

### MODEL 18TP

- **Description:** Portable or Chassis-Mounted Variable Voltage Power Control
- **Product Range:** 120-240 VAC, 5-15 amps, single-phase
- **Applications:** Electric Heating Elements (constant resistance materials only).

### FEATURES

- All solid state construction
- Lighted On/Off switch
- 6 foot power cord with plug
- NEMA-standard 120 or 240 VAC receptacle (NEMA 5-15 @ 120 VAC, or 6-15 @ 240 VAC)
- On-board "2 millisecond" fuse protection
- Lightweight, portable design

### TYPICAL APPLICATIONS

- Replace variable transformers
- Nozzle heaters
- Band heaters
- Platen heating
- Cartridge heaters
- Hot runners
- Constant resistance heaters

Model 18TP controls provide variable control of single-phase a.c. voltage to constant resistance loads. These units are all solid state replacements for variable transformers for many process temperature control applications. Power

semiconductors replace windings and brushes to control voltage output to constant resistance loads; the self-contained design facilitates portable use or easy installation and operation.

### VERSATILE DESIGN

Model 18TP units include a standard grounded plug on a six foot power cord and a three-prong receptacle for quick and easy line and load connection. A lighted rocker switch turns power to the unit on and off; a case-mounted, easy-to-operate 270°-turn potentiometer provides variable control of the RMS output voltage. Unit chassis are designed for portable use or 2-hole fixed mounting.

### "SELF-PROTECTING"

Model 18TP controls utilize unique "self-protecting" design features for maximum service life. Factory tested and approved "2 millisecond" fuses protect semiconductors from short circuit damage; an r-c snubber network provides RC/V<sub>bo</sub> protection; and the integral, isolated heatsink chassis allows continuous operation at nameplate ratings in ambients to 50°C (122°F).

### SPECIFICATIONS

**Power Circuit:** power semiconductor with parallel r-c circuit.

**Control Circuit:** all solid state circuit for stable, full-range control.

**Mains Frequency:** 50/60 Hz.

**Output Voltage:** 0-95% of input.

**Overall Efficiency:** 99%.

**Power Loss:** 1.5 watts/amp.

**Voltage Drop Across Power Circuit at 100% Output:** ≈1.5 volts

**Control Input:** variable resistance, 270°-turn potentiometer.

**Control Power:** 1 watt.

**Fuse Protection:** special "2 millisecond" fuses are factory-tested and coordinated to protect the

power semiconductors from short circuit faults.

**Ambient Temperature Range:** -10 to +50°C.

**Input Connection:** grounded three-prong plug. (NEMA 5-15P @ 120 VAC, or 6-15P @ 240 VAC)

**Output Connection:** three-prong receptacle. (NEMA 5-15 @ 120 VAC, or 6-15 @ 240 VAC)

### SIZING CONSIDERATIONS

Model 18TP controls are rated for **constant resistance loads**. Size units by actual load current, not kW.

1. Always use maximum possible load current for sizing purposes.
2. Unit amp rating is determined by the fuse. Continuous current draw should not exceed 85% of the fuse rating.
3. Load voltage rating must match input voltage to control.

### SIZING EXAMPLE

**Application:** single-phase, 800 watt nichrome heating element; input voltage is 120 VAC, 60 Hz.

**Model Number Selection:**

- a. Variable-voltage: 18
- b. Portable unit: TP
- c. 120 VAC input: -1-
- d. Amp rating, calculated as follows:

$$\frac{800}{120} = 6.66 \text{ amps}$$

6.66 < 10, so amp rating = 10

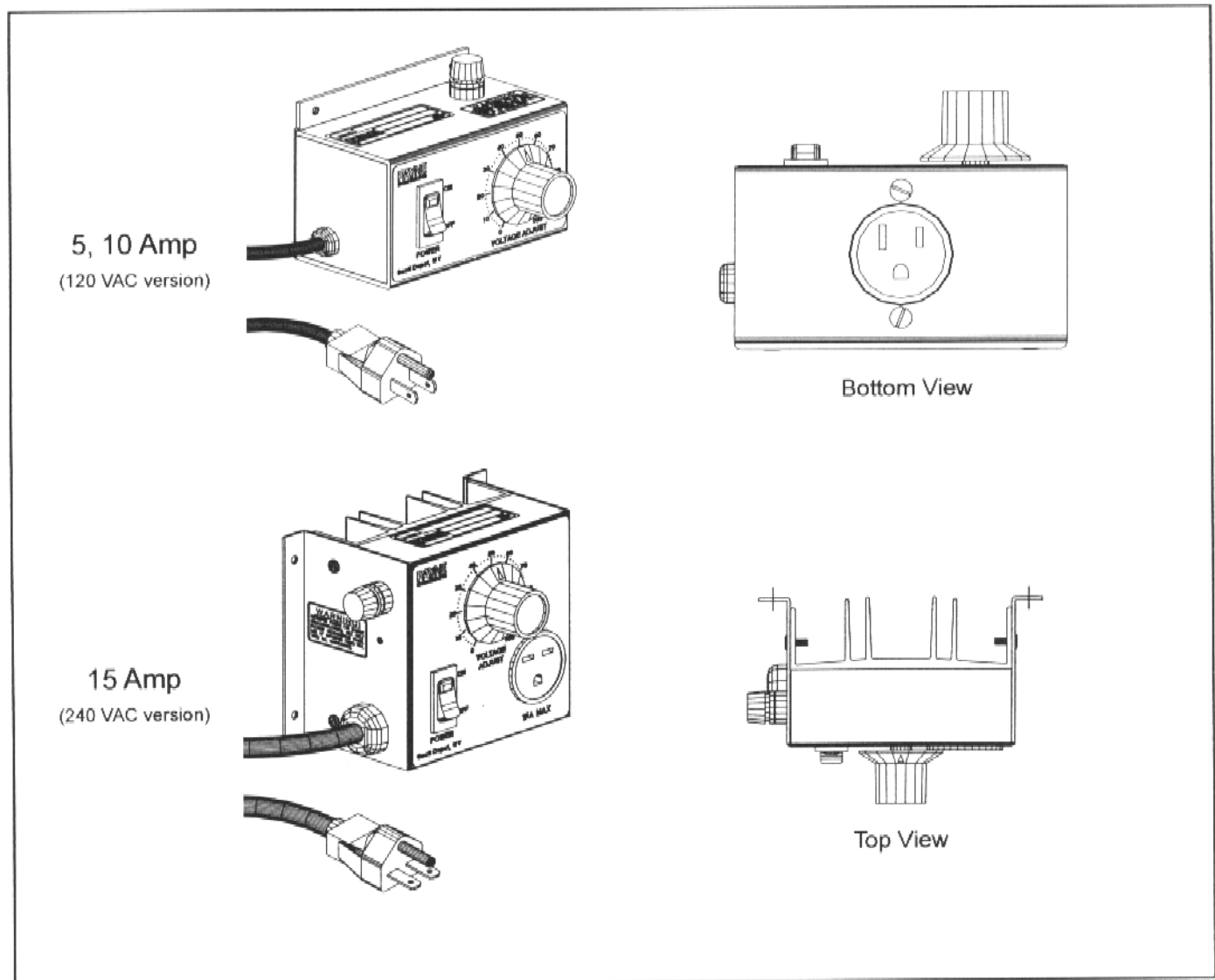
**Model Number:** 18TP-1-10

### WHEN ORDERING, SPECIFY:

- Model Number
- Input Voltage
- Load Specifications

NOTE: For short time constant, transformer coupled, or other high inrush loads, select appropriate Model 18D-H or 18D-SW. Consult factory or see Bulletins 18D/E-H/11.1 or 18D/E-SW/11.1.

MODEL NUMBER	AMPS (FUSE)	WATTS @ MAX. RATED VOLTAGE	FUSE PART NUMBER	OPEN CHASSIS DIMENSIONS (inches)		
				HEIGHT	WIDTH	DEPTH
<b>Single-Phase, 120 VAC, 50/60 Hz Input, 0-118 VAC Output</b>						
18TP-1-5	5	600	49C25-5	2.5	4.7	2.5
18TP-1-10	10	1200	49C25-10	2.5	4.7	2.5
18TP-1-15	15	1800	49C25-15	4.0	5.12	2.735
<b>Single Phase, 208/220/240 VAC Input, 0-206/218/238 VAC Output</b>						
18TP-2-5	5	1200	49C25-5	2.5	4.7	2.5
18TP-2-10	10	2400	49C25-10	2.5	4.7	2.5
18TP-2-15	15	3600	49C25-15	4.0	5.12	2.735



All dimensions are approximate, and are not to be used for construction purposes. Payne Engineering Company Inc. reserves the right to make changes to product design, construction, and component parts in the interest of technical advancement without prior notification.

