3Egreen technology Inc.

M4B0 Series

BLE -Ethernet Gateway Module

Product Brief

M4B0-00

Preliminary release

Released Date: 2014/10/01

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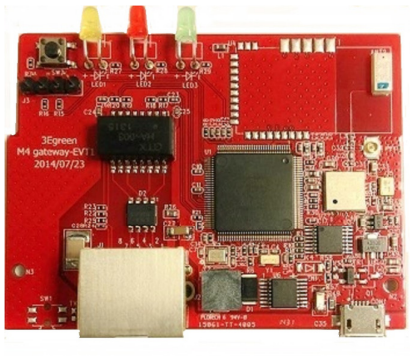

M4B0 BLE Gateway

M4B0-EVT1

Applications

- Home/Building/Factory Automation Systems
- Smart Lighting Control Systems
- Wireless Sensor Network
- Energy Management

Product Features

- *Bluetooth* 4.1 compliant
- Support of Up to 12 Simultaneous Connections
- Multiple Sniff Instances Tightly Coupled to Achieve Minimum Power Consumption
- Independent Buffering for BLE Allows Large Numbers of Multiple Connections
- Built-In Coexistence and Prioritization Handling for BR/EDR and LE
- Best-in-Class *Bluetooth* RF Performance : Class 1.5 TX Power Up to +10 dBm
- –93 dbm Typical RX Sensitivity
- Improved Adaptive Frequency Hopping (AFH) Algorithm with Minimum Adaptation Time
- Provides Longer Range, Including 2x Range Over Other BLE-Only Solutions
- Direct interface via TCP/IP ,fully software upgradeable via TCP/IP.
- The gateway uses AES128 encryption for RF communication
- IP configuration and server address can be changed via TCP/IP or via UDP for the first seconds after boot up
- 10/100M Ethernet MAC
- Ethernet PHY with IEEE 1588 PTP hardware support

Introduction

3Egreen M4B0 BLE-Ethernet Gateway is a low cost, small form factor module that provides reliable wireless data communication with Ethernet to over BLE4.1 networks. It enables robust BLE Central Up to 10 simultaneous connections with BLE slave devices like sensors to be built with very low total bill-of-material costs' solutions for smart home application . M4B0 gateway combines an excellent RF 2.4G BLE (Bluethooth low energy) transceiver(Ti CC2564) and Cortex-M4F processor core . Cortex-M4F processor perfors 120-MHz operation with 150 DMIPS performanc, 1024 KB Flash memory and system SRAM 256 KB.

M4B0 combined with the *Bluetooth* low energy protocol stack for the market's most flexible and cost-effective dual-mode *Bluetooth* low energy solution.M4B0 supports different networks and/or self-organizing/self-healing networks topologies. It offers network scalability and is ideal for applications for the rapidly growing energy management systems, home/building automation, lighting control, automated meter reading and security system.

Also 3Egreen offers the turnkey solution combined M4B0,BLE4.1 device module and Anroid & iOS APP. for cumstomers as below :

Ethernet to BLE 4.1 Gateway

BLE 4.1 Device Module

Anroid & iOS App.

Turnkey Solution :

1. BLE 4.1 Gateway supports up to 12 devices simultaneously
2. BLE4.1 device module with PA
3. Anroid & iOS APP. supports Remote and Local controllable

Electrical Characteristics

Absolute Maximum Ratings

Parameters	Min	Max	Unit
Storage temperature	-40	+120	°C
Supply voltage VDD input to the ground	-0.5	+5.5	V

Recommended Operating Conditions

Test conditions: VCC = 3.3V

Parameters	Min	Typ	Max	Unit
Ambient Operating Temperature	-20	+40	+70	°C
Supply Voltage for VCC	2.4	3.3	3.6	V
Logical high input voltage	0.8 x VCC3.3V		VCC3.3V	V
Logical low input voltage	0		0.2 x VCC3.3V	V

DC Characteristics

Test conditions: T_A = 25°C, VCC = 3.3V, Frequency= 2445MHz

Mode	Parameters	Min	Typ	Max	Unit
ACTIVE: TX	At -23 dBm output power At 10 dBm output power		21.1 31.6		mA
ACTIVE: RX	Normal Mode (250 Kbps) High Gain Mode (250Kbps)		19.6 22.1		mA
Deep Sleep	MCU: STOP mode, RFIC: Deep Sleep mode		5		uA

RF Characteristics

Conditions: TA = 25°C, VCC = 3.3 V

Parameters	Condition	Min	Typ	Max	Unit
RF frequency	BLE 2.4G	2045	2400	2480	Mhz
RF frequency spacing	At antenna input, 250 Kbps		2		Mhz
RF sensitivity (high gain)	At antenna input, 250 Kbps		-93		dBm
Maximum RF input				10	dBm
Adjacent channel rejection	@+/-1 MHz, 250 Kbps		-5		dBm
Alternate channel rejection	@+/-2 MHz, 250 Kbps		50		dBm
RSSI range	High gain mode, 250 Kbps Standard mode	-90 -87		-45 -35	dB
Maximum RF output power	At 10 dBm output power setting		10		dBm
RF output power control range		-23		10	dBm
TX gain control resolution		1			dB
TX EVM			15		%

Product Family and Ordering Information

When ordering, please specify the module configuration via the following part numbers: M4B0-YY where YY denotes the pre-loaded software code desired as shown in the Table and examples below.

M4B0-YY (application software code)
00: Standard
01: Smart Home
02: LED lighting

DISCLAIMER

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Release History

Date	Revision	Content
2014/10/01	Preliminary	Preliminary specification released