WIRING INFORMATION BETWEEN KEYS, DISPLAY AND TEENSY BOARD. CRANK MODULE VERSION.

I recommend you print this out and keep it nearby when wiring everything up.

SUMMARY OF PINS AND WIRING (Please refer to the wiring diagram).

OLED display	Pin on Teensy board
DATA / SDA / MOSI	9
CLK / SCK	10
DC	11
CS	12
Reset / RES	13

Plus also

Vcc	3.3V	(The board is supplied with power at 3.3V). This wire goes *FROM* 3.3V on the Teensy *TO* Vcc on the OLED screen, NOT to the 3.3V Pin on the screen.
GND	GND	

The Keys	Pin			Pin
A4	24		G4#	2
B4	25		A4#	3
C5	26		C5#	4
D5	27		D5#	5
E5	28		F5#	6
F5	29		G5#	7
G5	30		A5#	8
A5	31		C6#	18
B5	32		D6#	19
C6	33		F6#	20
D6	34			
E6	35			
F6	36			
G6	37			

NOTE: All key microswitches are connected to the respective Teensy pins as above and the *second microswitch pins are all then connected to GROUND*

Other components to be wired up

Gaming console push button switch

2 wires from switch to Pin 39 and GND (2 solder holes we marked earlier on rear of the printed circuit board).

Three extra pins for the Octave-UP, Octave-DOWN and Capo On/Off buttons on the front panel.

Pin 21:   Octave UP
Pin 22:   Octave DOWN
Pin 23:   Capo On/Off button.

As with the other pins these switches when pressed connect their respective pins to GROUND.
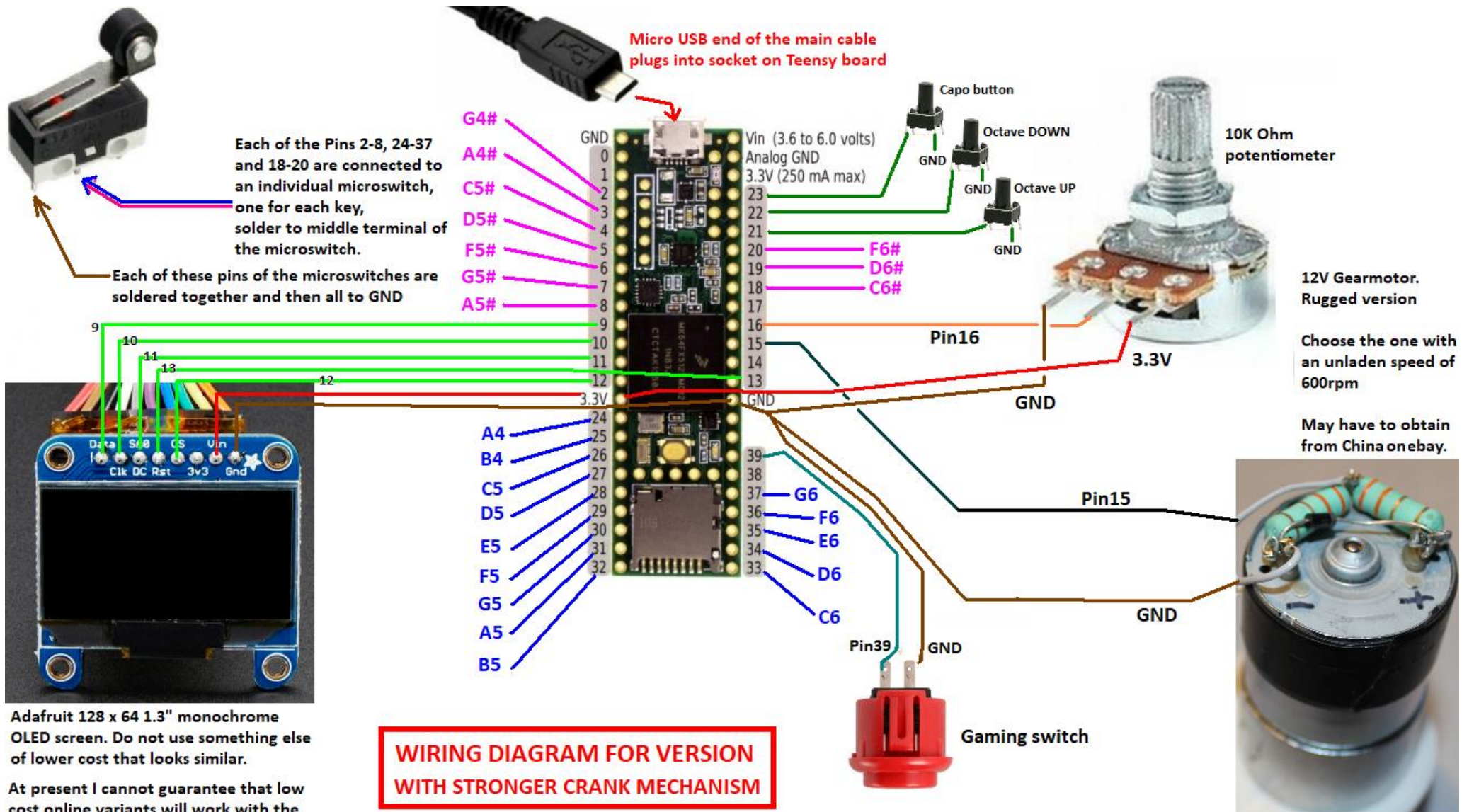
Potentiometer that adjusts buzz sensitivity. 3 wires to a row of 3 holes we marked earlier on rear of the printed circuit board.

Teensy	Potentiometer viewed from rear with its 3 solder terminals facing downwards
GND	Left terminal
3.3V	Right terminal
Pin 16	Middle terminal

2 wires running from the **crank gearmotor** *that we are using as a dynamo to generate a voltage when you crank it, that the Teensy board can then measure and respond to:*
GND
Pin 15   (solder holes we marked earlier on rear of the printed circuit board).

Micro USB end of the main cable plugs into socket on Teensy board

Each of the Pins 2-8, 24-37 and 18-20 are connected to an individual microswitch, one for each key, solder to middle terminal of the microswitch.

Each of these pins of the microswitches are soldered together and then all to GND

G4#
A4#
C5#
D5#
F5#
G5#
A5#

Capo button
Octave DOWN
GND
GND
Octave UP
GND

10K Ohm potentiometer

GND
0
1
2
3
4
5
6
7
8
9
10
11
12
3.3V

Vin (3.6 to 6.0 volts)
Analog GND
3.3V (250 mA max)
23
22
21
20 F6#
19 D6#
18 C6#
17
16
15
14
13
GND

Pin16

3.3V

GND

12V Gearmotor. Rugged version

Choose the one with an unladen speed of 600rpm

May have to obtain from China on ebay.

A4   24
B4   25
C5   26
D5   27
E5   28
F5   29
G5   30
A5   31
B5   32

39
38
37 G6
36 F6
35 E6
34 D6
33 C6

Pin15

GND

Pin39   GND

Gaming switch

Adafruit 128 x 64 1.3" monochrome OLED screen. Do not use something else of lower cost that looks similar.

At present I cannot guarantee that low cost online variants will work with the Arduino OLED screen drivers I am using.

WIRING DIAGRAM FOR VERSION WITH STRONGER CRANK MECHANISM

Wiring diagram including crank module   NOTE: Updated 16/02/2022 to include the front panel mounted Octave Up, Octave Down and Capo buttons.

Tin the solder terminals then solder one wire to the central terminal of each microswitch. Push microswitches into their sockets from this side with the roller wheels facing into the centre towards each other. Once this is done solder a continuous wire across the GND terminals of all the switches with the end of this wire then soldered to one of the GND terminals on the Teensy circuit board.
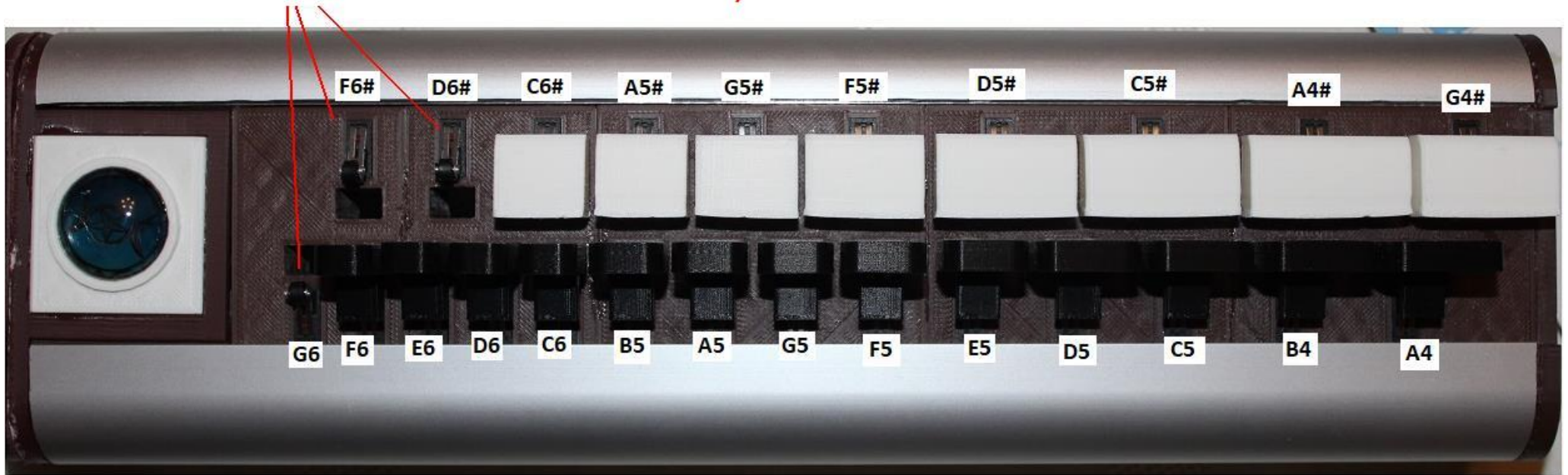
Front view with some of the keys removed to show the microswitches.
This is an earlier DigiGurdy but this diagram still applies.

Spin crank with voltmeter attached. It generates a voltage. Mark which pin is generating the positive voltage. Wire resistors in series between the motor terminals. Fit diode with silver line TOWARDS the +ve motor terminal you marked earlier. Now, refer to the wiring diagram.

Resistors should both be about 3.3 Ohms wire wound.

Crank motor clockwise while measuring voltage across terminals with a voltmeter. When the reading is positive 1 or 2 volts typically, label the terminal the RED wire of the voltmeter is connected to with a +ve sign and the other one with a -ve sign.

IGNORE the factory + and - labels on the motor, check all this for yourself, there may be slight differences between motors.

Wire the resistor pair as shown in series between the two terminals. The white stripe of the diode should be nearest to the +ve terminal you marked earlier.

The 2 wires to the Teensy board are GND (from the terminal you marked as -ve) and the other wire is from the JOIN between the two resistors.

TESTING:

When you have assembled this, *test it* by attaching a voltmeter black lead to the -ve motor terminal and the voltmeter red lead to the join between the two resistors. Then crank as hard as you can clockwise, faster than you would ever do when playing the DigiGurdy, and check that the voltage produced is always less than 3V (which it should be). If so, then you are OK to proceed and install the motor module. Again, an earlier design is shown here but the wiring is still the same.