

STAGE II

CUBAN FLAT BREAD WITH OCTOPUS (New format of PC)

*Fit into fold-out travel pouch with Stage I breadboard
I2C on backplane or GPIO if no pin collisions.*

This configuration is max density rectangle, minimum thickness + octopus expansion standardizing on I2C which everything is, using both backplane & cables for same bus.

Black hat hack3r \$13

Phat stack

match 3 HATs or 5 pHATs into a platter of functionality

pHAT Stack



Fully Assembled Kit /PIM322
~\$16.33

IN STOCK

ADD TO CART



Solder Yourself Kit /PIM321
~\$14

48 IN STOCK

ADD TO CART



PCB Only /PIM320
~\$7

26 IN STOCK

ADD TO CART



A preposterous pile of peripherals on your Pi! Mix and match 3 HATs or 5 pHATs into a platter of functionality. Use pHAT Stack for specific setups and projects, or just as a handy way to use several HATs or pHATs at once.



Mini Black HAT Hack3r

	Fully Assembled /PIM169 ~\$11.67	29 IN STOCK	ADD TO CART 
	Solder Yourself Kit /PIM170 ~\$9.33	IN STOCK	ADD TO CART 
	PCB only /PIM171 ~\$4.67	39 IN STOCK	ADD TO CART 

Need to detach or debug your HAT? Then the Mini Black HAT Hack3r is for you!



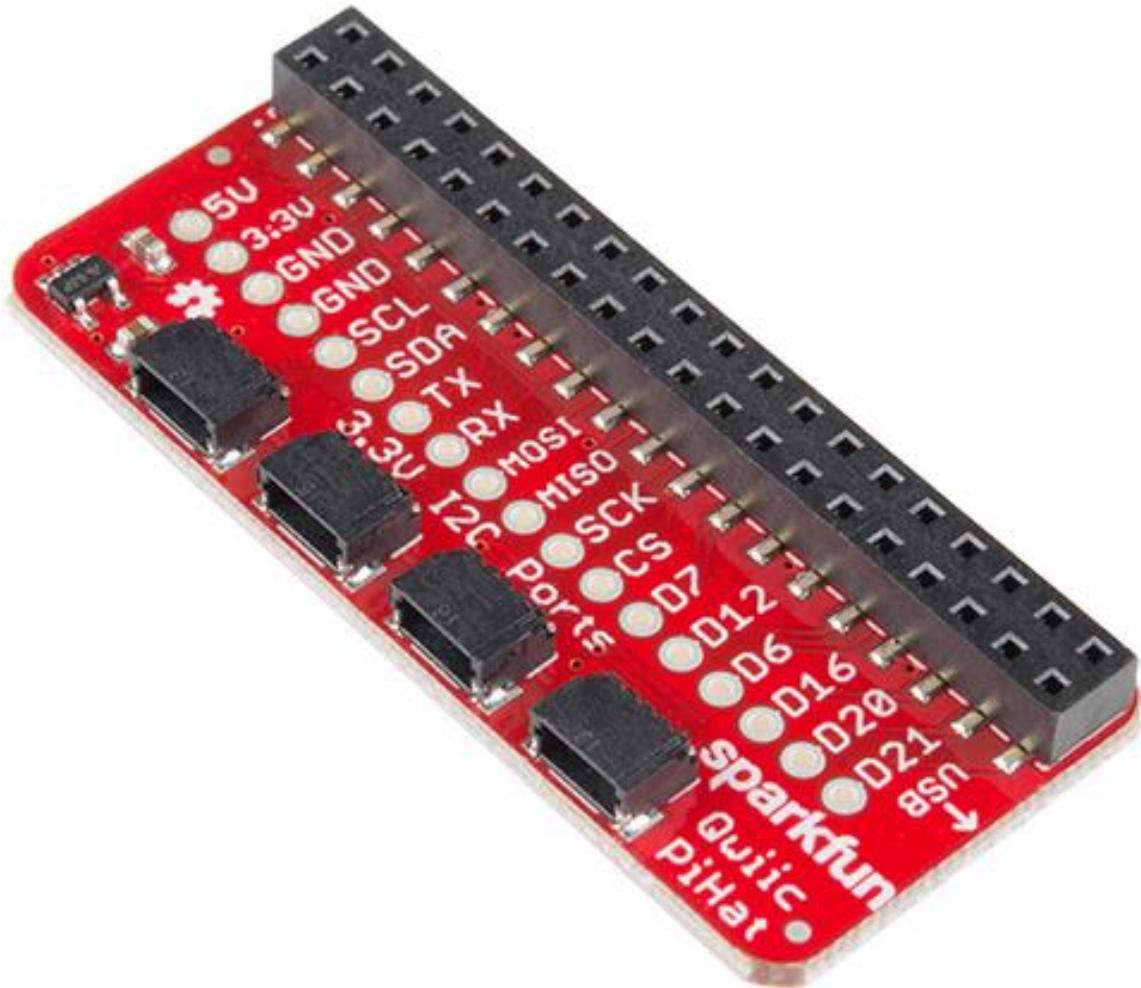
[Documentation](#) [review](#)

OCTOPUSS OF I2C SENSORS & ACTUATORS, SPARKFUN STANDARD (expands out from flat bread)

A common need to is to add I2c parts, so a pluggable standard saves mess. There is an uber cheap Sparkfun standard. Use this & add make-your-own female → pcb plugs & cables to adapt various things

\$5 Sparkfun [proto](#)

Sparkfun Qwiic Ecosystem



<https://www.sparkfun.com/products/14459>

<https://www.sparkfun.com/products/14425>

<https://www.sparkfun.com/products/14429>

<https://www.sparkfun.com/products/14417>

<https://www.sparkfun.com/products/9749>

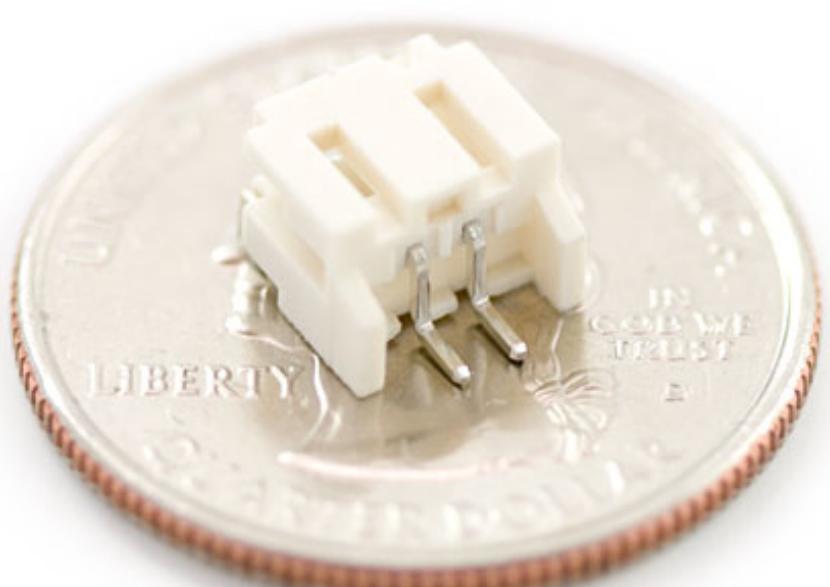
<https://www.sparkfun.com/products/8612>

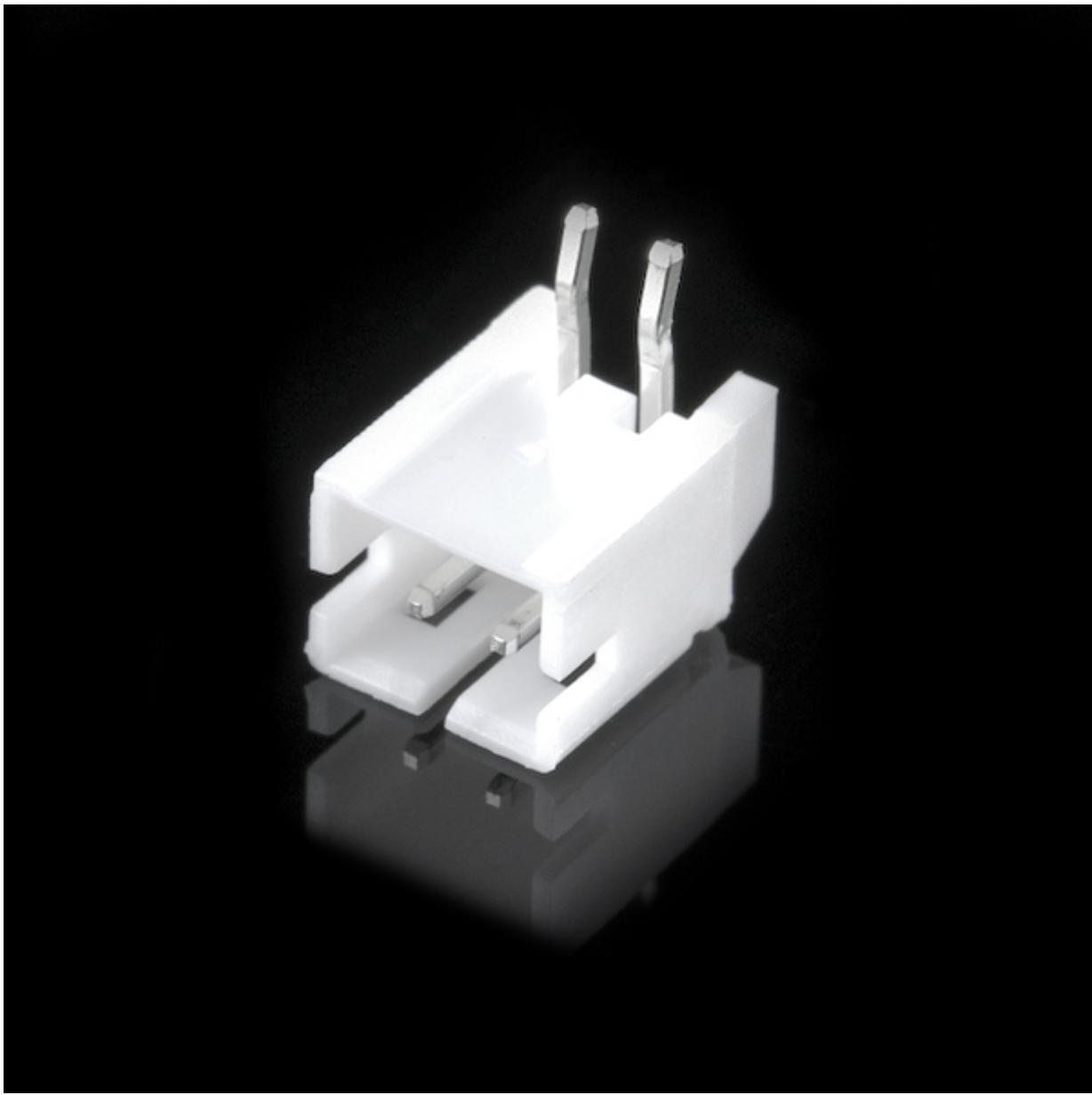
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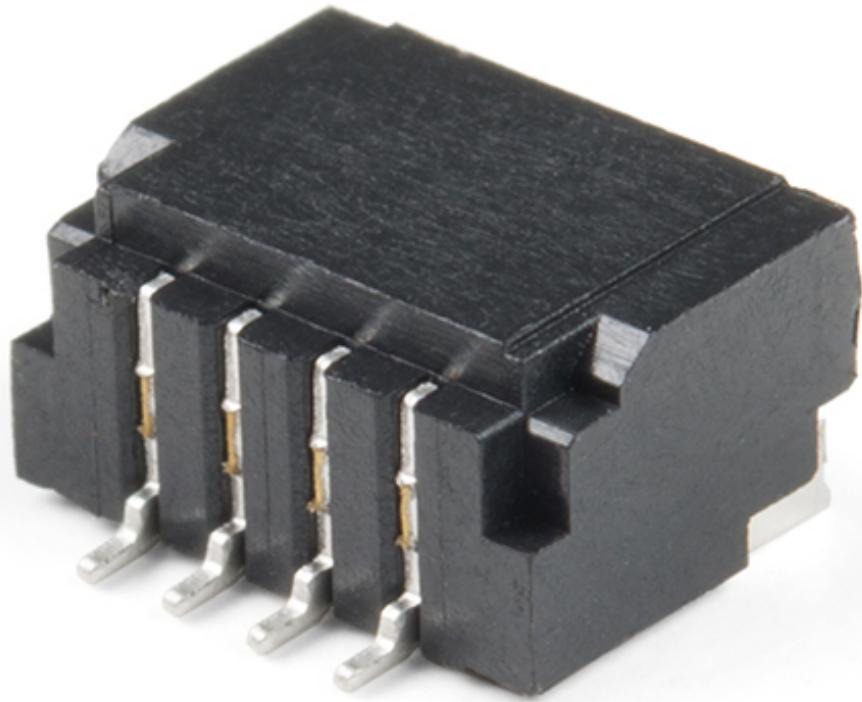
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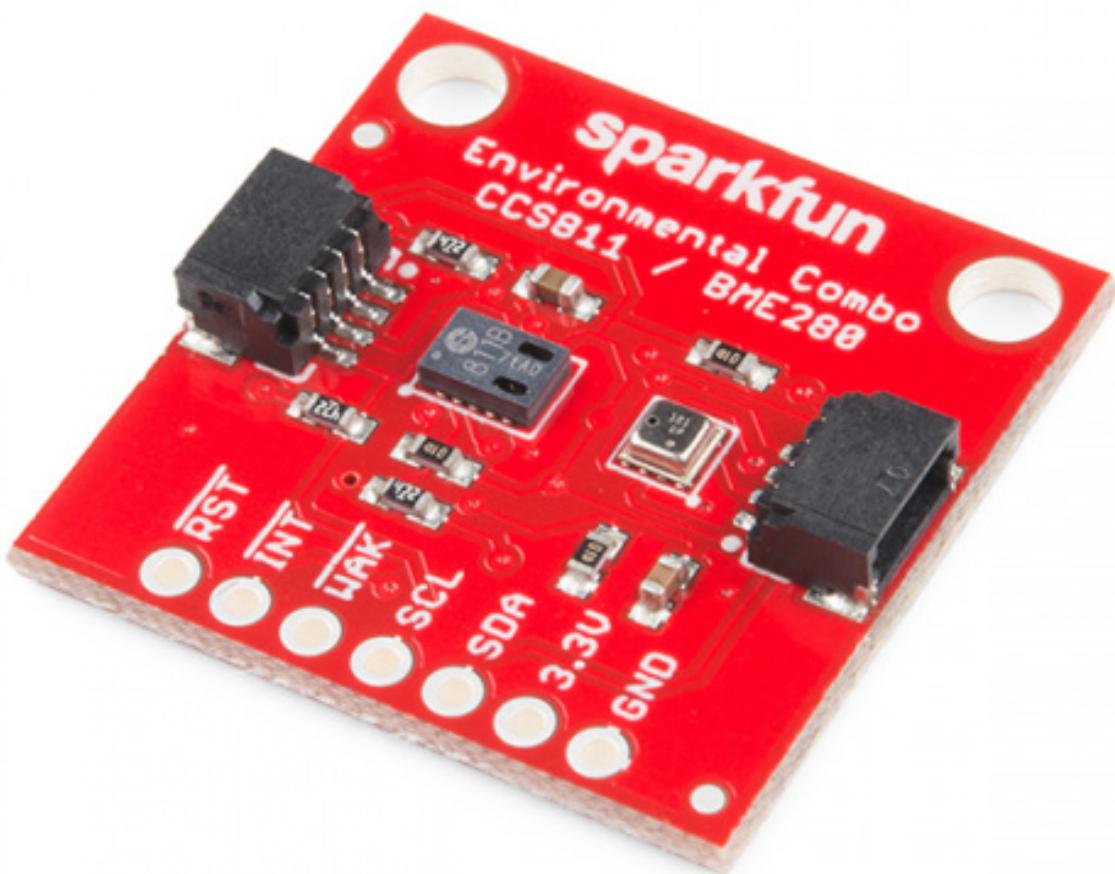








SparkFun Environmental Combo Breakout - CCS811/BME280 (Qwiic)
\$35

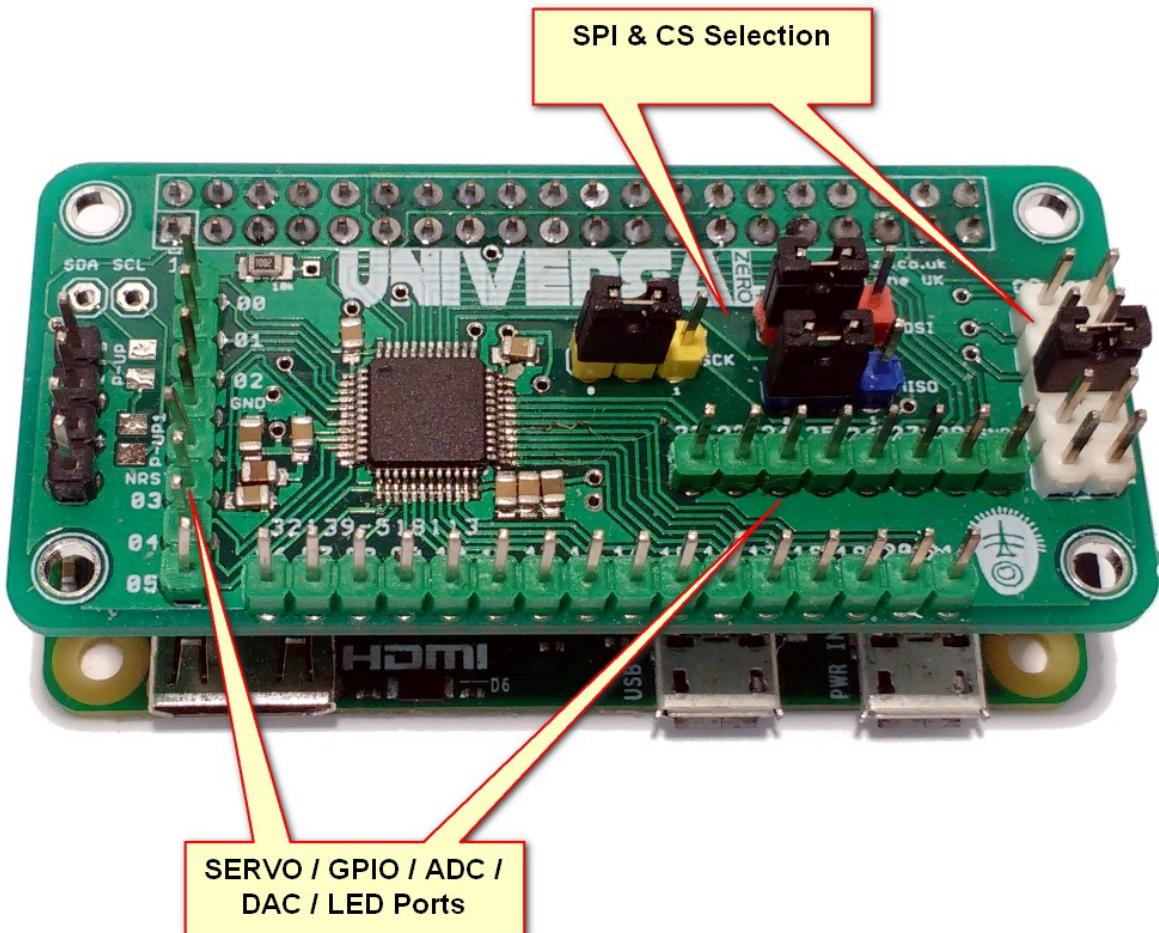


STAGE II 1/2 (ADD ANALOG FOR SCOPE ETC)

uk maker [shop](#)

Kickstarter Universal Zero buy Includes Analog I/O \$22

Universal zero 8 pin ADC / DAC or GPIO Raspberry pHat. Software configurable. All in one DAC, analog (ADC) or GPIO expansion RPi pHat

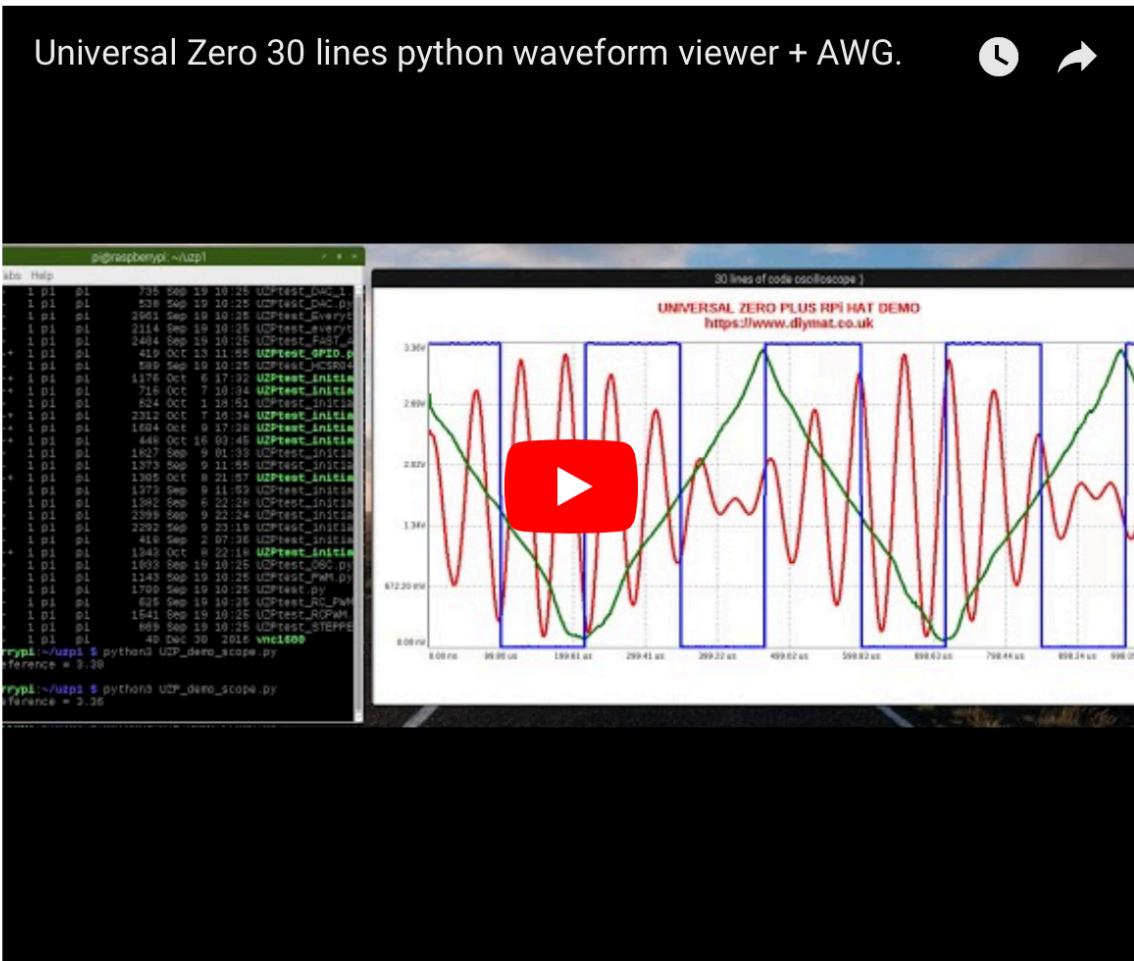


It is one of the most advanced I/O Raspberry Pi HATs. Integrates **GPIO**, **ADC**, **DAC**, **PWM**, **SERVO** and **WS2812** LEDs controller.

Main features:

- 29x GPIO ports
- 15x ADC ports (4x 5MSPS)
- 2x DAC 5MSPS
- 19x PWM ports
- 16x SERVO ports
- 4x WS2812 LED ports (up to 700 LEDs each)
- 4x stepper motor control ports

It is extremely easy to code. In 30 lines of code it is possible to create Arbitrary Waveform Generator, PWM and oscilloscope:



Waveform generation:

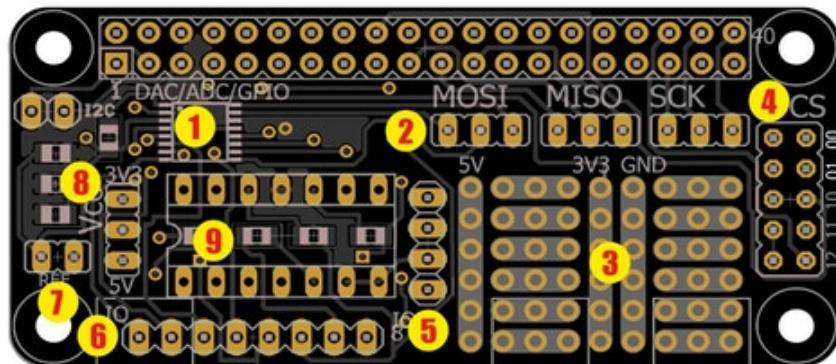
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Waveform generation
1 uzp0.DACInit(uzp0.DAC1, obuff = 0, generate = 1)
2 uzp0.DACInit(uzp0.DAC2, obuff = 0, generate = 1)
3 for i in range(0, nsamples):
4     samples.append(2048 + 1900 * math.cos(i*2*3.14/nsamples) * math.sin(i*2*3.14/nsamples))
5     if i < nsamples / 2:
6         samples1.append(100 + i * 3900 / (nsamples / 2))
7     else:
8         samples1.append(4000 - (i - nsamples / 2) * 3900 / (nsamples / 2))
9
10 uzp0.DACGenerate(uzp0.DAC1, nsamples, samples, frequency = DAC_Freq)
11 uzp0.DACGenerate(uzp0.DAC2, nsamples, samples1, frequency = 2 * DAC_Freq)
12 uzp0.DACStart(uzp0.DAC1)
13 uzp0.DACStart(uzp0.DAC2)

```

UNIVERSA^{ZERO}

9 OPTIONAL EXTERNAL BUFFER



1 ADC/DAC/GPIO IC

2 SPI PORT SELECTION (SPI0 or SPI1)

3 PROTOTYPING AREA

4 CS (chip select) SELECTION

5 BUFFERED PORTS

6 I/O PORTS

7 ADC / DAC External Vref

8 Vcc SELECTION (3.3V / 5V)

Display

Oled & Eink

