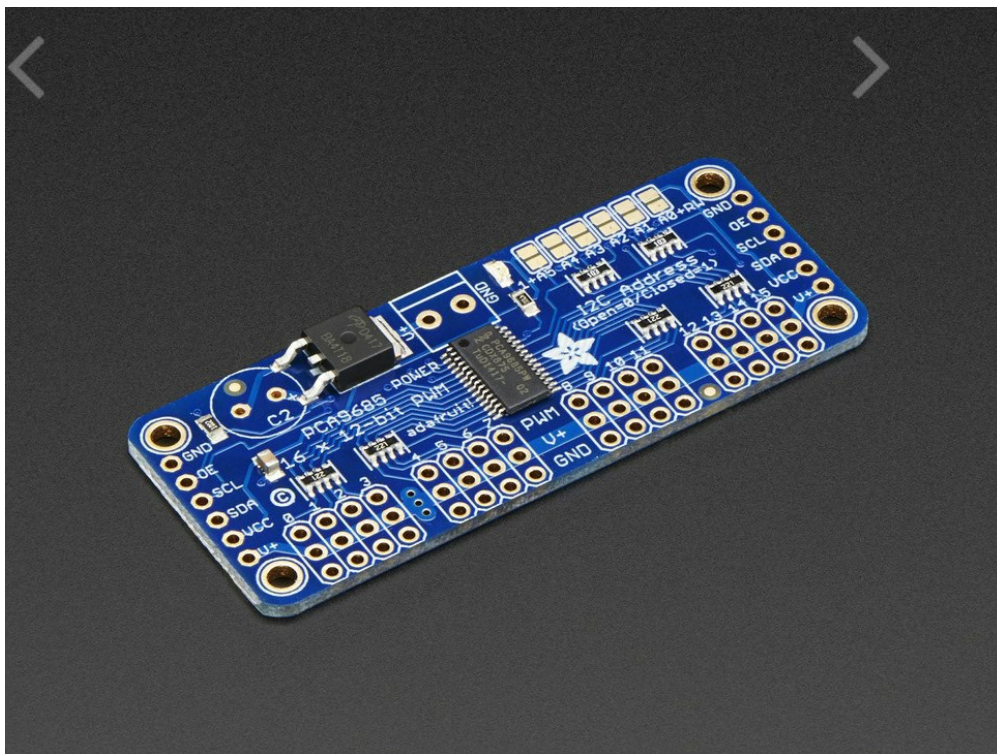




Adafruit 16-Channel 12-bit PWM/Servo Driver - I2C interface - PCA9685

PRODUCT ID: 815

IN STOCK

1

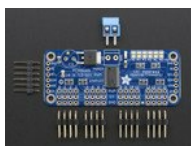
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[DESCRIPTION](#)[TECHNICAL DETAILS](#)

DESCRIPTION

You want to make a cool robot, maybe a hexapod walker, or maybe just a piece of art with a lot of moving parts. Or maybe you want to drive a lot of LEDs with precise PWM output. Then you realize that your microcontroller has a limited number of PWM outputs! What now? You could give up OR you could just get this handy PWM and Servo driver breakout.

When we saw this chip, we quickly realized what an excellent add-on this would be. **Using only two pins, control 16 free-running PWM outputs!** You can even chain up 62 breakouts to control up to 992 PWM outputs (which we would really like to see since it would be glorious)

- It's an i2c-controlled PWM driver with a built in clock. That means that, unlike the TLC5940 family, you do not need to continuously send it signal tying up your microcontroller, its completely free running!

safely drive up to 6V outputs (this is good for when you want to control white or blue LEDs with 3.4+ forward voltages)

- 6 address select pins so you can wire up to 62 of these on a single i2c bus, a total of 992 outputs - that's a lot of servos or LEDs
- Adjustable frequency PWM up to about 1.6 KHz
- 12-bit resolution for each output - for servos, that means about 4us resolution at 60Hz update rate
- Configurable push-pull or open-drain output
- Output enable pin to quickly disable all the outputs

We wrapped up this lovely chip into a breakout board with a couple nice extras

- Terminal block for power input (or you can use the 0.1" breakouts on the side)
- Reverse polarity protection on the terminal block input. The terminal block included with your product may be blue or black.
- Green power-good LED
- 3 pin connectors in groups of 4 so you can plug in 16 servos at once (Servo plugs are *slightly* wider than 0.1" so you can only stack 4 next to each other on 0.1" header
- "Chain-able" design
- A spot to place a big capacitor on the V+ line (in case you need it)
- 220 ohm series resistors on all the output lines to protect them, and to make driving LEDs trivial
- Solder jumpers for the 6 address select pins

This product comes with a fully tested and assembled breakout as well as 4 pieces of 3x4 male straight header (for servo/LED plugs), a 2-pin terminal block (for power) and a piece of 6-pin 0.1" header (to plug into a breadboard). A little light soldering will be required to assemble and customize the board by attaching the desired headers but it is a 15 minute task that even a beginner can do. [If you want to use right-angle 3x4 headers, we also carry a 4 pack in the shop.](#)

[Check out our tutorial with CircuitPython & Arduino libraries/examples, wiring diagrams, schematics, Fritzing and more!](#)

TECHNICAL DETAILS

Specifications:

- Dimensions (no headers or terminal block) 2.5" x 1" x 0.1" (62.5mm x 25.4mm x 3mm)
- Weight (no headers or terminal block): 5.5grams
- Weight (with 3x4 headers & terminal block): 9grams
- This board/chip uses I2C 7-bit address between 0x40-0x7F, selectable with jumpers

[Datasheets, EagleCAD PCB files, Fritzing object and more in the tutorial!](#)

Revision History:

- As of Feb 16, 2015 we now use a much beefier polarity-protection transistor. Functionality is otherwise the same



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[Adafruit 16 Channel Servo Driver with Raspberry Pi](#)



[Adafruit PCA9685 16-Channel Servo Driver](#)



[Raspberry Pi Wifi-Controlled Cat Laser Toy](#)

Make your own telepresence cat toy, perfect for exercising/torturing your favorite feline



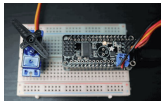
[Adafruit Motor Selection Guide](#)

Choose the right motor (and controller) for the job!



[LED Tricks: Gamma Correction](#)

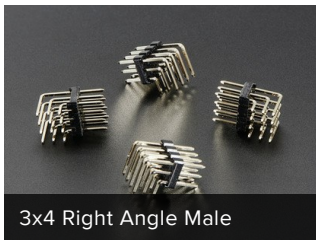
RGB colors off? It's not your LEDs or code...it's biology!



[CircuitPython Hardware: PCA9685 PWM & Servo Driver](#)

How to use the PCA9685 PWM & servo driver with CircuitPython!

MAY WE ALSO SUGGEST...



3x4 Right Angle Male



Female DC Power adapter -



5V 10A switching power



Micro servo



5V 2A (2000mA) switching



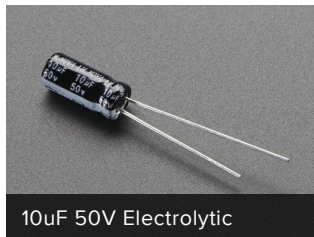
Standard servo - TowerPro



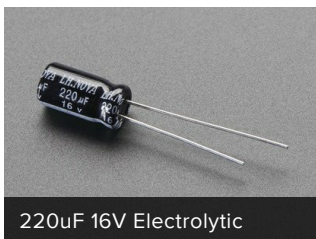
Continuous Rotation Servo



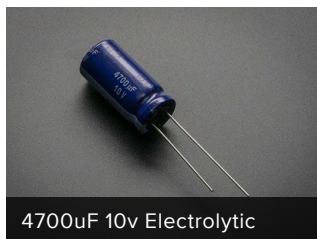
Motor party add-on pack for



10uF 50V Electrolytic



220uF 16V Electrolytic



4700uF 10v Electrolytic



Adafruit 12-Channel 16-bit

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