Core2 for AWS

SKU:K010-AWS

Tutorial&Quick-Start

Choose the development platform you want to use, view the corresponding tutorial&quick-Start.

FreeRTOS | UIFlow | Arduino

Description

Core2 for AWS is the reference hardware kit for AWS IoT EduKit – a prescriptive learning program from AWS which makes it easy and cost effective to learn how to build IoT applications using AWS services. It comes equipped with a Microchip ATECC608A Trust&GO secure element, in addition to the existing features of the standard M5Stack Core2 and M5GO Bottom2. The Core2 for AWS is a feature rich, plug and play extensible, and secure hardware kit for learning and building a wide range of IoT applications.

To learn more about the AWS IoT EduKit program, visit https://edukit.workshop.aws.

The Core2 for AWS comes with an ESP32-D0WDQ6-V3 microcontroller, which features dual Xtensa 32-bit LX6 cores and a main frequency up to 240Mhz, with 2.4GHz WiFi, Bluetooth v4.2 BR/EDR, and BLE support. Comes with 8MB PSRAM and 16MB flash on board.

The main unit is equipped with a 2.0-inch capacitive touch screen that provides a smooth and responsive human machine interface. The built-in vibration motor can be used to provide haptic feedback or alerts. Onboard RTC module provides accurate time of day. Power is supplied through an AXP192 power management chip, to monitor and control power attributes of the device. The included TF card slot supports microSD cards up to 16GB. The on-board speaker is paired with an I2S digital audio interface power amplifier chip to reduce signal distortion and provide clearer audio output. There are independent physical power and reset (RST) buttons on the sides of Core2 for AWS, with 3 programmable touch buttons on the front of the screen.

The M5GO Bottom2 for AWS adds additional features and security for IoT applications. The MPU6886 provides 6-axis internal IMU and temperature, the SPM1423 digital microphone captures audio for recording or creating voice applications, 10 individually programmable RGB LEDs via SK6812 to create customized and animated light effects, a 500mAh lithium-ion battery provides power on the go, the onboard Microchip ATECC608A Trust&GO crypto-authentication chip is pre-provisioned with secure keys to simplify connectivity to AWS and accelerate cryptographic computation.

Operations:

Power on: One click the power button on the left

Power off: Long press the left power button for 6 seconds

Reset: Click the RST button on the bottom side

Product Feature

Reference hardware kit for use with AWS IoT EduKit
ESP32-D0WDQ6-V3, supports 2.4GHz WiFi, Bluetooth 4.2, BLE
16M Flash, 8M PSRAM
Built-in ATECC608A hardware encryption chip
Capacitive touch screen
Built-in PDM microphone, power indicator, 6-Axis IMU, vibration motor, I2S codec, Amplifier, Speaker, RTC, power button, reset button, 10 x RGB LEDs
TF card slot (support up to 16GB)
Built-in 500mAh Lithium ion battery, equipped with power management chip
Supports FreeRTOS, MicroPython, UIFlow, Arduino development frameworks
Validated through AWS Device Qualification Program

Include

1x M5Stack Core2
1x M5GO Bottom2 for AWS
1x Type-C USB (50cm)
1x Hex wrench

Application

Internet of Things Controller
STEM Education
DIY projects

Specification

Master controller resources	Parameters
ESP32-D0WDQ6-V3	240MHz dual core, 600 DMIPS, 520KB SRAM, Wi-Fi, dual mode Bluetooth
Flash	16MB
PSRAM	8MB
Hardware encryption chip	ATECC608A
Input voltage	5V @ 500mA
Host interface	TypeC x 1, GROVE(I2C+I/0+UART) x 1
Programmable LED light	SK6812*10
Button	Power button, RST button, virtual screen button * 3
Vibration reminder	Vibration motor
IPS LCD screen	2.0"@320*240 ILI9342C
Capacitive touch screen IC	FT6336U
Speaker	1W-0928
Microphone	SPM1423
I2S power amplifier	NS4168
IMU	MPU6886
RTC	BM8563
PMU	AXP192
USB chip	CP2104
DC-DC boost	SY7088
TF card slot	Support up to 16G
Lithium battery	500mAh @ 3.7V
Antenna	2.4G 3D antenna
Working temperature	32°F to 104°F (0°C to 40°C)
Net weight	101g
Gross weight	108g
Product size	54 x 54 x 24mm
Package size	90 x 60 x 27mm
Shell material	Plastic (PC)

EasyLoader

> EasyLoader is a concise and fast program writer, which has a built-in case program related to the product. It can be burned to the main control by simple steps to perform a series of function verification. Please install the corresponding driver according to the device type. M5Core host Please click here to view the CP210X driver installation tutorial, M5StickC/V/T/ATOM series can be used without driver)

PinMap

LCD & TF card

LCD： 320x240 TF card Maximum size 16GB

ESP32 Chip	GPIO38	GPIO23	GPIO18	GPIO5	GPIO15			
AXP192 Chip						AXP_IO4	AXP_DC3	AXP_LDO2
ILI9342C	MISO	MOSI	SCK	CS	DC	RST	BL	PWR

ESP32 Chip	GPIO38	GPIO23	GPIO18	GPIO4
TF Card	MISO	MOSI	SCK	CS

CAP.TOUCH

ESP32 chip	GPIO21	GPIO22	GPIO39	
AXP192				AXP_IO4
FT6336U	SDA	SCL	INT	RST

Mic & NS4168

ESP32 Chip	GPIO12	GPIO0	GPIO2	AXP_IO2	GPIO34
NS4168	BCLK	LRCK	DATA	SPK_EN	
Mic		CLK			DATA

AXP Power Indicator Light

AXP192	AXP_IO1	AXP_LDO3
Green LED	Vcc	
Vibration motor		Vcc

RTC

ESP32 Chip	GPIO21	GPIO22	
AXP192			AXP_PWR
BM8563	SDA	SCL	INT

IMU(3-axis gyroscope & 3-axis accelerometer) &Pogo Pin

ESP32 Chip	GPIO21	GPIO22
MPU6886	SDA	SCL
Pogo Pin	SDA	SCL

USB to serial chip

ESP32 Chip	GPIO1	GPIO3
CP2104	RXD	TXD

SK6812-LED

ESP32 Chip	GPIO25
SK6812-LED	DATA

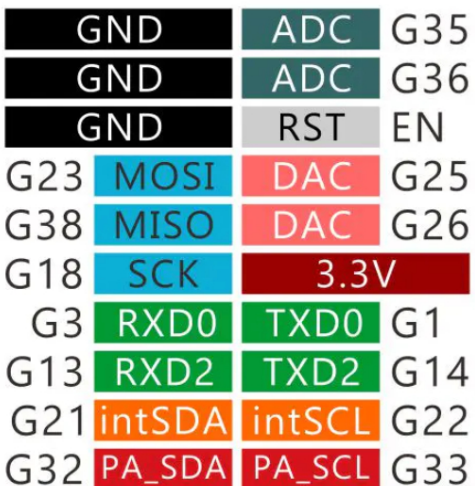
Internal I2C connection

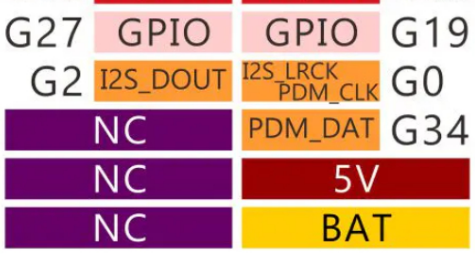
ESP32 Chip	GPIO21	GPIO22
MPU6886	SDA	SCL
AXP192	SDA	SCL
BM8563	SDA	SCL
FT6336U	SDA	SCL
ATECC608A	SDA	SCL

Charging current measured value

charging current	Fully charged current(Power OFF)	Fully charged current(Power ON)
0.219A	0.055A	0.147A

M5Core2 M-BUS Schematic diagram





M5Core2 PORT

HY2.0-4P-PortA(Red)

ESP32 Chip	GPIO32	GPIO33
PortA	GPIO32(SDA)	GPIO33(SCL)

M5GO-Bottom For AWS PORT

HY2.0-4P-PortB(black)

ESP32 Chip	GPIO26	GPIO36
PortB	GPIO26(DAC)	GPIO36(ADC)

HY2.0-4P-PortC(blue)

ESP32 Chip	GPIO13	GPIO14
PortC	GPIO13(RXD2)	GPIO14(TXD2)

ESP32 ADC/DAC

ADC1	ADC2	DAC1	DAC2
8 channels	10 channels	2 channels	2 channels
G32-39	G0/2/4/12-15/25-27	G25	G26

For more information about Pin assignment and Pin Remapping, Please refer to ESP32 Datasheet

Related Link

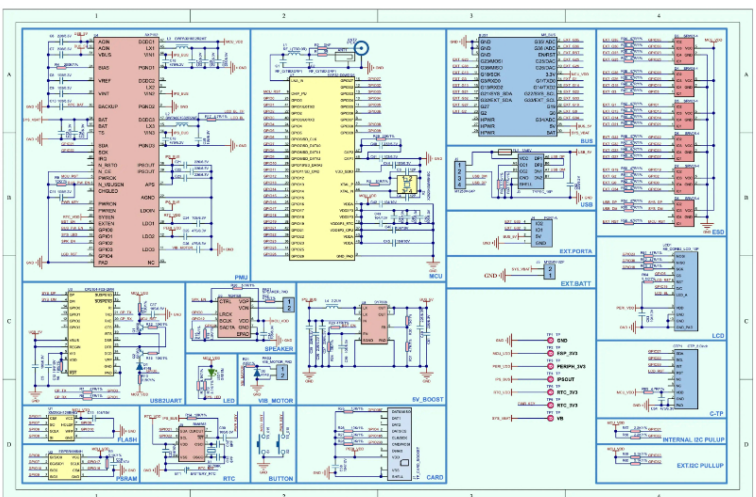
Datasheet

- ESP32
- FT6336U
- NS4168
- MPU6886
- ILI9342C
- SPM1423
- BM8563
- SY7088
- AXP192
- ATECC608A

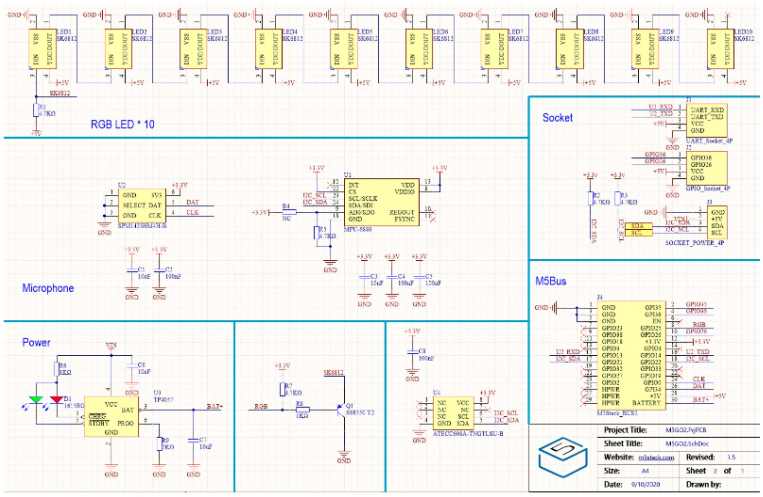
API

- Arduino API

Schematic



Core2-Schematic



Example

Arduino IDE

FactoryTest

Tutorial

UIFlow
Arduino

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PURCHASE