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MEGA DIAL PANEL  
*with*  
Elite Relay Board

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The Mega Dial Panel consists of three units, the Switch Panel with Dial Controller, the Relay Power Board, and the Display Board. The Switch Panel with Dial Controller is typically mounted within easy reach of the driver, while the Display Board is mounted so it can be viewed from the tower. To help with the mounting of the Display Board it was designed to fit a Goza Racing Dial Bracket, but it will fit inside any bracket that is at least 7.5 inches wide, or, it can be fastened to a window with Velcro strips.

An additional benefit of the Mega Dial's design is, very low current draw; less than ½ Amp when set to Bright and less than ¼ Amp when set on Dim. Compared to competitors' that can draw as much as 6 Amps, the Mega Dial's very low current means it can be connected to the master on/off switch on the vehicle with no concern of having to turn it off between rounds.

**The Mega Dial stores two times in memory, they are called "Time 1" and "Time 2". Having two dial values to select from allows for large number changes without a lot of time wasted to scrolling. There are many useful combinations, here are just a couple of examples of how beneficial Time 1 and Time 2 can be, Time 1 stores the 1/4 mile dial while Time 2 stores the 1/8 mile dial, or Time 1 has the bracket dial while Time 2 has an 8.90 dial for a Super Comp.**

To keep up with the ever expanding use of electronics in drag race vehicles the Relay Power Board has been designed to handle 80 Amps continuously and has been tested at currents over 100 Amps. This far exceeds all other brands of switch panels. The high power capability of the Relay Power Board ensures that all electrical devices in the vehicle receive full power from the battery. The Relay Power Board also has an Emergency Off feature that when activated turns power off to electrical devices controlled by the Relay Power Board while turning on only the Tail Light for safety at night.

## Display Board Wiring:

The supplied 14 foot telephone cord plugs into both the Switch Panel with Dial Controller and the Display Board and is used to send information between the two units. If desired, this cord can be shortened to any desired length, using standard hand tools found at home hardware stores. Replacement or longer cords can also be found at home hardware stores, just make sure the new crimp end, or the new telephone cord has six conductors. **The Display Board also requires +12V power and ground to operate.** The power for the Display Board comes from the terminal strip located on the back of the Switch Panel with Dial Controller labeled "Dial Board". Connect the Display Board's **RED WIRE TO 12 VOLTS** and the **BROWN WIRE TO GROUND**. If installing using the Mega Dial Panel Wire Kit, use the supplied 14 foot red and brown bonded wire to supply power to the Dial Board.

## Switch Panel with Dial Controller Wiring:

Plug the cable for the Switch Panel with Dial Controller into the connector on the Relay Power Board. This is all the wiring that is required to allow the Switch Panel with Dial Controller to function. However there are some outputs on the back of the Switch Panel with Dial Controller that can be used if desired. The "Tail" terminal will supply battery power when ever the Tail Light switch is turned on. This would typically be used to supply power to backlights for gauges. The "Ign." terminal will supply battery power when ever the Ignition switch is turned on. This would typically be used to supply power to a digital tachometer, electric gauges, or any other low current device(s) to be turned on when the Ignition is on. There is also a "GND" terminal to supply a ground reference for devices connected to the "IGN" and "Tail" terminals. Finally the 2 Amp capacity "Pass Through" terminal can be used to pass a signal between the Relay Power Board and the Switch Panel with Dial Controller. This is nothing more than a piece of wire with a terminal at each end. One possible use would be to pass the Tach signal to a digital tachometer on the dash.

## Relay Power Board Wiring:

For proper operation of Elite Relay Power Board use the supplied 6 gauge wire. Cut wire to length and strip ½ inch of insulation and insert bare wire into the high current connector. The end with the eyelet connects to the master cut-off switch or the Starter solenoid which ever is closer. The Ground lug on the Elite Relay Board must be connected to ground on the vehicle for the Elite Relay Power Board to work. All the rest of the terminals on the Relay Power Board are labeled on the board as their intended use. If outputs are used to control devices other than intended just make sure the current for the device is less than the fuse rating for that output.

**Warning:** The large 6 gauge power wire must be secured to the Relay Power Board with the supplied tie wrap. This is to prevent a direct short across the battery if the power wire was to come loose from the high current connector and come in contact with the frame.

# The Elite Relay Power Board

The Elite Relay Board is sold with the most commonly used fuse value for each output. If more current is required for any output, replace the fuse with a higher current fuse. The Elite Relay Board can handle up to 40 Amps. on any output. In the very unlikely event that even more current is required, two outputs can be connected together for up to 80 Amps. If more than 80 Amps is desired, please contact Digital Delay to purchase a 4 Gauge power cable which boost overall current capability to a 110 Amps.

## The LEDs

The Relay Power Board has an LED indicator for each fuse, each output, and the Emergency Off feature. The green LEDs, when lit, are used to indicate that the fuses are good. The yellow LEDs, when lit, are used to indicate when outputs are on and the red LED, when lit, indicates the Emergency Off is activated.

## Dual Select Feature

The Elite Relay Power Board's Dual Select Feature allows two outputs to be turned on by a single panel switch. There are three Dual Select switches on the Relay Power Board labeled A, B, and C. Use the list below to see which outputs turn on together.

When **Dual Select** is turned on:

- A**, will turn on both Headlight & Taillight outputs at the same time when switch on control panel is set to headlight.
- B**, will turn on both Aux. 1 & Aux. 2 outputs at the same time when switch on control panel is set to Aux. 2.
- C**, will turn on both Water Pump & Fan outputs at the same time when switch on control panel is set to fan.

When **Dual Select** is turned off, the Switch Panel switches will work each output independently.

## Emergency Off

The Elite Relay Power Board also has an Emergency Off feature that when activated turns power off to electrical devices controlled by the Relay Power Board while turning on only the Tail Light for safety at night. To use this feature a push button must be wired to the Relay Power Board as follows, one wire from the push button goes to ground. The other wire from the push button goes to the Emergency Off Terminal on the Relay Power Board. When the button is pressed the Emergency Off is activated. The only way to reset or deactivate the Emergency Off feature is to turn off the master cutoff for a short period of time. When the master cutoff switch is turned back on and power is restored to the Relay Power Board the Emergency Off feature will be automatically reset.

## The Shift Output Controller (Only Active When Ignition Switch Is On)

The Elite Relay Power Board also has a Shift Output Controller. The Shift Output Controller allows the driver to select whether to shift on time or RPM using a remotely mounted Select Switch (Not Supplied). The Select Switch is a simple on/off toggle switch, with +12 Volts connected to one side and the other side connected to the Select terminal on the Elite Relay Board. When the Select Switch is in the off position RPM is selected and when the Select Switch is turned on Time is selected.

**Note:** If the vehicle is going to be shifted only by RPM or only by Time a Select Switch is not necessary.

When shifting by RPM only, no connection is made to the Select terminal on the Elite Relay Board.

When shifting by Time only, +12 Volts must be connected to the Select terminal on the Elite Relay Board.

The Elite Relay Board also has three slide switches that need to be set. The Output Control Switch is used to control whether the shift output will apply +12 volts (N.O.) to shift or remove +12 Volts (N.C.) to shift. The two Input Selector Switches, one for Time and one for RPM, are used to tell the Elite Relay Board whether +12 Volts or ground is coming from the Shift Controllers. For example, if an Elite 500 is used for the Time Shift Controller the Time Input Selector Switch would be set to +12 Volts to match the +12 volts that the Elite 500 will send out from its shift terminal. Additionally if an MSD RPM Switch is going to be used for the RPM Shift Controller, the RPM Input Selector Switch would be set to ground to match the MSD RPM Switch output.

# The Switch Panel with Dial Controller

## The Switches

The switches are labeled as to their intended use, however they can be used to turn on any device as long as the current does not exceed the fuse rating for that output on the Relay Power Board. The Fuel switch will only turn on when the Ignition switch is on. This is a safety feature required in some classes by NHRA.

If both lights on any of the double throw switches come on together, when pressing the switch down, they indicate that the Power Relay Board's Dual Select Feature is turned on for that switch and that both outputs for the switch are turned on.

Press the center section of the Start Engine button for operation.

## The Dial Controller

The Dial Controller is used along with the Display Board, to alert the tower as to the vehicle's ET.

## Powering up

When power is turned on, both the Dial Controller and the Display Board go through a power up sequence. When first turned on, the Display Board will display three dashes. Approximately  $\frac{3}{4}$  of a second later the Display Board will send a signal to the Dial Controller stating that it is ready to receive the dial time to be displayed. Until the Dial Controller responds and sends the dial time the three dashes will remain displayed on the board. When the Dial Controller is turned on, the screen will first show "Power Up" this stays on the screen until the internal processor finishes its start up routine. Once the start up routine is finished the last dial value that was displayed will be retrieved from memory, during this time the screen will show either "Time 1" or "Time 2" indicating which value is being retrieved. After the dial value is retrieved from memory it is sent to the Display Board via the telephone cord, while the information is being transmitted the Dial Controller screen will show "Sending". Once the data has been successfully received by the Display Board the dashes are replaced with the new dial time. The Display Board then sends back a successful receive response to the Dial Controller. Upon receiving a successful response the Dial Controller will show a locked padlock and the current dial being displayed on the Display Board. This ends a normal power up sequence of the Dial Controller and the Display Board. However if during transmission of the dial value to the Display Board, an error occurs, one of two error messages will be shown on the Dial Controller screen. If either of these messages "No Board" or "Com Fail" is displayed follow the steps listed under Error Messages.

After both the Dial Controller and the Display Board have completed powering up, they both enter into normal run mode. While in normal run mode, the value for "Time 1" or "Time 2" can be selected, or adjusted, or the intensity of the Display Board can be set to either bright or dim.

## Run Mode

### Changing the Dial Time:

To change the value of a dial time while in run mode, the dial time must first be unlocked, then adjusted, and then locked again. These three easy steps are listed below, but first, the Dial Controller must be displaying a time. If the Dial Controller screen is showing a locked padlock and a dial time, go to Unlocking a Dial Time. If the Dial Controller is displaying either "Bright" or "Dim" press and release the lock button to send the intensity setting to the Display Board, then go to Unlocking a Dial Time. If either of the error messages "No Board" or "Com Fail" is displayed follow the steps listed under Error Messages.

### Unlocking a Dial Time

To unlock a dial time, press and hold down the Lock/Unlock button until the padlock on the screen of the Dial Controller unlocks. Once the padlock on the screen is unlocked, release the Lock/Unlock button, the Dial Controller will show either "Time 1" or "Time 2" indicating which time has just been unlocked; the Display Board will now show dashes instead of a dial time. Next, the Dial Controller screen will start to flash the dial time that is now unlocked. If unlocked, go to Adjusting the Dial Time. If an error occurs, the error message "Com Fail" will be shown on the Dial Controller. If the "Com Fail" message is displayed follow the steps listed under Error Messages.

## **Adjusting the Dial Time**

While the screen is flashing on the Dial Controller, use the up and down arrows buttons to adjust the dial time. The up arrow button increases the time while the down arrow button decreases the time. If either arrow button is held down the dial time will begin to scroll, slowly at first then after a short time the scrolling speed will increase to medium and then a little later to fast. As soon as the button is released the scrolling is stopped and the scroll speed resets back to slow for the next time. Once the desired dial time is flashing on the screen it needs to be locked in, see Locking in a Dial Time.

## **Locking in a Dial Time**

To lock in a dial time, while the desired dial time is flashing on the screen, press and release the Lock/Unlock Button. As soon as the Lock/Unlock button is pressed, the dial value is locked into memory. Then the dial time is sent to the Display Board via the telephone cord, while the information is being transmitted, the Dial Controller screen will show "Sending". Once the data has been successfully received by the Display Board the dashes are replaced with the new dial time. Upon completion of sending the data, the Dial Controller will show a locked padlock and the current dial being displayed on the Display Board. If during transmission of the dial time to the Display Board an error occurs, the error message "Com Fail" will be shown on the Dial Controller screen. If the "Com Fail" message is displayed follow the steps listed under Error Messages.

## **Switching Between "Time 1" and "Time 2":**

To switch to either "Time 1" or "Time 2" from the other while in run mode, the Dial Controller must be locked (displaying a locked padlock on the screen), if the Dial Controller is not locked refer to Changing the Dial Time. While the Dial Controller is locked, press and hold down Lock/Unlock button. While holding down the Lock/Unlock button watch the screen on the Dial Controller, the first change will be the unlocking of the padlock, continue holding the Lock/Unlock button, about four seconds later the dial time will switch to the other dial time. At this point release the Lock/Unlock button, the Dial Controller will show which dial time has been retrieved from memory. At the same time data will be sent to the Display Board, instructing it to display dashes instead of a dial time. Next, the Dial Controller screen will start to flash the new dial time. At this point the dial value can be changed by following the instructions in Adjusting the Dial Time or if the desired dial time is all ready shown follow the instructions for Locking in a Dial Time, to display the number on the Display Board.

## **Changing the Display Board Intensity:**

To change the intensity level of the Display Board while in run mode, the Dial Controller must be locked (displaying a locked padlock on the screen), if the Dial Controller is not locked refer to Changing the Dial Time. While the Dial Controller is locked, press and hold down either of the arrow buttons, after about 5 seconds the Dial Controller screen will show either "Bright" or "Dim". Once bright or dim is shown release the button being held. Now select the desired intensity by pressing the up arrow for bright or the down arrow for dim. Once the desired setting has been selected, press and release the Lock/Unlock button. The Dial Controller screen will immediately show "Sending" indicating the data is being sent to the Display Board. Once the data has been successfully sent to the Display Board, the Dial Controller will show a locked padlock and the current dial will be displayed on the Display Board. However if during transmission of the intensity level to the Display Board an error occurs, the error message "Com Fail" will be shown on the Dial Controller screen. If the "Com Fail" message is displayed follow the steps listed under Error Messages.

# **Error Messages**

## **Error Message "No Board"**

The "No Board" error message means that the Dial Controller is not receiving information from the Display Board. While this message is shown on the screen no other function of the Dial Controller is accessible. This will usually mean that the Display Board is turned off, or lost power. To verify this, simply look at the Display Board to see if the display is blank. If the display is blank, first check and make sure that the power is turned on. If the power is turned on, check the power and ground wires for voltage, to make sure they have not become damaged or disconnected. The "No Board" error message can also mean that there is a problem with the phone cable. If the Display Board is showing either a dial time or the dashes and the Dial Controller is still showing "No Board" the problem is probably with the phone cable. First make sure the cable is still plugged into both the Dial Controller and the Display Board. If the phone cable is plugged into both units, follow the phone cable from the Dial Controller to the Display Board looking for damage to the cable.

Once the problem is found and fixed the Dial Controller will automatically send the last dial time to the Display Board and then enter into run mode.

### **Error Message “Com Fail”**

The “Com Fail” error message means that the information sent from the Dial Controller to the Display Board was corrupted in some way. The first step is to try and send the information to the Display Board again, to do this press and hold down Lock/Unlock button until the error message is replaced with an unlocked dial time. At this point release the Lock/Unlock button and the screen will start to flash. Then follow the instructions Locking in a Dial Time. If repeated “Com Fail” messages occur it could mean a damaged phone cable, try replacing the phone cable with a new one.

If the above Error Message instructions do not solve the problem, please call Digital Delay at 563-324-1046 for further help.

## **Special Startup Features**

### **Bright/Dim Startup Feature**

The bright/dim startup feature allows selection of either bright or dim for the Display Board when the Dial Controller is turned on. This is done by holding down either of the arrow buttons when power is first turned on. Once the Dial Controller enters into the special bright/dim startup subroutine, the screen will show either “Bright” or “Dim”, release the button that was being held down. Now use the up arrow button to select bright or the down arrow button to select dim. After the desired intensity setting has been selected, press and release the Lock/Unlock button. The Dial Controller display will immediately show “Sending” indicating the data is being sent to the Display Board. Once the data has been successfully sent to the Display Board, the Dial Controller will show a locked padlock, and the current dial will be displayed on the Display Board, and enters into normal run mode. However if during transmission of the intensity level to the Display Board an error occurs, the error message “Com Fail” will be shown on the Dial Controller display. If the “Com Fail” message is displayed follow the steps listed under Error Messages.

### **Time 1 or Time 2 Startup Feature**

The Time 1 or Time 2 startup feature is used to select either Time 1 or Time 2 when first turning on the Dial Controller. This is done by holding down the Lock/Unlock button when power is first turned on. Once the Dial Controller enters into the Time 1 Time 2 startup routine the screen will display “1 Time 2”, now, release the Lock/Unlock button. Next select the desired time by using the down arrow button to select Time 1 or the up arrow button to select Time 2. As soon as either of the arrow buttons is pressed, the dial time is sent to the Display Board via the telephone cord, while the information is being transmitted, the Dial Controller screen will show “Sending”. Once the data has been successfully received by the Display Board the dashes are replaced with the new dial time. The Dial Controller will show a locked padlock, and the current dial will be displayed on the Display Board and enters into normal run mode. If during transmission of the display dial time instruction to the Display Board an error occurs, the error message “Com Fail” will be shown on the Dial Controller display. If the “Com Fail” message is displayed follow the steps listed under Error Messages.