

## TC-324C and TC344C Chamber System Temperature Controllers



- Slow ramped DC power for quiet operation
- Temperature control from ambient to +65C
- Manually controlled DC output choices
- Three feedback loop speeds
- Independent bath temperature monitoring
- External input for computer control
- Open thermistor fault protection
- Low noise toroidal transform power supply

The TC-324C and TC-344C temperature controllers have been designed to provide quiet power to a variety of heating devices including Warner heated platforms, in-line solution heaters, culture dish heaters, syringe warmers, and many other devices.

Each channel supplies up to 22 watts into a load of 10 ohms. Heat setpoint is controlled automatically in Auto mode via thermistor feedback. A loop-speed selector provides three feedback speeds to optimize the thermal stability of the device being heated. Heat setpoint may also be manually controlled in Manual mode.

### Ease of Use

In Auto mode, the desired temperature is set with a single set temperature control. The connected platform, solution heater, or other device is automatically maintained at the set temperature. Accuracy is typically better than  $\pm 1^\circ\text{C}$ , and under ideal conditions will approach  $\pm 0.1^\circ\text{C}$ . In Manual mode, the controller provides a continuous DC output adjustable from 0 to +15 volts.

### Quiet Operation in Recording Setups

Highly filtered DC power supplies employing toroidal transformers are used to eliminate AC noise and deliver the high-level of isolation required for sensitive electrophysiology applications. Slow-ramped analog switching circuitry delivers power without adding noise to the system.

### Unique Features

An open-thermistor fault protection circuit prevents over-heating of the sample in the event of a thermistor failure. Remote control of the set temperature allows a computer to control the sample temperature.

### Thermistor Readouts

Each channel reads two thermistors simultaneously: T1 for feedback control of the system, and T2 for measurement of any point of interest. These temperatures are displayed on the meter and are also available at front and rear panel outputs for recording devices. Unical thermistors are used and can be replaced without the need for recalibration.

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### Specifications per channel

Maximum Output Voltage	15 VDC
Maximum Output Current	1.5 A
Minimum Load Resistance	10.0 $\Omega$
Manual Voltage Range	0.0 to 15.0 VDC
Maximum Output Power	22 W into a 10 $\Omega$ load
Power Requirements	95-130 or 200-260 VAC, 50/60 Hz
Power Fuse	(5x20 mm) 0.5A SB for 95-130 VAC and 0.25A SB for 200-260 VAC
Front Panel BNC	Input/Output T2 thermistor Reporting 100 mV/°C
Rear Panel BNC	Output T1 (control) Reporting 100 mV/°C
Temperature Range	Ambient to 65°C
Internal Set Temperature	22°C to 65°C
External Set Temperature	Ambient to 65°C
Meter Display	3.5 digit LED display of °C or V
Meter Readouts	Set temperature T1 (control) temperature T2 (monitor) temperature Output voltage (to heater)
Enclosure	(W x H x D) 43.2 x 8.9 x 30.5 cm (17.0 x 3.5 x 12.0 in)
Weight	5.44 kg (12 lb)
Warranty	Two years, parts & labor

### Ordering Information

Cat. No.	Model	Product
64-2400	TC-324C	Heater controller, single channel
64-2401	TC-344C	Heater controller, dual channel
<b>Accessories and replacement parts</b>		
64-0106	CC-28	Cable assembly for Warner heated platforms and chambers
64-0109	CC-35	Cable assembly with unterminated outboard end
64-0102	SH-27B	Solution heater
64-0103	SF-28	Slow flow solution heater
64-0104	SHM-6	Six-line solution heater
64-0105	SHM-8	Eight-line solution heater