



2036 Fillmore Street  
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## 3-Stage Timer

### WARRANTY AND DISCLAIMER

DIGITAL DELAY INC. WARRANTS THE PRODUCTS IT MANUFACTURES AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD LIMITED TO 1 YEAR FROM THE DATE OF SHIPMENT, PROVIDED THE PRODUCTS HAVE BEEN STORED, HANDLED, INSTALLED, AND USED UNDER PROPER CONDITIONS.

The company's liability under this limited warranty shall extend only to the repair or replacement of a defective product, at the company's option. DIGITAL DELAY INC. disclaims all liability for any affirmation, promise, or representation with respect to the products.

The customer agrees to hold DIGITAL DELAY INCORPORATED harmless from, defend, and indemnify DIGITAL DELAY INC. against damages, claims, and expenses arising out of subsequent sales of or use of DIGITAL DELAY INC. products, or products containing components manufactured by DIGITAL DELAY INC. and based upon personal injuries, deaths, property damage, lost profits, and other matters which BUYER, its employees, or sub-contractors are or may be to any extent liable, including without limitation, penalties imposed by the Consumer Product Safety Act (P.L. 92-573) and liability imposed upon any person pursuant to the Magnuson-Moss Warranty Act (P.L. 93-637), as now in effect or as amended hereafter.

No warranties expressed or implied, are created with respect to the company's products except those expressly contained herein. The customer acknowledges the disclaimers and limitations contained and relies on no other warranties or affirmations.



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## INSTRUCTIONS FOR THREE STAGE TIMERS

### BENEFITS:

- Quartz Crystal Timing.
- All Solid State--no relays-25 Amp. output {for 30 seconds)-no scattering of the .001 second position due to relay variations.
- Time delays may be set to 1/100th. of a second resolution. Instant resets to the start of the first timer when button is pushed in middle of the any timing cycle. The case is heavy industrial die-cast aluminum is more durable than thin sheet metal boxes. Die-cast offers the best in electrical noise protection. Incorporates an output power reversing switch-permits user to select off/on/off throttle control or on/off/on throttle control at the flip of a front panel switch-no wire changing!!!
- Leds to indicate box status. Red-power on when lit-**If not lit** when the power switch is on, the output is short circuited. The red led will flash on and off if voltage engaged. Yellow-turns on when pushbutton is pushed. It tells you that the pushbutton is working. It goes out when the button is released.
- Green-timed output is active-12 volts present to turn on your throttle control
- 3 Green LEDs next to the thumbwheels indicates the timer stage that is in control of the output and is timing.
- The **3 STAGE** timer may be used as a **2 STAGE** timer by setting all zeroes in the third stage thumbwheels The timer now functions as a standard **2 STAGE** timer.

### SPECIFICATIONS

- **Input Voltage Range:** 10.5 to 15.0 VDC--Red led will flash at 11.5 Volts.
- **Voltage Drop through Delay Box:** 0.2 VDC at 6 Amp load 0.45 VDC at 20 Amp load
- **Output Current Range:** 20 Amps. continuous-25 Amps for 30 seconds.
- **Standby Current Draw:** 0.17 Amps.(Would take over 1 year to discharge an average racing battery if left turned on)
- **Operating Temperature Range:** -45 to +150 degrees F. internal temperature.
- **Dual usage:** The 3 stage can be actuated by the release of the transbrake voltage or can be actuated by a pushbutton supplying + 12 VDC to the HOTWIRE-TRANSBRAKE terminal
- **Output Current:** switched by a Field Effect Transistor that is electronically protected against short circuits in customer wiring. The output just turns off. The red power LED also turns off, telling you that the box is in short circuit. Pressing the pushbutton resets the internal protection. If the short is still there the red LED will stay off.

**Pushbutton Contact Current:** 0.100 amps. at 12 VDC.

## INSTALLATION INSTRUCTIONS

### READ THE WARRANTY AND THE DISCLAIMER FIRST

The **3 STAGE** timer may be located in any position. It is suggested that the box be mounted at least 12 inches from the ignition system. Test the operation of the timer with the engine running. If operation of the timer is incorrect, contact **DIGITAL DELAY INC.** at 563-324-1046. The **3 STAGE timer** has been designed to operate with all ignition systems, but it is impossible to cover all situations. Please call if you have a problem.

The **3 STAGE TIMER** must be operated with a negative ground 12 volt system only. Connecting to a positive ground system will result in destruction of the unit. This is out of warranty use.

**THE GROUND WIRE MUST BE CONNECTED BEFORE ANY OTHER WIRES.** THE WIRES SHOULD BE AT LEAST 14 GA. FOR THE , +12VDC, AND THE OUTPUT WIRE. **Increase the wire size to 10 Ga.** if you are using a throttle control with more than a **10 amp** current draw. The pushbutton wire may be any size that is convenient( at least 20 Ga.), and it does not need to be shielded wire.

The Timer ground must be to the battery or to the Chassis. The ground must not be made to aluminum parts.

The 3 STAGE can be mounted by putting stick-on velcro on the back of the box and on the car's mount. Mounting can also be done by first removing the 6 outer Phillips screws on the front panel. Then carefully lift the complete TIMER out of the box. You may now drill the back of the box for mounting bolts. Be very careful that the heads of the mounting bolts do not touch the back of the circuit board when you reinstall the TIMER.

### OPERATION NOTES

The red LED on indicates the box is turned on , has power and is not in the short circuit protection mode. When the red LED is not on, and the yellow LED comes on when the button is pushed, the throttle control is possibly shorted. The red LED will flash on and off if voltage to the transbrake is below **11.5** volts when the output is engaged.

The yellow LED turns on any time that the pushbutton is pushed. This tells you that the pushbutton circuit is working. The pushbutton terminal on the terminal strip must go to +12 Vdc to turn this LED on. This is done when the pushbutton switch is pressed or the transbrake line is turned on. The timer will not operate if the yellow LED is not turning on. If it does not turn on and the red LED is on, check the button wiring. The yellow LED turns off when the pushbutton is released.

The green LED turns on whenever the output is turned on(hot-12 volts) during the on parts of the off/on/off or the on/off/on timing cycle. If the green LED is on and the throttle control is not engaged, check the wiring for an open circuit.

**SHORT CIRCUIT PROTECTION**--When the red LED is not on, and the yellow LED comes on when the button is pushed, the throttle control is possibly shorted. The green LED will not turn on if there is a short. Turn the timer off. Disconnect the wire from the OUTPUT point on the terminal strip and turn the timer back on. If the green LED turns on when the button is pushed, there is a short in the wiring or in the throttle control.

Three green LEDs are provided to monitor the operation of the THREE STAGE TIMER. They are next to the thumbwheel switches. They light up when that stage is timing. This does not mean that the output is turned on. That is controlled by the setting of the OUTPUT REVERSER switch.

The OUTPUT POWER REVERSER Switch gives you the option of off/on/off or on/off/on throttle settings. When the **TIMER** is turned on, the output is preset to the first stage of your selection. When

the third stage timer completes its' cycle, the output reverses for 20 seconds and then returns to the preset condition. Preset/off/on/off/on(20seconds)/preset or preset/on/off/on/off(for 20 seconds)/preset

All zeroes loaded in the third stage thumbwheels makes the 3 STAGE work like a standard 2 STAGE. The third stage and the 20 second period are eliminated.

One important feature of the **3 STAGE TIMER** is the ability to restart your **FIRST** cycle if you slip off the button while you are staged. Every time that you press the pushbutton, the timer resets to the beginning of the first timing cycle. This means that you can instantly recover without having to complete the timing sequence.

**THERE ARE NO USER SERVICABLE PARTS IN THE TIMER.**

**ALL REPAIRS WILL BE MADE BY THE MANUFACTURER.**

**WHAT THE FLASHING RED LIGHT MEANS**

THE RED LIGHT WILL FLASH WHEN THE THROTTLE CONTROL IS ENGAGED AND THE BATTERY VOLTAGE IS BELOW 11.5 VOLTS. THIS IS WARNING YOU THAT YOU COULD BE STARTING TO HAVE PROBLEMS DUE TO LOW VOLTAGE. YOU SHOULD CHECK THE BATTERY VOLTAGE AT THE 3 STAGE TIMER WITH A DIGITAL VOLTMETER. PUT THE BLACK(-) METER LEAD ON THE GROUND TERMINAL SCREW AND THE RED(+) METER LEAD ON THE BATTERY TERMINAL SCREW, ENGAGE THE THROTTLE CONTROL AND READ THE BATTERY VOLTAGE AT THE OUTPUT TERMINAL, IF IT IS BELOW 11.5 VOLTS, YOU SHOULD FIND THE REASON AND CORRECT IT BEFORE PROBLEMS DEVELOP IN THE THREE STAGE TIMER. SOME REASONS FOR LOW VOLTAGE AT THE 3 STAGE TIMER ARE:

1. Discharged or bad battery
2. Loose or broken wires
3. Wires too small for the current draw (If more than 10 Amp. draw use 10 GA. wire)
4. Defective electrical component in race car drawing too many Amps.
5. The 3 STAGE TIMER may be defective (check by making sure battery voltage is over 12 volts. disconnect the throttle control wire, apply 12 volts to hot wire and read the voltage at the throttle control terminal, if below 9 volts and the LED still flashes, the box is defective return for repair)

**3 STAGE TIMER CONNECTIONS**

