FX300 Datasheet

Available in 3 configurations. Bare, Minimum, and Full.

Initial Setup

Welcome! You have just received the Anidea Engineering AEI FX300 Arduino Compatible Controller. To get started, there are a few key things to do:

1. Download and install the Arduino IDE https://www.arduino.cc/en/main/software if you don't have it installed already. Tested with version 1.8.1.
2. Add the Board Configuration Package URL (below) to the preferences.

   Additional Boards Manager URLs: https://raw.githubusercontent.com/anidea/aeifx300/master/package_AEIFX_index.json

3. Load the board settings by selecting Tools -> Board -> Boards Manager. Towards the bottom, install the AEI FX package.

   AEI FX Escape Game Controllers by **Gabriel Goldstein** version **1.0.0 INSTALLED**
   Boards included in this package:
   AEI FX300.
   Online help
   More info

4. Go to Tools -> Board and select AEI FX300 towards the bottom.
5. Plug in the micro USB connector to the AEI FX300.
   a. The board will fully power up from USB, however the VIN pins on the headers will not have any voltage on them. You should connect to your system voltage once you connect devices outside of the board. The USB connection will get you started though.
6. Bring up a new sketch or load your own code into the editor and happy programming!

Electrical Specifications:

|	
Input Voltage	6 – 24V (additional heat sink on U5 may be required, depending on your configuration)
Inputs	6x
	Configurable as 0-10V analog or 0-10V Digital (~5V switch point)
	ESD Protected 30KV HBM
	1K pulldowns
	Approximately 150pf on each input
Outputs	2 Relay, 6 Digital
	Relay outputs, 120V, 10A
	Digital Outputs, 500mA Max, VinMax, Sinking configuration, 2500mA max all.
Hall Sensor	Linear Hall Sensor into analog input
Processor	Arduino Compatible. Arduino Uno or Adafruit Metro compatible. (Software wise)
	URL for Board Configuration Package: https://raw.githubusercontent.com/anidea/aeifx300/master/package_AEIFX_index.json

Configurations:

Bare

No thru-hole components. Used for hobbyist and others who may want to solder connections and change components.
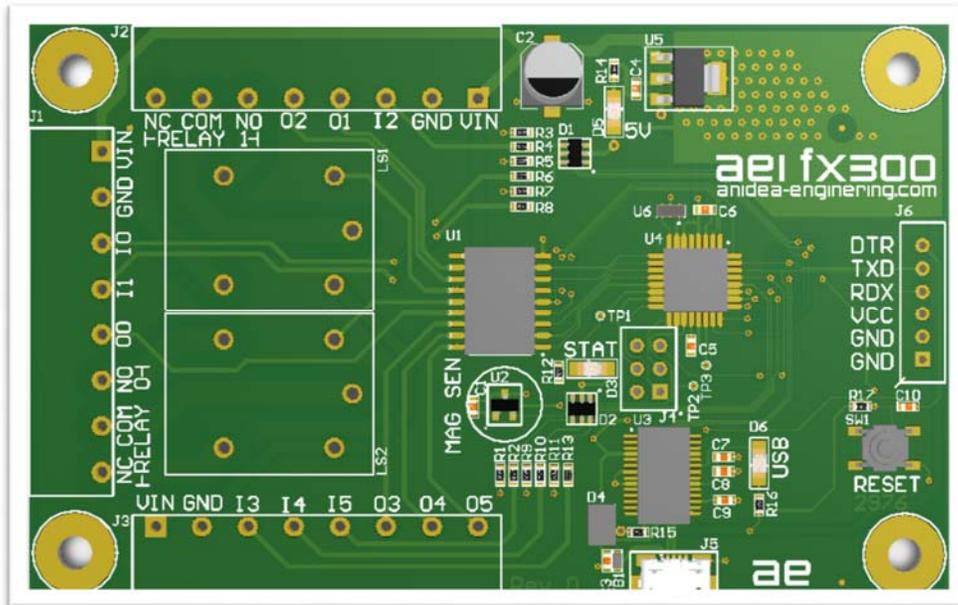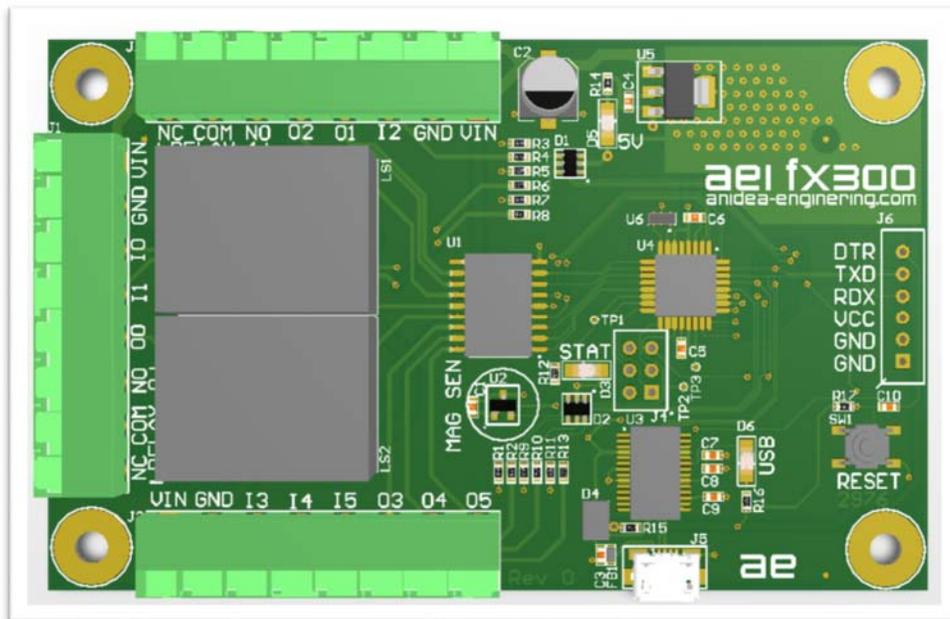

Minimum

Standard configuration for most users. Supports professional style headers with sufficient inputs and outputs for standard escape game props and project.
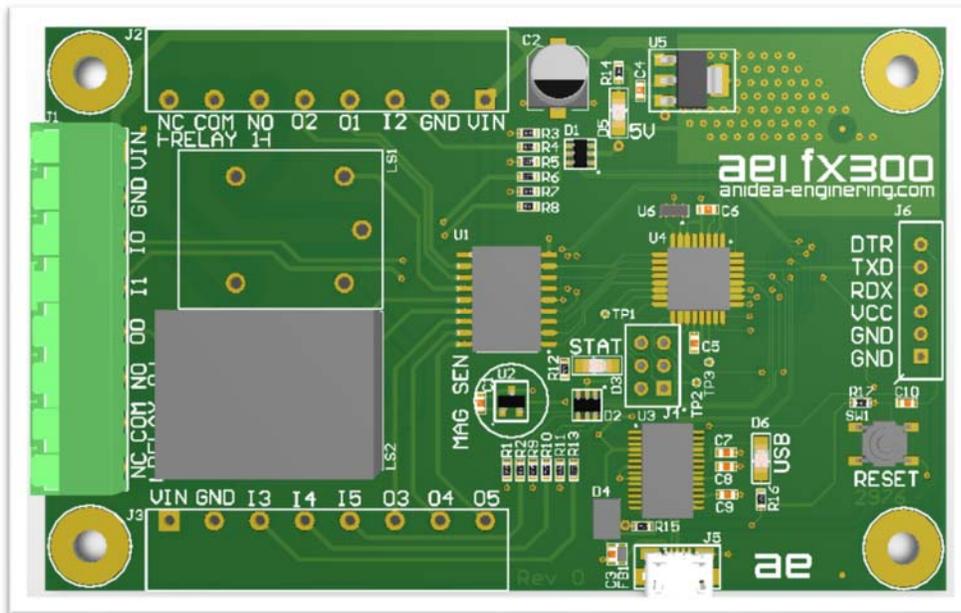
Full

Just like the minimum, but all 3 I/O headers are supplied with both relays for full, turnkey operation.

Sample Prop Wiring

The beauty of the FX300 is you don't spend your time dealing with 5V signals and from a typical Ardiunio board. You get protected inputs and outputs capable of driving loads directly. Here is a sample prop wiring of 2 switch inputs, 2 LED outputs, and a relay to control the maglock.

Arduino Mapping

The inputs can be configured for digital or analog input.

In the 'setup()' portion of your program, configure the pinMode() for each pin. The use the digitalWrite(), digitalRead(), and analogRead() functions to get your use your signals. Please reference https://www.arduino.cc/en/Reference/HomePage for definitions of these functions.

Do not bother to use the pullups on the processor. All inputs are already pulled down on the board. Power must be supplied to them (over 10V) to turn the input on. The inputs are also ESD protected!

```
// Arduino/FX300 Pin Mapping
#define RELAY0  3
#define RELAY1  2

#define OUTPUT0    4
#define OUTPUT1    5
#define OUTPUT2    6
#define OUTPUT3    7
#define OUTPUT4    8
#define OUTPUT5    9

#define INPUT0  14
#define INPUT1  15
#define INPUT2  16
#define INPUT3  17
#define INPUT4  18
#define INPUT5  19

#define LED     LED_BUILTIN

#define HALL    6
```

Programming

Please check out our GitHub for sample programming games, projects, and frameworks.
https://github.com/anidea

Hardware Notes

Inputs

The inputs require voltage to be triggered. There are internal pull downs. Provide at least 10V to an input to trigger it. Max voltage is 26V. For an analog input, there is 2K of resistance to ground at the input. If you have a low impedance voltage source (like a powered device), you can connect it directly to

the input and use the input as an analog input. If you have a higher impedance voltage source (as in a potentiometer), set the value accordingly. A 10K potentiometer should work well in many cases.
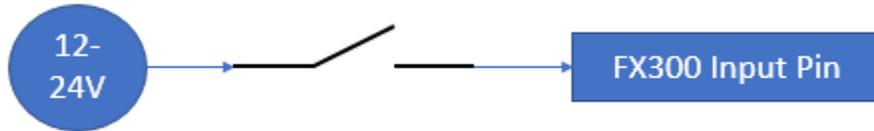

Outputs

The digital outputs are designed to ground up to 500mA each. Connect lights and devices between the power source and the output pin.

Relays

There are two great uses for the relays. They can be used to drive AC outputs (please be careful and ask for help if you don't know what you are doing), solenoids, motors, or linear actuators. Here is an example of a bi-directional control of a motor or linear actuator.
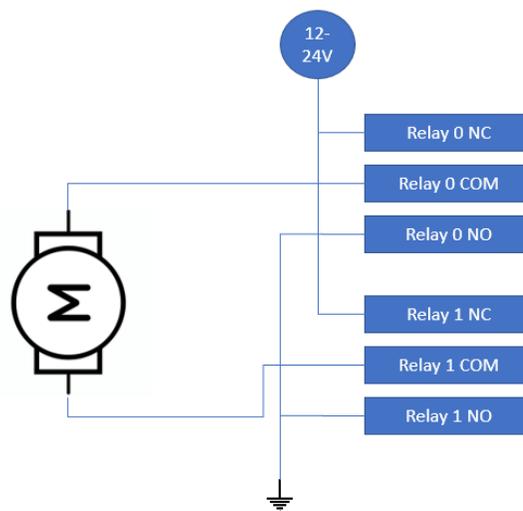
References

Relay: Panasonic JS1-5V-F http://www.digikey.com/products/en?keywords=255-2064-ND

Terminal Blocks: Phoenix Contact/Onshore Tech

>(Header 1836244): http://www.mouser.com/ProductDetail/Phoenix-Contact/1836244/?qs=%2fha2pyFadujqki4eX39GIwwNAw8q2iWv4jPyti1y8nA%3d

>(Terminals 1836134) http://www.mouser.com/ProductDetail/Phoenix-Contact/1836134/?qs=%2fha2pyFaduigEoJ3x4P28nQIB3YyuJy5y%2fxf4jq66Rc%3d

Regulator: LD1117S50 http://www.digikey.com/products/en/integrated-circuits-ics/pmic-voltage-regulators-linear/699?k=497-1243-1-ND

Current Driver: TI ULN2803 http://www.digikey.com/products/en?keywords=296-36073-5-ND

Hall Sensor: Allegro A1325 http://www.digikey.com/products/en?keywords=620-1401-1-ND