

# **CB-1**

## **Peripheral Board**

### **Technical Manual**

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#### WARRANTY:

BiPOM Electronics warrants CB-1 for a period of 1 year . 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 CB-1. BiPOM Electronics disclaims all the expressed warranties or the 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.

# 1. Overview

CB-1 is a wireless communication expanding peripheral board for the MINI-MAX series of micro-controller systems. CB-1 provides InfraRED, Zigbee, BlueTooth communications for a host microcontroller.

CB-1 board can be used in different configurations:

- CB-1 ( Base module, does not include any modules or IrDA support )
- CB-1-MZB (ZigBee)
- CB-1-PBT (Promi ESD-02 BlueTooth, [www.initium.co.kr](http://www.initium.co.kr) )
- CB-1-BBT (BR-SC40A BlueTooth, [www.BlueRadios.com](http://www.BlueRadios.com))
- CB-1-IRDA (Infra Red interface)
- CB-1-MZB-IRDA (ZigBee and IRDA)
- CB-1-PBT-IRDA (Promi ESD-02 BlueTooth and IRDA)
- CB-1-BBT-IRDA (BR-SC40A BlueTooth and IRDA)
- CB-1-MZBPRO (Extended Range ZigBee)

CB-1 is powered from 5 Volts DC of external power source through the 20-pin expansion connector.

ARM7, 8051/52, BASCOM51 and SDCC (Small Device C Compiler) development systems provide examples for CB-1.

Please download any of these development systems from:  
<http://www.bipom.com/software.php>

# 2. Specifications

CB-1 board has the following configuration:

- Slave mode Synchronous Serial Interface (SPI) for host communications.  
SPI clock speed up to 15Mbit/s
- 64 bytes of transmit and receive FIFO's ( SC16IS762 Dual UART IC )
- MCP2140 Controller and GP2W0004YP0F Transceiver are used to provide IrDA communications (9600 baud, up to the one meter range)
- An interface and a socket for XB24-ACI-001/XBP24-ACI-001 ZigBee module
- An interface and a socket for PROMI-ESD02 BlueTooth module
- An interface and a socket for BR-SC40A BlueRadios module
- 20-pin Expansion connector for a host micro-controller board  
(<http://www.bipom.com/boards.php>)
- 6-pin PWM and analog output connector
- One or two CB-1 boards can be connected to a host micro-controller board
- Single operating voltage: 5 VDC, 60mA typical (180mA maximum) current consumption
- Onboard 3.3 VDC regulator powered from an external 5 VDC through the expansion connector
- Dimensions are 2.35 X 2.40 inches (5.97 X 6.10 centimeters).
- Mounting holes of 0.125 inches (3.5 millimeters) are on four corners.
- 0° - 70° C operating, -40° - +85° C storage temperature range.

### 3. Functional Blocks

Figure 1 shows the block diagram of the CB-1 peripheral board

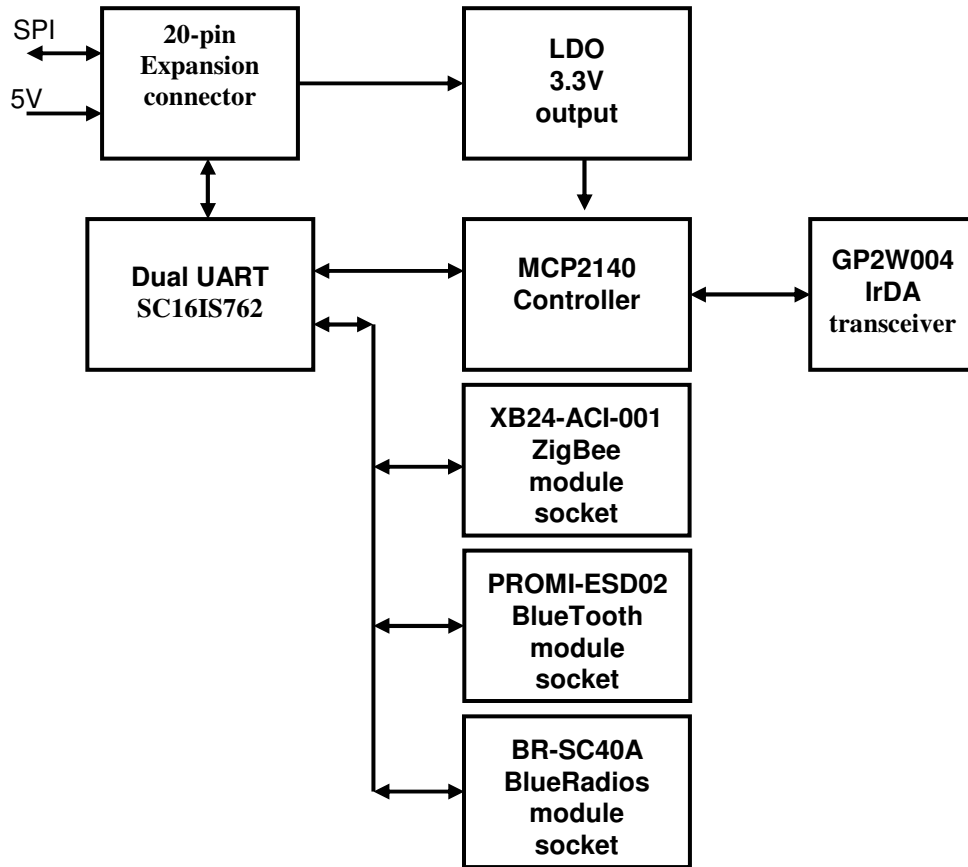


Figure 1

#### Expansion connector

Control pins and 5-Volt power supply pins are available on the 20-pin connector (X1) for interfacing to micro-controller boards. Table 1 shows the pin assignments for the connector.

Table 1. **Connector X1**

Signal	Pin	Pin	Signal
Unused	20	19	Unused
<b>INT51</b> (Interrupt pin for 8051 family of MINI-MAX boards)	18	17	<b>MISO</b>
<b>SCK</b>	16	15	<b>CS1</b>
<b>CS2</b>	14	13	<b>MOSI</b>
<b>INTAVR</b> (Interrupt pin for AVR family of MINI-MAX boards)	12	11	Unused
Unused	10	9	Unused
<b>INTARM</b> (Interrupt pin for ARM family of MINI-MAX boards)	8	7	Unused
Unused	6	5	Unused
Unused	4	3	<b>GND</b>
<b>VCC (+5V)</b>	2	1	Unused

## Output connector

PWM and analog signals are available on the 6-pin connector (J1). Table 2 shows the pin assignments for the connector.

Table 2. **Connector J1**

Signal	Pin	Pin	Signal
PWM0	6	5	PWM1
GND	4	3	GND
ANO0	2	1	ANO1

## Jumpers

Table 3 shows the jumpers assignments

Table 3. **Jumpers JP1 ... JP10**

Name	Signal	If removed	If installed
JP1	A0/ZigBee Module	A0 unconnected	A0 goes to IC4 pin 17 /GPIO0
JP9	A1/ZigBee Module	A1 unconnected	A1 goes to IC4 pin 18 /GPIO1
JP10	Vref/ZigBee Module	Vref unconnected	Vref goes to VDD / 3.3V
JP2	PIO4/BlueRadios Mod.	Normal operation	PIO4 has 1K pull up
JP3	CS IC4 /UART	CS IC4 unconnected	CS IC4 connected to GND
JP4	CS IC4 /UART	CS IC4 unconnected	CS IC4 goes to CS1 /X1:15
JP5	CS IC4 /UART	CS IC4 unconnected	CS IC4 goes to CS2 /X1:14
JP6	INT51	X1 pin 18 unconnected	IRQ output goes to X1 pin 18
JP7	INTAVR	X1 pin 12 unconnected	IRQ output goes to X1 pin 12
JP8	INTARM	X1 pin 8 unconnected	IRQ output goes to X1 pin 8

## Power Supply

External power supply should be able to supply 5 Volts DC at 180mA current

**WARNING:** Correct polarity should be observed when applying external DC supply to Expansion connector.

## 4. Application Notes

CB-1 board can either be stacked on top of MINI-MAX single board computer using stand-offs or connected in a chain configuration using flat ribbon cable (Part #: EXPCABLE-6). Figure 2 shows how CB-1 can be connected to a microcontroller board in a stacked fashion. Figure 3 shows the chain connection. Two CB-1 boards can be stacked on top of a microcontroller board.

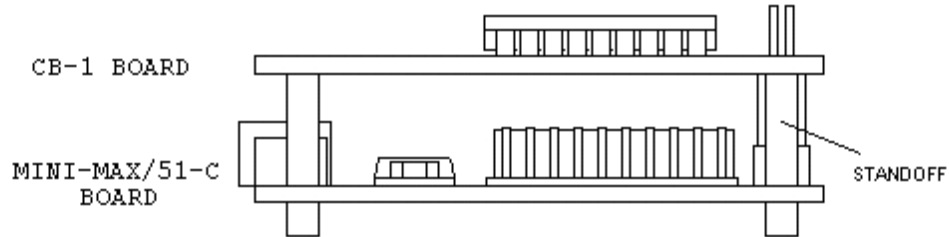


Figure 2

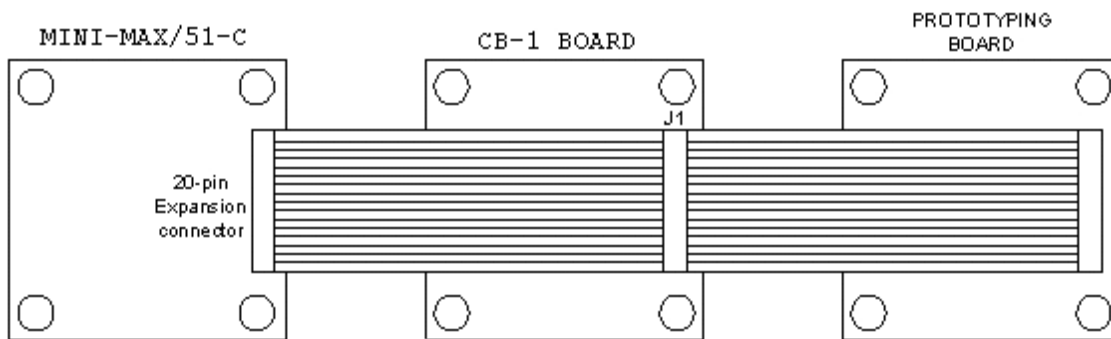
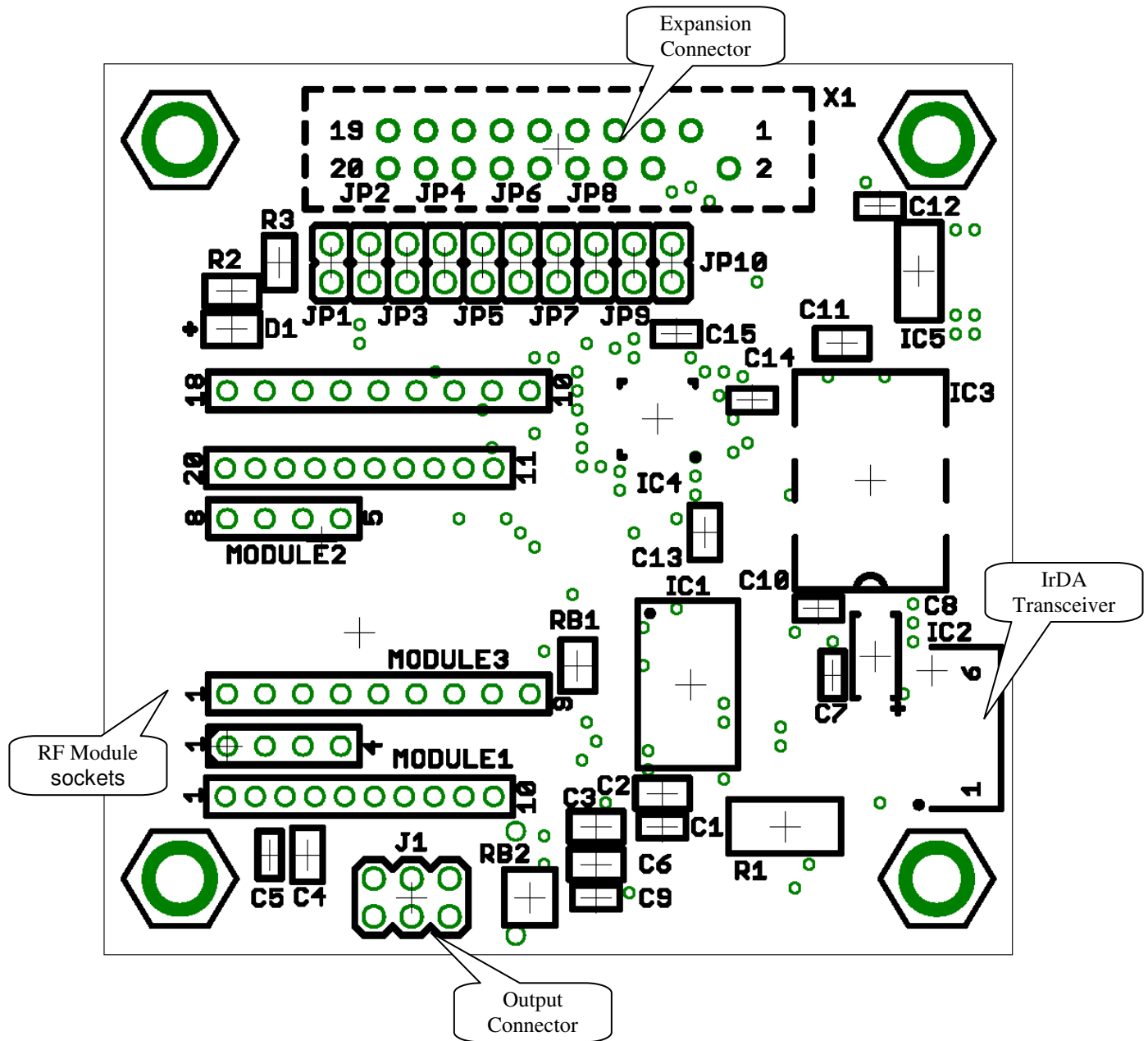


Figure 3

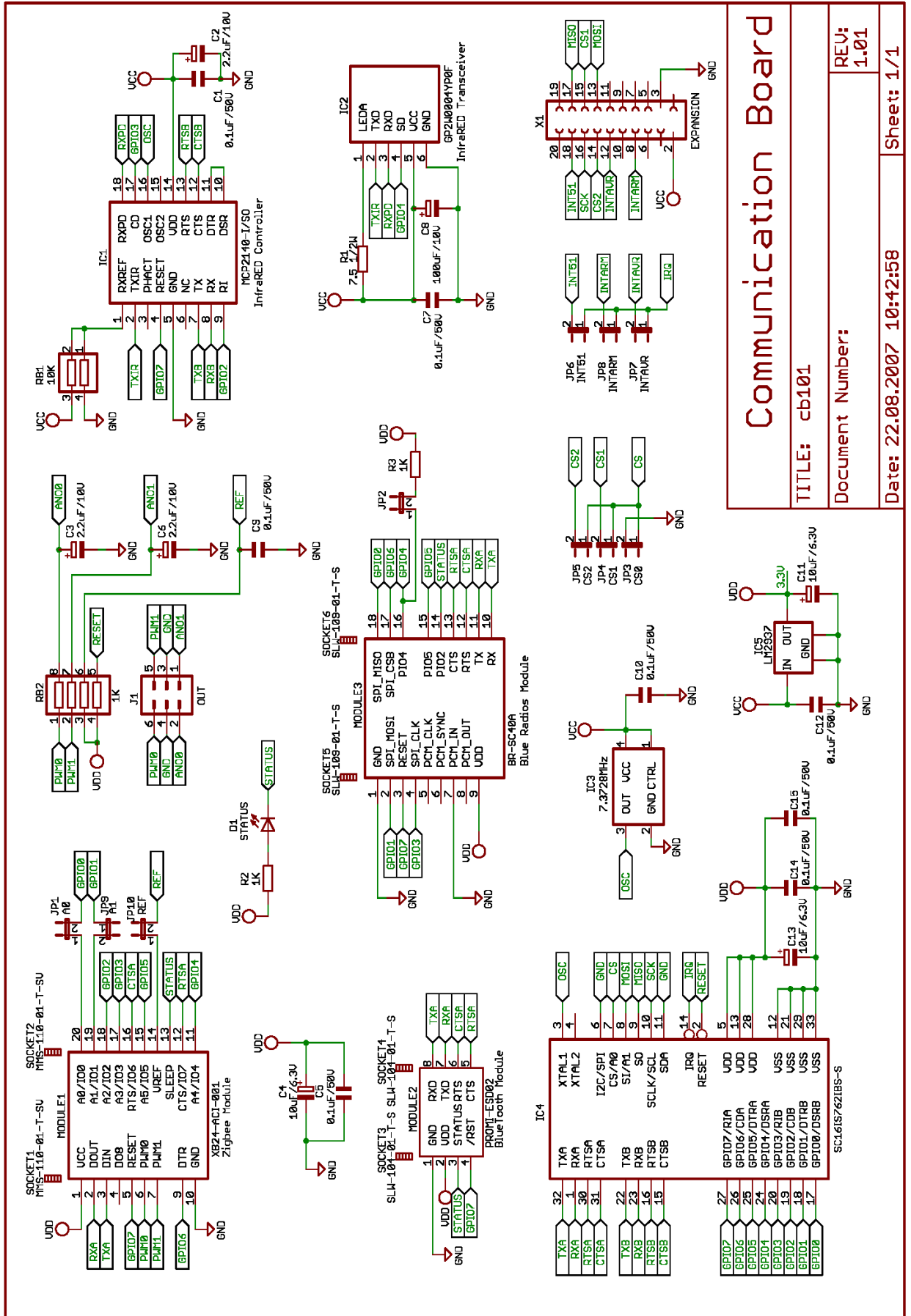
More details concerning BiPOM Peripheral boards are available from the link below:  
[http://www.bipom.com/periph\\_boards.php](http://www.bipom.com/periph_boards.php)

## 5. Board Layout

Layout of CB-1 board is shown below:



# 6. Schematics



**Communication Board**

TITLE: cb101  
 Document Number:  
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 Date: 22.08.2007 10:42:58  
 Sheet: 1/1