Control Accessories · **IOT Servo Shield**

Actuonix Motion Devices' unique line of Miniature Linear Actuators just became easier to control with the IOT Servo Shield. Plug in a Particle Photon WIFI module and you're ready to control actuators using your cell phone (Android or IOS) or many of the Home Automation options offered by IFTTT.com . The IFTTT service supports Google Home and Amazon Alexa, giving you custom voice control options. The Actuonix IOT Servo Shield makes wiring a breeze.

Applications
→ **Home Automation**
→ **Agriculture**
→ **Robotics**
→ **Voice Control**

Resources
→ **Photon Datasheet:**

https://docs.particle.io/ datasheets/photon- (wifi)/photon-datasheet/

→ **Photon Guide**

https://docs.particle.io/ guide/gettingstarted/intro/ photon

→ **IFTTT Details**

https://docs.particle.io/ guide/tools-and-features/ ifttt/

Control Specifications

Input Voltage	6 or 12 VDC (Match Actuator Voltage) *
Operating Temperature	-40°C to 85°C
Frequency	802.11b/g/n Wi-Fi
Dimensions(Photon+Shield)	40mm x 50mm x 15mm
Required Services	Particle.io Account
Optional Services	IFTTT.com Account
Compatible Actuators	Our models ending in -I , -R, or -P with an LAC

Sum the stall currents of the connected actuators to determine maximum current draw.

Wiring
The Actuonix Servo Shield makes the Photon easy to install and operate. Plug the Particle Photon into the IOT Servo Shield. Align the Photon with the outline on the Shield. Use the two inner pin headers(the external rows give you access to the other Photon pins). Connect 6V or 12V to the + screw terminal, and Ground to the - screw terminal (match the actuator voltage). Connect up to 4 actuators to the servo headers(black wire facing up). Do not mix actuators of differing voltages. Only connect one power supply(the barrel socket can be used if your supply has a compatible barrel plug).

-R Type Actuator Connected to D3 Output

DC Power Supply Connected to +/-

The small proto-board area can be used to prototype additional circuits(Photocell, temperature sensor, buttons, etc). The Photon comes preloaded with "Tinker" firmware. This allows you to control 4 servos without any changes to the Photon code. Sign in to Particle's development website, to customize the Photon code for more advanced projects.

Photon Module installed

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WIFI Setup and Smart Phone Apps

1) Download and install the Photon App on your phone. Search for "Particle" in the IOS, Android or Windows App store. This App is free to use, but does require you to create a Particle account.

2) Wire up your Photon, power supply and actuator(s) as described above.

3) Open the app and power on the photon

4) Follow the App's instructions to complete connection

5) That's it, you should now be able to control the connected actuators using the App control bars. Tap the Pin you have connected, select Analog Output. **Control Range** is between **120(Full Retract)** and **250(Full Extend).**

If your phone supports the Amazon Alexa or Google Assistant Apps, you can setup cell phone voice control. Refer to the corresponding setup instructions below.

IFTTT

1)Follow the above WIFI Setup instructions to get the Photon connected to your home network. You only have to do this once, the Photon will remember your WIFI login credentials next time you power it up.

2)Go to www.ifttt.com and set up an account if you do not already have one. Go back to the home page when you have finished setting up an account.

3)Click on My Applets->New Applet

4)Click "If This", and select the trigger you want to use(time, email, etc). Refer to the next page if you want to use Alexa or Google Home.

5)Click "Then that", and search for "Particle". Click Particle.

6)Select the function "Analog Write". Enter the pin and desired movement.

For Example if you have the actuator white wire connected to pin D1 and you want to fully **extend** the actuator enter the following: **D1, 250**

7) Click Finish and wait a few seconds then try out your trigger.

8) Repeat from step 3, if you want another trigger to **retract** the actuator enter: **D1, 120**

Note: You can enter any value between 120 and 250. The actuator position is proportional. For example to extend 50%, use 185.

Google Home Voice Control Example

The IFTTT service facilitates connection to your Google Home system. Google will take commands through Google Assistant on your phone, or via the various Google Assistant products such as Google Home, or Google Home Mini.

Setup IFTTT as above, but search for and select Google Assistant -> Simple Phrase in Step 4.

Choose a service
Step 1 of 6

🔍 google assistant

Google Assistant

Choose action service
Step 3 of 6

🔍 particle

Particle

Complete trigger fields
Step 2 of 6

Say a simple phrase

This trigger fires when you say "Ok Google" to the Google Assistant followed by a phrase you choose. For example, say "Ok Google, I'm running late" to text a family member that you're on your way home.

What do you want to say?

Open Window

What's another way to say it? (optional)

Extend Actuator

And another way? (optional)

Fire the Cannon

What do you want the Assistant to say in response?

By your command

Language

English

Create trigger

Choose action
Step 4 of 6

Publish an event

This Action publishes an event back to your Device(s), which you can catch with particle.subscribe.

Call a function

This Action will call a function on one of your Devices, triggering an action in the physical world.

Complete action fields
Step 5 of 6

Call a function

This Action will call a function on one of your Devices, triggering an action in the physical world.

Then call (Function Name)

analogwrite on "Actuonix" ⌄

The name of the function you want to call; ex: for your lighting project you may name your function LED

with input (Function Input)

D1, 200

Whatever that function takes as an input, ex: color of LED, brightness of LED

Add ingredient

Create action

Note: Some phones may not have the Google Assistant App pre-installed. It is available for free from the Google Play Store.

Amazon Echo Voice Control Example

This also uses IFTTT. Search for and select Amazon Alexa -> Say a specific phrase in step 4. Complete the IFTTT setup as above.

Troubleshooting:

If you have trouble setting up the Photon through the cell phone app, hold down the setup button on the photon until the LED flashes green rapidly. Try finding the photon in the phone app again.

LED:

> Rapid Flashing **Green** (Looking for Internet)
>
> Slow Flashing **Cyan** (Connected, ready for App/IFTTT control)
>
> More LED codes available at Particle.io

Further Support:

Contact Actuonix support for questions relating to our servo shield or actuators.

Contact Particle.io for Photon and Particle account specific issues.

Contact IFTTT.com for IFTTT service specific issues.