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4-Digit Plus

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.

INSTRUCTIONS FOR 4 DIGIT PLUS DELAY TIMER

BENEFITS:

Quartz Crystal Timing--All Solid State--no relays-30 Amp. output-(for 30 seconds)-no scattering of the .001 second delay time due to relays. The **4 DIGIT PLUS** has one thousandths second operating time due to not using an output relay making it one of the quickest boxes on the market.

Time delays may be set to 1/1000th. of a second resolution. Instant cycle restart when the button is pushed in middle of cycle.

The case is heavy industrial-type die-cast aluminum.....unlike thin sheet metal boxes. Die-cast offers the best in electrical noise protection and coolest operation on hot days.

The **4 DIGIT PLUS** is a standard 4 digit delay timer with an **INTERFACER** and **HOW LATE** circuit built in. The **4 DIGIT PLUS** has an external input that allows you to use any delay box or pushbutton. The **INTERFACER** takes the quickest release of the built-in 4 digit system or the external system, such as a **crossover**, and releases the transbrake. The **HOW LATE** section is a 4 digit display reading , telling you the difference between the two.

One of the advantages of the **4 DIGIT PLUS** is that either system may be used by itself, one after the other (you can use one hand, if you wish, to release one system after the other on the same pass), or at the same time. There is no switch on the box that needs to be turned on before the run to let you use one or two systems or, worse yet, *forgetting to turn it on.*

BENEFITS--CONTINUED

LED's INDICATE BOX STATUS

Left Red LED--The power is on when lit. The red LED will flash on and off if the voltage to the transbrake is below **11.5** volts when the transbrake is engaged.

Right Upper Red LED--when lit it indicates that the 4 DIGIT was used to release the transbrake. If it is off, the external input was used for the release.

Right Lower Red LED--when lit indicates that the 4 DIGIT system is timing the delay cycle of the internal 4 DIGIT.

Green LED--delay output turned on-The transbrake power is being turned on by one of the two systems-internal 4 DIGIT or the external input.

Top Yellow LED--This turns on when the **4 DIGIT PLUS** pushbutton is being used This tells you that pushbutton is working . This LED goes out when the button is released.

Bottom Yellow LED--This turns on when the external input is being used. This tells you that external system is working . This LED goes out when the external system releases.

Four digit **HOW LATE** . readout-shows time from 0.001 second to 9.999 seconds. This display shows the time difference between the release from the 4 DIGIT system and the release from the external system. If only one of the systems is used, the display will read all zeroes.

SPECIFICATIONS

Input Voltage Range: 10.5 to 15.0 volts DC

External input active range: 10.5 to 15.0 volts DC

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-30 Amps for 30 seconds. Call **Digital Delay** if higher current is needed for your car. **1-563-324-1046**

Standby Current Draw: 0.26 amp--would take about two months to discharge an average car battery.

Operating Temperature Range: -45 to +150 degrees F. internal temperature.

Delay Timing Range: 0.000 to 9.999 seconds. All zeroes may be used for bypass.

HOW LATE Timing Range: 0.000 to 9.999 seconds.

Pushbutton Contact Current: 0.100 amps. at 12 VDC.

INSTALLATION NOTES

READ THE WARRANTY AND THE DISCLAIMER FIRST

The digital delay 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 **DIGITAL DELAY 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 **DIGITAL DELAY TIMER** must be operated with a negative ground 12 volt system only. Connecting to a positive ground system will damage 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 TRANSBRAKE WIRES. **Increase the wire size to 10 Ga.** if you are using a transbrake with more that **10 amps.** 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 Chassis. The ground must not be made to aluminum parts.

OPERATION NOTES

The left red LED is on indicating the box is turned on. This red LED will flash on and off if voltage to the Transbrake is below 11.5 volts when the Transbrake is engaged. The upper right red LED is on after the release of the Transbrake, indicating that the 4 digit in the 4 Digit Plus released the Transbrake. The bottom right LED indicates 4 DIGIT is on.

The top yellow LED turns on any time that the 4 Digit Plus pushbutton is pushed. This tells you that the pushbutton circuit is working. The pushbutton terminal must go to a pushbutton with the other side going to ground to turn this led on. The timer will not operate if the yellow LED is not turning on. If it does not turn on and the **How Late** display is on, check the button wiring. The top yellow LED turns off when the pushbutton is released.

The bottom yellow LED turns on any time that the external input is made active by applying 11.5 to 15.0 volts from an external system. If it does not turn on and the How Late display is on, check the external system wiring. The bottom yellow LED turns off when the external system releases.

The green LED turns on whenever the Transbrake output is turned on. It stays on for the duration of the delay cycle. The Transbrake should be engaged whenever the green LED is on. If the green LED is on and the Transbrake is not engaged, check the wiring.

The **How Late** displays tell you the time difference between the two releases in thousandths of a second. When the box is turned on the 4 displays show all 8s momentarily and then go to zeroes. This is a display test that shows that all display segments are working. The **How Late** display is also used to indicate a short circuit. If the green LED does not turn on when the pushbutton is pushed check the **How Late** display for short circuit indication which is; the power light is on and the **How Late** display is showing only the decimal. Disconnect the transbrake wire from the terminal strip. Cycle the box, if the green led turns on when the button is pushed, there is a possible short in the wiring or in the Transbrake solenoid.

One very important feature of the 4 Digit Plus is that every time the a pushbutton is used, the delay timer is reset.

WHAT THE FLASHING RED LIGHT MEANS

THE LEFT RED LED WILL FLASH WHEN THE TRANSBRAKE IS ENGAGED AND THE VOLTAGE AT THE TRANSBRAKE TERMINAL 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 4 DIGIT PLUS DELAY BOX WITH A DIGITAL VOLTMETER. PUT THE BLACK (-) METER LEAD ON THE GROUND TERMINAL SCREW AND THE RED(+) METER LEAD ON THE TRANSBRAKE TERMINAL SCREW, ENGAGE THE TRANSBRAKE AND READ THE BATTERY VOLTAGE. IF IT IS BELOW 11.5 VOLTS, YOU SHOULD FIND THE REASON AND CORRECT IT BEFORE PROBLEMS DEVELOP IN THE 4 DIGIT PLUS DELAY BOX OPERATION. SOME REASONS FOR LOW VOLTAGE AT THE DELAY BOX ARE:

1. Discharged or bad battery
2. Loose or broken wires
3. Wires too small for the current draw. (If more than 10 AMPS. use 10 GA. wire)
4. Defective electrical component in race car drawing too many AMPS.
5. The 4 DIGIT PLUS delay box may be defective. Check by making sure that the battery

voltage at the delay box terminal strip is over 11.5 volts. Disconnect the Transbrake wire at the Transbrake terminal and apply the brake. If the light still flashes and voltage at the Transbrake terminal is below 9 volts the box is defective. Return it for repair.

4 DIGIT PLUS WIRING DIAGRAM

THERE ARE NO USER SERVICABLE PARTS IN THE TIMER.
ALL REPAIRS WILL BE MADE BY THE MANUFACTURER.

THE 4 DIGIT PLUS PUSHBUTTON MUST BE GROUNDED FOR PROPER OPERATION. DO NOT SUPPLY +BATTERY VOLTAGE TO THE 4 DIGIT PLUS PUSHBUTTON TERMINAL ON THE DELAY BOX!! THE EXTERNAL INPUT TERMINAL MUST BE FROM A POSITIVE 12 VOLT SOURCE!!

THE DRAWING BELOW IS CORRECT.

