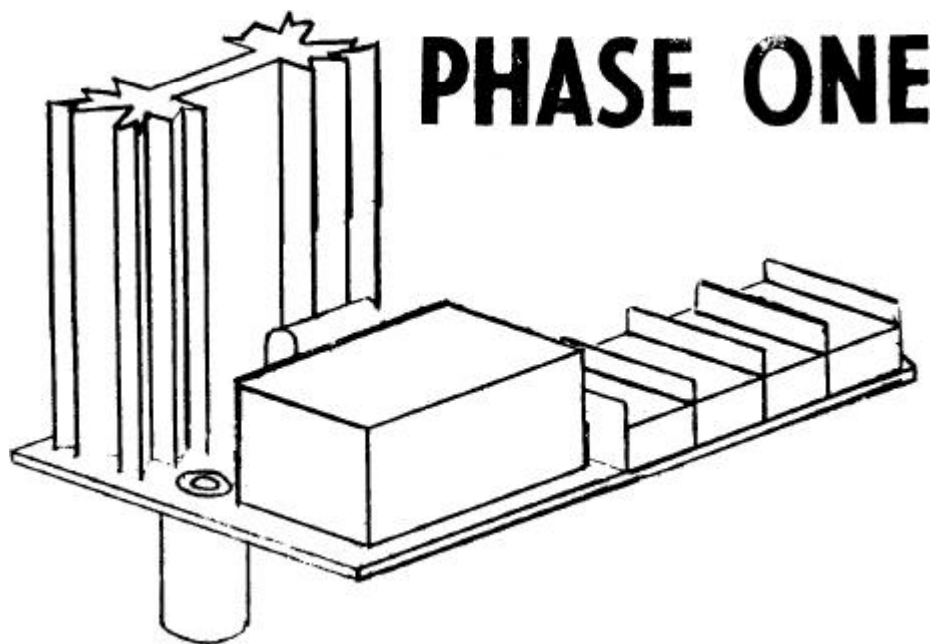


# DALLEE

## ELECTRONICS



### **NOTE:**

These instructions were scanned into text format and do not represent the actual original format but do contain the actual text as originally printed. This document was created this way for ease in making a pdf of a smaller size and is just for reference. If a graphical text operation was used to match exactly as the original, the pdf would not only be super large but would not be as legible.

The PHASE ONE has not been made for many years but we do get calls for instructions on wiring since there are many in the field with lost instructions. The PHASE ONE was originally produced in the late 1970's but are still going strong.

# DALLEE

## ELECTRONICS

MOTION CONTROL CONCEPTS EXCLUSIVELY  
FOR DISCRIMINATING MODEL RAILROADERS

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### PHASE ONE ————— Installation Instructions

Caution - Electrically Operated Product

Read and follow instructions to insure safe  
operation and handling.

#### SPECIFICATIONS

##### Input

10 - 20 Volts DC

5/8/12 Amps (dependent on type throttle purchased)

##### Output

8-18 Volts DC (dependent on input)

5/8/12 Amps (dependent on type throttle purchased)

#### DESCRIPTION

PHASE ONE is an SCR type throttle designed for DC operation in any gauge, scale or tinplate. Output current is limited by an automatic reset circuit breaker. The circuit breaker is rated for 5, 8 or 12 amps depending on the model selected. The maximum output voltage is dependent on the voltage of the power supply used as an input source. For scale operation with 12 VDC motors use a 14 - 15 VDC input. Series wound motors found in tinplate equipment (Lionel, American Flyer, etc.) operate at higher voltages and use an 18 - 20 VDC input. Remember the input voltage must not exceed 20 VDC. The input supply must be unfiltered full wave DC, which can be obtained by using a transformer and a full-wave silicon bridge rectifier.

## PHASE ONE

### Installation Instructions

PHASE ONE has excellent low speed control for yard operation as well as for main line use. With its high current capabilities this throttle is perfect for the operator who likes running multiple unit locomotives, all of which are powered. During multiple unit operation the PHASE ONE essentially solves the motor synchronization difficulties most operators have experienced.

The basic PHASE ONE does not include a power supply or a reversing switch. Tinplate operators utilizing existing sequence reverse units (E units) need only an on-off switch. Converted tinplate (see "OPERATING NOTES" section 4) and scale operators employing polarity reverse require a double pole double throw (DPDT) center off switch for reversing. PHASE ONE is also available with a DPDT center off toggle reversing switch and a control mounting panel. The panel is 1/8 inch thick aluminum. Both the reversing switch and speed control are mounted to the panel. The panel is lettered for FORWARD/OFF/REVERSE and SPEED RANGE (MIN - MAX) .

A silicon bridge rectifier is necessary to convert the power source (AC Transformer) from AC to DC. Do not use any bridge rectifier rated at less current than the PHASE ONE type purchased. It is also recommended that the bridge rectifier is adequately heat sinked. Since more than one PHASE ONE throttle may be powered from one bridge rectifier, we suggest a 25 Amp device. DALLEE ELECTRONICS has such a device available with a more than adequate heat-sink attached. With a 25 Amp bridge rectifier and power transformer up to 3 - 8 Amp or 5 - 5 Amp or 2 - 12 Amp or any combination of throttles, which total output amperage does not exceed 25 Amps may be used. Please remember that whatever power (Power = E X I = Volts X Amps) is delivered to the load must be supplied by the input transformer. Since most tinplate transformers are rated for 18 volts at 300 Watts, this means they can deliver a total of 16 Amps (300/18 = 16.666 Amps).

### INSTALLATION & WIRING

The 5 and 8 Amp models of PHASE ONE are mounted in any convenient location by the use of wood screws through the two stand-off spacers. Mounting can be in any position but for best results mount so the heat sink is vertical. The 12 Amp model is mounted on a separate heat sink. This heat sink should be mounted to 2 "L" brackets. The "L" brackets may then be screwed to the panel or benchwork. Again for best results mount the heat sink vertically in a well ventilated location. Semiconductor devices work best with adequate ventilation. The lack of ventilation will cause premature failure of these devices.

## PHASE ONE

### Installation Instructions

When wiring the PHASE ONE throttle, refer to the enclosed wiring diagram. For convenience, the terminal strip will be referred to as being numbered from left to right. The left side is the side with the circuit breaker and heat sink. The circuit breaker is on the left front side and the heat sink is on the left rear side. With this orientation, the right front locates lug #4 of the terminal strip.

All wiring is to be done with the power source disconnected i.e. unplugged. This precaution is to prevent any possible shock to you or damage to the equipment being installed ! If this is the second or more throttle to be operated from the same bridge rectifier, skip the next paragraph.

The first item to be connected is the bridge rectifier. If this item was purchased from DALLEE ELECTRONICS, then it should be mounted with wood screws near the power transformer. The AC leads from the transformer to the bridge rectifier should be 14 gauge wire. The AC input on the bridge rectifier is labeled "AC" and should be connected to the low voltage side of the power transformer. If you are using an American Flyer or Lionel power transformer with a "FIXED" AC output, then connect one 14 gauge wire from the "BASE POST" to the one "~" AC input of the bridge rectifier and connect the "18 VAC POST" to the other "~" AC input of the bridge rectifier. If a "FIXED" tap is not available from the American Flyer/Lionel transformer (such as the Lionel ZW), then place the "Speed Control" at full and wire the speed controls output as if it were a fixed output. When the transformer is used as a power source for the PHASE ONE do not use it for other accessories (refer to "OPERATING NOTES" section 3).

The DC input wires should be connected in the following manner. The positive "+" lead from the bridge rectifier **MUST** be connected to terminal #4 and the negative "-" lead to terminal #2. **THIS STEP IS IMPORTANT AND MUST BE DONE CORRECTLY. IF THE POWER SUPPLY LEADS ARE REVERSED THE SEMICONDUCTORS MAY BE DAMAGED AND WILL HAVE TO BE REPLACED AT YOUR EXPENSE !** Because these wires carry high current we suggest #16 gauge or heavier wire.

The next step is to connect the speed control potentiometer to the throttle. Note from the drawing which connections are used on the "POT". Wires from the "POT" connect to terminals #3 and #4. It does not matter which wire connects to which terminal. Speed should increase as the "POT" turns clockwise. If the throttle is backwards, switch the wires on the barrier strip. Heavy wire is not required for the potentiometer connection 22 - 28 gauge is fine.

## PHASE ONE

### Installation Instructions

The last wire pair is the throttle output through the reversing (ON/OFF) switch to the track. Output wires connect at terminals #1 and #2. Reverse (ON/OFF) switch wiring is dependent upon application to scale or tinsplate operation and use of either sequence or polarity reversing. Since the output is also high current we again suggest #16 gauge or heavier wire.

Now, after making sure all other connections are OK, connect the main power and try out your installation. It is recommended to use a lighted car on the tracks, instead of an engine, to verify proper operation before "highballing" a locomotive with-out intentions of doing so.

### OPERATING NOTES

- 1) PHASE ONE has no "OFF" position on the speed control. Full stop must be accomplished by the "OFF" position of the selected reversing switch.
- 2) Since PHASE ONE output to the track is DC, certain accessories such as horns/whistles (located in the engine) which were DC operated, will have to be disconnected.
- 3) Track switches, uncouplers and other operating accessories must be connected to an auxiliary power supply. These accessories can still be operated on AC when using the PHASE ONE control system. Consult your train set or accessory manual for instructions on wiring to a separate power supply.
- 4) Since DC is being used for propulsion, directional lighting becomes a simple project. Also, for improved operation you may wish to replace E-units with bridge rectifiers for polarity reverse. Wiring for these modifications has been published several times in the various magazines or may be obtained from DALLEE ELECTRONICS.
- 5) Output to the track is essentially a constant peak voltage, therefore illumination of headlights and lighted cars will tend to be of uniform brightness through all speed ranges. This constant peak voltage will also tend to improve E-unit function with less drop-out. Liquid type smoke units with heater elements should also develop a higher volume of smoke.

When writing to us for information please furnish a self addressed stamped business size envelope and please include your telephone # so that if we decide it is better to call you we may do so with relative ease.

