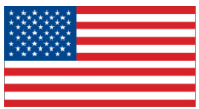


PAYNE CONTROLS, LLC

18TBP & 18TB MANUAL POTENTIOMETER POWER CONTROLLER

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MADE IN USA



NRNT FILE # E350716

Payne Controls, LLC.
Phone: 801-544-4236

81 Gold Miner Lane, Ste A
sales@gordosales.com

Belgrade MT 59714
www.payne-controls.com

INTRODUCTION

This manual was designed to assist you in installing, operating and maintaining your new power control in a safe manner. By following the instructions in this manual, you will be rewarded many years of trouble free service from your new 18TB / 18TBP. It is essential that you read the captions followed by the safety warnings; they are located through out the manual and are very easy to identify.



Indicates important installation, operating, servicing instructions

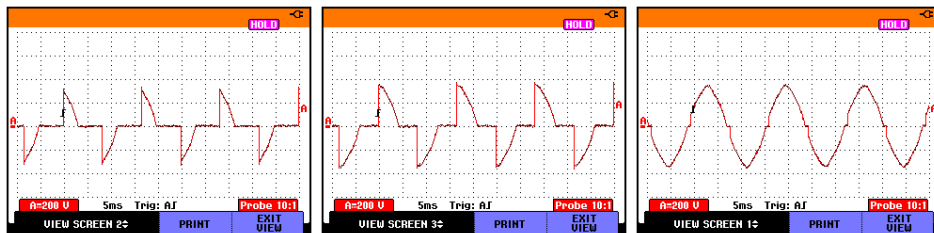


Indicates dangerous voltage present and risk of electric shock

DESCRIPTION

The 18T Series is a proportional, infinitely variable power controller capable of delivering 1-97% of the applied line voltage to the directly connected electric heaters. This is accomplished by phase angle firing an industrial sized TRIAC.

Graphs below shows **phase angle fired** voltage output on a 240V power line.



25% output or 60V RMS

50% output or 120V RMS

99.5% output or 238.8V RMS

- **Load Type: Constant Resistance Elements (nichrome, kanthal, calrod)**
- **Load Characteristics: Resistance Nominally Constant (<50% change versus temperature)**
- **Line Power Configuration: Single Phase**
- **Load Configuration: Line-to-Line or Line-to-Neutral**

NOTE: The 18T **will not control** transformers, fans or motors. It is strictly for direct heater control in industrial and commercial processes. Not to be used on hi-inrush heaters, T-3 lamps, short wave emitters. Not to be used in any residential or medical facility.

OPERATION

The 18TB comes with a 100,000 Ohm panel mount potentiometer on two (2) feet of wire leads, a dial with a 0-100% scale, and knob. By turning the potentiometer CW, you increase the output voltage of the 18TB to the connected electric heaters, similar to a light dimmer and light bulb. The 18TBP has the potentiometer mounted to the PCB.

Note: A heater load must be connected to the 18T for controller to turn on. The 18TP CAN NOT create more voltage or current than what is supplied to it.

INSTALLATION



WARNING: FIRE HAZARD!! Even the best electronic components CAN FAIL SHORTED, KEEPING FULL POWER ON! Provide a completely SEPARATE (redundant) OVER TEMPERATURE SHUTDOWN MEANS to switch power off if safe temperature is exceeded.



WARNING: HIGH VOLTAGE!! This control must be installed in a GROUNDED enclosure by a qualified electrician. In accordance with any and all local and national electric codes including NEC and any other applicable codes. Provide a safety interlock on door to remove power before gaining access to device.



WARNING: The 18TB potentiometer leads are NOT ISOLATED; it is at line voltage potential.



To reduce the risk of electrocution, physically **TURN ALL POWER OFF** to wires that will be connected to the 18TB/18TBP before making any connections. Remember, solid state devices are never “off” unless you physically disconnect the incoming electrical power.

Turning the potentiometer all the way down is NOT off. It is 0% output with a line voltage to ground potential. Breaking contact with the potentiometer leads will not turn the 18TB “OFF”. It will drop power to 0%, with a line to ground potential shock hazard.

Check the 18TB/18TBP serial tag and verify the correct voltage/ ampere ratings and input control signal for your application. Wiring must be performed in accordance with any and all applicable local and national codes. Use NEC wire code. Ground wire can be attached to 18T heat sink using mounting screw.

The 18TB / 18TBP controller must be installed in an enclosure for protection against electrocution.

The 18TB / 18TBP chassis heatsink must be mounted flat against the steel or aluminum backplate of your enclosure.

ELECTRICAL CONNECTIONS: See "WIRING DIAGRAM" on Page 6

AC POWER INPUT:

Power input (AC MAINS) is connected to J2 lug labeled "LINE". LINE 2 is connected to the other side of your heater load. Use proper feed and branch protection (fusing) as per NEC and local electrical codes.

We recommend installing your new controller on the positive side of your circuit for 120VAC applications. We would recommend either tinning the end of the wire or using a ferrule to get the best connection.

HEATER LOAD CONNECTION:

J2 Heater Load connections are equally simple; connect the load/ heater to lug labeled "HEATER". Again, the other side of the heater is attached directly to the LINE 2 of the AC power source.

INPUT CONTROL PANEL MOUNT POTENTIOMETER for 18TB:

Connect the potentiometer leads to terminals marked **J1**. The wire color is marked on the PCB. If using extension wire, use wire insulated to match the incoming power line.

Terminal torque is 5 In-Lbs for the J1 potentiometer wire terminal block.

There is no "click-stop" on the 18TB potentiometer. It is a 300° single turn with 4 IN-LBS stop strength.

Do not break the potentiometer leads with contactor or relay. With the low power/high-ohm signal, the contact surfaces in your mechanical switching device can cause a loss of continuity.

INPUT CONTROL POTENTIOMETER for 18TBP:

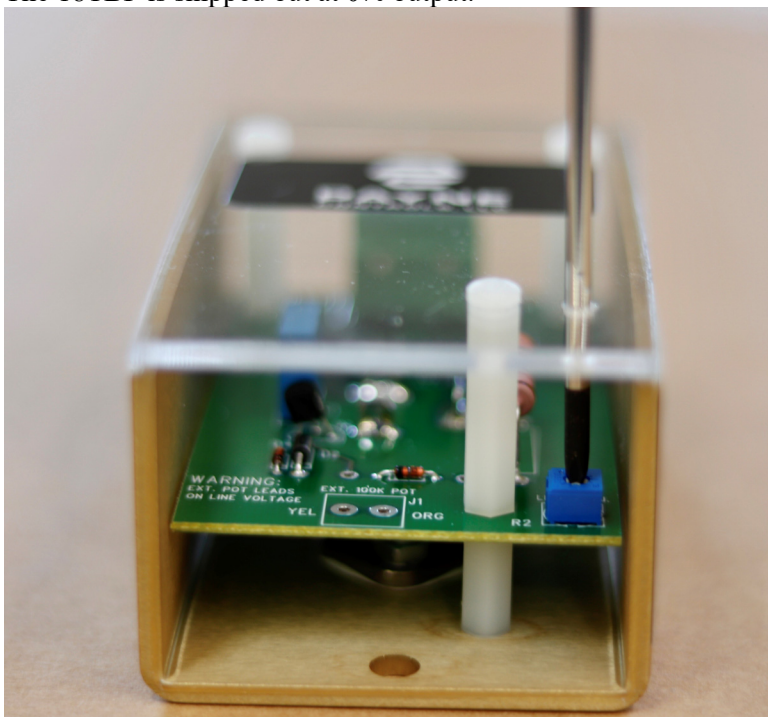
The power adjustment PCB potentiometer is marked **R2** on the PCB.

Using a small screwdriver, turn the R2 potentiometer clockwise to increase power. See photo below.

R2 potentiometer rotation 270°, single turn

Maximum setpoint torque is 3 Oz-In for R2 power adjust potentiometer.

The 18TBP is shipped out at 0% output.



18TB & 18TBP SPECIFICATIONS

INPUT SIGNAL: supplied 100K potentiometer w/2 feet of 600V wire

18TB POTENTIOMETER ROTATION: 300° Single Turn

18TB POTENTIOMETER STOP STRENGTH: 4 IN-LBS (THERE IS NO “CLICK-STOP”)

18TB POTENTIOMETER IP RATING: IP 40

18TBP POTENTIOMETER STOP STRENGTH: 3 IN-OZ (THERE IS NO “CLICK-STOP”)

18TBP POTENTIOMETER ROTATION: 270° Single Turn

J1 FIELD TERMINAL TORQUE RATING: 5 IN-LBS

SUPPLY VOLTAGE: 120-240 VAC, 50/60Hz

POWER CONSUMPTION (max) 24 watts

CURRENT RATING (vertically, flat mounted to metal backplate) 20 amps

OPERATING TEMPERATURE (ambient):..... 0-40°C/122°F

FUSE REQUIREMENTS (SCR Protection): semi-conductor/ rectifier I²T @ 20 Amps. Form 101.

FUSE REQUIREMENTS (BRANCH Protection): T Class fusing.

Fuse to heater size. 20 Amps maximum. JJS, A6T or JLLS.

RESPONSE TIME:10 mS

CONTROL METHOD:Phase Angle Fired, proportional

OUTPUT VOLTAGE:.....1-97% of supply voltage

WEIGHT:1 lbs.

Wire Gauge and Torque Specifications for 90°C Temp Wire.

Use copper wire only.

Wire Gauge and Torque Specifications for 90°C Temp Wire			
Power Control Maximum Current Rating/Circuit	Copper Wire Only MINIMUM AWG	Wire Lug Torque Spec. (lbs./in.)	Lug Wire Size AWG
20A	12AWG	5	10-24

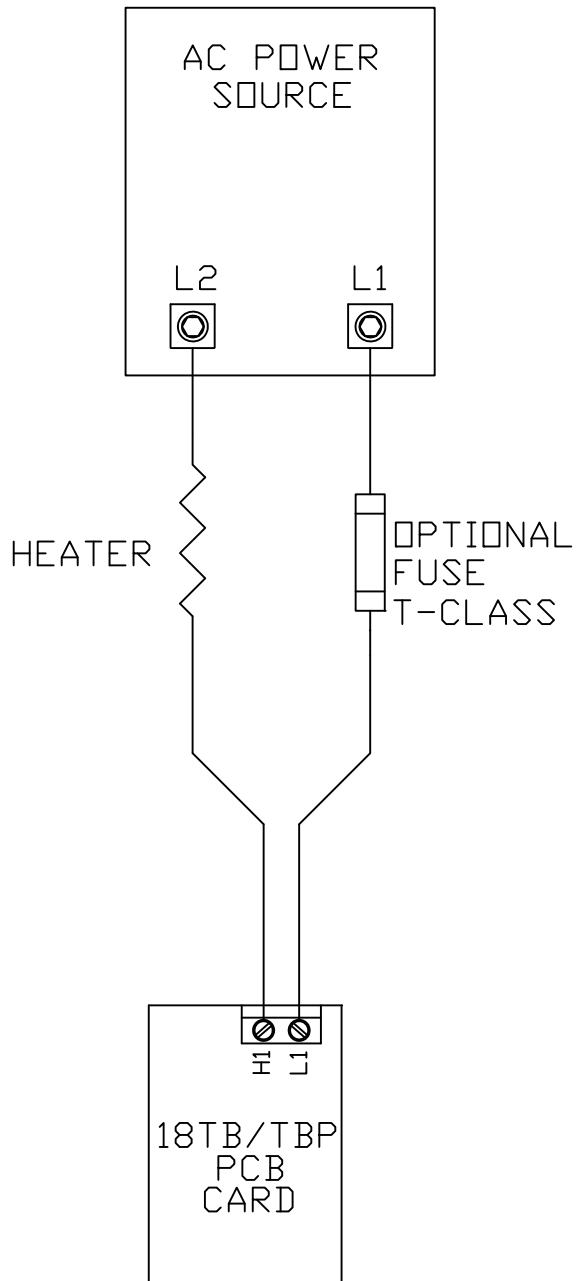
WARRANTY

Your controller comes with a one (1) year limited warranty, contingent that the unit is not water damaged, heavily abused, or mis-fused. Outside of the warranty period, you will always have the option to have your controller repaired, but you will need to pay for shipping to us, and the amount for return shipping will be included in your repair price. You can contact Gordo Sales customer service or follow the link on our website at www.payne-controls.com to request repairs to your controller.

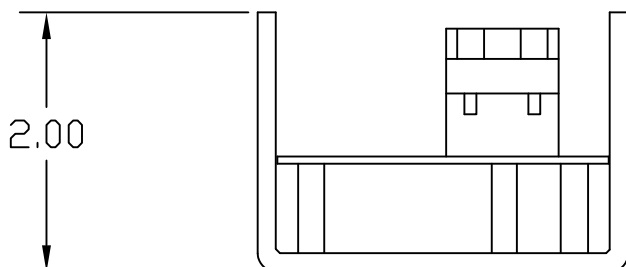
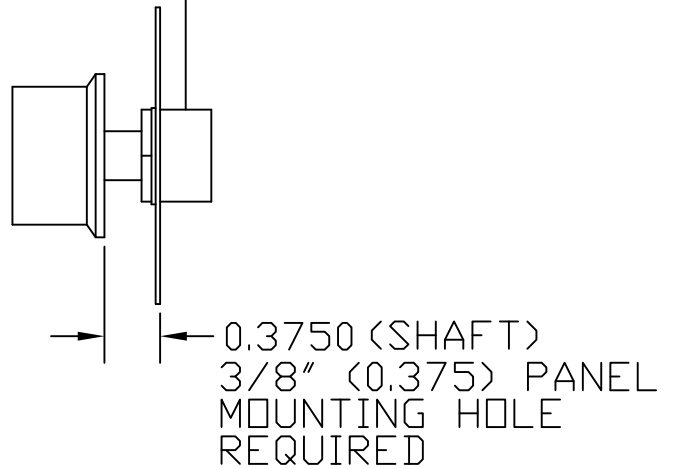
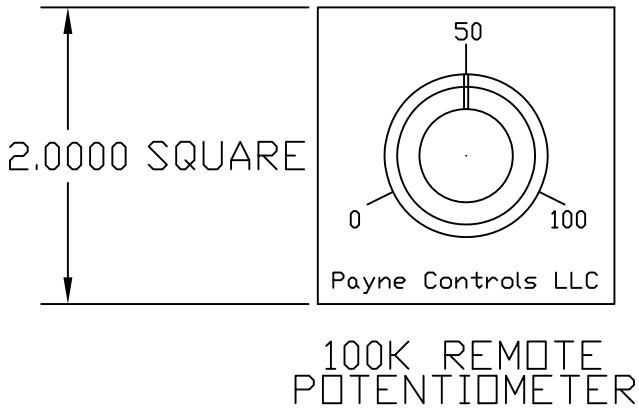
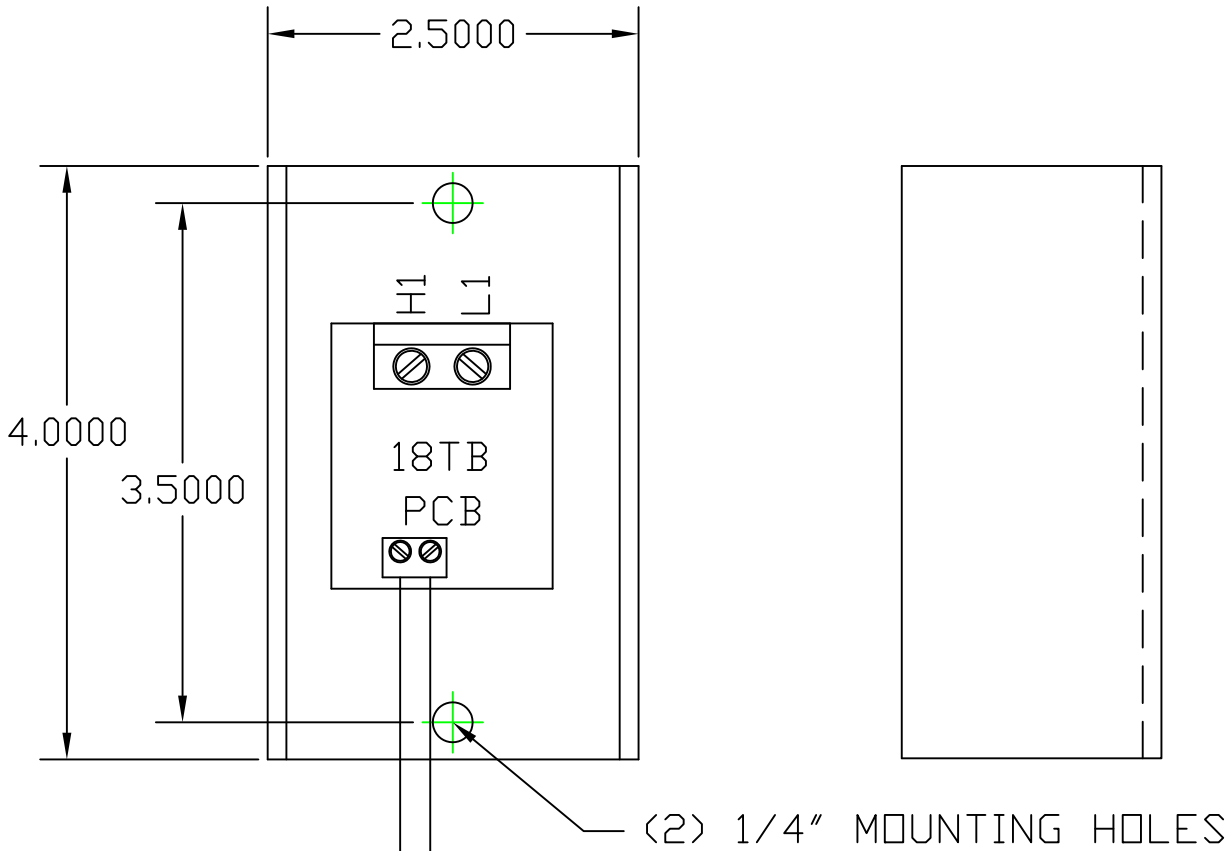
This warranty DOES NOT cover damage due to shipping, abuse, misapplication, user error or operation beyond specified rating. Furthermore, fuses and improperly fused TRIAC's are NOT COVERED by this warranty.

WIRING DIAGRAM

18TB & 18TBP



PHYSICAL DIMENSIONS
18TB - 20 AMP
with remote setpoint potentiometer



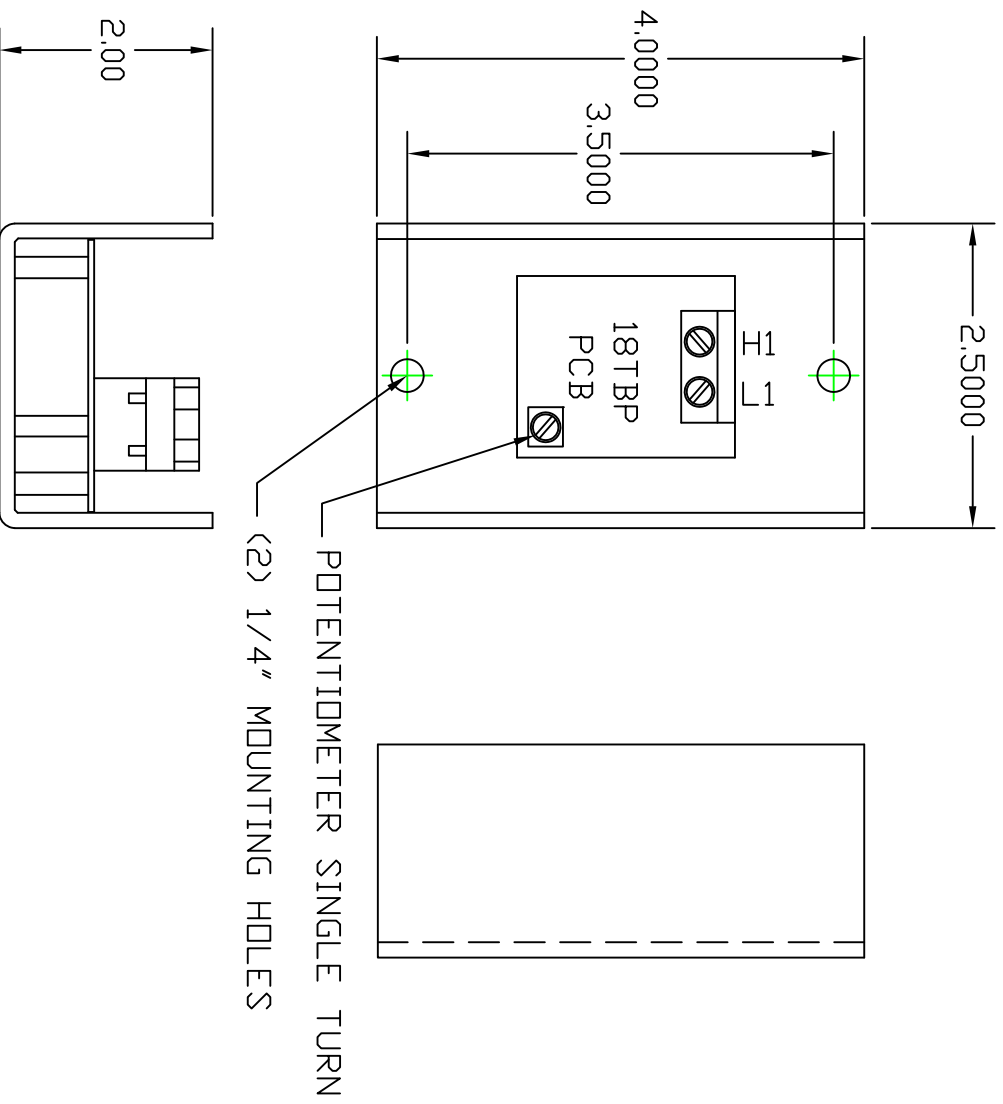
DANGER!!!
POT TERMINALS ARE AT LINE VOLTAGE

PHYSICAL DIMENSIONS

18TBP - 20 AMP

with integral setpoint potentiometer

DIMENSIONS IN INCHES



CUSTOMER NOTES:

Payne Controls, LLC.
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81 Gold Miner Lane, Ste A
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