	Output Power Resolution	Signal Level Analog Output	Cool or Heat Control Only	Bipolar Cool and Heat Control	Communication	Ramp/Soak Capability	Optional Second Thermistor Input (for Alarm/Data)	Number of Alarm Signals	Maximum Alarm Current	Over current Protection	Fan Speed Control	Display & Keyboard (Integrated)	Display & Keyboard (Optional)	Thermistor Compatibility	Software Source Code Available	Energy-Saving Control Mode for Air Coolers
TC-24-10	26	10	1000	•	0.1	50 steps	•												15K		
TC-36-25 RS485	36	25	2700	•	0.01 °C	512 steps		•	RS485		•	3	25 mA	•			•		5K, 10K, 15K, 50K, 230K	•	
TC-36-25 RS232	36	25	2700	•	0.01 °C	512 steps		•	RS232		•	3	25 mA	•			•		5K, 10K, 15K, 50K, 230K	•	
TC-48-20 OEM	50	20	337	•	0.1 °C	512 steps	0 - 5 VDC	•	RS232		•	2	1 A						10K, 15K	•	
TC-48-20	50	20	337	•	0.1 °C	512 steps	0 - 5 VDC	•	RS232		•	2	1 A			•			10K, 15K	•	
TC-720 OEM	36	20	337	•	0.01 °C	512 steps	0 - 10 VDC		•	USB	•	•	2	2 A	•				5K, 10K-1, 10K-2, 15K, 50K, 230K, user	•	•
TC-720	36	20	337	•	0.01 °C	512 steps	0 - 10 VDC		•	USB	•	•	2	2 A	•	•	•		5K, 10K-1, 10K-2, 15K, 50K, 230K, user	•	•

Control Range for Thermistors	
5K	-60 °C to 70 °C *
10K	-20 °C to 85 °C
15K	-20 °C to 100 °C
50K	0°C to 150 °C
230K	25 °C to 199 °C

* Control range is -40 °C to +199 °C on TC-720 controllers with firmware revision J or older.

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Visit <http://totech.com/product-category/temperature-controllers/> to view our temperature controllers & manuals.



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