

UNIVERSAL⁺

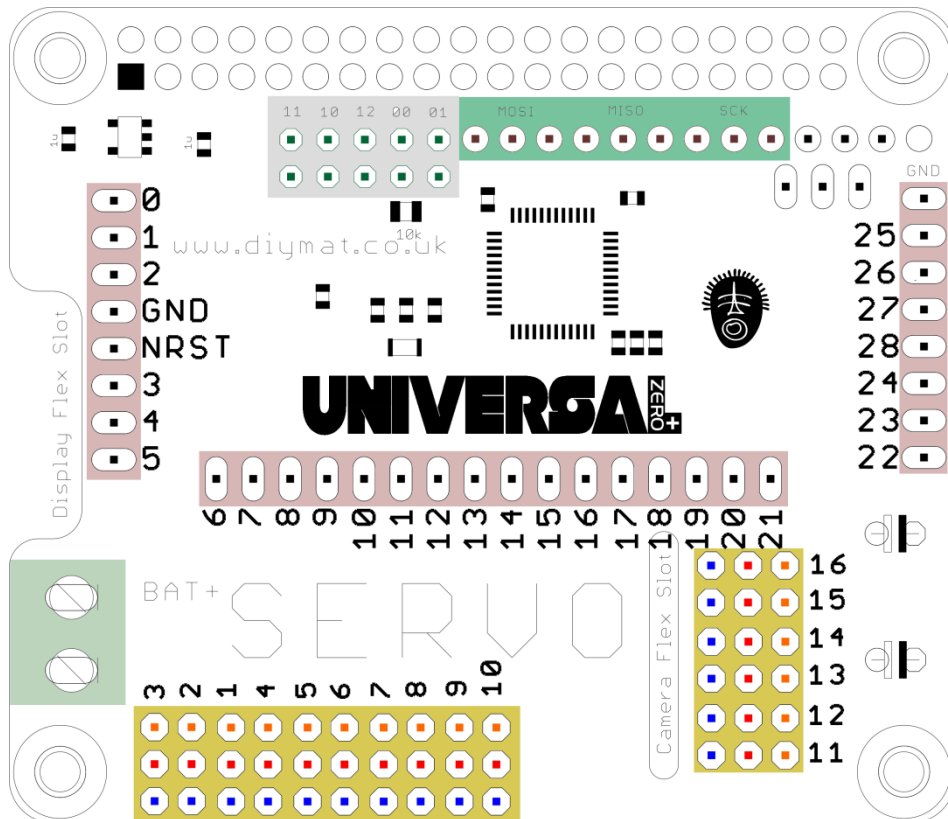
MULTI DAC/ADC/GPIO/PWM/SERVO HATs
SOFTWARE CONFIGURABLE RASPBERRY PI ZERO™ FORMAT ADD-ON CARD

UNIVERSAL PLUS

RPi Hats & Arduino shield

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Universal Plus RPi



Ports

Ports in the RC servo configuration

SPI CS selection



SPI number selection

Servo battery connector



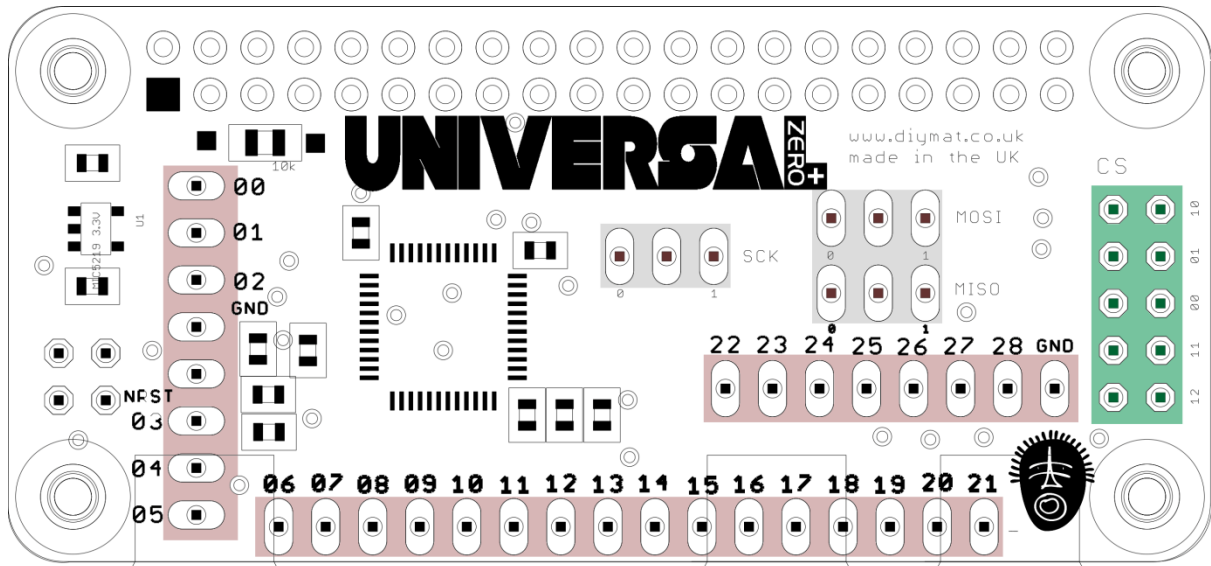
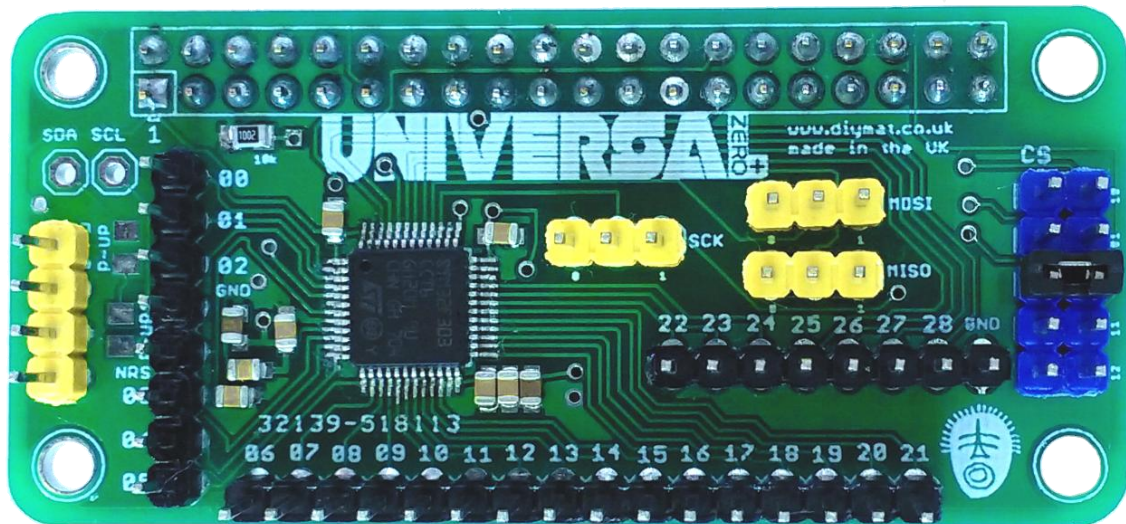
SERVO POWER CONNECTOR IS NOT PROTECTED

ALWAYS CHECK THE POLARITY!!!

WRONG CONNECTION MAY DESTROY YOUR ARDUINO OR PI



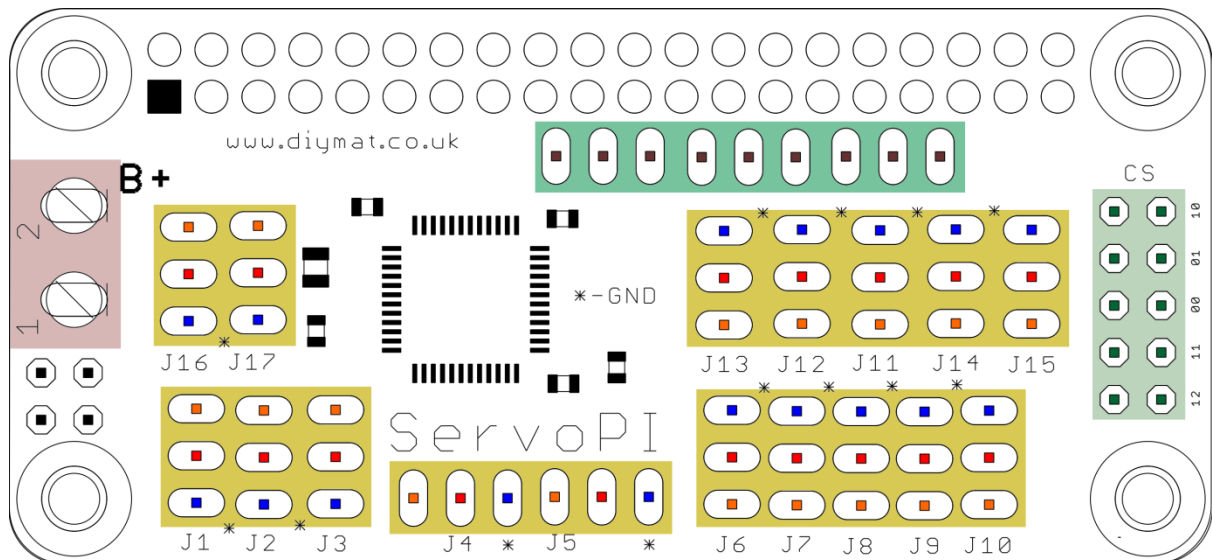
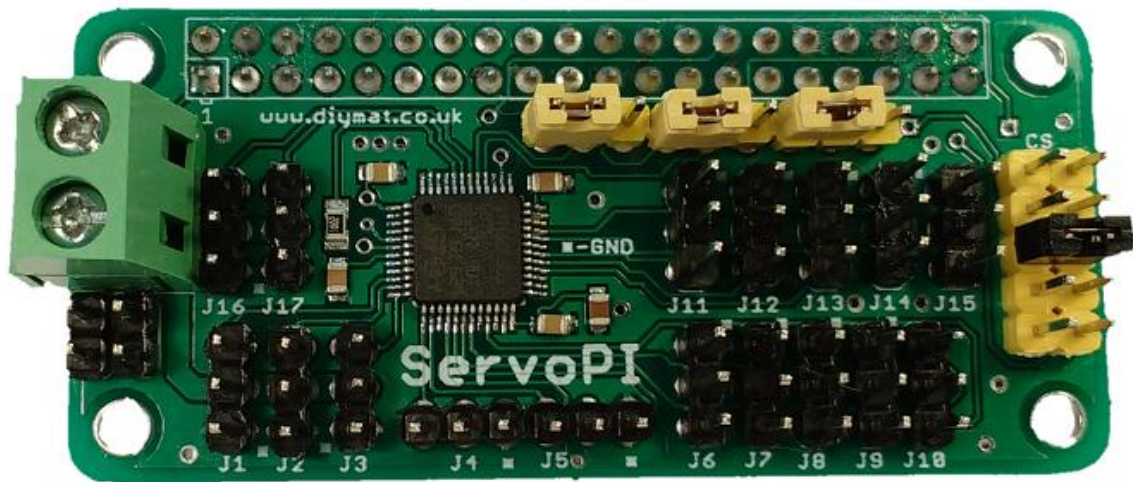
Universal Zero Plus







Ports
SPI CS selection

SPI number selection
Servo battery connector

Universal Zero Plus Servo



 Servo battery connector
 Ports in the RC servo configuration

 SPI number selection
 SPI CS selection



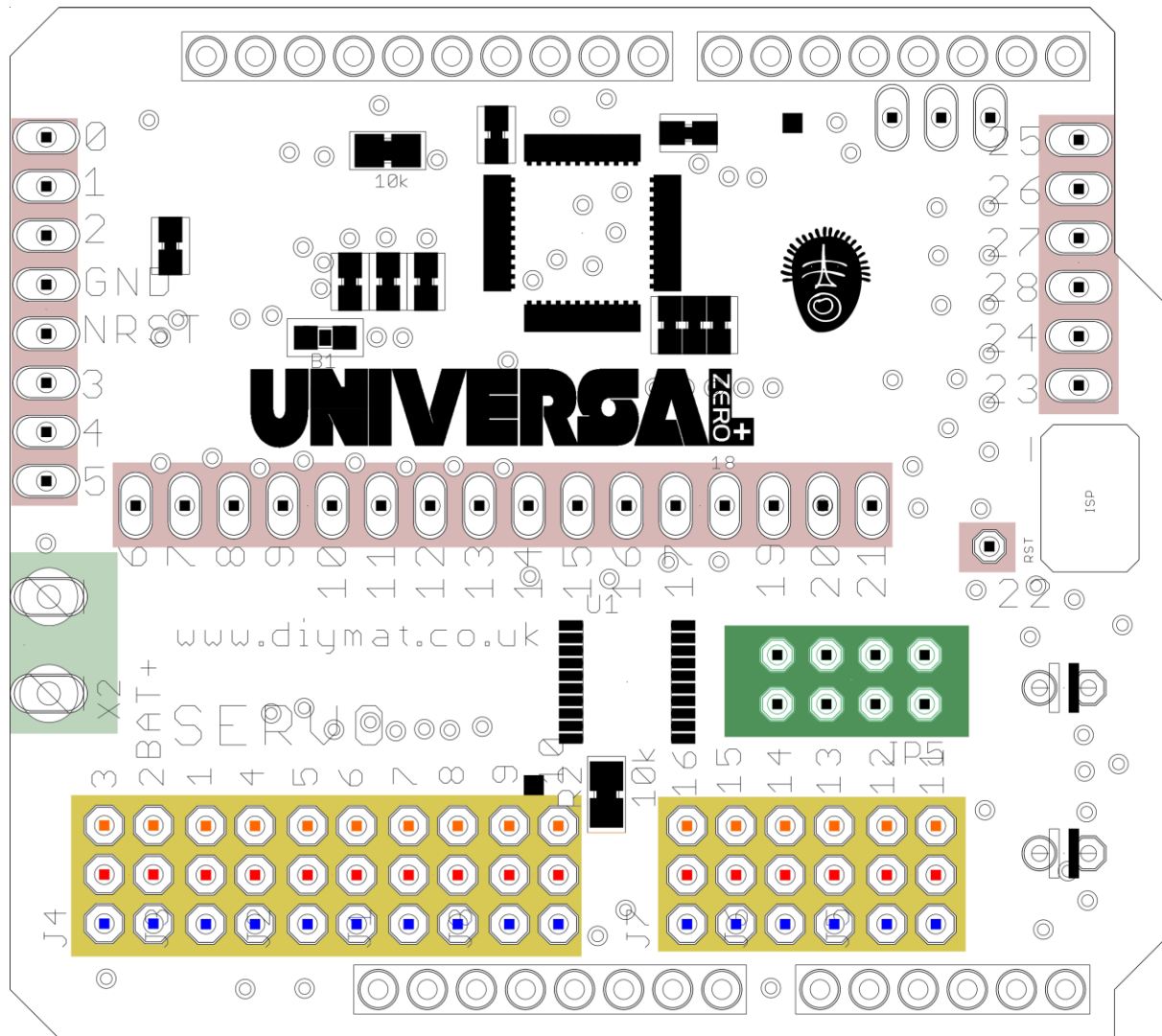
SERVO POWER CONNECTOR IS NOT PROTECTED





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Universal Plus Arduino Shield



- | | |
|---|---|
|  Ports |  Optional 5V pins |
|  Ports in the RC servo configuration |  Servo battery connector |

	<p>SERVO POWER CONNECTOR IS NOT PROTECTED</p> <p>ALWAYS CHECK THE POLARITY!!!</p> <p>WRONG CONNECTION MAY DESTROY YOUR ARDUINO OR Pi</p>	
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RAPSBERRY Pi Configuration

Enable SPI interface

Check if the SPI interface is enabled:

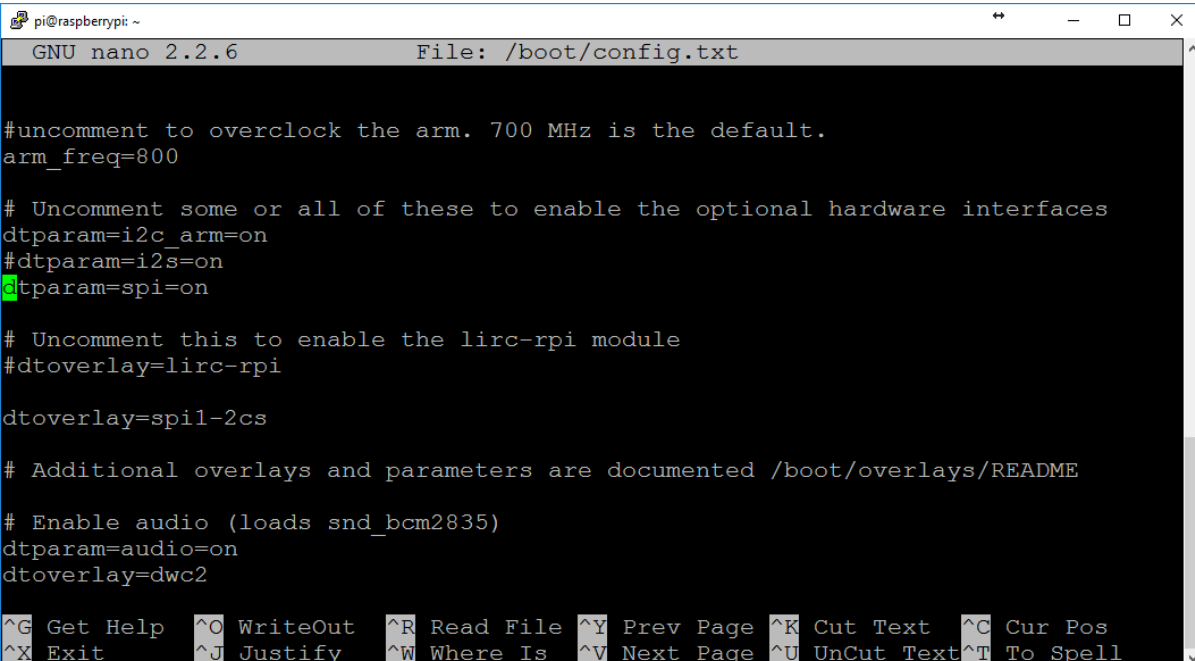
```
ls /dev/*spi*
```



```
pi@raspberrypi: ~  
pi@raspberrypi:~$ ls /dev/*spi*  
/dev/spidev0.0 /dev/spidev0.1 /dev/spidev1.0 /dev/spidev1.1  
pi@raspberrypi:~$
```

In this case both SPI interfaces are enabled, both with two chip select lines. If no devices are displayed SPI interface needs to be enabled.

```
sudo nano /boot/config.txt
```

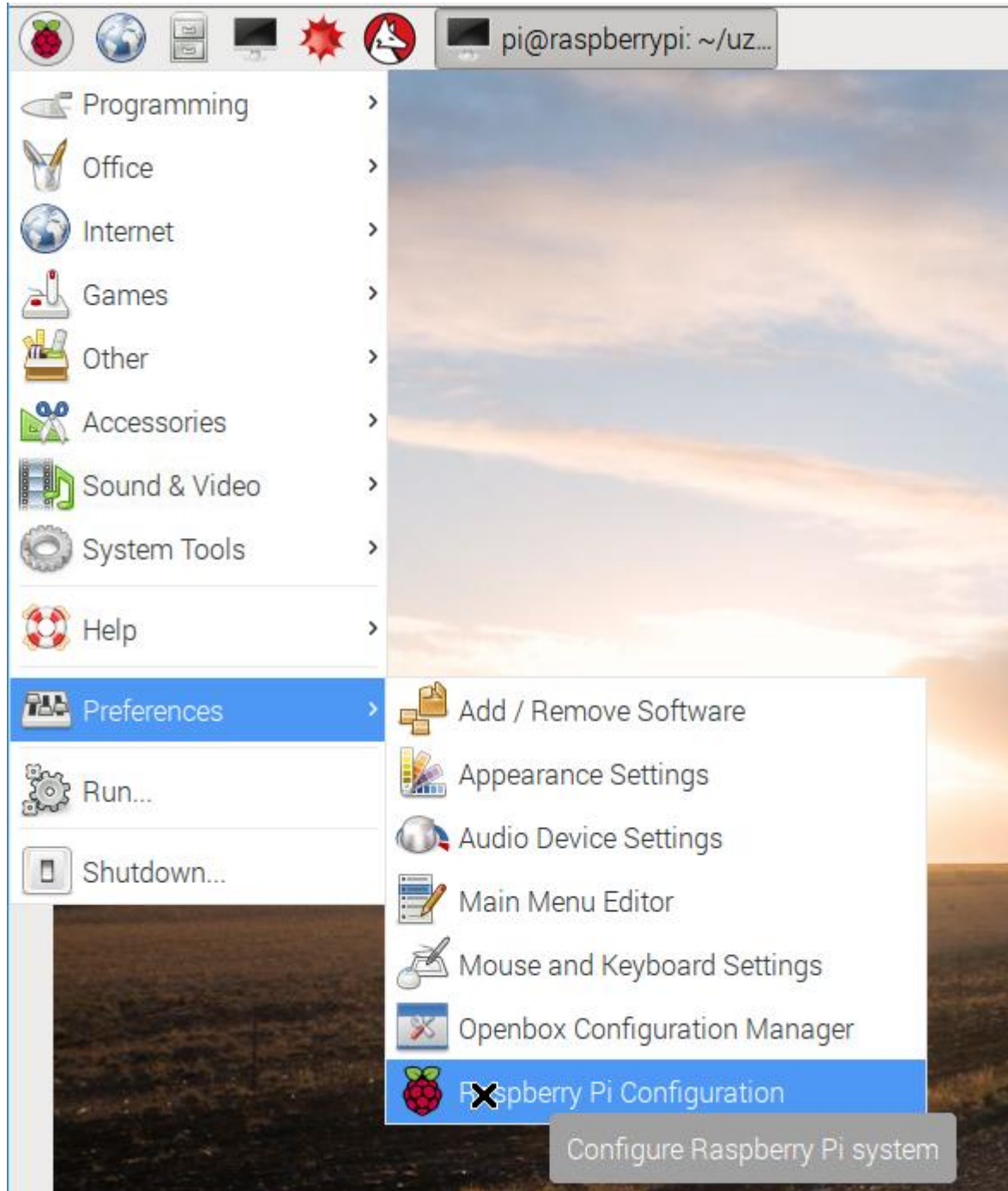


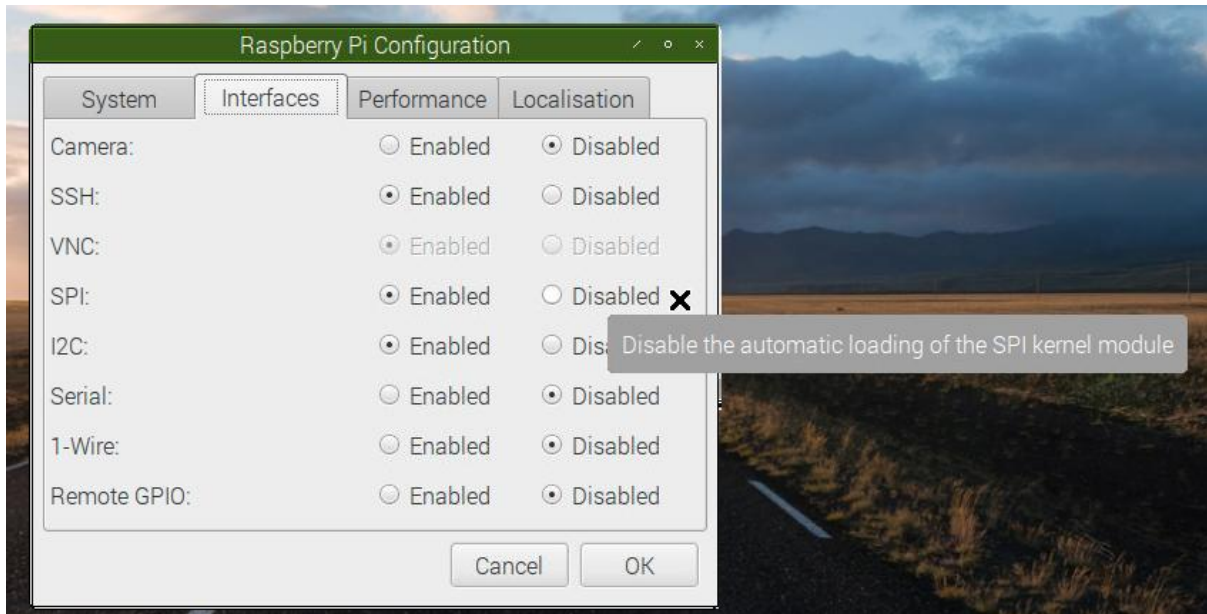
```
GNU nano 2.2.6 File: /boot/config.txt  
  
#uncomment to overclock the arm. 700 MHz is the default.  
arm_freq=800  
  
# Uncomment some or all of these to enable the optional hardware interfaces  
dtparam=i2c_arm=on  
#dtparam=i2s=on  
dtparam=spi=on  
  
# Uncomment this to enable the lirc-rpi module  
#dtoverlay=lirc-rpi  
  
dtoverlay=spi1-2cs  
  
# Additional overlays and parameters are documented /boot/overlays/README  
  
# Enable audio (loads snd_bcm2835)  
dtparam=audio=on  
dtoverlay=dwc2  
  
^G Get Help ^O WriteOut ^R Read File ^Y Prev Page ^K Cut Text ^C Cur Pos  
^X Exit ^J Justify ^W Where Is ^V Next Page ^U UnCut Text ^T To Spell
```

Find and uncomment or add:

- ***dtparam=spi=on*** – for the first SPI interface
- ***dtoverlay=spi1-2cs*** – for the second SPI interface

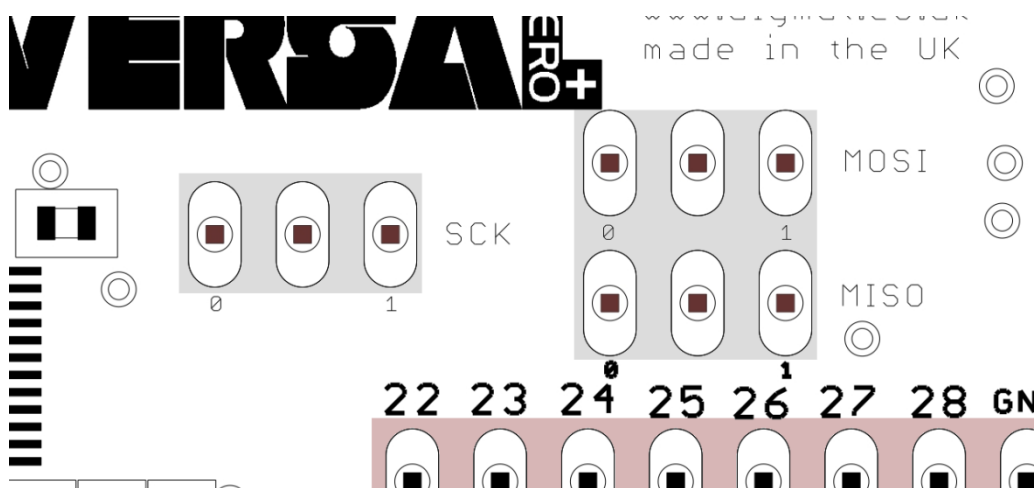
To enable SPI it is possible to use the configuration tool:





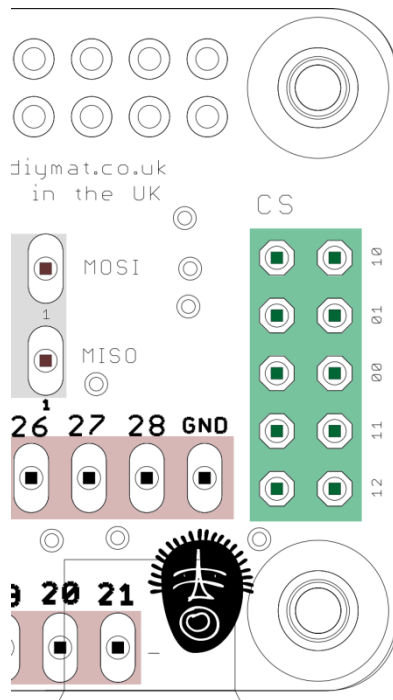
Configure the hat.

Use jumpers to select SPI interface and CS signal. Connect SPI signal lines



Every SPI interface signal has 3 pin selection jumper. Left and the middle enables the SPI1 signal, the middle and the right pin SPI2,

CS signal selection :



00 = SPI1 – CS0
01 = SPI1 – CS1
10 = SPI2 – SPI2-CS0
11 = SPI2 – SPI2-CS1
12 = SPI2 – SPI2-CS2

Download Python or C libraries and examples from

<https://github.com/diymat/UniversalZeroPlus>

Firmware upgrade procedure.

Download the firmware upgrade utility:

<https://github.com/diymat/UniversalZeroPlus/raw/master/upgrade>

and the latest version of the firmware :

<https://github.com/diymat/UniversalZeroPlus>

Run the upgrade utility.

upgrade <upgrade file>