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The Little Wizard

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The Little Wizard Instructions

Digital Delay, the company that invented and patented the Crossover, has designed and manufactured The Little Wizard to be the easiest to use multi-function delay box ever made. Contained in its small case are all the features racers have come to expect from a Digital Delay box. Plus Digital Delay added a new driver interface to The Little Wizard that uses plain English when changing Dial-ins or selecting how different functions of the box are used.

Getting Started

When The Little Wizard is first turned on, the Digital Delay logo screen is displayed for a couple seconds while the unit goes through a power up routine. When done, the unit will go to the Dial-in and Delay screen, which is the first of five main level screens. Each of the first three main level screens has at least one sublevel screen. The sublevel screens are where changes to the unit's settings can be made. While on the main level, (level one) use the Setup button to cycle through the five main screens, or use the Change button to access the sublevel screen of the current main level screen being displayed. When in a sublevel screen, use the Change button to cycle through the different screens on that level, use the arrow buttons to make changes to the units settings, use the Setup key to go to the next main level, or use the BRKT key to exit and return to the Dial-in and Delay screen. All of the screens are listed on pages 4, 5, and 6 along with what each button will do for every screen.

After taking a little time to learn the screens, the basic help will give a quick reminder of how to use each screen.

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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
- 2 row 16 character illuminated LCD (liquid crystal display) for easy reading of information day or night
- Data Lock feature
- Built-in Drivers Reaction Tester
- Line Lock output terminal
- Basic help on most screens
- Allows two shots at the tree with either one or two push buttons
- Tap up or down
- Small rugged case
- Up to 99 seconds of pushbutton interrupt time
- Three different push button modes

Specifications:

- Input Voltage Range: 10 to 18 Volts DC (16 Volt compatible)
- Operating Temperature Range: 0 to 150 degrees F.
- Operating current < .25 Amps.
- Two Outputs
    - Transbrake output rated at 10 Amps.
    - Line Lock output rated at 10 Amps.
- Two Inputs
    - P.B. 1 current draw .1 Amps at 12Volts
    - P.B. 2 current draw .1 Amps at 12Volts

The Terminal Strip

P.B. 2 Terminal: In Push-button Mode 2 the push-button connected to PB-2 terminal is used to control the secondary delay only. In Push-button Mode 1 & 3 this terminal can be used for a Tap pushbutton connection. After a Transbrake push-button has been released, every time the Tap push-button is depressed a programmable amount of time is either added to, or subtracted from, the first delay time started until the transbrake is released.

P.B. 1 Terminal: In Push-button Mode 3 the push-button connected to PB-1 terminal is used to control the primary delay and the secondary delay in sequence. In Push-button Mode 1 & 2 the push-button connected to PB-1 terminal is used to control the primary delay only.

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

Trans. Terminal: Connect to the Transbrake solenoid and to low side of the 2-Step, if used.

L.L. Terminal: Connect to the Line Lock solenoids if desired to have Line Locks engaged at starting line.

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

What the buttons do on the Five main screens and there sub-level screens

1. Dial-ins and Delays

Level 1

While display shows "Y=XX.XX 1=X.XXX"
"T=XX.XX 2=X.XXX"

Setup button	Moves to the How Late and Tap screen
Change button	Moves to the Your Dial change screen
BRKT button	N/A
Up Arrow	N/A
Right Arrow	N/A

Level 2

While display shows "YOUR DIAL XX.XX"
"USE ↑→ TO CHANGE"

Setup button	Moves to the How Late and Tap screen
Change button	Moves to the Their Dial change screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

While display shows "THEIR DIAL XX.XX"
"USE ↑→ TO CHANGE"

Setup button	Moves to the How Late and Tap screen
Change button	Moves to the Delay 1change screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

While display shows "DELAY 1 X.XXX"
"USE ↑→ TO CHANGE"

Setup button	Moves to the How Late and Tap screen
Change button	Moves to the Delay 2 change screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

While display shows "DELAY 2 X.XXX"
"USE ↑→ TO CHANGE"

Setup button	Moves to the How Late and Tap screen
Change button	Moves to the Your Dial change screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

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2. How Late and Tap

Level 1

While display shows "HOW LATE X .XXX"
"TAPPED XX X .XXX"

Setup button	Moves to the Pushbutton mode and interrupt screen
Change button	Moves to the clear How Late and Tap
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	N/A
Right Arrow	N/A

Level 2

While display shows "CLEAR HOW LATE"
"AND TAP USE ↑ "

Setup button	Moves to the Pushbutton mode and interrupt screen
Change button	Moves to the change Tap amount
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Clears the How Late Time and the Tap count
Right Arrow	Clears the How Late Time and the Tap count

While display shows "TAP AMOUNT .XXX"
"USE ↑→ TO CHANGE"

Setup button	Moves to the Pushbutton mode and interrupt screen
Change button	Moves to the change Tap direction screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

While display shows " TAP X "
"USE ↑→ TO CHANGE"

Setup button	Moves to the Pushbutton mode and interrupt screen
Change button	Moves to the clear How Late and Tap screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the Tap direction, between up and down
Right Arrow	Changes the Tap direction, between up and down

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3. Push button mode and Interrupt Time

Level 1

While display shows "P. B. MODE = X "
"INTERRUPT = XX "

Setup button	Moves to the Lock on/off screen
Change button	Moves to the change Push Button mode screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	N/A
Right Arrow	N/A

Level 2

While display shows "P. B. MODE = X "
"USE ↑→ TO CHANGE"

Setup button	Moves to the Lock on/off screen
Change button	Moves to the change Interrupt Time screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the Pushbutton mode, 1, 2, or 3
Right Arrow	Changes the Pushbutton mode, 1, 2, or 3

While display shows "INTERRUPT = XX "
"USE ↑→ TO CHANGE"

Setup button	Moves to the Lock on/off screen
Change button	Moves to the change Push Button mode screen
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes the digit flashing
Right Arrow	Moves the flashing cursor to next digit to change

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4. Lock on/off

Level 1

While display shows "LOCK = XXX "
"USE ↑→ TO CHANGE"

Setup button	Moves to the Drivers Reaction Tester screen
Change button	N/A
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Changes Lock setting, on or off
Right Arrow	Changes Lock setting, on or off

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5. Drivers Reaction Tester

Level 1

While display shows "DRIVERS REACTION"
"TEST ↑ TO START"

Setup button	Moves to the Dial-ins and Delays screen
Change button	N/A
BRKT button	Always goes to Dial-ins and Delays screen, level 1
Up Arrow	Enters into the Drivers Reaction Test mode
Right Arrow	Enters into the Drivers Reaction Test mode

Setting Dial-In and Delay Times

To set a new Dial-In or Delay time, the screen must first be displaying the Dial-in and Delay screen. If the Dial-in and Display screen is not being displayed, press the BRKT key. While the Dial-in and Delay screen is being displayed press the Change key, the display will now show the change Your Dial screen. If the change key is then repeatedly pressed the screen will now show change Their Dial followed by change Delay 1 and then change Delay 2. If the change key is pressed again while displaying change Delay 2 the unit will go back to the change Your Dial screen and start the sequence over again. While on any of the change screens use the right arrow to select which digit to change and then use the up arrow to change the number.

Understanding the How Late

To display the How Late information, repeatedly press the setup key, until the How Late and Tap information is shown on the screen. On the top line of the screen the How Late information is displayed. Just to the right of the text How Late is a single number representing which delay was used to release the Transbrake. For example; if the Transbrake released on Delay-2 (4-Digit) the digit will display a "2", if not, it will be a "1" indicating that Delay-1 was used. The remaining digits display the How Late time. For example if the display is "HOW LATE 2 .012" and your reaction time was .510 on the time slip, add the How Late time to the .510 for a total reaction time of .522 on the crossover delay.

NOTE: Both How Late and Tap Up/Down information are stored in memory until either a new number replaces the old one or the up arrow key is used to clear both to all zeros.

Setting and Displaying the Delay Tap Up/Down

To display the Tap Up/Down information, repeatedly press the setup key, until the How Late and Tap information is shown on the screen. On the bottom line of the screen the Tap information is displayed. The left most two digits show the number of times the Tap Up/Down push-button was pressed. The arrow indicates which direction the Tap went, up or down. If the arrow is pointing down, a subtraction from the delay time is done, if the arrow is pointing up, an addition to the delay time is done. The three right hand digits show the programmable time (0 to 99 thousands of a second) to be subtracted from or added to the delay time every time the Tap Up/Down push-button is pressed. To change the number, while on Tap information is displayed, press the change key twice, the display will now show change Tap amount screen. Use the right arrow key to select which digit to change and use the up arrow key to change the value. To change the Tap direction press the change once more and the screen will go from the change Tap amount to the change Tap direction screen. Once the change Tap direction screen is displayed every time the up arrow is pressed the Tap direction will toggle between up and down.

Setting Push-button Mode and the Push-button Interrupt Time

To set the Push-button Mode or Interrupt Time, repeatedly press the setup key, until the Push-button and Interrupt Time information is shown on the screen. The Push-button mode is displayed on the top line, with the digit shows "1", " 2", or "3" to indicate which Push-button Mode the unit is in, when in Push-button Mode 3, the P.B. 1 on terminal strip starts both the primary and secondary delays, this is done by pressing and then releasing the pushbutton on the first desired yellow light to start delay one. Then repressing the same pushbutton and releasing on the second desired yellow light is done to start delay 2. Care should be taken not to flinch in pushbutton mode 3 because the box will think you released, and the car will roll out of the beams causing a red light even if you are pressing the pushbutton. When in Push-button Mode 2, one or both push buttons can be used in any sequence, the *First P.B.* starts the primary and S*econd P.B.* starts the secondary delay. When in Push-button mode 1 the pushbutton wired to pushbutton 1 on the terminal strip will only be used to hit the tree once. To change the Push-button mode, while displaying the Push-button and Interrupt screen, press the Change key. The screen will now display the Push-button mode change screen, next use the up arrow to cycle through the three Push-button modes.

The Interrupt Time is shown on the bottom line of the Push-button and Interrupt screen. This two digit number shows the programmable amount of time (00 to 99 seconds) that after the Transbrake releases, Button 1 and Button 2 push-button inputs are disabled. To change the Interrupt Time, while on the Push-button and Interrupt screen, press the Change key twice. Then use the right arrow key to select the digit to be changes and the up arrow key to change the value. If no Push-button Interrupt Time is wanted enter "00".

Push-button Mode Quick Reference

PUSHBUTTON MODE 1: Means one button for one hit at tree.
PUSHBUTTON MODE 2: Means two push buttons for two hits at tree.
PUSHBUTTON MODE 3: Means one pushbutton for two hits at tree.

Note: Only in pushbutton mode 1 or 3 can the push button 2 terminal be used as the tap button input. While in Push-button mode 2, the Tap feature is disabled.

The Data Lock

When turned on, with the exception of the Data Lock setting none of the settings in The Little Wizard can be changed. This is to keep the settings in the unit from getting changed by accidentally hitting the buttons. There are two ways to turn the Data Lock on and off. The first way is to go to the Data Lock screen by repeatedly pressing the Set Up key. Then use the up arrow to toggle the Data Lock on and off. The second way is to hold down the BRKT key for two seconds, at which time The Little Wizard will toggle the Data Lock setting (on to off or off to on) and display the new Data Lock setting on the screen until the BRKT key is released. When the BRKT key is released The Little Wizard will return to the Dial-in and Delay screen.

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 use the Driver's Reaction Tester, repeatedly press the Set Up key, until the Drivers Reaction Tester screen is displayed. Then press the up arrow to enter. Once in Reaction Test Mode, if a push button connected to either PB. -1 or PB. -2 is pressed and held down, the screen will go blank. After 2 seconds "GREEN!" 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 "GREEN" was 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, the display will show RED LIGHT 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 MISSED LIGHT to indicate a missed light. To exit the Driver's Reaction Test Mode press the BRKT key. If neither P.B.-1 nor P.B.-2 button is 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 Transbrake solenoid will not be activated when a push button is pressed.

This is to prevent any damage to the solenoid from over heating.

Understanding and Connecting a By-pass push-button

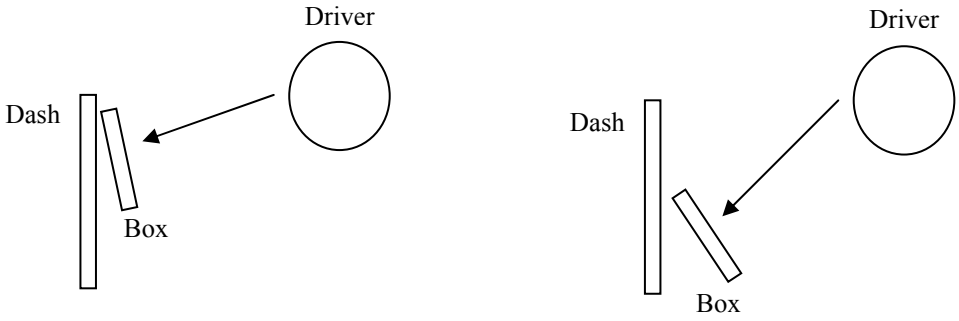
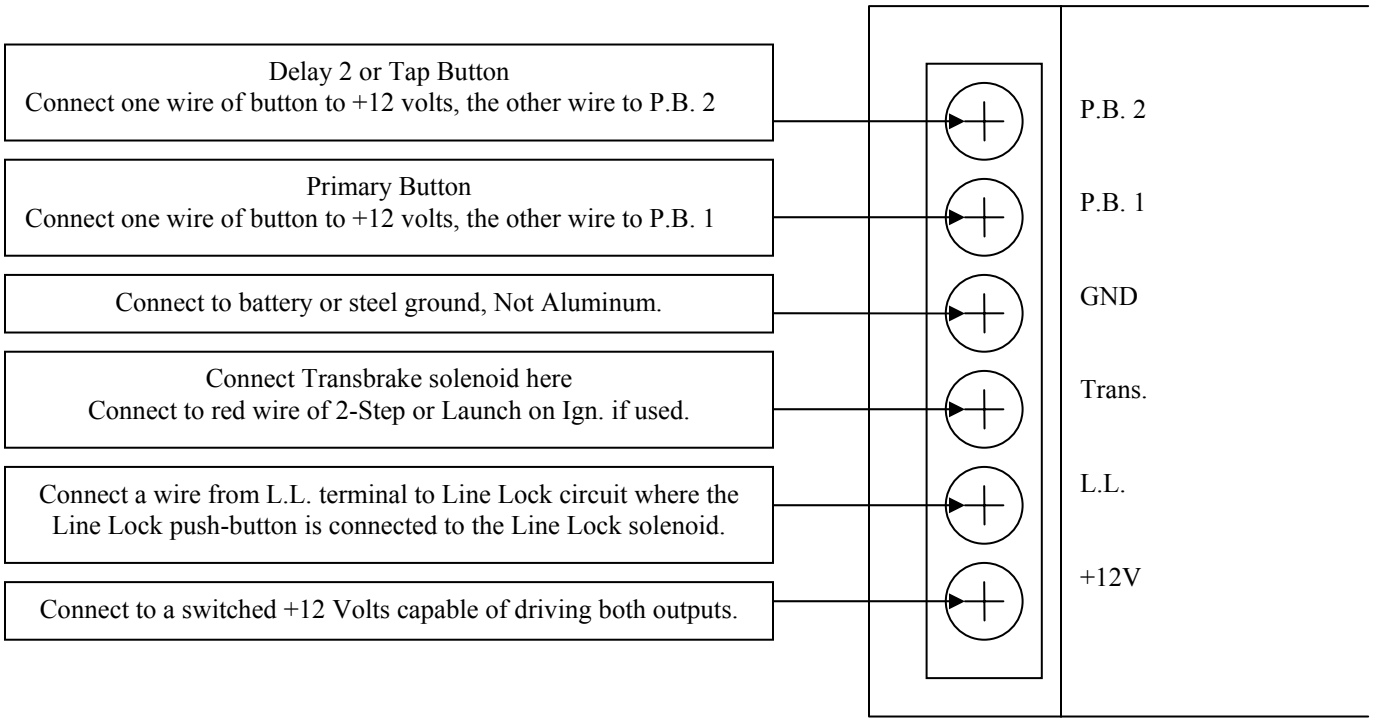
A by-pass push-button is used to engage the Transbrake solenoid without starting a timing cycle. This can be helpful if the vehicle needs the Transbrake engaged to back up. If a by-pass push-button is desired, connect one side of a push-button to the Transbrake terminal and the other side of the push-button to +12 Volts.

Applying 12 Volts to any of the outputs will not damage the unit.

Connecting or shorting any output terminal directly to ground will cause damage to the unit. This damage will not be covered by the warranty. It is strongly recommended that a 15 Amp fuse be put in each of the wires coming from the output terminals.

Mounting The Little Wizard

For complete viewing of the LCD, care should be taken when mounting the unit to make sure that the display is angled towards the driver's eyes. Before mounting The Little Wizard, place the box in the desired location and check the legibility of the display in both day and night conditions. As shown below, the lower the box is placed below eye level, the more the angle amount needs to increase for viewing.



Wiring The Little Wizard