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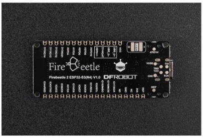
Advanced Tutorials
Tutorial for MicroPython
Build Environment for MicroPython
MicroPython Interpreter

SKU:DFR1145

Introduction


FireBeetle
Firebeetle 2 ESP32-S3(N4) V1.0
DFROBOT

FireBeetle 2 ESP32-S3(N4) is a main control board designed based on the Espressif ESP32-S3-WROOM-1-N4 module. It features a 32-bit dual-core processor with a clock frequency of 240MHz and a built-in 4M FLASH memory. It supports dual-mode communication of WIFI and Bluetooth 5.0. Additionally, it also supports Bluetooth Mesh protocol and Espressif Wi-Fi Mesh, providing higher communication stability, larger coverage area, longer transmission distance, and more device interconnectivity.

The ESP32-S3 chip is equipped with AI acceleration capability, enabling it to perform neural network calculations and signal processing tasks. This allows it to meet the performance requirements of low-computational AI edge computing tasks such as simple voice command recognition, text recognition, and sensor data recognition. Therefore, it is not only suitable for IoT scenarios but also plays an important role in simple, low-computational AIoT projects.

In terms of product features, FireBeetle 2 ESP32-S3(N4) has the following characteristics:

Rich peripheral interfaces

It includes 18 analog pins, 26 digital pins, 3 UART interfaces, 3 SPI interfaces, 3 I2C interfaces, 2 I2S interfaces, 10 infrared transceivers, and 10 DMA controller channels. Additionally, it provides an onboard GDI display interface to meet various hardware connection requirements.

Dual power supply modes

It supports both USB and external lithium battery power supply and can automatically switch between power sources in dual power supply mode. Furthermore, it supports both USB and external DC charging modes and allows hardware to control power on/off settings.

Support for multiple programming methods

Including Arduino IDE, idf, MicroPython, C language, and Python, catering to the programming preferences of different developers.

Compact design, convenient for embedding

With dimensions of only 25.4mm × 60mm, it has onboard WIFI and Bluetooth antennas and adopts a stamp hole design, making it easy to embed or integrate into PCB prototypes.

Wide range of application scenarios

It is suitable for various scenarios such as home automation renovation, IoT device prototyping, IoT remote monitoring, and remote robot control. Additionally, it is also applicable to low-computational AI edge computing, voice command recognition, text recognition, and sensor data recognition applications.

Furthermore, this product is one of the low-power IoT development boards in the FireBeetle series. If it does not meet your requirements, you can refer to the FireBeetle Series Selection Guide to choose a more suitable model.

If there is a programming failure, please connect the USB, hold down the BOOT button, click the RST button, and then release the BOOT button to put the development board into download mode.

Features

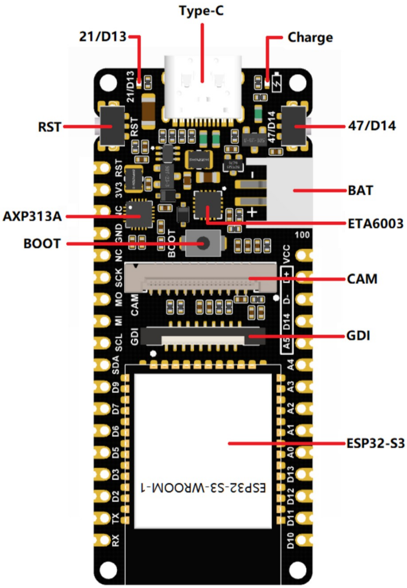
- Equipped with ESP32-S3-WROOM-1-N4 dual-core module, supporting AI acceleration.
- Clock frequency up to 240MHz, with built-in 512KB SRAM and 4M Flash.
- Supports dual-mode communication of Wi-Fi and Bluetooth 5 (LE).
- Integrated power management, supporting lithium battery charging and hardware power on/off.
- Onboard independent GDI display interface, enabling quick connection to display screens.
- Supports various programming methods such as Arduino IDE, ESP-IDF, and MicroPython.
- Compact design with small size, suitable for IoT and AIoT projects with limited space and embedded systems.

Specification

- Basic Parameters
  - Input Voltage
    - USB-C interface: 5V DC
    - PH2.0 interface: 3.7V Li-ion
    - VCC pin: 5V DC
  - Interface: FireBeetle V2 series compatible
  - Module Size: 25.4mm × 60mm
  - Weight: 23.4g
- Hardware Information
  - Processor: Xtensa® dual-core 32-bit LX7 microprocessor
  - Clock Frequency: 240 MHz

  - SRAM: 512KB
  - ROM: 384KB
  - Flash: 4MB
  - RTC SRAM: 16KB
  - USB: USB 2.0 OTG full-speed interface
- WIFI
  - WIFI Protocol: IEEE 802.11b/g/n
  - WIFI Bandwidth: 2.4 GHz band supports 20 MHz and 40 MHz bandwidth
  - WIFI Modes: Station mode, SoftAP mode, SoftAP+Station mode, and mixed mode
  - WIFI Frequency: 2.4GHz
  - Frame Aggregation: TX/RX A-MPDU, TX/RX A-MSDU
- Bluetooth
  - Bluetooth Protocol: Bluetooth 5, Bluetooth mesh
  - Bluetooth Frequency: 125 Kbps, 500 Kbps, 1 Mbps, 2 Mbps
- Interface Pins
  - Digital I/O x26
  - SPI x2
  - UART x3
  - I2C x2
  - I2S x2
  - LED PWM controller with 8 channels
  - Infrared transceiver: 5 transmission channels, 5 reception channels
  - 2 × 12-bit SAR ADC, 20 channels
  - DMA controller, 5 reception channels, and 5 transmission channels

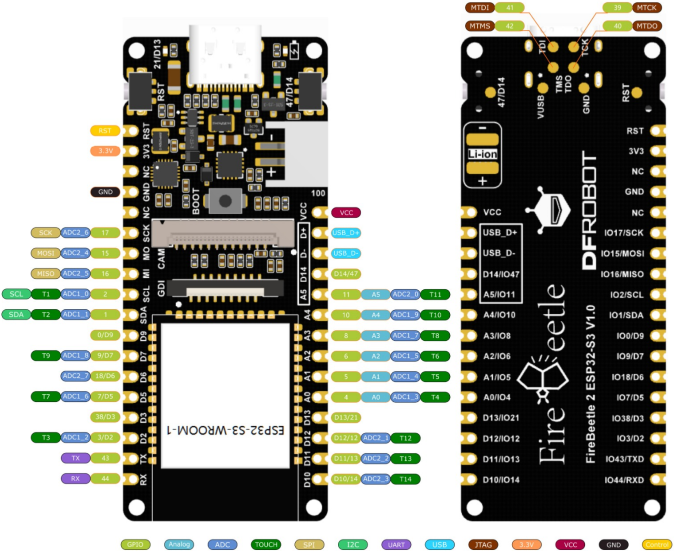
Board Overview


Type-C
21/D13
Charge
RST
47/D14
BAT
AXP313A
ETA6003
BOOT
CAM
GDI
ESP32-S3
RST
3V3
NC
GND
NC
SCK
MO
MI
SCL
SDA
D9
D7
D6
D5
D3
D2
TX
RX
100
VCC
D+
D-
D14
A5
A4
A3
A2
A1
A0
D13
D12
D11
D10
ESP32-S3-WROOM-1

- **Type-C:** Type-C USB port
- **21/D13:** onboard LED pin
- **47/D14:** IO/Power Control Pin. By default, Long press 6s to power off, press 2s to power on
- **ESP32-S3:** ESP32-S3-WROOM-1-N16R8 or ESP32-S3-WROOM-1U-N16R8 module
- **RST:** Reset button

- **BOOT:** Boot button
- **AXP313A:** Power management chip
- **ETA6003:** ETA6003 Li-ion Battery Charging Managment chip
- **BAT:** Li-ion battery port
- **Charge:** Charging indicator
- **Off:** not plugged in power supply or fully charged
- **On:** charging
- **Blinking:** battery not connected
- **GDI:** GDI display interface

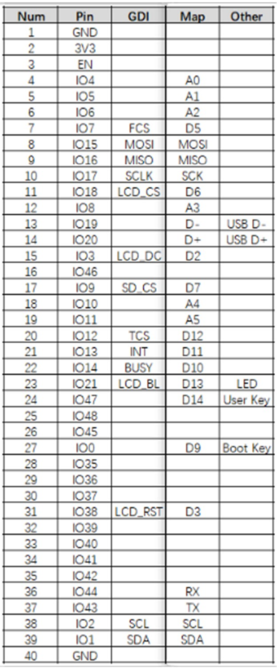
Pin Diagram


RST
3.3V
GND
SCK ADC2_6 17
MOSI ADC2_4 15
MISO ADC2_5 16
SCL T1 ADC1_0 2
SDA T2 ADC1_1 1
0/D9
T9 ADC1_8 9/D7
ADC2_7 18/D6
T7 ADC1_6 7/D5
38/D3
T3 ADC1_2 3/D2
TX 43
RX 44
21/D13
RST
47/D14
RST
3V3
NC
GND
NC
SCK
MO
MI
SCL
SDA
D9
D7
D6
D5
D3
D2
TX
RX
BOOT
CAM
GDI
100
VCC
D+
D-
D14
A5
A4
A3
A2
A1
A0
D13
D12
D11
D10
ESP32-S3-WROOM-1
VCC
USB_D+
USB_D-
D14/47
11 A5 ADC2_0 T11
10 A4 ADC1_9 T10
8 A3 ADC1_7 T8
6 A2 ADC1_5 T6
5 A1 ADC1_4 T5
4 A0 ADC1_3 T4
D13/21
D12/12 ADC2_1 T12
D11/13 ADC2_2 T13
D10/14 ADC2_3 T14
MTDI 41
MTMS 42
39 MTCK
40 MTDO
TDI
TCK
TMS
TDO
47/D14
VUSB
GND
RST
Li-ion
DFROBOT
FireBeetle
FireBeetle 2 ESP32-S3 V1.0
VCC
USB_D+
USB_D-
D14/IO47
A5/IO11
A4/IO10
A3/IO8
A2/IO6
A1/IO5
A0/IO4
D13/IO21
D12/IO12
D11/IO13
D10/IO14
RST
3V3
NC
GND
NC
IO17/SCK
IO15/MOSI
IO16/MISO
IO2/SCL
IO1/SDA
IO0/D9
IO9/D7
IO18/D6
IO7/D5
IO38/D3
IO3/D2
IO43/TXD
IO44/RXD
GPIO
Analog
ADC
TOUCH
SPI
I2C
UART
USB
JTAG
3.3V
VCC
GND
Control

Pin Definition

- GPIO: general input/output
- Analog: analog input pin
- ADC: analog to digital conversion
- TOUCH: touch pin
- SPI: SPI interface
- I2C: I2C interface
- UART: UART interface
- USB: USB interface
- JTAG: debug interface
- 3V3: 3.3V stable output
- VCC: power input/output
  - Input：5V DC input for powering FireBeetle(Cannot charge Li-ion battery)
  - Output: output USB voltage when powered by 5V-USB;output battery voltage when powered by 3.7V Li-ion battery
- GND: common ground pin

GPIO Configuration



Num	Pin	GDI	Map	Other
1	GND			
2	3V3			
3	EN			
4	IO4		A0	
5	IO5		A1	
6	IO6		A2	
7	IO7	FCS	D5	
8	IO15	MOSI	MOSI	
9	IO16	MISO	MISO	
10	IO17	SCLK	SCK	
11	IO18	LCD_CS	D6	
12	IO8		A3	
13	IO19		D-	USB D-
14	IO20		D+	USB D+
15	IO3	LCD_DC	D2	
16	IO46			
17	IO9	SD_CS	D7	
18	IO10		A4	
19	IO11		A5	
20	IO12	TCS	D12	
21	IO13	INT	D11	
22	IO14	BUSY	D10	
23	IO21	LCD_BL	D13	LED
24	IO47		D14	User Key
25	IO48			
26	IO45			
27	IO0		D9	Boot Key
28	IO35			
29	IO36			
30	IO37			
31	IO38	LCD_RST	D3	
32	IO39			
33	IO40			
34	IO41			
35	IO42			
36	IO44		RX	
37	IO43		TX	
38	IO2	SCL	SCL	
39	IO1	SDA	SDA	
40	GND			

GDI Display Interface

This interface is a DFRbot dedicated GDI display interface for connecting a screen using a 18pin-FPC wire.

The pin list for using GDI camera interface is shown below:

FPC PINS	Beetle ESP32 S3 Pins	Description
VCC	3V3	3.3V
LCD_BL	21/D13	Backlight
GND	GND	GND
SCLK	17/SCK	SPI clock
MOSI	15/MOSI	Host output, slave input
MISO	16/MISO	Host input, slave output
LCD_DC	3/D2	Data/command
LCD_RST	38/D3	Reset
LCD_CS	18/D6	TFT Chip Select
SD_CS	9/D7	SD card chip select
FCS	7/D6	Font library chip select
TCS	12/D12	Touch chip select
SCL	2/SCL	I2C clock
SDA	1/SDA	I2C data
INT	13/D11	INT
BUSY	4/D10	Tearproof pins

X1	NC	custom pin 1
X2	NC	custom pin 2

When using FPC to connect the screen, please configure the corresponding pin numbers according to the GDL demo. Normally, only three pins need to be configured on different main controllers.

Displays that support GDI:

- 1.54" 240x240 IPS wide viewing angle TFT display
- 1.8" 128x160 IPS TFT LCD Display
- 2.0" 320x240 IPS wide viewing angle TFT display
- 2.8" 320x240 IPS TFT resistive touch display
- 3.5" 480x320 IPS TFT capacitive touch display
- 1.51" OLED Transparent Display with Converter

Dimensional Diagram

- Pin pitch: 2.54mm
- Mounting hole spacing: 22mm and 56.6mm
- Mounting hole size: 2mm
- Board dimensions: 25.4.00mm × 60.00mm
- Board thickness: 1.6mm

Tutorial - First Time Use

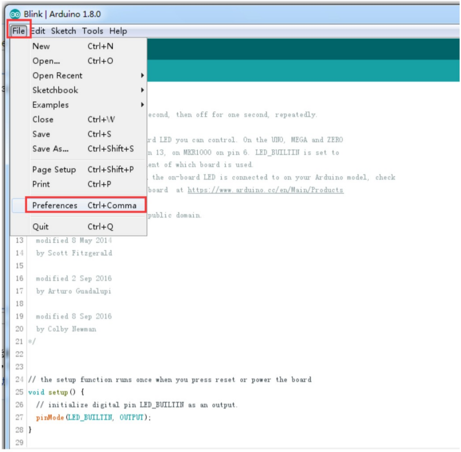
Arduino IDE Configuration

Please pay attention to the followings when using FireBeetle 2 ESP32-S3(N4) for the first time.

1. Add the json link in the IDE
2. Download the core of the MCU
3. Select the development board and serial port
4. Open the sample code and burn it into the board
5. Get to know the serial monitor

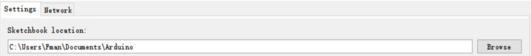
Arduino IDE compiler environment config

1. Open Arduino IDE and click File->Preferences, as shown below.


Blink | Arduino 1.8.0
File Edit Sketch Tools Help
New Ctrl+N
Open... Ctrl+O
Open Recent
Sketchbook
Examples
Close Ctrl+W
Save Ctrl+S
Save As... Ctrl+Shift+S
Page Setup Ctrl+Shift+P
Print Ctrl+P
Preferences Ctrl+Comma
Quit Ctrl+Q

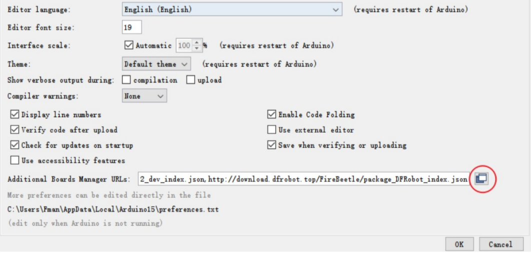
```
econd, then off for one second, repeatedly.

rd LED you can control. On the UNO, MEGA and ZERO
n 13, on MKR1000 on pin 6. LED_BUILTIN is set to
ent of which board is used.
 the on-board LED is connected to on your Arduino model, check
board  at https://www.arduino.cc/en/Main/Products

public domain.

  modified 8 May 2014
  by Scott Fitzgerald

  modified 2 Sep 2016
  by Arturo Guadalupi

  modified 8 Sep 2016
  by Colby Newman
*/


// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

```

2. In the newly opened interface, click the button in the red circle as shown below


Settings
Network
Browse

Sketchbook location:

C:\Users\Fman\Documents\Arduino



Editor language: English (English) (requires restart of Arduino)
Editor font size: 19
Interface scale: ☑ Automatic 100 % (requires restart of Arduino)
Theme: Default theme (requires restart of Arduino)
Show verbose output during: ☐ compilation ☐ upload
Compiler warnings: None

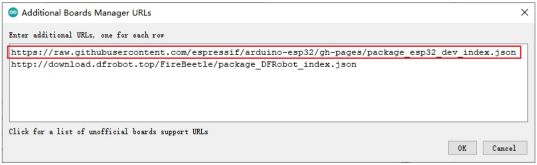
☑ Display line numbers
☑ Verify code after upload
☑ Check for updates on startup
☐ Use accessibility features
☑ Enable Code Folding
☐ Use external editor
☑ Save when verifying or uploading

Additional Boards Manager URLs: 2_dev_index.json,http://download.dfrobot.top/FireBeetle/package_DFRobot_index.json

More preferences can be edited directly in the file
C:\Users\Fman\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)

3. Copy the following link into the new pop-up dialog box: https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json

   Note: If you have installed another environment before, you can press Enter key at the beginning or end of the previous link and paste the link at a new line.



Additional Boards Manager URLs

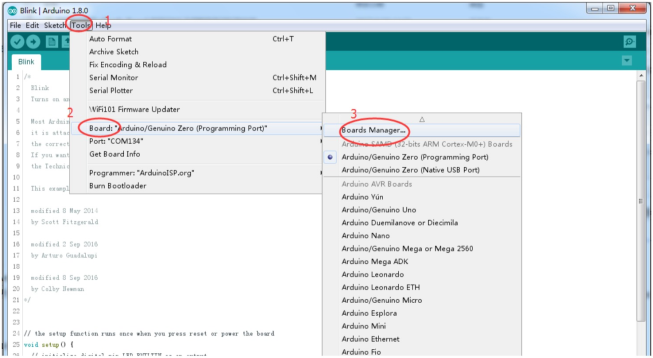
Enter additional URLs, one for each row

```
https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_dev_index.json
http://download.dfrobot.top/FireBeetle/package_DFRobot_index.json
```

Click for a list of unofficial boards support URLs

4. Click OK.

5. Update the board. Open Tools->Board:->Boards Manager... as shown below:

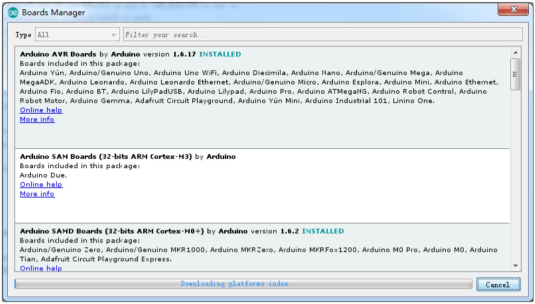


Blink | Arduino 1.8.0

File Edit Sketch Tools Help
1
Blink
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 Firmware Updater
2
Board: "Arduino/Genuino Zero (Programming Port)"
Port: "COM134"
Get Board Info
Programmer: "ArduinoISP.org"
Burn Bootloader
3
Boards Manager...
Arduino SAMD (32-bits ARM Cortex-M0+) Boards
Arduino/Genuino Zero (Programming Port)
Arduino/Genuino Zero (Native USB Port)
Arduino AVR Boards
Arduino Yún
Arduino/Genuino Uno
Arduino Duemilanove or Diecimila
Arduino Nano
Arduino/Genuino Mega or Mega 2560
Arduino Mega ADK
Arduino Leonardo
Arduino Leonardo ETH
Arduino/Genuino Micro
Arduino Esplora
Arduino Mini
Arduino Ethernet
Arduino Fio

```
/*
  Blink
  Turns on an

  Most Arduin
  it is attac
  the correct
  If you want
  the Technic

  This exampl

  modified 8 May 2014
  by Scott Fitzgerald

  modified 2 Sep 2016
  by Arturo Guadalupi

  modified 8 Sep 2016
  by Colby Newman
*/


// the setup function runs once when you press reset or power the board
void setup() {
```

6. Boards Manager will automatically update the boards as shown below:


Boards Manager
Type All
Filter your search...
Online help
More info
Cancel

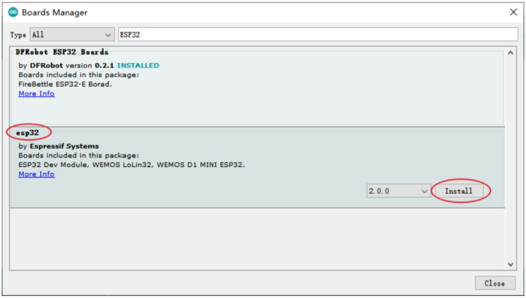
Arduino AVR Boards by **Arduino** version **1.6.17** INSTALLED
Boards included in this package:
Arduino Yún, Arduino/Genuino Uno, Arduino Uno WiFi, Arduino Diecimila, Arduino Nano, Arduino/Genuino Mega, Arduino MegaADK, Arduino Leonardo, Arduino Leonardo Ethernet, Arduino/Genuino Micro, Arduino Esplora, Arduino Mini, Arduino Ethernet, Arduino Fio, Arduino BT, Arduino LilyPadUSB, Arduino Lilypad, Arduino Pro, Arduino ATMegaNG, Arduino Robot Control, Arduino Robot Motor, Arduino Gemma, Adafruit Circuit Playground, Arduino Yún Mini, Arduino Industrial 101, Linino One.

Arduino SAM Boards (32-bits ARM Cortex-M3) by **Arduino**
Boards included in this package:
Arduino Due.

Arduino SAMD Boards (32-bits ARM Cortex-M0+) by **Arduino** version **1.6.2** INSTALLED
Boards included in this package:
Arduino/Genuino Zero, Arduino/Genuino MKR1000, Arduino MKRZero, Arduino MKRFox1200, Arduino M0 Pro, Arduino M0, Arduino Tian, Adafruit Circuit Playground Express.

Downloading platforms index...

7. After the update is completed, you can enter "esp32" in the search bar above. When you see the following situation, select "esp32" and click on "Install" (it is recommended to install the latest version):

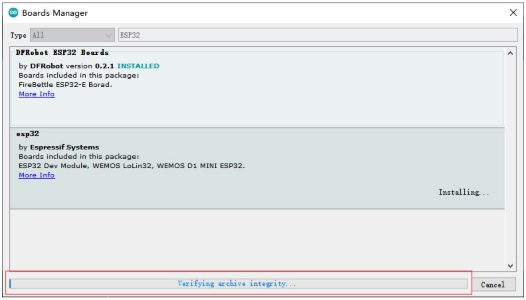

Boards Manager
Type All
More Info
2.0.0
Install
Close

ESP32

DFRobot ESP32 Boards
by **DFRobot** version **0.2.1** INSTALLED
Boards included in this package:
FireBettle ESP32-E Borad.

esp32
by **Espressif Systems**
Boards included in this package:
ESP32 Dev Module, WEMOS LoLin32, WEMOS D1 MINI ESP32.

8. Please wait for the progress bar below to finish:


Boards Manager
Type All
More Info
Cancel

ESP32

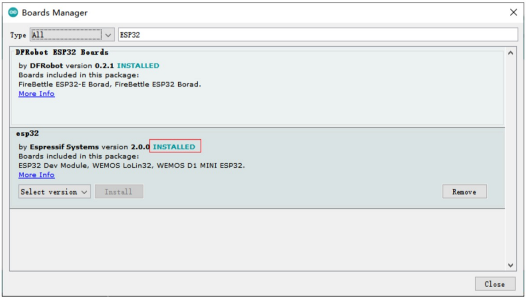
DFRobot ESP32 Boards
by **DFRobot** version **0.2.1** INSTALLED
Boards included in this package:
FireBettle ESP32-E Borad.

esp32
by **Espressif Systems**
Boards included in this package:
ESP32 Dev Module, WEMOS LoLin32, WEMOS D1 MINI ESP32.

Installing...

Verifying archive integrity...

9. Once the installation is complete, the list will display the installed ESP32 board, as shown in the following image:



Boards Manager
Type All
ESP32
Select version
Install
Remove
Close

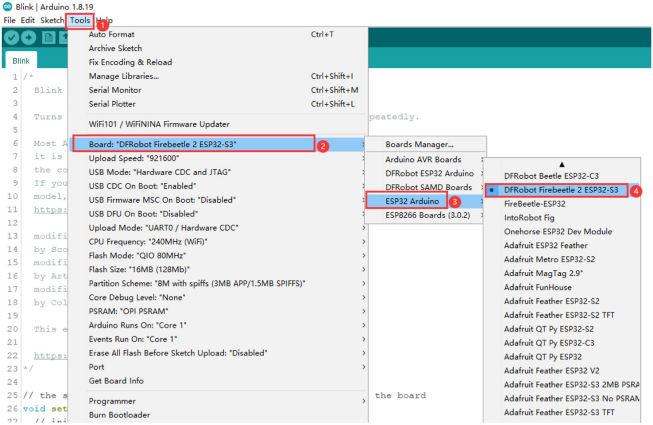
DFRobot ESP32 Boards

by **DFRobot** version **0.2.1** INSTALLED
Boards included in this package:
FireBettle ESP32-E Borad, FireBettle ESP32 Borad.
More Info

esp32

by **Espressif Systems** version **2.0.0** INSTALLED
Boards included in this package:
ESP32 Dev Module, WEMOS LoLin32, WEMOS D1 MINI ESP32.
More Info

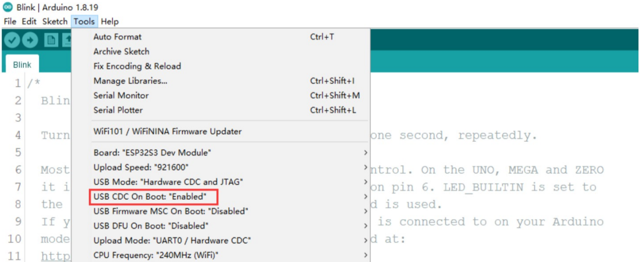
10. Click on Tools->Board: and select DFRobot FireBeetle 2 ESP32-S3.



Blink | Arduino 1.8.19
File Edit Sketch Tools Help
1
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater
2
Port
Get Board Info
Programmer
Burn Bootloader
Boards Manager...
Arduino AVR Boards
DFRobot ESP32 Arduino
DFRobot SAMD Boards
ESP32 Arduino
3
ESP8266 Boards (3.0.2)
DFRobot Beetle ESP32-C3
DFRobot Firebeetle 2 ESP32-S3
4
FireBeetle-ESP32
IntoRobot Fig
Onehorse ESP32 Dev Module
Adafruit ESP32 Feather
Adafruit Metro ESP32-S2
Adafruit MagTag 2.9"
Adafruit FunHouse
Adafruit Feather ESP32-S2
Adafruit Feather ESP32-S2 TFT
Adafruit QT Py ESP32-S2
Adafruit QT Py ESP32-C3
Adafruit QT Py ESP32
Adafruit Feather ESP32 V2
Adafruit Feather ESP32-S3 2MB PSRA
Adafruit Feather ESP32-S3 No PSRAN
Adafruit Feather ESP32-S3 TFT

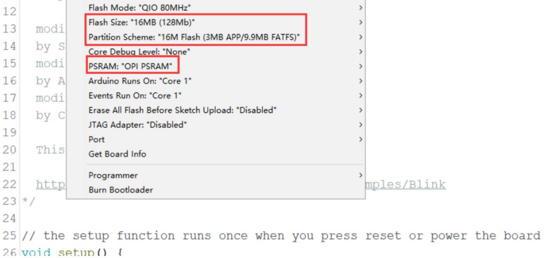
Board: "DFRobot Firebeetle 2 ESP32-S3"
Upload Speed: "921600"
USB Mode: "Hardware CDC and JTAG"
USB CDC On Boot: "Enabled"
USB Firmware MSC On Boot: "Disabled"
USB DFU On Boot: "Disabled"
Upload Mode: "UART0 / Hardware CDC"
CPU Frequency: "240MHz (WiFi)"
Flash Mode: "QIO 80MHz"
Flash Size: "16MB (128Mb)"
Partition Scheme: "8M with spiffs (3MB APP/1.5MB SPIFFS)"
Core Debug Level: "None"
PSRAM: "OPI PSRAM"
Arduino Runs On: "Core 1"
Events Run On: "Core 1"
Erase All Flash Before Sketch Upload: "Disabled"

11. Before you begin, you also need to configure the following settings: (When you select "Disabled", the serial port will be RX(44) and TX(43). If you want to print on the Arduino monitor via USB, you need to select "Enable".)



Blink | Arduino 1.8.19
File Edit Sketch Tools Help
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
WiFi101 / WiFiNINA Firmware Updater

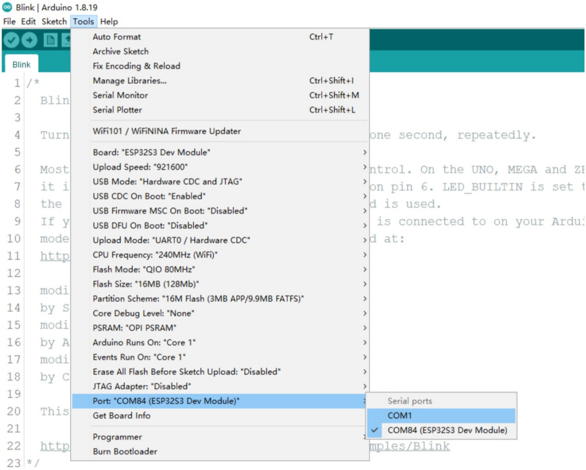
Board: "ESP32S3 Dev Module"
Upload Speed: "921600"
USB Mode: "Hardware CDC and JTAG"
USB CDC On Boot: "Enabled"
USB Firmware MSC On Boot: "Disabled"
USB DFU On Boot: "Disabled"
Upload Mode: "UART0 / Hardware CDC"
CPU Frequency: "240MHz (WiFi)"



Flash Mode: "QIO 80MHz"
Flash Size: "16MB (128Mb)"
Partition Scheme: "16M Flash (3MB APP/9.9MB FATFS)"
Core Debug Level: "None"
PSRAM: "OPI PSRAM"
Arduino Runs On: "Core 1"
Events Run On: "Core 1"
Erase All Flash Before Sketch Upload: "Disabled"
JTAG Adapter: "Disabled"

Port
Get Board Info
Programmer
Burn Bootloader
// the setup function runs once when you press reset or power the board
void setup() {

12. Click on Port and select the corresponding serial port.



Blink | Arduino 1.8.19
File Edit Sketch Tools Help
Blink
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Manage Libraries... Ctrl+Shift+I
Serial Monitor Ctrl+Shift+M
Serial Plotter Ctrl+Shift+L
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Events Run On: "Core 1"
Erase All Flash Before Sketch Upload: "Disabled"
JTAG Adapter: "Disabled"
Port: "COM84 (ESP32S3 Dev Module)"

Get Board Info
Programmer
Burn Bootloader
Serial ports
COM1
COM84 (ESP32S3 Dev Module)

LED Blink

The onboard LED is connected to pin 21 by default.

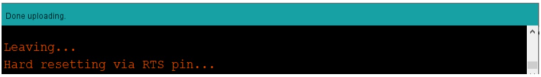
Code

```
int led = 21;
void setup() {
  pinMode(led, OUTPUT);
}

void loop() {
  digitalWrite(led, HIGH);
  delay(1000);
  digitalWrite(led, LOW);
  delay(1000);
}
```

- Copy and paste the above code into the code editor.
- Click on the arrow to compile and upload the program to the development board.

Upload Successful



```
Done uploading.

Leaving...
Hard resetting via RTS pin...
```

- The upload is successful as shown in the image.
- You will see the onboard LED start blinking.
- Still having trouble uploading? Click here

Basic Tutorials

The basic tutorials include tutorials on PWM, interrupts, serial communication, servos, and SD card.

Advanced Tutorials

Note: FireBeetle 2 ESP32-S3(N4) does not support camera functionality, so you don't need to refer to the camera-related content in the tutorials.

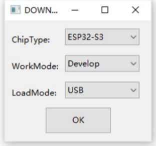
The advanced tutorials include tutorials on screen display, Bluetooth, Wi-Fi, ESP-NOW, project examples, one-click configuration, and camera.

Tutorial for MicroPython

Build Environment for MicroPython

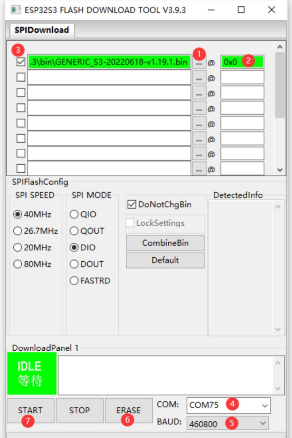
To run microPython on the FireBeetle 2 ESP32-S3(N4), you need to burn the firmware into FireBeetle 2 ESP32-S3(N4) first.

1. Click to download microPython firmware.
    - MicroPython official firmware (Note: Please select Support for Octal-SPIRAM version)
    - DFRobot MicroPython firmware-with camera driver
2. Click to download esptool Flash burning tool
3. Run flash_download_tool_3.9.3.exe
4. Select the ESP32-S3 main controller, than Press Boot, press RST and release both, then try burning again.



ChipType: ESP32-S3
WorkMode: Develop
LoadMode: USB

5. Select the downloaded firmware, clear the flash and then burn the firmware.


ESP32S3 FLASH DOWNLOAD TOOL V3.9.3
SPIDownload
3
1
2
...
@
SPIFlashConfig
SPI SPEED
SPI MODE
DetectedInfo
CombineBin
Default
DownloadPanel 1
START
7
STOP
ERASE
6
4
5

☑ .3\bin\GENERIC_S3-20220618-v1.19.1.bin @ 0x0

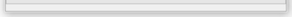
SPI SPEED: ● 40MHz ○ 26.7MHz ○ 20MHz ○ 80MHz

SPI MODE: ○ QIO ○ QOUT ● DIO ○ DOUT ○ FASTRD

☑ DoNotChgBin
☐ LockSettings

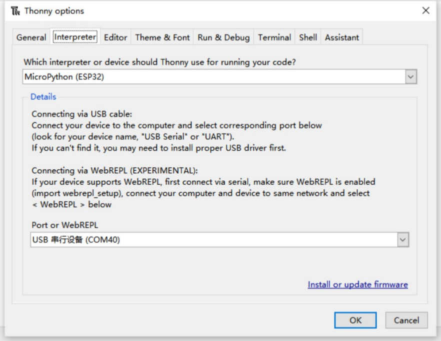
IDLE 等待

COM: COM75
BAUD: 460800



MicroPython Interpreter

1. Click to download thonny
2. Open the software and set up the interpreter (Run->Configure interpreter...)



Thonny options
General
Interpreter
Editor
Theme & Font
Run & Debug
Terminal
Shell
Assistant

Which interpreter or device should Thonny use for running your code?

MicroPython (ESP32)

Details

Connecting via USB cable:
Connect your device to the computer and select corresponding port below
(look for your device name, "USB Serial" or "UART").
If you can't find it, you may need to install proper USB driver first.

Connecting via WebREPL (EXPERIMENTAL):
If your device supports WebREPL, first connect via serial, make sure WebREPL is enabled
(import webrepl_setup), connect your computer and device to same network and select
< WebREPL > below

Port or WebREPL

USB 串行设备 (COM40)

Install or update firmware
OK
Cancel

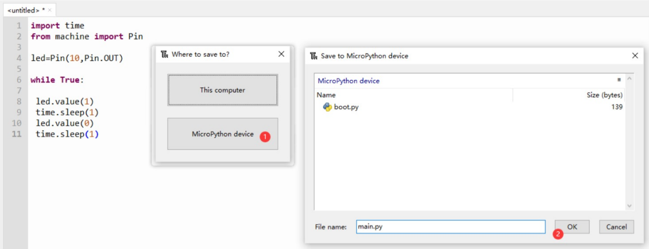
3. Copy and paste the code into the code box, save the file to the MicroPython device and name it main.py

```
import time
from machine import Pin

led=Pin(21,Pin.OUT)

while True:

 led.value(1)
 time.sleep(1)
 led.value(0)
 time.sleep(1)
```



```
import time
from machine import Pin

led=Pin(10,Pin.OUT)

while True:

 led.value(1)
 time.sleep(1)
 led.value(0)
 time.sleep(1)
```

<untitled> *
Where to save to?
This computer
MicroPython device
1
Save to MicroPython device
MicroPython device
Name
Size (bytes)
boot.py
139
File name:
main.py
OK
Cancel
2

4. Reboot the FireBeetle 2 ESP32-S3, and you can see the L LED flashing.

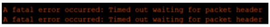
MicroPython Tutorial

MicroPython basic tutorial

FAQ

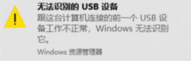
1. What will cause burning error?

- There is no delay or too short delay in Loop.



```
A fatal error occurred: Timed out waiting for packet header
A fatal error occurred: Timed out waiting for packet header
```

- The USB cannot be recognized by the PC as some functions are incorrectlly called.


无法识别的 USB 设备
跟这台计算机连接的前一个 USB 设备工作不正常，Windows 无法识别它。
Windows 资源管理器

How to solve

- Press Boot, press RST and release both, then try burning again.

2. Data cannot be printed on serial port

- Check if the USB CDC is enabled
- Check print information using other serial debugger.

2. Drive multiple servos in the same time

- If you can't drive multiple servos at the same time using the servo library in Basic Tutorial. Please use the ESP32-AnalogWrite library.

For any questions, advice or cool ideas to share, please visit the **DFRobot Forum**.

More Documents

- ESP32-S3-WROOM-1 Datasheet
- ESP32-S3 Chip Datasheet
- DFR1145-Schematics.pdf
- DFR1145-Dimension.pdf
- FireBeetle2 Shell stl

Get **FireBeetle 2 ESP32-S3(N4)** from DFRobot Store or **DFRobot Distributor**.

Turn to the Top

Downloaded from Arrow.com.