

# AVATAR INSTRUMENTS CZ OPERATING MANUAL

## CONFIGURATIONS

The CZ series controllers are available in three configurations.

C1Z - single phase control

C2Z - three phase two legs controlled, comprised of (1) C1Z and (1) CZ slave.

C3Z - three phase three legs controlled, comprised of (1) C1Z and (2) CZ slaves.

See wiring diagram for detailed configurations and wire connections.

**DESCRIPTION** The C1Z is a proportional, zero voltage switched power controller capable of delivering 1-98% of the applied line voltage to the directly connected electric heaters. This is accomplished by varying the percentage of AC voltage cycles conducted by an SSR. The CZ series will not control transformers or motors.

**OPERATION** The C1Z takes a 4-20mA input signal from a front-end controller and varies the average voltage applied to the electric heaters (see "WIRING DIAGRAM"). At 4mA input, the C1Z will start applying short duration voltage pulses to the heaters, at 12mA the pulse duty cycle will be approximately 50%, providing approximately 50% of the average line voltage to the heaters, and at 20mA, 98% of the line voltage will be applied to the heaters. The C1Z is a POWER CONTROLLER; it CANNOT create more voltage or current. There is no "tuning" or "tuning adjustments". TROUBLESHOOTING TIP: phase angle fired controllers are recommended for very fast processes and low mass heaters. Overall process control results are set by the dynamic characteristics of the heaters, transfer medium, sensor, and the tuning of the front-end controller, not the power controller

## 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. Provide a safety interlock on door to remove power before gaining access to device.

**ELECTRICAL CONNECTIONS** See "WIRING DIAGRAM" on back. Check the Avatar 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 a minimum wire size of 16AWG for a 10 amp CZ, 14AWG for a 15 amp CZ, and a minimum of 10AWG for a 25 amp CZ. For best results keep control signal and power wires separated.

## OPTIONS

**120VAC INPUT SIGNAL:** add "-120" to part number.

**3-32 VDC INPUT:** add "-VDC" to part number.

**MANUAL CONTROL:** Use Avatar MAP. Isolated Potentiometer.

**WARRANTY** All Avatar Instruments products carry a full three year, from date of purchase, parts and labor warranty against component failure and defects in workmanship. In the event your controller fails to perform properly, **contact Avatar to obtain a return authorization number.** Controllers sent to Avatar for warranty service that have no apparent defect will be treated as a standard repair and a \$50.00 charge will be applied. Avatar will repair or replace any unit that failed due to defective parts or assembly. This warranty DOES NOT cover damage due to shipping, abuse, misapplication or operation beyond specified rating. Further more fuses and improperly fused SCR's are NOT COVERED by this warranty. Avatar is not responsible for any subsequent or other damage experienced in use of this device.

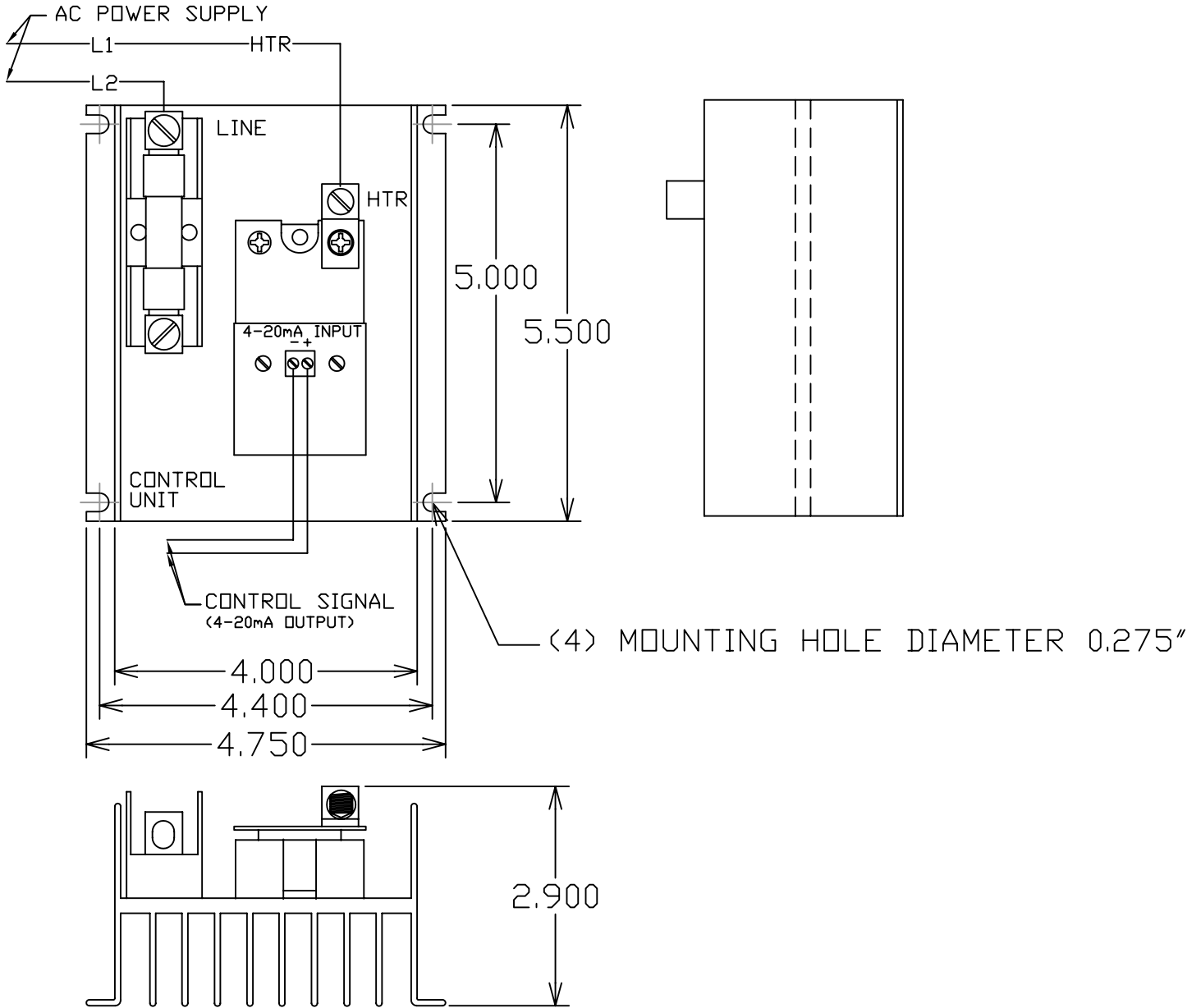
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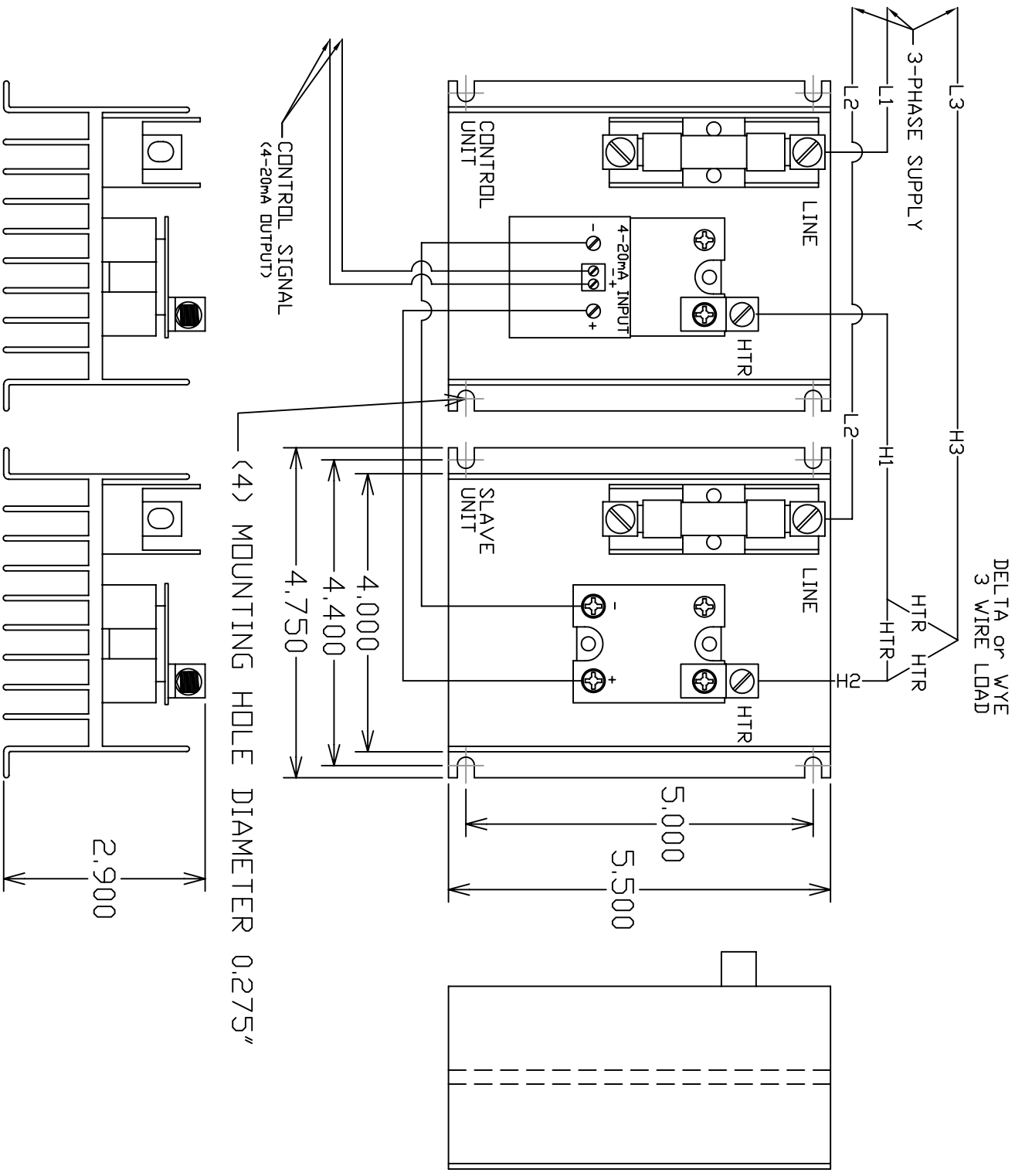
# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C1Z - 10, 15 & 25 AMP



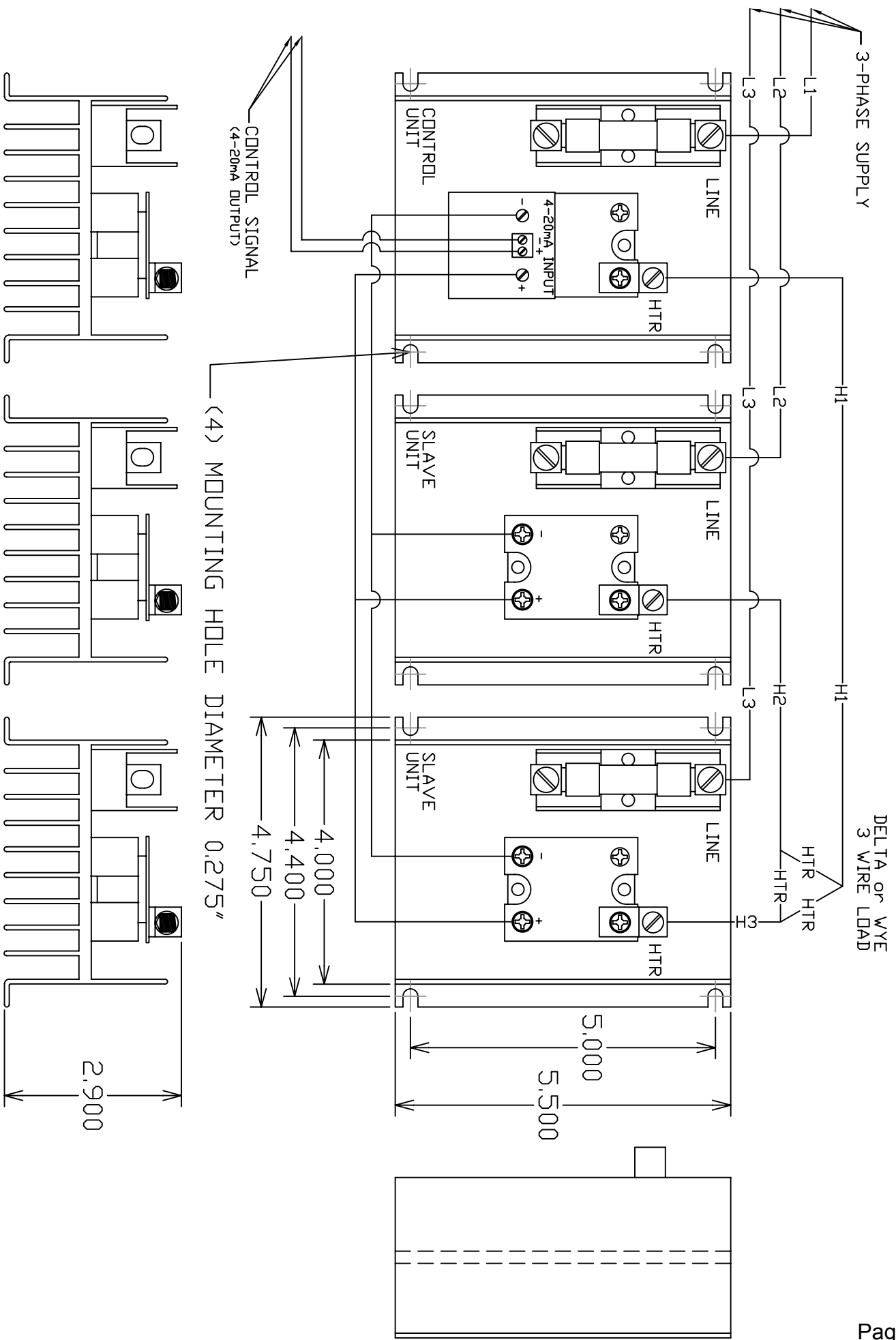
# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C2Z - 15, 25 & 40 AMP



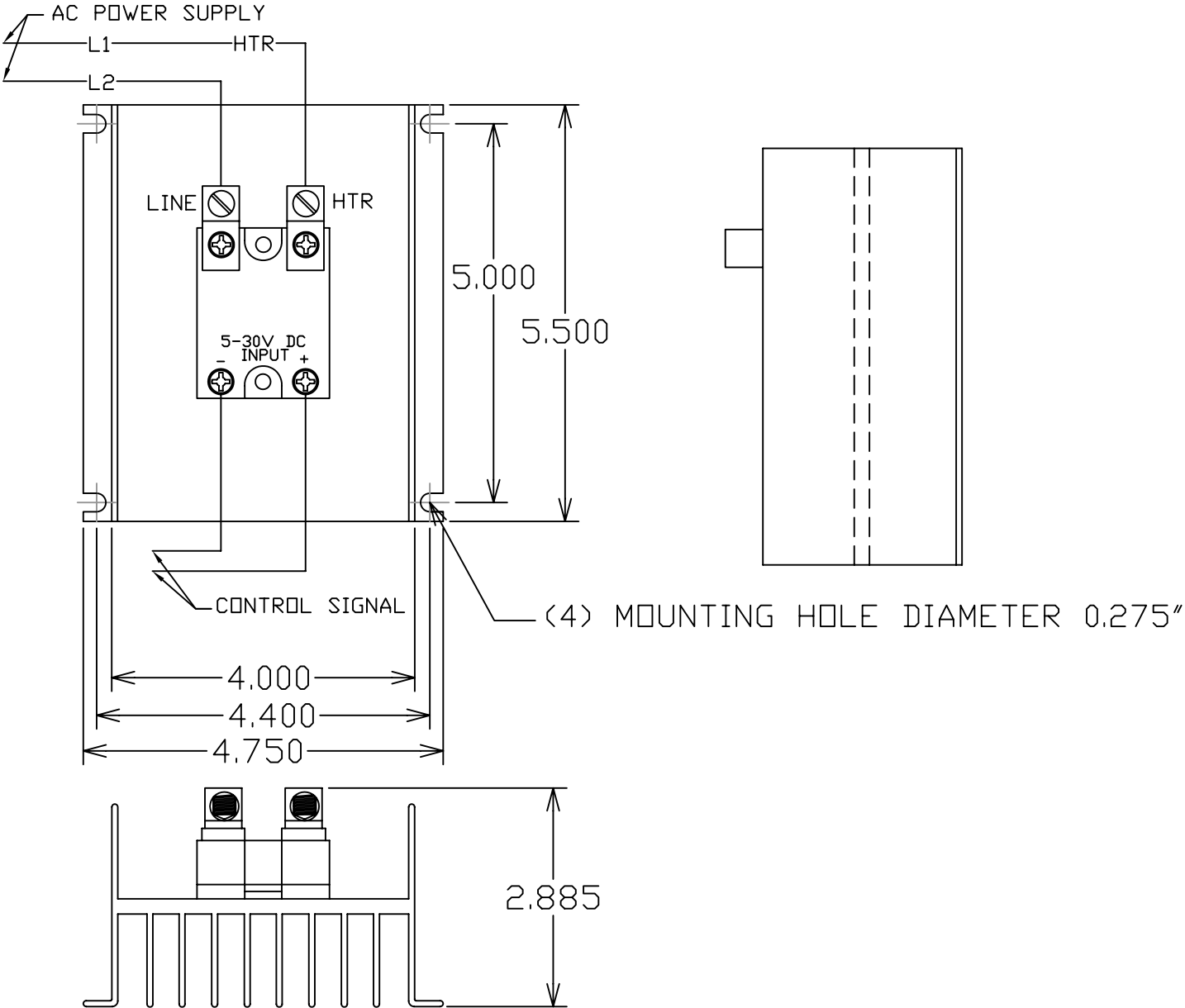
# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C3Z - 15, 25 & 40 AMP



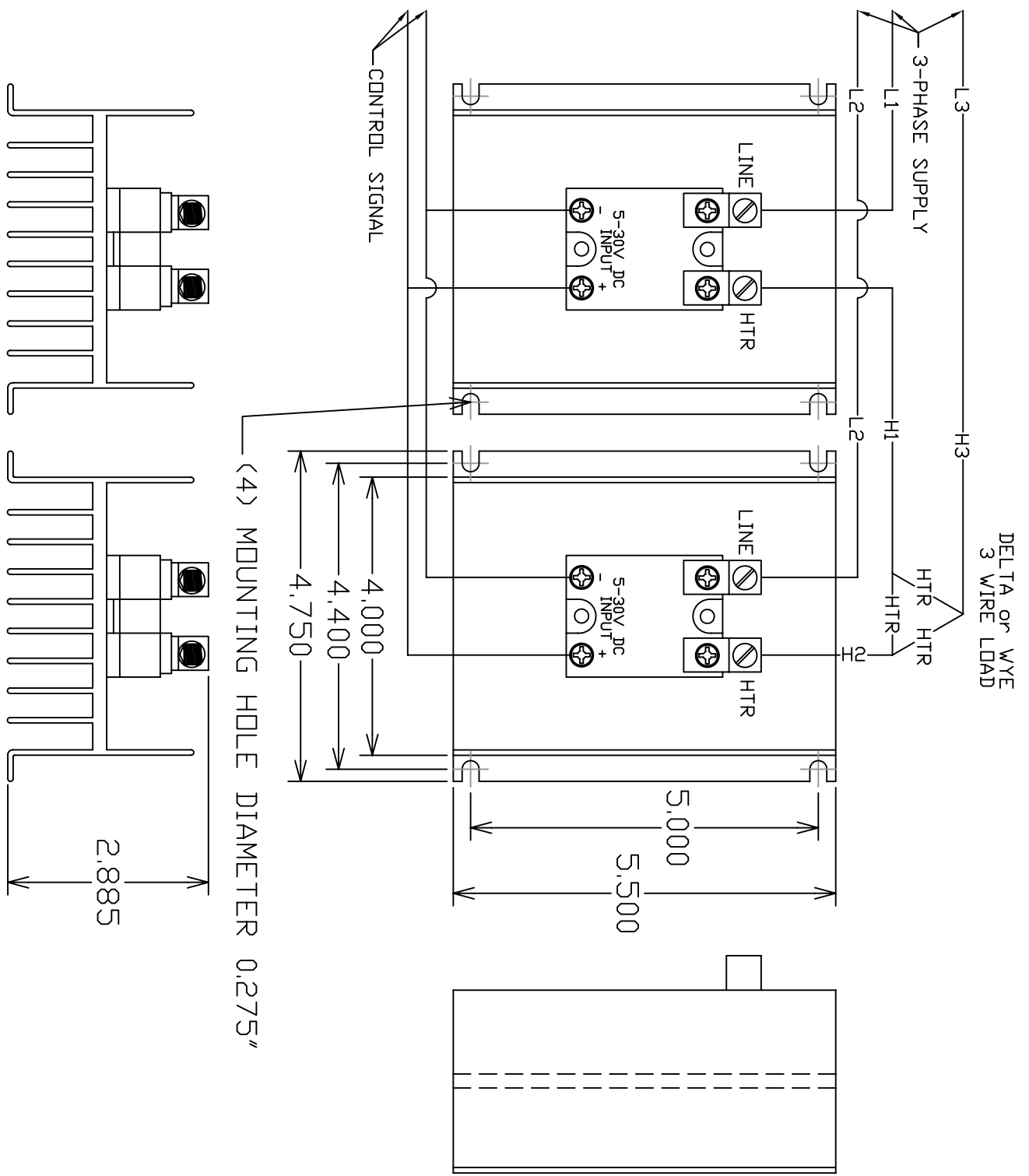
# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C1ZNF - 10, 15 & 25 AMP



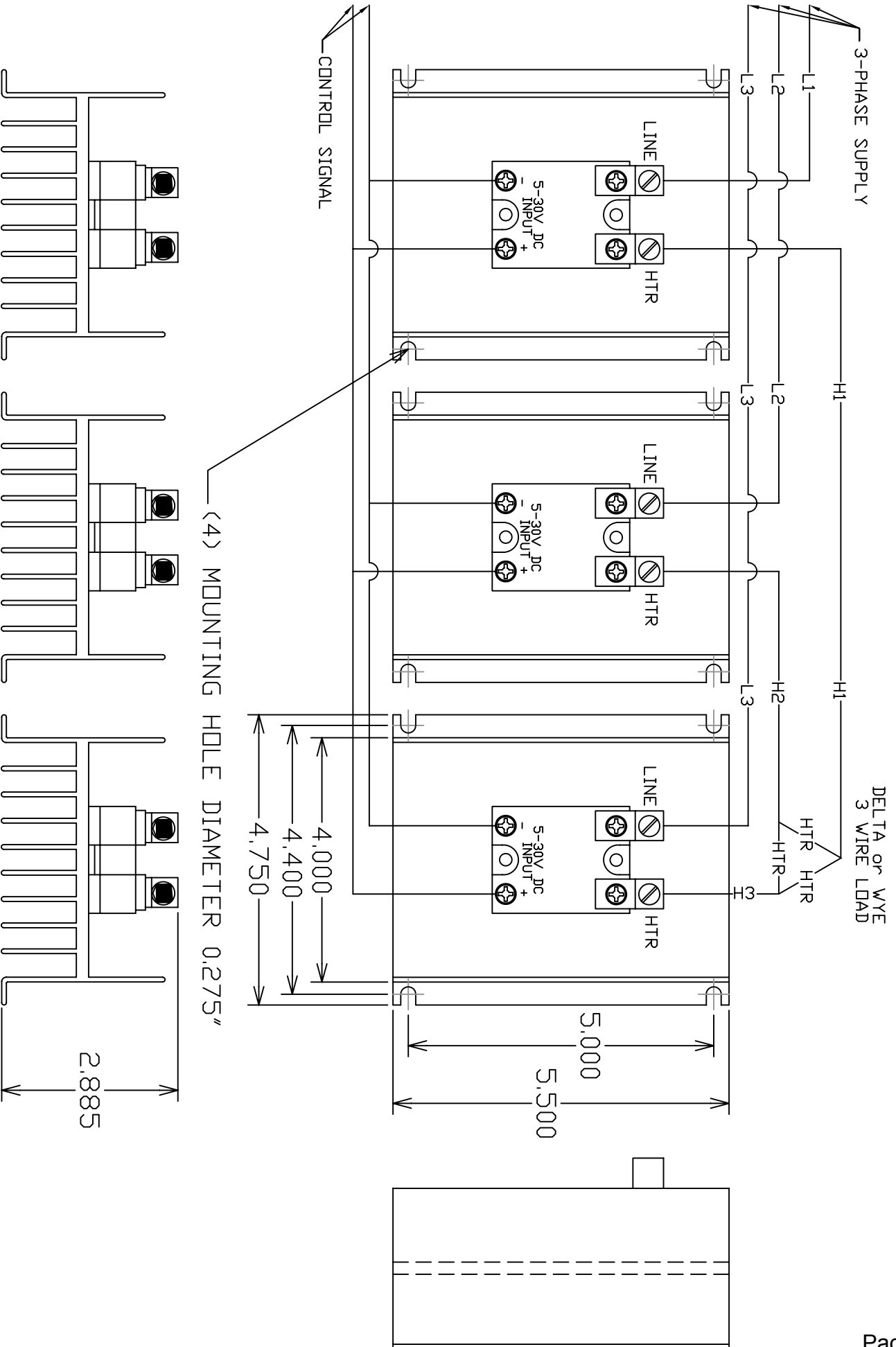
# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C2ZNF - 15, 25 & 40 AMP



# PHYSICAL DIMENSIONS and WIRING DIAGRAM

## C3ZNF - 15, 25 & 40 AMP





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