Padawan 360 Advanced(ish) Servo Control/Animation

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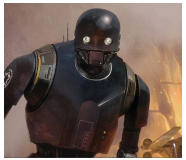
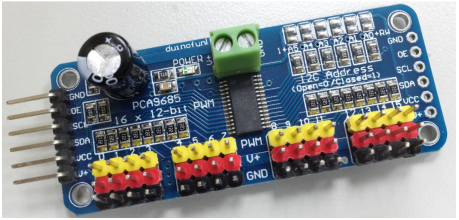
Options for controlling servos

Padawan 360 (based on Shadow) runs critical code



Direct from Padawan arduino board (this is a bad idea)

Another Arduino board over i2c or direct (limited PWM pins)



PCA9685 over i2c/another arduino (servo expansion)

Pololu Maestro

Pololu Maestro

- Dedicated servo control board
- Variety of sizes
- Flexible software (Maestro Control Centre)
- Speed ramping
- Arduino/Pi Libraries
- Different Servo voltages
- Daisy chainable

Hardware required

- Arduino Mega with Padawan installed/working
- Pololu mini/micro Maestro
- Servos
- Windows/Linux (possibly support for MacOS)
- Jumper wires (make own dupont crimps)
- Power supply(s)

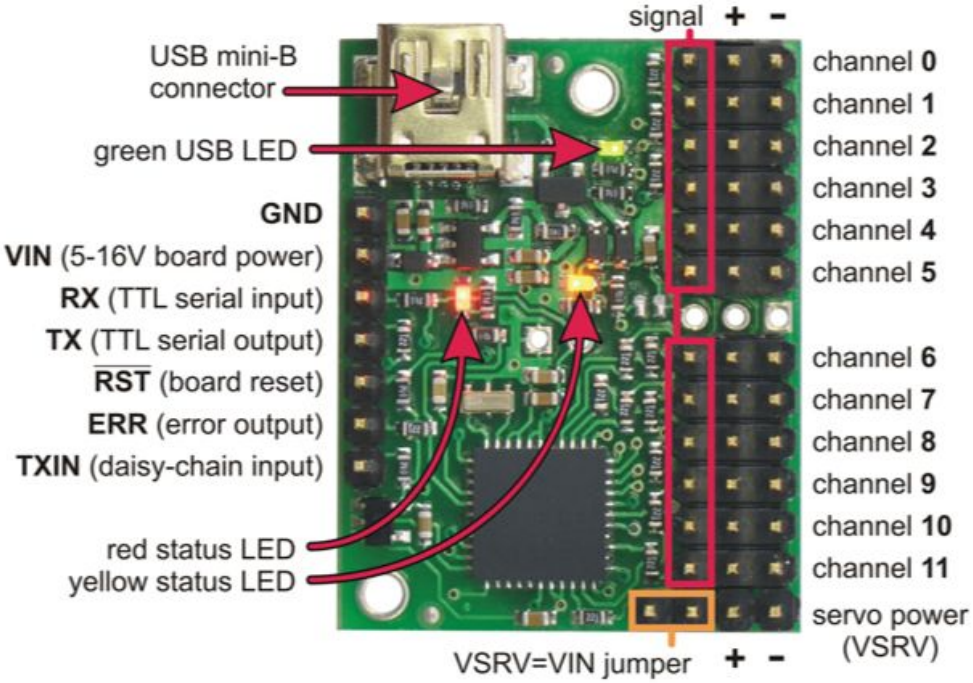
Connectivity

Power

- Logic (board) power (5-16v)
- Servo power (check servo specs)

Logic/data

- Common Logic Ground
- Rx
- Tx (optional)



Power

Can tie power using jumper on mini Maestro boards

Micro requires solder wire connection

Recommend discreet power (avoid brownouts) to logic and servos

Can be same voltage

Don’t power from Arduino regulator

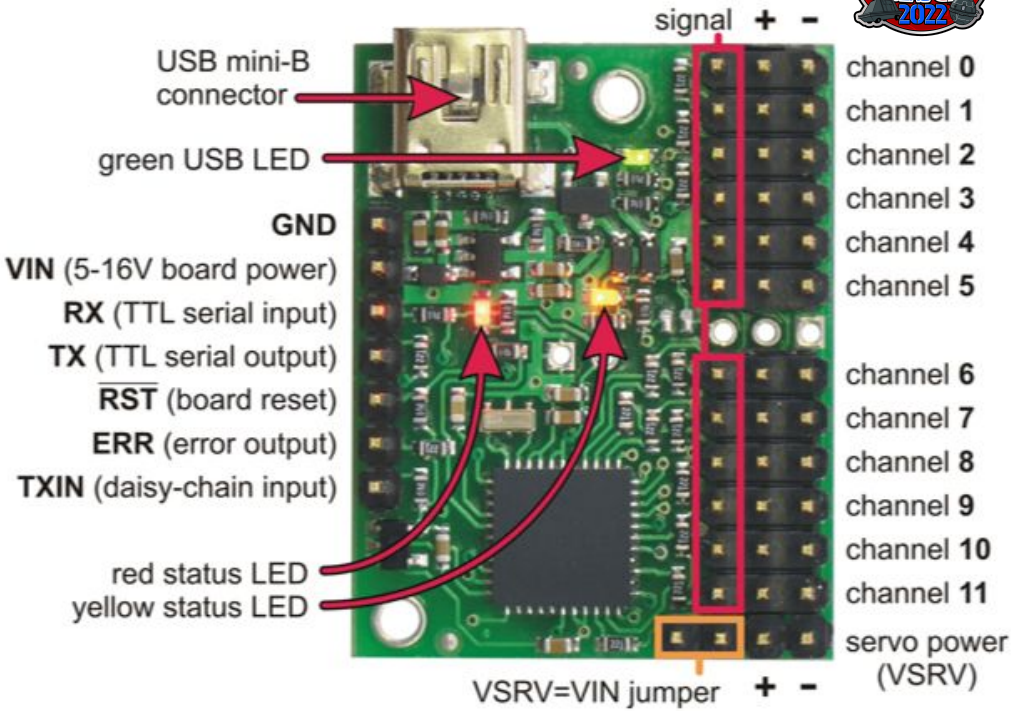
Power from Sabertooth at own risk

Data (TTL) connectivity

Mega - hardware or software serial

Tx on arduino to Rx on Maestro

Rx on arduino to Tx on Maestro (opt)

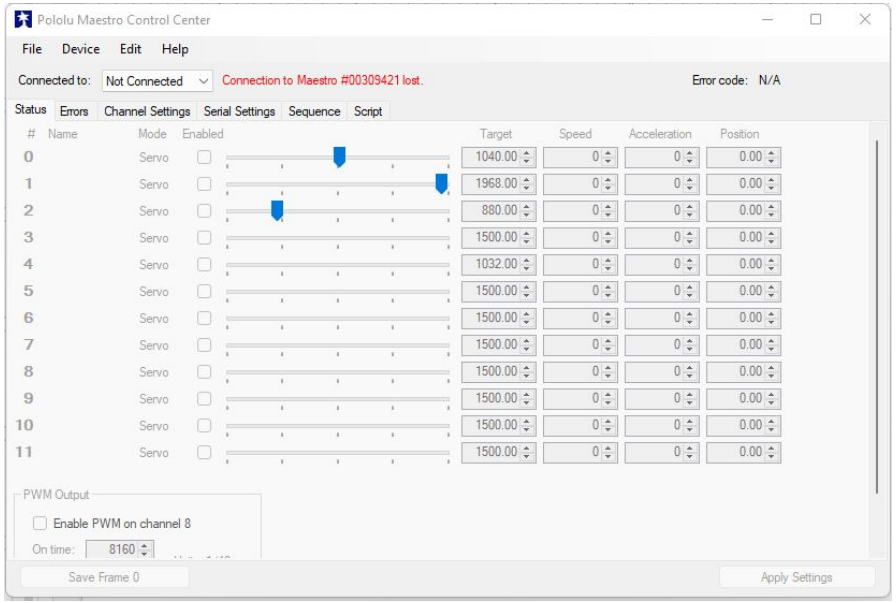


Maestro Control Centre Software

Install drivers/software

Run Maestro Control Centre

Connect board using USB



First steps

Logic power + GND

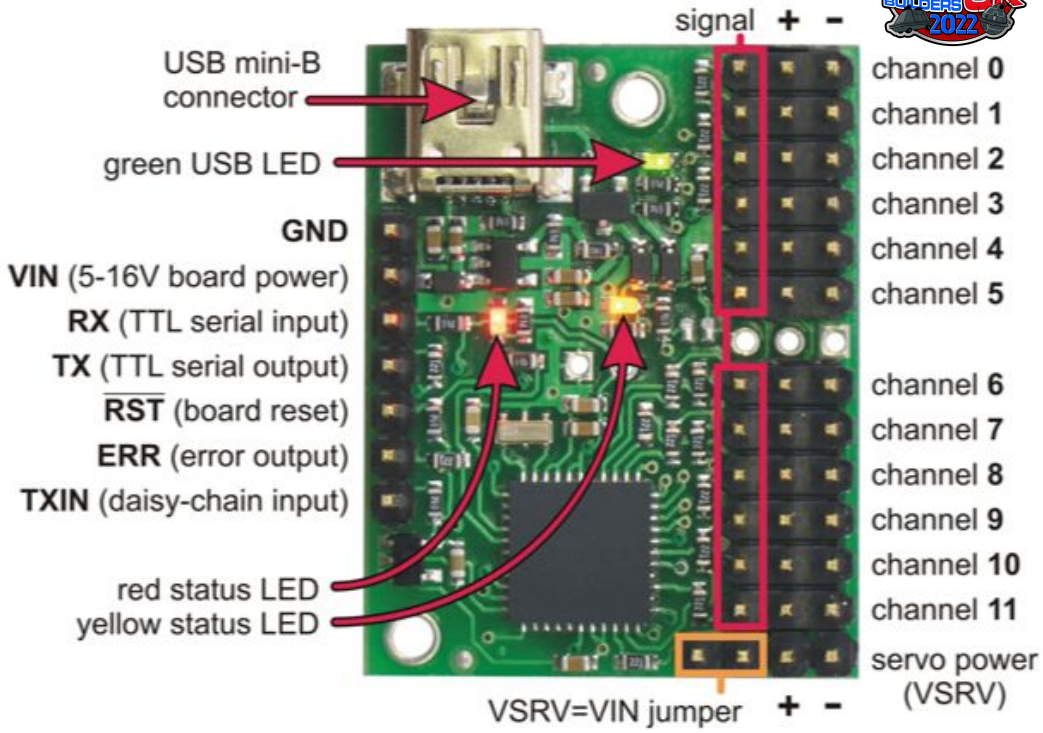
Servo power

Rx

VIN Jumper

Servo(s)

- Channel 0..1..2..3..



Maestro Control Centre

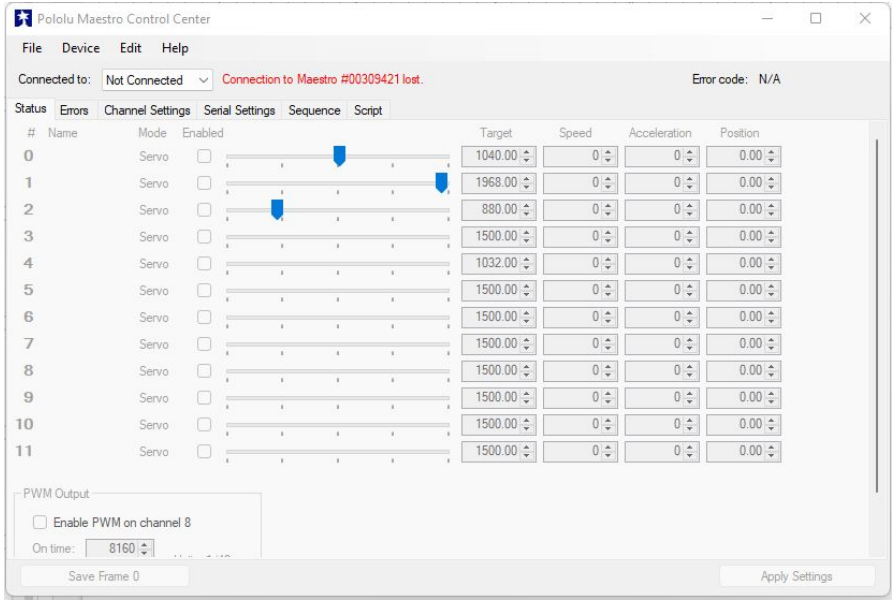
Hit Connect

Enable Servos

Move sliders

Test/set limits

- Min/Max in Channel Settings Tab
- Save frames to build sequence
- Copy all sequences to script



Changing the sketch

Add libraries #include <PololuMaestro.h>

(Sketch, include library, add zip file or folder)

Understand key combos

Find spare combo/replace existing

Hardware or Software serial?

Mega

Add the following BEFORE Setup:

```
#include <PololuMaestro.h> // adds the Maestro library

#include <SoftwareSerial.h> //allows for software serial if required

SoftwareSerial maestroSerial(10, 11); //tx pin 11 (if Software Serial required)

MiniMaestro maestro(Serial3); //hardware serial

MiniMaestro maestrosserial(maestroSerial); //software serial as required
```

Void setup();

- Serial3.begin(9600); //start serial3 for the Maestro

(and/or maestroSerial.begin(9600);)

Key combos (hardware serial)

```
if (Xbox.getButtonPress(L2, 0)) {
    if (Xbox.getButtonPress(UP, 0)) {
     maestro.restartScript(0);
      Serial.println ("L2 and Up start script 0");
    }
  }
```

Key combos continued…

```
if (Xbox.getButtonPress(L2, 0)) {
  if (Xbox.getButtonPress(DOWN, 0)) {
    maestro.restartScript(1);
    Serial.println ("L2 and Down start script 1");
  }
}
```

Key combos (SoftwareSerial)

```
if (Xbox.getButtonPress(R2, 0)) {
    if (Xbox.getButtonPress(UP, 0)) {
     maestrosserial.restartScript(3);
     Serial.println ("SS R2 and Up start script 3");
    }
  }
```

Questions??

Links:

https://github.com/dankraus/padawan360

https://github.com/Imperiallandm/padawan_360_mega_maestro

Thanks for listening!