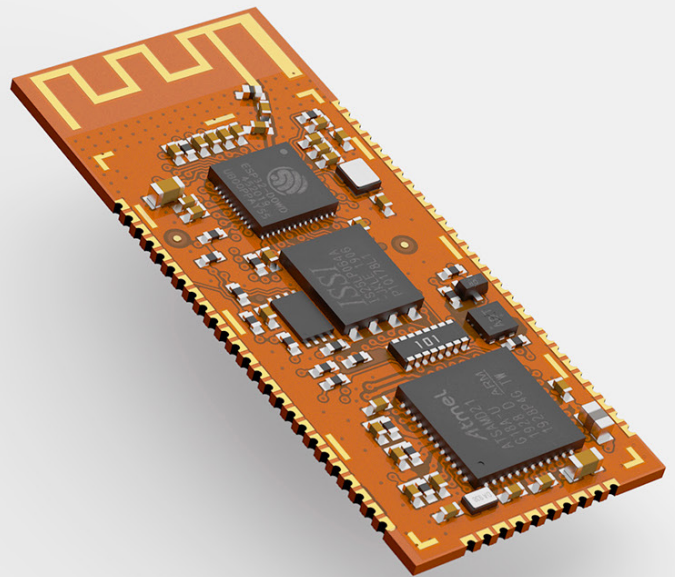# Briki MBC-WB

Wi-Fi & Bluetooth Device

OVERVIEW

This compact System on module (SoM) is the ideal solution for designers who want a unique device with Wi-Fi & Bluetooth plus a dedicated control MCU.

From prototype to product in a simple and fast way

Exposed debug interfaces for both the chips

Small "1-Brick" form factor with many GPIOs

Compatible pinout between all modules in the family

Liquid logic to surpass the classical rigid master/slave topology

Embedded flash memory for both, code and user storage

Dual-level of embedded security, from cloud to boot

Multi-language support (C/C++ and python)

Dual wireless interface (BLE/BT and Wi-Fi)

FEAUTURES

Technical information

ATSAMD21G18A ARM® Cortex®-M0+ running at 48MHz	Product size: 38 x 16 mm
ESP32-D0WD dual-core Tensilica Xtensa LX6 running @240MHz	Format: 1 brick
Internal / External QSPI 16-Mbit, 64-Mbit or 128-Mbit flash	
PCB Antenna integrated	
CryptoAuth ECC608B chip	

This product is sold by request as products for industrial use. The MBC module is available in different versions by hardware configuration and functionalities. Depending on your design, you may prefer one version over the other. Contact us to find the best suited for you!
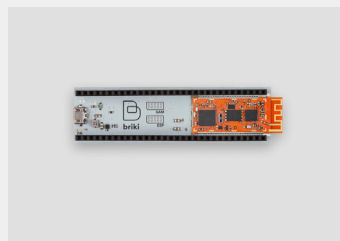
DEVELOPMENT TOOLS

Firmware and software tools

Meteca offers a complete firmware solution for both the MCUs, written in C/C++ and fully compatible with Arduino for a fast and simple prototyping process.

All Briki MBCs are completely programmable using the Arduino IDE or a more professional IDE like Visual Studio Code. The latter, in particular, allows customers to program both the MCUs using different programming languages and/or SDK like Microchip's ASF, Espressif's esp-idf or python.

Both the MCUs have their debugging interface exposed on the module's pinout to ensure full control over the firmware implementation. In conjunction with Visual Studio Code, several debugging devices can be used to extensively debug the code: ATMEL ICE (link) for the ARM Cortex MCU and/or Segger J-Link (link), useful for both the Cortex and the Tensilica ESP32.
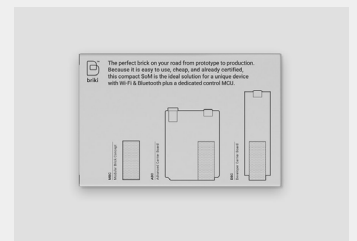
The software suite offered includes a set of tools specifically designed to allow firmware update procedure (via USB or OTA for both the MCUs), ESP32's memory mapping along with automatic pin-mapping configuration.
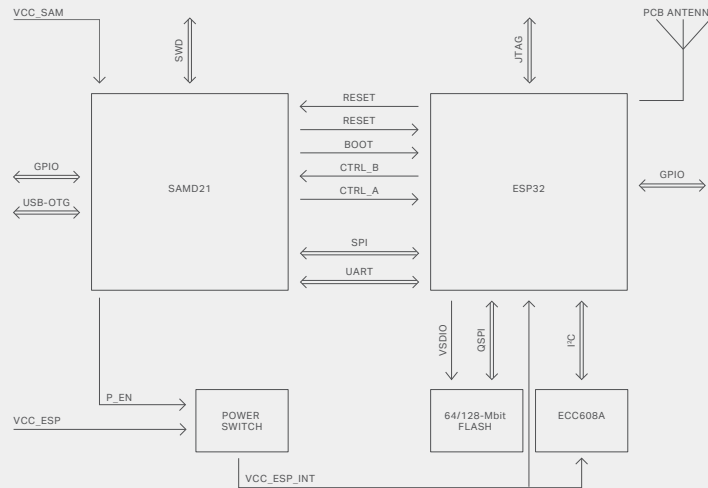

Briki DBC
Debugger Board Carrier
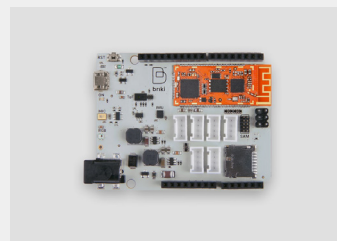
Briki ABC
Advanced Board Carrier

Briki MBC-WB
Development Kit

TECH SPECS

Block diagram

ATSAMD21

PROCESSOR

ARM©, Cortex-M0+ CPU up to 48MHz

MEMORIES

256KB in-system self-programmable Flash

32KB SRAM Memory

SYSTEM

External Interrupt Controller (EIC), 16 external interrupts, one non-maskable interrupt

Low Power

Idle and standby sleep modes

SleepWalking peripherals

PERIPHERALS

12-channel Direct Mem Access Controller (DMAC)

12-channel Event System

Up to five configurable 16-bit Timer/Counters (TC)

Three 24-bit Timer/Counters for Control (TCC)

32-bit Real Time Counter (RTC) with clock/calendar function

Watchdog Timer (WDT)

CRC-32 generator

One full-speed USB (12Mbps) Device/Host

Several SERCOM digital interfaces like: I²C (up to 3.4MHz), SMBUS/PMBUS, SPI, LIN, UART and analog interfaces like: 12-bit, 350 ksps ADC , 10-bit, 350 ksps DAC, Two Analog Comparators, Peripheral Touch Controller with capacitive touch and proximity sensing I/O

ATECC608A

CLOUD AUTHENTICATION

for AWS IoT and Google Cloud IoT Core

HARDWARE SECURITY FEATURES

Cryptographic coprocessor with secure key storage for up to 16 Keys, certificates or data

Asymmetric sign, verify, key agreement: ECDSA, ECDH, NIST standard P256 elliptic curve support

Support for symmetric algorithms: SHA-256 & HMAC hash including off-chip context save/restore, AES-128 with encrypt/decrypt, galois field multiply for GCM

Networking key management support

Turnkey PRF/HKDF calculation for TLS 1.2/1.3

Ephemeral key generation and key agreement in SRAM

SECURE BOOT SUPPORT

Implementation with ATSAMD21 Cortex-M0+

Full ECDSA code signature validation

Encryption/Authentication for messages to prevent on-board attacks

ADDITIONAL FEATURES

Internal high-quality FIPS 800-90 A/B/C Random Number Generator (RNG)

Two high-endurance monotonic counters

Guaranteed unique 72-bit serial number

1MHz Standard I2C interface

<150nA Sleep current

ESP32

PROCESSOR

CPU: Xtensa dual-core 32-bit LX6 at 240 MHz and 600 DMIPS

WIRELESS CONNECTIVITY

Wi-Fi: 802.11 b/g/n

Bluetooth: v4.2 BR/EDR and BLE

PERIPHERALS

10 × GPIOs (touch capacitive sensing)

Temperature sensor

Several digital interfaces like: SPI, I²S, I²C, UART, SD/SDIO/CE-ATA/MMC/eMMC

CAN bus 2.0

IR controller

SECURITY

IEEE 802.11 featuring WFA,WPA/WPA2, WAPI

Secure boot and Flash encryption

1024-bit OTP, up to 768-bit for customers

Cryptographic hardware acceleration: AES, SHA-2, RSA, elliptic curve cryptography (ECC), random number generator (RNG)