

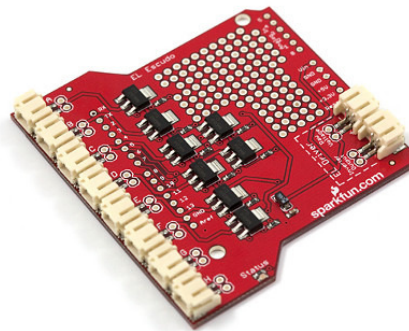
EL Escudo User Guide

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Overview

The EL Escudo is an Arduino Compatible shield for controlling up to 8 channels of EL wire. Electroluminescent wire is this really neat, flexible cord that emits a florescent light. Some times referred to as 'cool neon' because the cord does not heat up. The kicker is that EL wire runs on high voltage AC - about 125V at 425Hz. While EL wire requires very little power, you can't use normal transistors to turn on/off a string of it. The EL Escudo was created to make it easy to interface EL wire to an Arduino board.

Figure 1

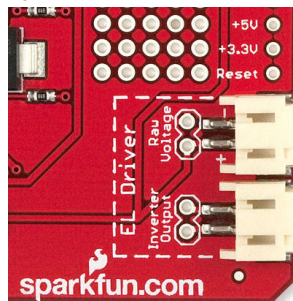


Note: A device called an inverter is needed to generate the required AC voltage to power the EL wire. An inverter takes the 3V DC and outputs the required 125V AC to drive the electroluminescent wire. SparkFun does not currently sell an inverter. We currently recommend the ifw-3294 from coolight (www.coolight.com).

Connecting the EL Escudo

The first step is to plug the EL Escudo into your Arduino board. You'll need to solder in some headers with the male end of the pin facing down (or away from the components on the board), but then it should be pretty obvious which way the board needs to be plugged in. Make sure the Arduino board is not powered when you plug the EL Escudo into the Arduino. There will be 4 wires coming from your inverter; two of them are for the input power, and two of them will be the wires that output the AC signal. Connect the two wires for the input power to the pins on the EL Escudo labeled "Raw Voltage." Connect the other two wires to the pins labeled "Output." Once the hardware is connected the Arduino board can be powered.

Figure 2



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Using the EL Escudo Arduino Library

SparkFun has created an EL Escudo Library for Arduino to make it easier to control the EL wire attached to the shield. Download the library from the EL Escudo product page and extract the contents of the zip file to the Hardware/Libraries subdirectory of your Arduino directory. Once you've extracted the library reload Arduino (If you have Arduino open, close it and then start it again). Now if you go to Sketch->Import Library in Arduino the EL_Escudo library should be available. Also, if you go to File->Sketchbook->Examples->Library-EL_Escudo you should see two example sketches that will show you how to use the library. Below is a list of the functions and what they do:

Figure 3

Function Name:	on	Inputs:	Char Channel
Description:	Turns the specified EL channel on. (Keep in mind that only two EL channels can be on at the same time unless the 'all_on' function is used)		
Example:	EL.on(A);		

Figure 4

Function Name:	off	Inputs:	Char Channel
Description:	Turns the specified EL channel off.		
Example:	EL.off(C);		

Figure 5

Function Name:	all_on	Inputs:	None
Description:	Uses pulse width modulation to turn all of the EL channels on.		
Example:	EL.all_on();		

Figure 6

Function Name:	all_off	Inputs:	None
Description:	Turns all of the EL channels off.		
Example:	EL.all_off();		

Figure 7

Function Name:	fade_in	Inputs:	Char Channel
Description:	Uses PWM to fade an EL channel on, rather than the "instant on" of the EL.on function		
Example:	EL.fade_in(B);		

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Figure 8

Function Name:	fade_out	Inputs:	Char Channel
Description:	Uses PWM to gradually dim an EL channel until it is off.		
Example:	EL.fade_out(E);		

Figure 9

Function Name:	pulse	Inputs:	Char Channel
Description:	Pulses an EL channel by fading the wire in and then out		
Example:	EL.pulse(H);		