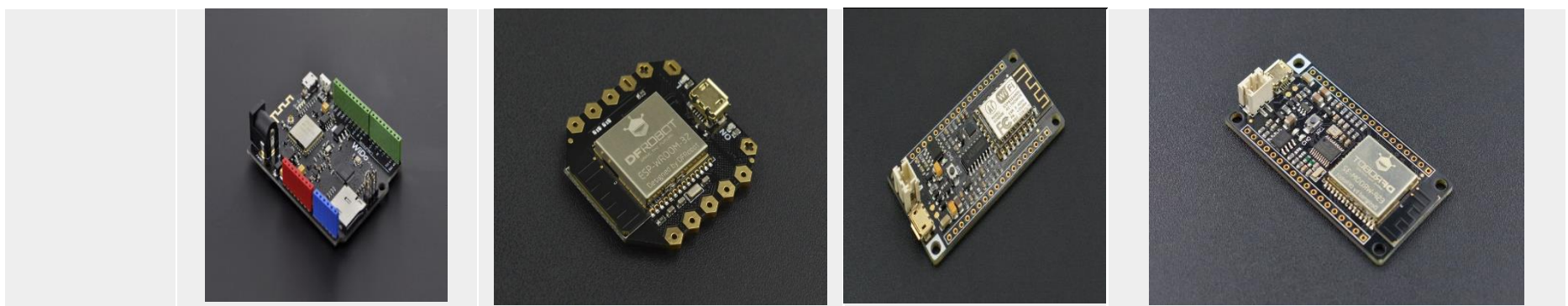# FireBeetle ESP32 IoT Microcontroller (Supports Wi-Fi & Bluetooth)

**SKU:DFR0478**



## INTRODUCTION

DFRobot FireBeetle series is the low-power consumption micro-controller intentionally designed for Internet of Things (IoT) projects. FireBeetle Board - ESP32 integrates a Dual-Core ESP-WROOM-32 module, which supports MCU and Wi-Fi &Bluetooth dual-mode communication. The electric current is just 10μA in the deep-sleep mode. The main controller supports two power supply methods: USB and 3.7V external lithium battery. And both USB and external DC can charge the Lipo battery directly.



| Name | WiDo | Beetle ESP32 | FireBeetle ESP8266 | FireBeetle ESP32 |
|---|---|---|---|---|
| SKU | DFR0321 | DFR0575 | DFR0489 | DFR0478 |
| Microcontroller | CC3000 | ESP32 | ESP8266 | ESP32 |
| Power supply interface | USB or DC2.1 | USB | USB or 3.7V Lipo | USB or 3.7V Lipo |
| USB Powered or External (V) | 7 - 12 | 3.5 - 6.5 | 3.3 - 5.0 | 3.3 - 5.0 |
| Operating Voltage (V) | 5V | 3.3V | 3.3V | 3.3V |
| CPU Frequency (MHz) | 16 | 240 | 160 | 240 |
| Flash(M) | - | 16 | 16 | 16 |
| SRAM(KB) | - | 520 | 50 | 520 |

| | | | | |
|---|---|---|---|---|
| Analog pins | 6 | 4 | 1 | 5 |
| Digital pins | 14 | 4 | 10 | 10 |
| Wi-Fi protocol | 802.11b/g | 802.11b/g/n | 802.11b/g/n | 802.11b/g/n |
| Frequency range | 2.4 GHz | 2.4 - 2.5 GHz | 2.4 - 2.5 GHz | 2.4 - 2.5 GHz |
| UART | 1 | 1 | 1 | 1 |
| I2C | 1 | 1 | 1 | 1 |
| I2S | 1 | 1 | 1 | 1 |
| SPI | 1 | 1 | 1 | 1 |
| Compatible IDE | Arduino IDE 1.6+ | Arduino IDE 1.6+ | Arduino IDE 1.6+ | Arduino IDE 1.6+ |
| Download Mode | Micro USB | Micro USB | Micro USB | Micro USB |
| Arduino UNO Compatible | √ | × | × | × |
| Lipo Charger Support | × | √ | √ | √ |
| Dimension(mm) | 75*54 | 35*34 | 58*29 | 58*29 |
| Weight (g) | 30 g | 12 g | 24 g | 24 g |
| Key Features | On board 2.4G PCB Antenna and SD card slot. | Integrate a Dual-Core ESP-WROOM-32 module. Support MCU and Wi-Fi &Bluetooth dual-mode communication. V shaped gilded I/O interface, can be sewn on clothes directly. | Arduino、RTOS、microPython Programming Support. Built-in 32-bit Tensilica L106 MCU and 10-bit ADC. | Mobile BLE APP Connection Support. Two way H-bridged Motor Driver with 2A maximum current and wireless socket. |

## FEATURES

- Compatible with products in the DFRobot FireBeetle serials
- Low-power consumption(the electricity current under ultra-low power is 10μA)
- Quick Response(the top frequency is 400KHz)
- Cost-effective
- Small size, convenient to install

## SPECIFICATION

- Working voltage: 3.3V
- Input voltage: 3.3V~5V
- Support electric current of low power consumption: 10 μA
- Support maximum discharge current: 600mA
- Support maximum charge current: 500mA
- Support USB charging.
- Processer: Tensilica LX6 dual core processer (One for high speed connection; one for independent programing).
- Frequency: 240MHz
- SRAM：520KB
- Flash：16Mb
- Wi-Fi standard：FCC/CE/TELEC/KCC
- Wi-Fi protocol: 802.11 b/g/n/d/e/I/k/r (802.11n, high speed can reach to 150 Mbps), converge A-MPDU and A-MSDU, supporting 0.4us protecting interval.
- Frequency range: 2.4~2.5 GHz
- Bluetooth protocol: Comply with BR/EDR/BLE standard of Bluetooth v4.2.

- Bluetooth audio: the current under low power consumption of CVSD and SBC is 10μA

- Working current: 80mA in average

- Frequency range: 2.4~2.5GHz

- Support one-key downloading.

- Support micropython.

- On-chip clock: 40MHz crystal and 32.768 KHz crystal.

- Digital I/O: 10 (default setting of arduino)

- Simulative input: 5(default setting of arduino)

- SPI: 1 (default setting of arduino)

- I2C: 1 (default setting of arduino)

- I2S: 1 (default setting of arduino)

- LED_BUILTIN：D9

- Interface: FireBeetle series compatible

- Working temperature: -40℃~+85℃

- Dimension: 29 × 58(mm)/1.142 x 2.283(inches)

- The dimension of mounting hole: inner diameter 3.1mm; outside diameter 6mm.