TC-4300 Temperature Controller and EzLog® Software

**MAIN FEATURES**

- Dual printed circuit board design fitted behind the equipment panel
- Dual four digits display, set point and process
- Thermocouple and RTD input
- On-Off, Proportional-Integral-Derivative (PID)
- Smart automatic tuning algorithm
- Two Solid Sate Relay (SSR) drive output for heating and cooling or alarm
- One 10 A relay output for system/component shut down and reset
- Two dry contact inputs for warning lights
- 24V +/- 10 % ac/dc power supply
- Ramp and soak programmable
- Programmer configurable as 4 programs with eight segments, 1 program with 32 segments or 2 programs with 16 segments
- Program execution repetitions: from 0 (one execution only) to 9999 and endless executions
- Configurable ramp tracking and guaranteed soak functions
- Configurable servo to PV function for smooth recovery from hold or power down
- RS232 communication available with EzLog® software
- 0-10 VDC analog or 5-20 mA speed control output (typically for fans)
- Use stock or custom Front Panel Overlay

**SPECIFICATIONS**

- **Ambient temperature:** From 0 °C to 50 °C
- **Storage temperature:** From -30 °C to 70 °C
- **Humidity:** From 20% to 85% RH non condensing
- **Power supply:** 4 W 7 VA maximum
- **Construction:** Self-extinguishing degree V0 rated PCB assembly according to UL-94
- **Installation:** Behind panel mounted
- **Dimension:** 120 X 80 X 52 mm depth
- **Weight:** Maximum 200 g
- **Sampling time:** 500 ms typical
- **Accuracy:** +0.3% fsv +1 digit @ 25 °C and nominal power supply voltage range
- **Temperature drift:** < 200 ppm/°C of full scale for L, J, K, N thermocouple type (reference junction excluded)
  < 400 ppm/°C of full scale for RTD and T thermocouple type (reference junction excluded)

**Reference junction drift:** 0.1°C/°C
**Common mode rejection ratio:** ≥120 dB @50/60 Hz
**Normal mode rejection ratio:** ≥60 dB @50/60 Hz

**PV input:** Thermocouple J, L, K, N, T, R, S or Resistance Temperature Detector (RTD) Pt100
The input type is keyboard selectable
The line must be not longer than 30 meters or leave the building

**Operating mode:** ON/OFF or PID; Automatic operation; Self-tuning function

**Out 1:** Logic output for SSR (Typically Heat function), 30 meter line
Logic level 0: < 0.5 V dc
Logic level 1: 8 V dc +20% @ 12mA max

**Out 2:** Relay (form A) 10 A @ 250 Vac resistive load System/Component shut down
Logic level 0: < 0.5 V dc
Logic level 1: 14 V dc +20% @ 20mA max
24 V dc +20% @ 1ma The line must be not longer than 30 meters or leave the building

**Out 3:** Logic output for SSR
Logic level 0: < 0.5 V dc
Logic level 1: 14 V dc +20% @ 20ma max
24 V dc +20% @ 1ma The line must be not longer than 30 meters or leave the building

**Serial interface:** Optional, RS-232 standard, opto-isolated
**Protocol type:** Modbus (RTU mode)
**Device address:** From 1 to 254
**Baud rate:** 600 up to 19200 baud
**Format:** 1 start bit; 8 bit with/without parity; 1 stop bit
**Parity:** Even/Odd

**Watch-dog:** Hardware / software watch-dog is provided for automatic restart
The Out 2 is used in association with a timer to control the system or specific component function as shown below. This function will disable the system or component if a dry contact is open and has existed for more than "t" time. Otherwise, Out 2 will remain energized. Once the timer has expired and the component or system is OFF, the Out 1(Heat) and Out 3(Cool) are also OFF. The program will be forced in "HOLD 1" if it is "RUN" status. The component or system is reset by pressing "+" pushbutton at the same time (the program will revert in "RUN" mode). The diagram shown in the left is made for pump shut down and reset based on flow or no flow conditions.

The ramp tracking function - if enabled - pauses the ramp execution when the control error (difference between the process variable and the operative set point) is larger than a specific threshold. The ramp restarts when the control error falls below the prefixed value. Two different thresholds for ramp tracking can be specified: a tracking low limit (when the process variable is lower than the operative set point) and a tracking high limit (when the process variable is greater than the operative set point).

When a fault is detected on measure and ramp tracking is configured the ramp is always stopped, independently of configured value. The guaranteed soak function is similar to the ramp tracking one, but it works during dwell segments. It can be separately enabled by means of a proper threshold that specifies the maximum absolute control error.

When a fault is detected on measure and guaranteed soak is configured the time is always stopped, independently of configured value.

The ramp tracking function will also be stopped if the control error falls below the prefixed value area. This function can be separately enabled.

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