Government Hubs

<u>api.data.gov</u>: Data.gov aims to improve public access to high value, machine readable datasets generated by the Executive Branch of the Federal Government. The site is a repository for federal government information, made available to the public.

<u>code.gov/#/explore-code/agencies/CFPB</u>: Code.gov is the US government's web-based, open-source software hub. The site features dozens of projects from 10 different agencies.

docs.opencv.org/3.0-beta/index.html: OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. OpenCV was built to provide a common infrastructure for computer vision applications and to accelerate the use of machine perception in the commercial products. Being a BSD-licensed product, OpenCV makes it easy for businesses to utilize and modify the code.

Hardware & Libraries

Input	Arduino / NodeMCU (ESP8266)	Raspberry Pi 3B / 2B	
Barometer Module	https://www.sunfounder.com/learn/category/Sen-sor-Kit-v2-0-for-Arduino.html https://www.sunfounder.com/learn/kit-v2-0-for-raspberry-pi-b-plus.htm		
Button	https://www.sunfounder.com/learn/category/Sen-sor-Kit-v2-O-for-Arduino.html	https://www.sunfounder.com/learn/category/sensokit-v2-0-for-raspberry-pi-b-plus.html	
DS18B20 Temperature Sensor	https://www.sunfounder.com/learn/category/Sen-sor-Kit-v2-O-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
Flame Sensor	https://www.sunfounder.com/learn/category/Sen- sor-Kit-v2-O-for-Arduino.html	https://www.sunfounder.com/learn/category/sensorkit-v2-0-for-raspberry-pi-b-plus.html	
Gas Sensor	https://www.sunfounder.com/learn/category/Sen- sor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	

Input	Arduino / NodeMCU (ESP8266)	Raspberry Pi 3B / 2B		
Hall Sensor	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Humidity Sensor	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
IR Obstacle Avoidance Module	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
IR Tracking Sensor	https://www.sunfounder.com/learn/category/Sen- sor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
IR Receiver Modules w/ Remote Control	https://learn.sparkfun.com/tutorials/ir-communication	https://www.sunfounder.com/learn/sensor-kit-v2- O-for-raspberry-pi-b-plus/lesson-23-ir-remote-con- trol-sensor-kit-v2-O-for-b-plus.html		
Joystick	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
MPU-6050 3 Axis Gyroscope + Accelerometer Sensor	https://diyhacking.com/ardui- no-mpu-6050-imu-sensor-tutorial/	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Photo-interrupter	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Photoresistors	https://learn.sparkfun.com/tutorials/sik-experi- ment-guide-for-arduinov32/experiment-6-read- ing-a-photoresistor	https://www.sunfounder.com/learn/category/sensorkit-v2-0-for-raspberry-pi-b-plus.html		
Potentiometer Module	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Pyroelectric Infrared Motion Sensor	https://learn.adafruit.com/pir-passive-infra- red-proximity-motion-sensor/using-a-pir https://diyhacking.com/raspberry-			
Real Time Clock DS1302	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		

Input	Arduino / NodeMCU (ESP8266)	Raspberry Pi 3B / 2B		
Rain / Liquid Water Detection Module	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Reed Switch	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Rotary Encoder Module	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Sound Sensor	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Temperature Sensor	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Thermistor	https://learn.adafruit.com/thermistor/us- ing-a-thermistor	http://www.paulschow.com/2013/08/monitor-ing-temperatures-using-raspberry.html		
Tilt-Switch	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Touch Switch	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Tracking Sensor	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Ultrasonic Ranging Module	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		
Vibration Switch	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html		

Output	Arduino / NodeMCU (ESP8266)	Raspberry Pi 3B / 2B	
7 Segment Display w/ 595 Shift Register	https://www.sunfounder.com/learn/rfid-kit-v2-0-for-arduino/lesson-20-driving-7-segment-display-by-74hc595-rfid-v2-0-for-arduino.html	https://www.sunfounder.com/learn/Super_Kit_V2_for_RaspberryPi/lesson-11-driving-7-segment-display-by-74hc595-super-kit-for-raspberrypi.html	
Buzzer Module	https://www.sunfounder.com/learn/category/Sen- sor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
I2C LCD1602	https://www.sunfounder.com/learn/category/Sen- sor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
LEDs (Various Colors, RGB, infrared, modules)		https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
Laser Emitter	https://www.sunfounder.com/learn/category/Sensor-Kit-v2-0-for-Arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
Servo motors (SG90)	http://www.elegoo.com/tutorial/Elegoo%20 Super%20Starter%20Kit%20for%20UN0%20 11.7.zip	https://learn.adafruit.com/adafruit-16-channel- pwm-servo-hat-for-raspberry-pi/	
Stepper Motor & ULN2003 Stepper Motor Driver Board	http://www.elegoo.com/tutorial/Elegoo%20 Super%20Starter%20Kit%20for%20UNO%20 11.7.zip		

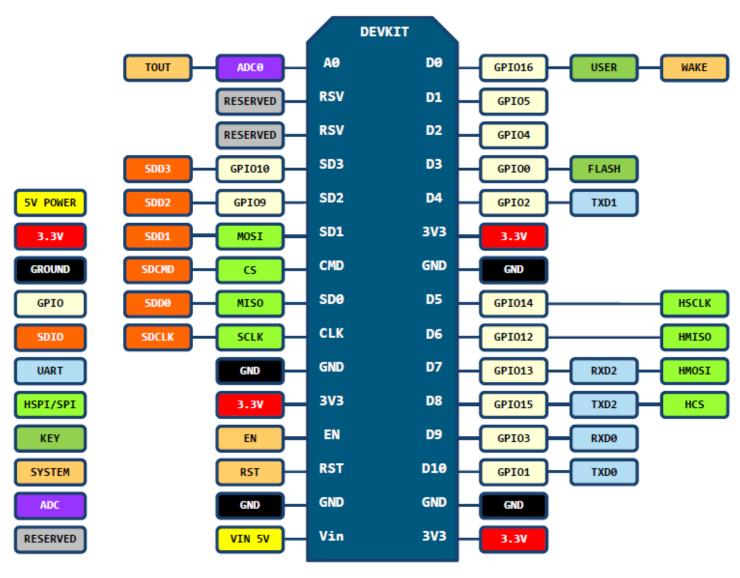
General	Arduino / NodeMCU (ESP8266)	Raspberry Pi 3B / 2B	
555 Timer	http://www.555-timer-circuits.com/		
595 Shift Register	https://www.sunfounder.com/learn/rfid-kit-v2-0-for-arduino/lesson-20-driving-7-segment-display-by-74hc595-rfid-v2-0-for-arduino.html	https://www.sunfounder.com/learn/Super_Kit_V2_for_RaspberryPi/lesson-11-driving-7-segment-display-by-74hc595-super-kit-for-raspberrypi.html	
NPN Transistors	https://learn.adafruit.com/adafruit-arduino-les-son-13-dc-motors/transistors		
PCF8591 (I2C/IIC) CMOS data acquisition / Analog-Digital Converter	https://www.sunfounder.com/learn/Sensor-Kit-v2- O-for-Arduino/lesson-33-analog-digital-convert- er-sensor-kit-v2-O-for-arduino.html	https://www.sunfounder.com/learn/category/sensor-kit-v2-0-for-raspberry-pi-b-plus.html	
Various Capacitors			
Various Diodes			
Various Relays			
Various Resistors			

Kits/Etc.			
Raspberry Pi 3	https://www.raspberrypi.org/products/raspberry-pi-3-model-b/		
Arduino Uno			
ESP8266 NodeMCU Boards			
Amazon Echo Dot	https://www.amazon.com/dp/B015TJD0Y4		
Raspberry Pi Camera Module	https://www.raspberrypi.org/products/camera-mod- ule-v2/		
FLIR One Imaging Camera (Android)	http://www.flir.com/flirone/ios-android/		
FLIR One Imaging Camera (IOS)	http://www.flir.com/flirone/ios-android/		
FLIR One Dev Kit	https://www.sparkfun.com/products/13233		
TP-LINK Smart Wifi Plug	http://www.tp-link.com/us/products/details/cat-5516_HS100.html		
Fredi Spy Camera	https://www.amazon.com/FREDI-Portable-Wireless-Digital-Recorder/dp/B01FSH5G5S		
Spy Pen 1080p Hidden Camera	https://www.amazon.com/Primium-IM- PROVED-Upgraded-Executive-Multifunction/dp/ B0196JOKII		
Polar H7 Heart Rate Sensor	https://www.polar.com/us-en/products/accessories/ H7_heart_rate_sensor		

Kits/Etc.			
Adafruit Temperature and Humidity Sensor	https://learn.adafruit.com/adafruit-htu21d-f-tem- perature-humidity-sensor/overview		
Netatmo Welcome Camera	https://www.netatmo.com/product/security/wel- come		
STM32F429-I Discovery Board	http://www.st.com/en/evaluation-tools/32f429idis-covery.html		
Alienware Laptop			
Alienware X51 Desktop Set			
Amazon Fire Phone			
Arduino 101			
Base Shield			
Dell Inspiron Laptop			
Dell Monitor			
Dell Tablet			
Dell XPS 13 Laptop (Ubuntu)			

Kits/Etc.			
Dell XPS 13 Laptop (Windows)			
Grove Starter Kit			
Intel Edison			
Leap Motion			
Muse Headband			
Oculus Rift			
Pebble Time			
Samsung Gear VR			
Intel Starter Kit			

PIN DEFINITION



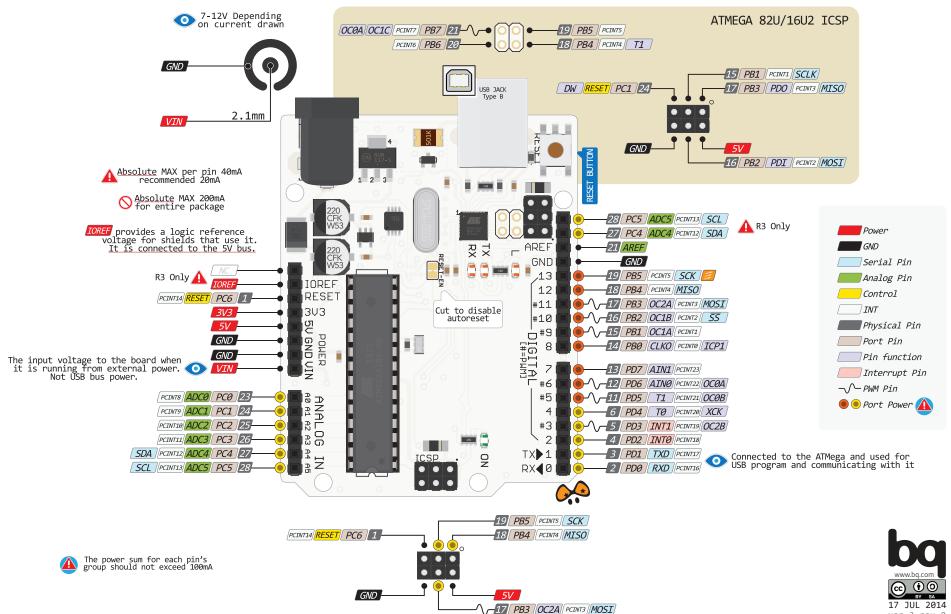
D0(GPI016) can only be used as gpio read/write, no interrupt supported, no pwm/i2c/ow supported.

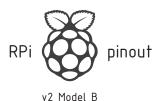
5-Band-Resistor $234*100k\Omega = 23.4M\Omega @ 0.25$.4MΩ @ 0.25%	
	Г				
Color	Band 1	Band 2	Band 3	Multiplic.	Tolerance
Black	0	Θ	Θ	10^{0} (1 Ω)	
Brown	1	1	1	10^1 (10Ω)	± 1%
Red	2	2	2	$10^2 \ (100\Omega)$	± 2%
0range	3	3	3	10^3 (1k Ω)	
Yellow	4	4	4	10^4 (10 k Ω)	
Green	5	5	5	$10^{5}(100 {\rm k}\Omega)$	± 0.5%
Blue	6	6	6	10^6 (1M Ω)	± 0.25%
Purple	7	7	7	10^7 (10 M Ω)	± 0.1%
Gray	8	8	8	10^8 (100 M Ω)	± 0.05%
White	9	9	9	10^9 (1G Ω)	
Gold				$10^{-1}(100 \text{m}\Omega)$	± 5%
Silver				10^{-2} $(10\text{m}\Omega)$	± 10%
4-Band-Resistor $23*10k\Omega = 230k\Omega @ 0.5\%$					

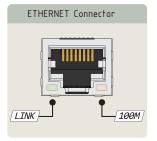
ver 3 rev 0

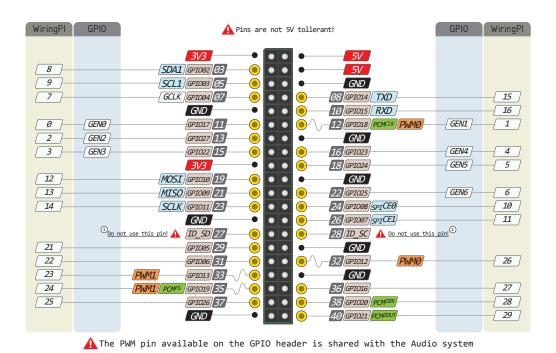
HACK@CEWIT













These pins are reserved for ID EEPROM

At boot time this IZC interface will be interrogated to look for an EEPROM that identifies the attached board and allow automagic setup of the GPIOs (and optionally, Linux drivers).

DO NOT USE these pins for anithing other than attaching an I2C ID EEPROM. Leave unconnected if ID EEPROM not required.

recommended 8mA

