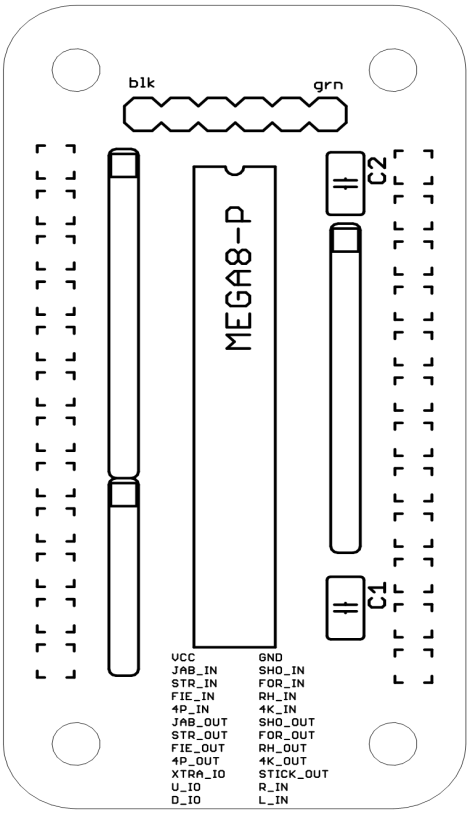
Thank you for purchasing a FGWidget LED Controller!

Please take a moment to verify all of the parts of this kit you need are present:

- 1x FGWidget printed circuit board
- 1x 28 pin IC socket, probably clipped to the printed circuit board
- 1x 28 pin Atmel micro-controller
- 1x 6 pin resistor array (yellow, '151' written on it)
- 2x 10 pin resistor array (yellow, '151' written on it)
- 2x 0.1uF ceramic capacitors C1, C2 (small, two pins, '104' written on it)



Overview:

The FGWidget LED Controller is a simple board made to be used in an arcade stick to control specific LEDs in each button. Based on the mode the board is set to, the LEDs will display moving patterns based on the buttons pressed, making your stick a wonder to behold.

Notice: Please take a moment to think about your LED setup before assembling the board. The FGW LED Controller comes with a set of resistor arrays, providing 150 ohms of resistance if installed, allowing you to directly connect an LED to the OUT screw terminals and Ground. However, if your LEDs are installed elsewhere with resistors already connected, then you may not want to use the included resistors. Please take a moment to look over your LED setup to decide if you want to use the resistors included with the FGW LED Controller. Remember, if your LEDs do not have resistors already, then use the ones included in the kit.

Assembly: Assembly of the board is pretty straight forward. The IC socket needs to be soldered to the board first, usually right where it is when received. There is a notch in one end of the silkscreen, and in one end of the IC socket; make certain they match. Next, solder the two small capacitors to the points marked C1 and C2 on the right of the socket. There is no orientation to the capacitors; you cannot put them in wrong.

- If you will be using the included resistors: You'll see the small collection of six holes to the lower left of the main chip. Solder the single 6 pin resistor array in. There is no orientation to these arrays, so you can safely solder them in in either direction. Afterward, you'll be left with one column of 10 pins in the upper left, and another column of 10 pins in the middle right. Solder the two remaining resistor arrays into these columns.
- If you will not be using the included resistors: You will see a column of 16 holes on the left of the main board. Using a small piece of bare wire, you will need to connect each pair of holes; the top most hole should be connected to the second, the third should be connected to the fourth, and so on. Once you've soldered these 8 wires on the left hand side, solder another 5 in the pairs of holes on the right hand side between C1 and C2.

Lastly, solder in the screw terminals on the edges, if you have them.

Pin Explanation: You'll notice a legend of sorts on the end of the Controller board. This text identifies what each of the screw terminals (or holes, if you aren't using the screw terminals) are for. The '_IN' points should connect to the signal line on your game controller board; the same line going to the button's microswitch. The '_OUT' points go to power the LED for that button. For example, the 'JAB_IN' line will be connected to the microswitch on the upper left-most button, while the 'JAB_OUT' line will go to the LED installed in that button. The button names are based on the Capcom name for that button, so 'STR_' deals with Strong, the second button in the top row, 'FIE_' deals with Fierce, the third button in the top row, 'SHO_' deals with Short, the first button in the bottom row, 'FOR_' deals with Forward, the second button in the bottom row, 'RH_' deals with Roundhouse, the third button in the bottom row. '4K' and '4P' are the fourth buttons in the bottom and top row, respectively.

The '_IO' pins on the bottom can be either an input or an output based on your configuration. More on that in a bit. In short, if you don't want to use a line or LED, just don't wire it up. As long as you have the minimal 6 LEDs and buttons installed, you can completely ignore the 4K, 4P, and various IO lines.

Decide Configuration: Take a moment to decide how exactly you want the LEDs in your stick setup. The FGW LED Controller can control up to 8 play buttons and a stick, or up to 11 play buttons without a stick. The minimum number of LEDs recommended is 6, in a standard Street Fighter layout.

- With stick: If you want a single LED to react to how the joystick is moved, connect the 'U_IO', 'D_IO', 'L_IN', and 'R_IN' lines to the matching directions on the joystick; up, down, left, and right, respectively. Connect the LED to the STICK_OUT line.
- With the 3 additional buttons: The signal lines from your main controller board should connect to XTRA_IO, R_IN, and L_IN. These will control LEDs connected to STICK_OUT, U_IO, and D_IO, respectively.

Usage and Configuration – Power On:

- First three punches held: This is your universal reset. All of the options for your stick including 'tournament mode' will be reset to default.
- First three kicks held: This activates tournament mode. In tournament mode, all of the LEDs are disable and the controller board goes to sleep, requiring almost no power at all. This setting is saved, so that even multiple plug ins will still all start with everything disabled. The only way to disable tournament mode and go back to normal operation is to plug it in again with all three kicks held, or do a full reset by plugging in with all three punches held.

Usage and Configuration – Setup Menu: By pressing and holding the Jab button until the display changes (about 10 seconds), you can enter Setup mode. This is your main way of telling the LED Controller how you want it to behave. In setup mode, you will see it periodically change as if the the Jab button (and possibly the Strong button) are being slowly pressed and then released. This helps to tell you which display mode is currently set, along with a view of the brightness settings. If the lights behave as if Strong is pressed the same time Jab is pressed, then the screensaver mode is on. In setup mode, you have the following commands available:

Jab: Increase maximum brightness.	Strong: Enable/Disable Screensaver	Fierce: Exit Setup mode, save all settings.
Short: Decrease maximum brightness.	Forward: Change display mode	Roundhouse: Enable/Disable Invert
4K+4P: Set to use 8 play buttons.	R_IN + L_IN buttons: Set to use the three extra buttons instead of stick.	Move stick in circle: Use Stick mode instead of the three additional buttons.

DisplayModes:

- **Basic:** LED will fully light up when the matching button is pressed, and turn off when not pressed.
- **Sparkle:** LED fully lights up when pressed, and slowly fades out if held.
- **Fade:** When button is held, LED will fade in to full brightness, and fade out when released.
- **Splash:** LED fully lights up when pressed. When released, a 'ripple' of light will expand outwards to all neighboring LEDs.
- **LightsOut:** Pressing a button will cause itself, and it's immediate neighbors to toggle on or off. Can be played as its own game, with the goal to turn on or off all lights at the same time.
- **Cylon:** A moving light does laps around the buttons, regardless of button presses.
- **Fade on Release:** LED fully lights up when pressed, fades out when released.

Notes:

-If the display mode is set to Cylon, the screensaver will black out all of the lights if nothing has been pressed in a while. In any other mode, the Cylon pattern will display if nothing has been pressed for a while.

-The brightness can easily be turned down to where no light appears at all, which can make it confusing trying to navigate the setup menu. If you get lost with nothing blinking, remember that plugging it in with the three punches held will reset everything, including brightness and tournament mode.

Happy Modding!

Marcus “Toodles” Post

http://www.godlikecontrols.com