



CG9102-multiWireles User Manual

Document Revision: 1.02
Document Date: 30 October 2014





© 2014 by BiPOM Electronics, Inc. All rights reserved.

CG9102-multiWireles User Manual. No part of this work may be reproduced in any manner without written permission of BiPOM Electronics, Inc.

All trademarked names in this manual are the property of respective owners.

WARRANTY:

BiPOM Electronics warrants CG9102-multiWireles for a period of 3 years. If the board becomes defective during this period, BiPOM will at its option, replace or repair the board. This warranty is voided if the product is subjected to physical abuse or operated outside stated electrical limits. BiPOM Electronics will not be responsible for damage to any external devices connected to CG9102-multiWireles. BiPOM Electronics disclaims all warranties express or implied warranties of merchantability and fitness for a particular purpose. In no event shall BiPOM Electronics be liable for any indirect, special, incidental or consequential damages in connection with or arising from the use of this product. BiPOM Electronics' liability is limited to the purchase price of this product.



Overview



CloudGate is an Intelligent M2M gateway and wireless Linux computer from Option®. CloudGate provides cell modem, LAN to WWAN routing and GPS functionality in a single basic unit for remote monitoring and control applications.



On top of the basic functionality, CloudGate can be tailored to meet specific industrial requirements by adding additional software and peripheral boards. CG9102-multiWireles is one such peripheral board for CloudGate.

CG9102-multiWireles contains 2 wireless modules: XBP24-AUI-001 from Digi International®, and TiWi-BLE from LSR®, which bring Bluetooth and XBee features to CloudGate. CG9102-multiWireles peripheral board adds ZigBee®, Bluetooth® Low Energy and Wi-Fi capabilities to CloudGate. The combination of MultiWireless and CloudGate offers unmatched wireless gateway capability to battery operated and even energy harvesting sensor networks. CloudGate MultiWireless is fully backed by a 3-year warranty, technical support and application assistance from BiPOM.

XBP24-AUI-001 module is an embedded solution, providing wireless end-point connectivity to devices. These modules use the IEEE 802.15.4 networking protocol for fast point-to-multipoint or peer-to-peer networking. They are designed for high-throughput applications requiring low latency and predictable communication timing.

The TiWi-BLE module is a high performance 2.4 GHz IEEE 802.11 b/g/n, Bluetooth 2.1+EDR, and Bluetooth Low Energy (BLE) 4.0.

CG9102-multiWireles also contains a Real Time Clock IC MCP79410-I/MS.



Specifications

MultiWireless Features:

- LS Research TiWi-BLE Module for Wi-Fi and Bluetooth®
- XBee™ module socket
- XBee™ or XBee-PRO™ options
- Protocols: 802.11 b/g/n, Bluetooth
- Temperature Range: -30° to 70°Celsius
- Two Reverse SMA (male) connectors for antennas
- Use with stub antenna or extender cable
- Bluetooth® 2.1+EDR
- Supports Bluetooth Smart and Bluetooth Classic
- Powers from CloudGate
- Low power consumption: Under 100mA
- FCC Certified

XBP24-AUI-001 features:

- 802.15.4/Multipoint network topologies
- 2.4 GHz for worldwide deployment
- 900 MHz for long-range deployment
- Fully interoperable with other Digi Drop-in Networking products
- Low-power sleep modes
- Industrial temperature rating (-40° C to 85° C)
- Bluetooth Advanced Audio Interfaces

TiWi-BLE features:

- IEEE 802.11b,g,n,d,e,i compliant
- Typical WLAN Transmit Power:
 - 20.0dBm, 11 Mbps, CCK (b)
 - 14.5dBm, 54 Mbps, OFDM (g)
 - 12.5dBm, 65 Mbps, OFDM (n)
- Typical WLAN Sensitivity:
 - -89dBm, 8% PER, 11 Mbps
 - -76dBm, 10% PER, 54 Mbps
 - -73dBm, 10% PER, 65 Mbps
- Bluetooth® 2.1+EDR, Power Class 1.5
- Full support for BLE 4.0 and ANT
- Integrated band-pass filter
- Worldwide acceptance: FCC (USA), IC (Canada), and CE (Europe)
- Compact design based on Texas Instruments WL1271L Transceiver
- Seamless integration with TI OMAP™ application processors
- SDIO Host data path interfaces
- Bluetooth Advanced Audio Interfaces
- Low power operation



Target Applications

- Oil and Gas Monitoring
- Irrigation Generator Set Monitoring
- Energy Monitoring
- Utility Meter Remote Monitoring
- Factory Automation
- Vibration Monitoring
- Sensor Networks
- Medical Devices
- Asset Tracking

Ordering Information

- **CG9102-multiWireless-NM** No modules, XBee™ socket
- **CG9102-multiWireless-ZB** 2.4 GHz XBee™ module installed
- **CG9102-multiWireless-ZBPRO** 2.4 GHz XBee-PRO™ module installed
- **CG9102-multiWireless-BT** Bluetooth module installed
- **CG9102-multiWireless-BT-ZB** Bluetooth and 2.4GHz XBee™ modules installed
- **CG9102-multiWireless-BT-ZBPRO** Bluetooth and XBee-PRO™ modules installed

Board layout

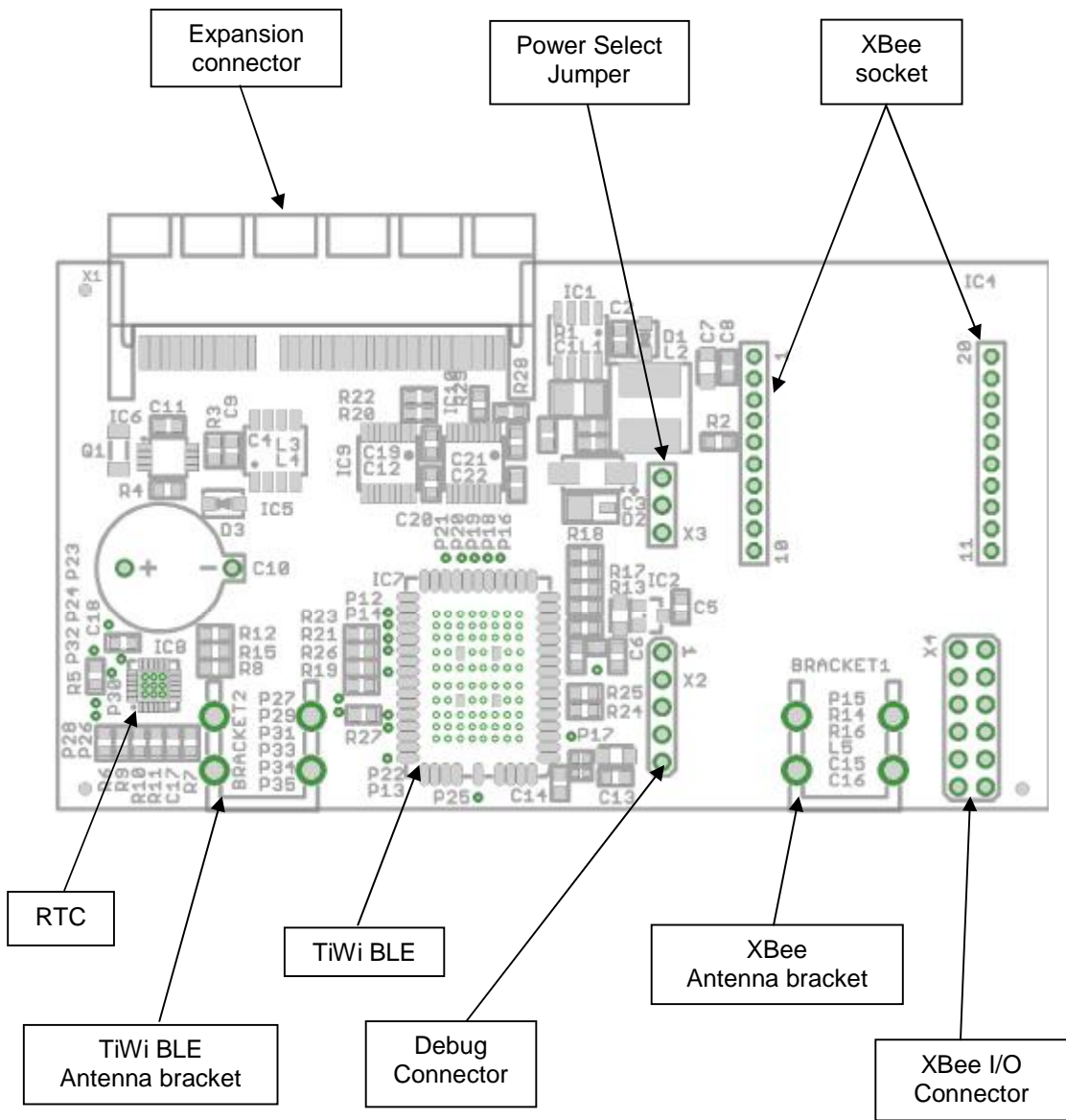


Figure 1

Power Select Jumper

CG9102-multiWireles can be powered either from its own on-board power supply, or from CloudGate 3.4V.

Figure 2 shows how Jumper X3 is used to switch between these two options:

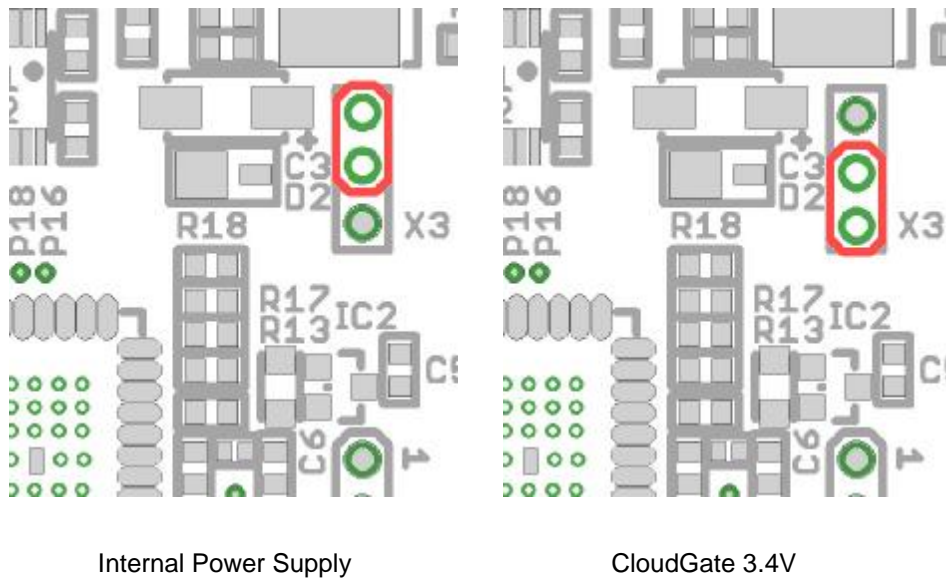


Figure 2

XBee Module I/O Connector

The XBee®/XBee-PRO® RF Modules support ADC (Analog-to-digital conversion) and digital I/O lines. These lines are wired to X2, as it shown at Table 1.

Circuit	Pin #	Circuit	Pin #
IO5	12	VREF	11
IO4	10	SLEEP	9
IO3	8	PWM1	7
IO2	6	PWM0	5
IO1	4	D08	3
IO0	2	GND	1

Table 1



Debug connector

The pinout of Debug connector for TiWi-BLE Module:

Circuit	Pin
1.8V	1
BT_F4	2
GND	3
WL_TX	4
WL_RX	5

Table 2

RTC

Real Time Clock IC (RTC) is provided on the board to generate Slow Clock signal, required for TiWi-BLE module operation. RTC is also connected to the system through SYS_SCL and SYS_SDA lines so it can be used as a Real Time Clock for CloudGate as well.