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4-Stage and Dual 4-Stage Timer

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4 Stage Timer & Dual 4 Stage Timer Instructions

Digital Delay, Inc., the company that invented and patented the Crossover, designed and manufactured the *4 Stage Timer & Dual 4 Stage Timer* simply to be the best and one of the most advanced multi-function box on market. The *4 Stage timer* has one output and the *Dual 4 Stage Timer* has two separate outputs, they both have two separate push-button inputs. This combination of inputs and outputs allows the *4 Stage Timer & Dual 4 Stage Timer* to be tailored to fit a variety of roles.

Some of the special functions of the *4 Stage Timer & Dual 4 Stage Timer* are, the ability to run either a air or electric throttle stop. The *Dual 4 Stage Timer* has 2 outputs that run independently of each other. The *4 Stage Timer & Dual 4 Stage Timer* have a special feature that includes a Driver's Reaction Tester that allows a driver using the push-buttons mounted in the vehicle to test his or her reaction time under different circumstances. They both include scrolling keys for small number changes to be done more rapidly.

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Features and Specifications

Features:

- Microprocessor controlled timing
 - Discrete I/O (input - output) construction
 - Retains all numbers even with power disconnected from unit
 - Large illuminated display for easy reading of information day or night
 - Self-test mode on all display functions
 - Dust & splash-proof key pad with detent (positive feel)
 - 2 separate 4 stage timers on Dual 4 Stage timer only
 - Instant timing cycle reset
 - Programmable throttle stop over ride
 - Scrolling on keypad for quick number changes
- Timing can be set to thousands of a second on stage 1 and 2
- Output reversible for both air or electric throttle stops
 - Built-in drivers reaction tester

Specifications:

- Input Voltage Range: 10 to 18 Volts DC (16 Volt compatible)
- Operating Temperature Range: 0 to 150 degrees F.
- Push-button Current: .1 AMPS at 12 VDC
- Two Separate outputs
 - 4 Stage Timer one output
 - Dual 4 Stage Timer two outputs

The Terminal Strip

+12VDC Terminal: Connect the +12VDC terminal to a switched +12 Volt source with enough amperage capable of driving all outputs at the same time.

Throttle One Terminal: Connect throttle stop wire to this terminal. This can be used as a down track throttle stop controller.

Throttle Two Terminal: (Dual 4-Stage Timer only) Connect throttle stop wire to this terminal. This can be used as a second down track throttle stop controller.

Ground Terminal: Connect the Ground terminal to the Neg. terminal on the battery or to a good steel ground, not aluminum.

Signal Terminal: Connect wire from one side of a pushbutton and the other side of pushbutton to + 12 volts. The other option being a wire from the transbrake terminal of your delay box to the signal terminal.

PTSO Terminal: Connect a wire from one side of a pushbutton to the PTSO Terminal and the other side of the pushbutton to + 12 volts.

The Keypad

The keypad is made up of numerical and function keys that are used to control the information that is either entered into the unit or shown on the displays. The numerical keys 0-9 are used in conjunction with the function keys to enter new information. While the numerical keys 1-6 are used to control what information is shown on the display and the clear key is used to clear numbers for new values, The up and down arrow keys are used for scrolling in changing number values. The 2ND key is used to switch the scrolling arrows on the screen from one side of the screen to the other. The ENTER key will add the leading zeros on the screen. The HELP key is used to back up one digit at a time to enter a new digit or if display 1 or 2 is blank it will restore the original value.

Example:

- 1) Select Stage 1 & 2 of timer 1 by pressing the 1 key for stages to be displayed, 2 key for stages 3 & 4 of timer 1
- 2) The screen you selected will be displayed with arrows on the side of the screen most commonly used first. The arrows show what side of the screen is being used, to change sides press the 2ND key to move the arrow signs from display 1 to display 2. Then press the clear key to clear that side of the screen.
- 3) Use the numerical keys to enter your stage times, once the desired number has been entered, Press the ENTER key and the number will be stored in memory. As the numbers are entered they will appear on the display..
- 4) If you want to use the scrolling arrow keys, after you have selected the correct screen you want to change, push the 2ND key to move the arrow signs from display 1 to display 2, then push the up or down arrow to cause the number to increase or decrease in a scrolling motion. If the arrow sign is on the side of the screen you want, you only need to push an arrow key to scroll.

Note: If an error is made while entering, press the HELP key to erase the last digit. This can be repeated as many times as necessary until the display is blank. Pressing the HELP key one more time restores the original number.

Numerical Keys 1-6

The numerical Keys 1-6 are used to select what information is shown on the display. For example, if Stage 1 & 2 of Timer 1 are wanted and Stage 3 & 4 of Timer 1 are being displayed, the 1 key would be pressed to display the Stage 1 & 2 times of Timer 1, the press of the 2 key would bring up Stage 3 & 4 of Timer 1.

<u>Displays using 1-6</u>	<u>Change with Clear key</u>	<u>Change with Clear key</u>
<u>1</u>	<u>Stage 1 of Timer 1</u>	<u>Stage 2 of Timer 1</u>
<u>2</u>	<u>Stage 3 of Timer 1</u>	<u>Stage 4 of Timer 1</u>
<u>3</u>	<u>PTSO</u>	
<u>4(Dual 4-Stage Timer only)</u>	<u>Stage 1 of Timer 2</u>	<u>Stage 2 of Timer 2</u>
<u>5 (Dual 4-Stage Timer only)</u>	<u>Stage 3 of Timer 2</u>	<u>Stage 4 of Timer 2</u>
<u>6</u>	<u>Display Test Mode</u>	<u>Drivers Reaction Tester</u>

Setting Stage Times 1 & 2 of Timer One

To set stage 1 & 2 times, press the 1 key, then check the location of arrows on the screen, press the 2ND key to move the arrows to the desired side of the screen you want to change. Press the CLEAR key and the selected display side will go blank indicating the unit is ready to accept the new time. Enter a new time using the numerical keys. If a mistake is made while entering the number, pressing the HELP key will erase the last digit entered. This can be repeated as many times as necessary until the display is blank. Pressing the HELP key while the screen is blank will restore the original number. Once the new number has been entered press the ENTER key to store in memory.

Setting Stage Times 3 & 4 of Timer One

To set stage 3 & 4 stage times, press the 2 key. Then follow the same procedure for entering a new number as instructed in setting stage 1 & 2 times.

Timer Two is only available in the Dual 4 Stage Timer

Setting Stage Times 1 & 2 of Timer Two

To set stage 1 & 2 times, press the 4 key, then check the location of arrows on the screen, press the 2ND key to move the arrows to the desired side of the screen you want to change. Press the CLEAR key and the selected display side will go blank indicating the unit is ready to accept the new time. Enter a new time using the numerical keys. If a mistake is made while entering the number, pressing the HELP key will erase the last digit entered. This can be repeated as many times as necessary until the display is blank. Pressing the HELP key while the screen is blank will restore the original number. Once the new number has been entered press the ENTER key to store in memory.

Setting Stage Times 3 & 4 of Timer Two

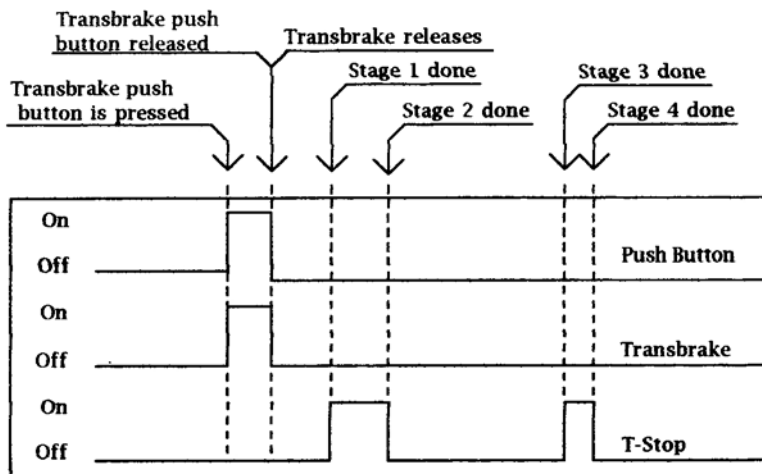
To set stage 3 & 4 stage times, press the 5 key. Then follow the same procedure for entering a new number as instructed in setting stage 1 & 2 times.

Eliminate the use of any stage by putting all zeros in the stage times not used.

Explanation of the 4-Stage Timer

This is to help the racer understand the 4-Stage Timer when controlling a throttle stop. The 4-Stage Timer can also be used to control other timed devices, nitrous, or timing retarders.

Stage 1 represents when the throttle stop turns on. Stage 2 represents the amount of time (duration) the throttle stop will stay on. Stage 3 represents when the throttle stop will turn on the second time during the run. Stage 4 represents the amount of time (or duration) the throttle stays on the second time. Both Stage 1 and Stage 3 start counting from the release of the Transbrake. Stage 2 starts counting after the amount of time set in Stage 1 is completed. Stage 4 starts counting after the amount of time set in Stage 3 is completed.



Possible 8.90 S/C pass

Timer 1	= 1.000
Timer 2	= 2.000
Timer 3	= 08.00
Timer 4	= 00.50

Selecting the Output Mode

To select the output to either be putting out 12 volts or not on the first stage of Timer 1 or Timer 2. First bring up the stage times 1 and 2 for the timer you want to change. With numbers in both stage times, pressing the zero key will reverse the output. Example if you are on off, it will change to off on. This is viewed on the screen above the stage times.

Understanding the Driver's Reaction Tester

This new feature in delay boxes allows a driver using the buttons mounted in the vehicle to test their reaction time. This can also be used to test different kinds of buttons and locations that buttons are mounted in the vehicle for the quickest release possible.

To select the Driver's Reaction Tester, press the 6 key, everything on the screen will turn on, this can also be used to check for proper screen operation. Once in Reaction Test Mode, if a push button connected to PTSO terminal is pressed and held down, the screen will go blank. After 2 seconds all eights will be shown on the screen, at which time the driver releases the push button being held. The display will now show the amount of time from when the eights were displayed, to when the push button was released, this is the driver's reaction time. If the driver lets go of the button too soon, before the display turns on, dashes will be shown on the screen to indicate a red light. If the driver does not let go of the button within .75 seconds after the eights are displayed, the display will show reaction time of all nines to indicate a missed light. To exit the Driver's Reaction Test Mode press any key on the keypad. If the PTSO pushbutton is not pressed, the unit will automatically exit the Driver's Reaction Test Mode after 30 seconds. Each time a push-button is pressed the 30 second time period resets.

NOTE: When in the Driver's Reaction Test Mode, the Throttle stop solenoid will not be activated when a push button is pressed. This is to prevent any damage to the solenoid from over heating or loss of air.

Wiring the Unit

