

# TC-5300 PWM Temperature Controller

PWM Temperature Control

Pulse Width Modulating Temperature Controller

## OVERVIEW

The **TC-5300** PWM temperature controller is an innovative new thermal control platform for precision temperature control applications. Designed specifically for thermoelectric temperature control, the TC-5300 controller incorporates features like PWM, bi-directional power, 4 temperature-zone auto-tune PID, broad sensor support, and a USB interface with software for managing the controller using a computer.

The TC-5300 controller is available in panel and din rail mount versions.

## FEATURES

**Control Modes:** Up to Four Temperature Zones P, PI, PD, PID, Autotune Open-loop Control

**Output:** PWM 1KHz, duty cycle resolution=1000 steps Hot / Cold direction (logic 0/1)

**Input:** Thermocouple: J, K, T; RTD: PT100 (DIN); Thermistor: 2252 ohm or 10K ohm

**Resolution:** 0.1°C

**Communications:** USB, interface cable included

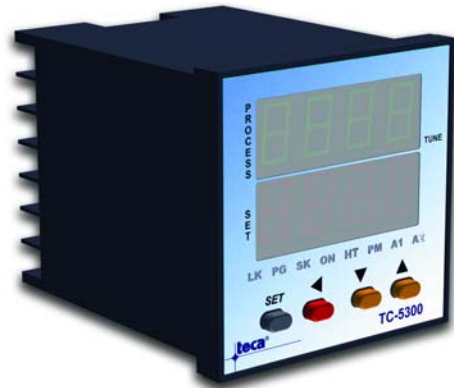
**H-Bridge:** Use with one or multiple **HA-5300** 700 watts H-Bridge Amplifier

**Software:** tecaLOG Windows based real time plotting, logging, programming and tuning software

**LabView:** Write your own LabView program (VI examples available)

**Includes:** wiring harness, USB cable and driver, tecaLOG software

**Ingress Protection:** IP65 front panel (applies to panel mount only)



TC-5300 Panel Mount



TC-5300 Din Rail Mount

## SPECIFICATIONS

### General

**Rated Voltage:** 9~36 VDC

**Power Consumption:** Less than 3VA  
(100mA@24VDC)

**Memory Backup:** EEPROM and non-volatile memory  
(Approx. 10 years)

**Operation Condition Temperature:** 0 ~ 50°C,  
Humidity 0 ~ 90% RH (Non-condensing)

### Input

**Thermocouple:** J, K, T

**RTD:** DIN PT-100 (2 or 3 wire)

**Thermistor:** 2252 ohm, 10k ohm

**Range:** -50°C ~ 200°C (\*sensor type dependable)

**Accuracy:** ±0.2°C (3 wire RTD)

**Cold Junction Compensation:** 0.1°C/°C ambient

**Normal Mode Rejection:** 60 dB

**Common Mode Rejection:** 120 dB

### Control Function

**Proportional Band:** 0.0 ~ 100.0 %

**Integral Time:** 0 ~ 3600

**Derivative Time:** 0 ~ 900

**Sampling Rate:** 10Hz

**Temperature Control Res.:** 0.1°C / 0.1°F

**Programmable Profile:** 8 Steps, ramp/soak time,  
loop-in-loop, complex loop profile

**Control Software:** Full function Windows Program,  
plot, chart, log data, sensor select, set temperature,  
monitor process

### Output

**Display Resolution:** 0.1°C / 0.1°F or 1°C / 1°F

**Alarm Relay Output:** Logic 5VDC Level (on:1 /off:0)  
0.5 mA Max.

**PWM Output:** Logic 5VDC Level, Freq: 1K Hz

**Enable:** Logic 5VDC Level

**H/C Control Action:** Logic 5VDC Level, Direct or  
Reverse (for cooling or heating direction)

**Communications:** USB (RS-485 or RS-232 available  
with special request)

### HA-5300 H-Bridge Amplifier

**Voltage Rating:** 5~36V DC

**Maximum Current:** 30 Amps

**Maximum Power Output:** 700W (for loads above  
350 watts use forced air or other methods to cool the  
base of the H-Bridge)

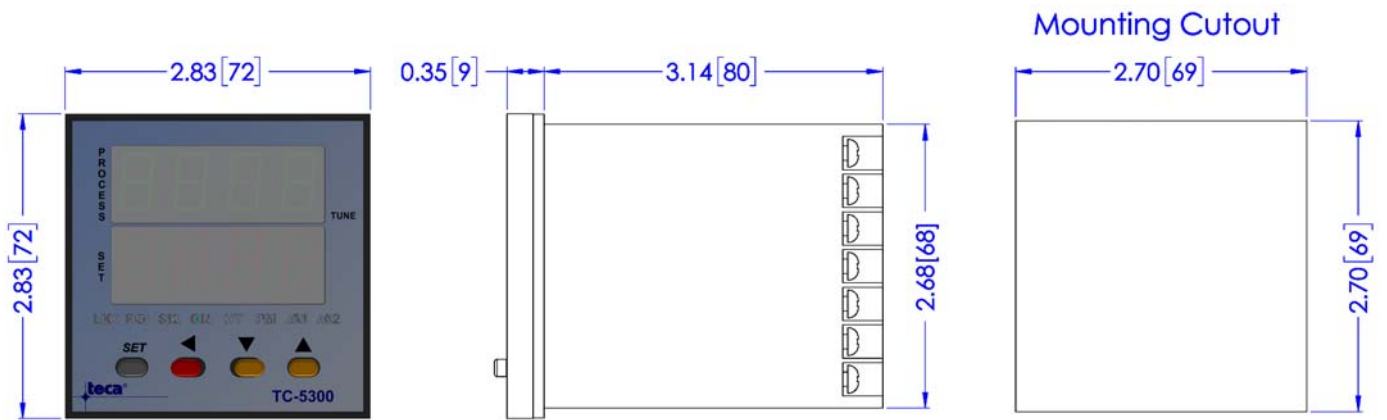
# TC-5300

## PART NUMBER AND ORDERING

MODEL NUMBER	DESCRIPTION	VOLTAGE VDC	SWITCHING CURRENT AMPS (MAX.)	COMMUNICATIONS
TC-5300	Panel Mount Controller	9 - 36	N/A	USB
TC-5300D	Din Rail Mount Controller	9 - 36	N/A	USB
HA-5300	H-Bridge Amplifier	5 - 36	30*	N/A

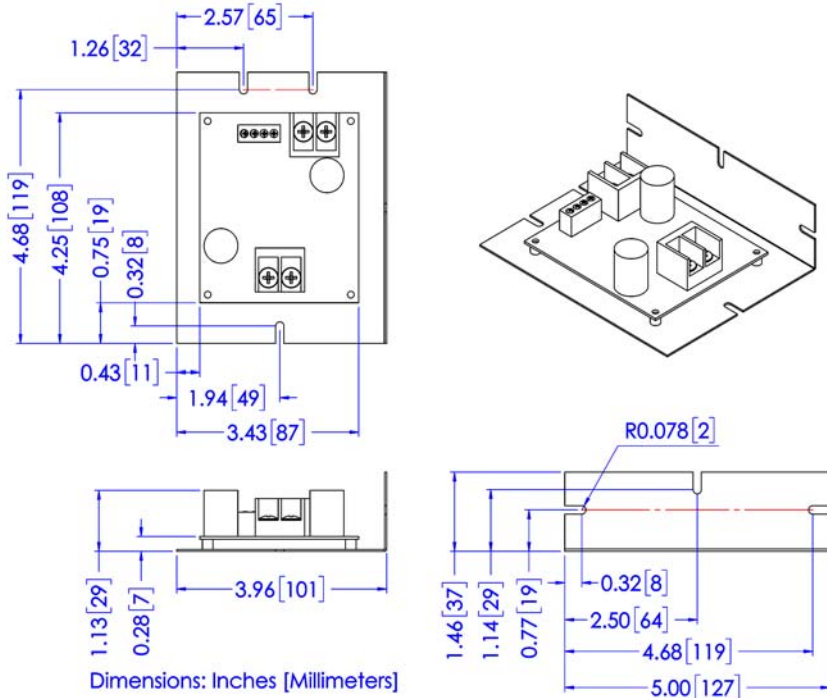
\* For loads above 350 watts use forced air or other methods to cool the base.  
 Maximum rated power is 700 watts, for larger loads use multiple HA-5300 H-Bridge amplifiers.

## PANEL MOUNT DIMENSIONS



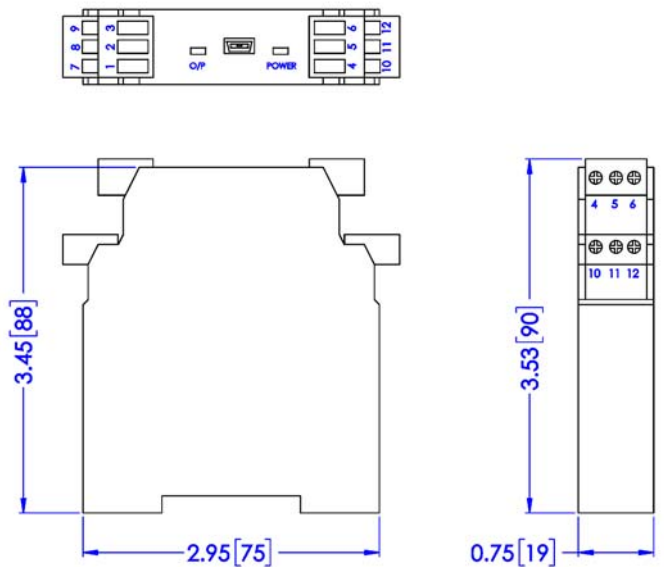
Dimensions: Inches [Millimeters]

## HA-5300 DIMENSIONS



Dimensions: Inches [Millimeters]

## DIN RAIL MOUNT DIMENSIONS



Dimensions: Inches [Millimeters]