

RapidConnect Gateway

When developing a custom IoT ecosystem, time to market and ease of development are critical. Leveraging MMB's decade of experience in IoT deployments, our Linux gateway allows users to quickly get connected.

It's the ideal solution for customers looking to deploy their own IoT solution. Industry standard interfaces include ethernet, Wi-Fi, USB, BLE, Thread and Zigbee. With minimal development effort, the RapidConnect Gateway can be configured to form a network, connect to other devices, and communicate data to the cloud.



Simple Path to Market

Reduce budget uncertainty and engineering time.

Pre-certified and tested, low cost Zigbee 3.0 compliant solution.

Go from proof of concept to scaled manufacturing with white label friendly enclosure and packaging options.

Focus on building unique features for your customers, leave the connectivity to MMB.



Better Performance

Create a great customer experience with a secure, wired or wireless end-to-end ecosystem.

Maximum network range with minimal energy consumption.

Read sensor and telemetry data in the cloud with powerful local control and processing.

Compatible with existing onsite WiFi and ethernet network connectivity backbones.



Developer Friendly

Work in your own dev environment with an off the shelf Gateway running a full Linux O/S.

Friendly and easy to work with whether programming in Java, Python, or C++.

Pull in more features to increase market share and functionality by leveraging a full JRE and all of its libraries on board.

CONTENTS:

1. General Information	3
2. Processor and Memory	3
3. Electrical Specifications	3
3.1 Absolute Maximum Ratings	3
3.2 Recommended Operating Conditions	3
3.3 DC Electrical Characteristics	4
4. RF Specifications	4
4.1 ZigBee Specifications	4
4.2 WiFi Specifications	5
4.3 Bluetooth Low Energy (BLE) Specifications	6
5. Hardware Architecture	7
6. Functional Descriptions	8
6.1 Button	8
6.2 Status LEDs	8
6.3 WiFi	8
6.4 Ethernet	8
6.5 Real-Time Clock (RTC)	8
6.6 USB 2.0	8
7. Mechanical Specifications	9
8. Regulatory Approvals	10
8.1 Federal Communications Commission (FCC - US)	10
8.2 Industry Canada (IC)	10
8.3 RoHS Compliance	10
9. Revision History	11
10. Ordering Information	11

1. General Information

This is a Preliminary Datasheet and specifications are subject to change.

The Multiprotocol Gateway leverages our industry-leading CSB04PA10 module family (based on Silicon Labs EFR32MG13 SoC) for IoT connectivity and enables communication via the following standards:

Zigbee, Thread, BLE 5.0, Wi-Fi, USB, and Ethernet

2. Processor and Memory

Processor	RAM	Flash Memory
Marvell Armada 370 (ARMv7) Processor @ 800MHz	up to 512MB DDR3 SDRAM	1 GB

3. Electrical Specifications

3.1 | Absolute Maximum Ratings

Parameter	Minimum	Typical	Maximum	Units
Supply Voltage (VCC)	-0.3		6	V
Storage Temperature	-20		50	°C

3.2 | Recommended Operating Conditions

Parameter	Minimum	Typical	Maximum	Units
Temperature Range	0	25	50	°C

3.3 | DC Electrical Characteristics

Parameter	Test Condition	Minimum	Typical	Maximum	Units
Supply Voltage (VCC)	-0.3		6	V	
Input Voltage Supply	At the input to the gateway	4.7	5	5.3	V
Current Consumption	At 25 °C		500		mA
Power Consumption	At 25 °C		3		W

Notes:

The MMB Networks Multiprotocol Gateway ships with the required power adapter included.

4. RF Specifications

4.1.1 | Zigbee/Thread Receive Specifications

Note: The Typical number indicates one standard deviation above the mean, measured at room temperature (25°C). The Min and Max numbers were measured over process corners at room temperature.

Parameter	Test Condition	Min	Typical	Max	Units
Frequency range		2400	2450	2500	MHz
Sensitivity	1% PER, 20 byte packet defined by IEEE 802.15.4-2003		-102		dBm

4.1.2 | Zigbee/Thread Transmit Specifications

Parameter	Test Condition	Min	Typical	Max	Units
Output Power at highest FCC-compliant power setting	Channels 11-25		19	19.5	dBm
	Channels 26		8.5	9	dBm
Error vector magnitude as per IEEE 802.15.4		0	5	15	%
Carrier frequency error		-40	0	40	ppm

4.2.1 | WiFi Receive Specifications

Parameter	Test Condition	Min	Typical	Max	Units
Frequency range	2.4GHz ISM Bands	2412		2472	MHz
Sensitivity	802.11b at 11Mbps		-76		dBm
	802.11g at 54Mbps		-65		dBm
	802.11n at HT20 MCS7		-64		dBm
	802.11n at HT40 MCS7		-61		dBm

4.2.2 | WiFi Transmit Specifications

Parameter	Test Condition	Min	Typical	Max	Units
Output Power at highest FCC-compliant power setting			23		dBm
Supported Datarates	802.11b	1	1, 2, 5.5, 11	11	Mbps
	802.11g	6	6, 9, 12, 18, 24, 36, 48, 54	54	Mbps
	802.11n			150	Mbps

4.3.1 | Bluetooth Low Energy (BLE) Receive Specifications

Parameter	Test Condition	Min	Typical	Max	Units
Frequency range		2400		2483.5	MHz
Sensitivity - Bluetooth Low Energy	0.1% BER. Signal is reference signal ¹ , bit rate=125kbps		-102		dBm
	0.1% BER. Signal is reference signal ¹ , bit rate=500kbps		-98		dBm
	0.1% BER. Signal is reference signal ¹ , bit rate=1Mbps		-94		dBm
	0.1% BER. Signal is reference signal ¹ , bit rate=2Mbps		-90		dBm

Notes:

1. Reference signal is defined 2GFSK at -67dBm, Modulation index=0.5, BT=0.5, desired data=PRBS9, interferer data=PRBS15, frequency accuracy better than 1 ppm

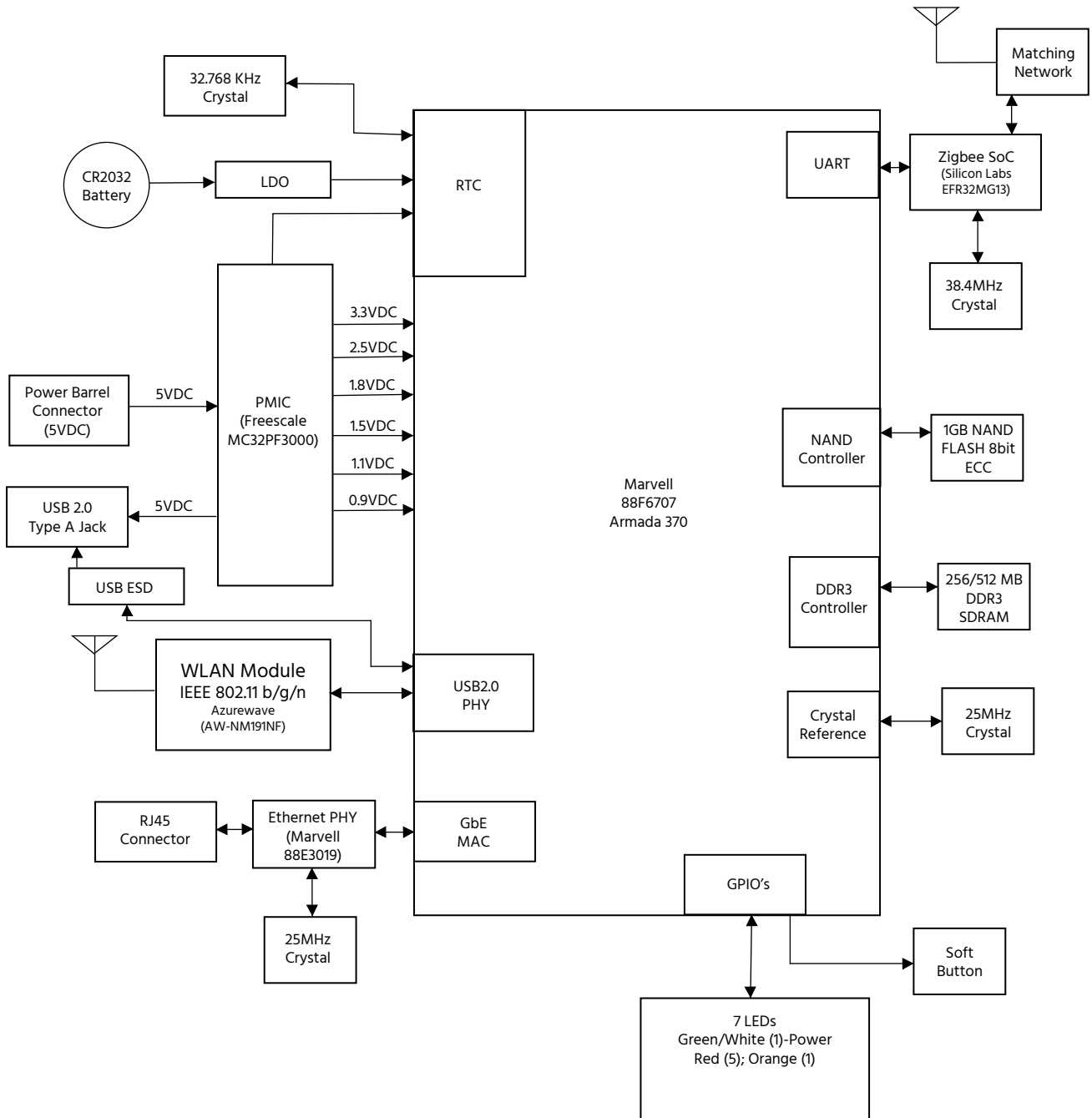
4.3.2 | Bluetooth Low Energy (BLE) Transmit Specifications

Parameter	Test Condition	Min	Typical	Max	Units
BLE output power at highest power setting, general limit in connected mode ¹			19		dBm
BLE output power in advertising mode			19		dBm

Notes:

1. When operating on BLE channels 33-36, the RF power will be reduced below these levels to ensure compliance with FCC radio spectrum regulations

Figure 5.1 Hardware Architecture



6. Functional Descriptions

6.1 | Button

A single soft button with functionality that can be defined in software.

The default behaviour of the button is to clear the WiFi provisioning information and restart wireless bridge commissioning.

6.2 | Status LEDs

7 status LEDs which can be defined in software.

The LED colours and quantities are:

Red - 5

Yellow - 1

Bi-colour (Green/White) - 1 (two separate on-board LEDs which can be combined to a single status location)

The standard out of the box behaviours of the LEDs are:

Red – No Configuration

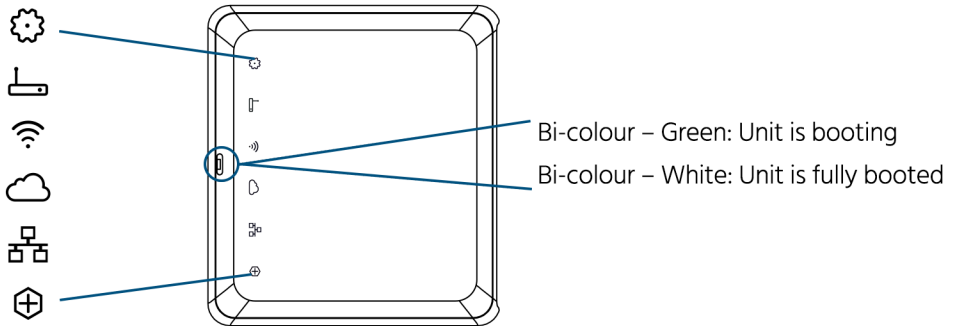
Red – No IP Connection

Red – No Internet

Red – No Cloud

Red – Zigbee/Thread/BLE Device Fault

Orange – Permit Join Window Open



6.3 | WiFi

An internal WiFi antenna that supports antenna diversity. Supported protocols are: 802.11b/g/n with WPS

6.4 | Ethernet

Supports 10BASE-T (IEEE802.3i) and 100BASE-TX (IEEE802.3u) ethernet protocols.

6.5 | Real-Time Clock

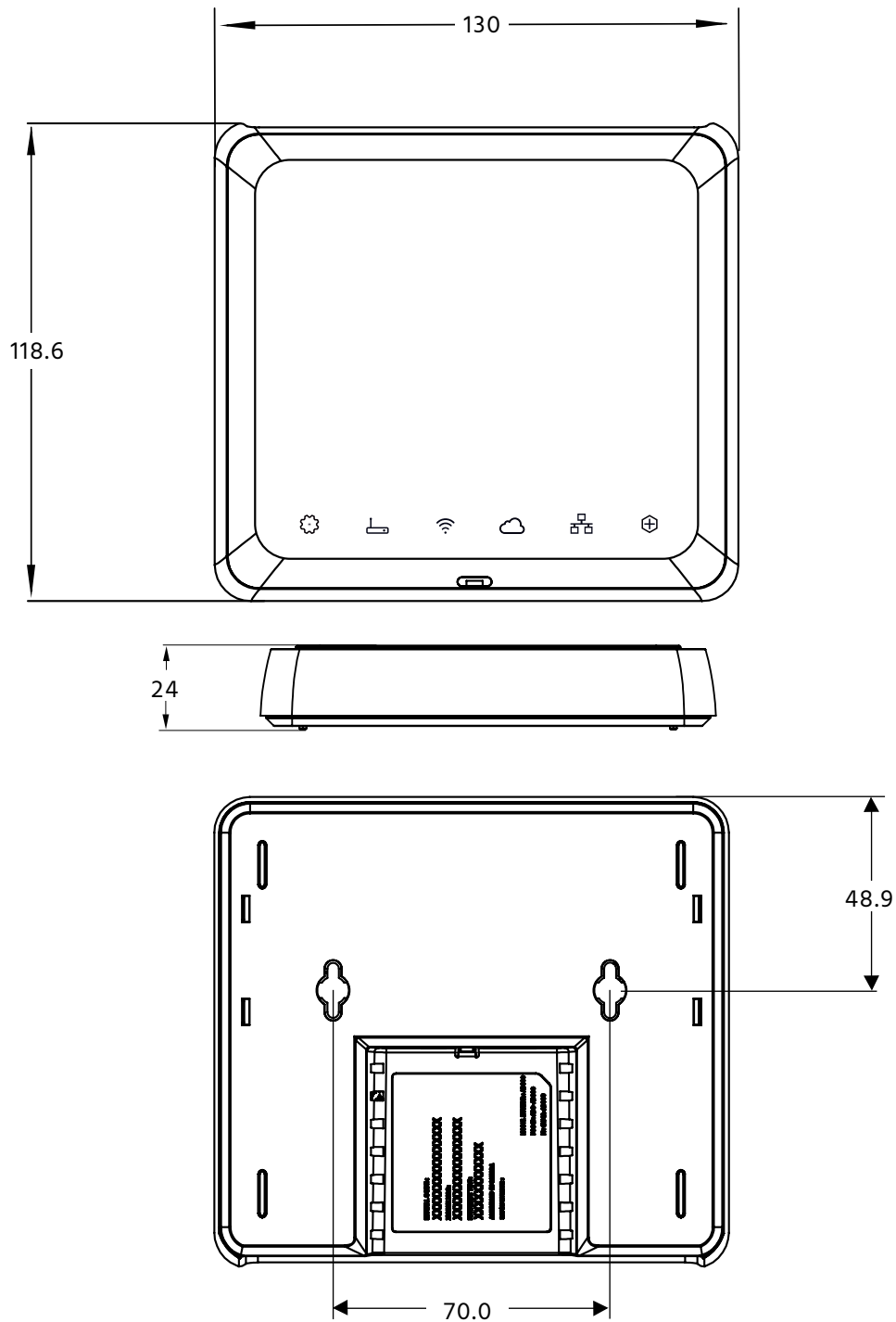
There is an on-board 32kHz Lithium CR2032 battery backup.

6.6 | USB 2.0

The-board contains one USB2.0 Type A Jack.

7. Mechanical Specifications

All dimensions in mm.



Note: The colour of the housing and the icons on top can be customized for a minor fee. Full enclosure customization is also possible – contact MMB for details.

8. Regulatory Approvals

8.1 | Federal Communications Commission (FCC - US)

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does not cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: (1) re-orient or re-locate the receiving antenna. (2) Increase the separation between the equipment and receiver. (3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. (4) Consult the dealer or an experienced radio/TV technician for help.

Federal Communications Commission (FCC-US): The GWY20 complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. To comply with FCC RF Exposure requirements, users of this device must ensure that the device be installed and/or configured to operate with a separation distance of 20cm or more from all persons. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

8.2 | Industry Canada (IC)

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

8.3 | RoHS Compliance

This device (GWY20) does not contain any substances in excess of the maximum concentration allowed by Directive 2002/95/EC.

9. Revision History

Revision	Date	Comments
1.0	2019/08/23	Rebranded material
0.1	2018/10/10	Initial version

10. Ordering Information

SKU	RAM	Flash Memory	Ordering Information
GWY20-2-8-N-xxx	256MB (2Gb)	1GB (8Gb)	Multiprotocol Gateway
GWY20-4-8-N-xxx	512MB (4Gb)	1GB (8Gb)	Multiprotocol Gateway

The above table provides the HW SKU which forms the first part of the complete part number.

The complete part number requires a three digit programming code (xxx)

The MMB Networks Multiprotocol Gateway ships with the required power adapter included.

Contact your local MMB sales representative to determine the correct programming code for your application.



416.636.3145
info@mmbnetworks.com
www.mmbnetworks.com
25 Adelaide Street East, Suite 400
Toronto, ON, M5C 3A1, Canada

Copyright © 2019 MMB Research Inc. All rights reserved. The information in this document is subject to change without notice. This document is believed to be accurate and reliable, but the statements contained herein are presented without expressed or implied warranty. MMB Networks is a division of MMB Research Inc. MMB Networks is a division of MMB Research Inc RapidSE, RapidHA, and RapidConnect are trademarks of MMB Research Inc. All other trademarks are the property of their respective holders.