CB-1

Peripheral Board

Technical Manual

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BiPOM Electronics

WARRANTY:

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)
- CB-1-BBT (BR-SC40A BlueTooth, 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

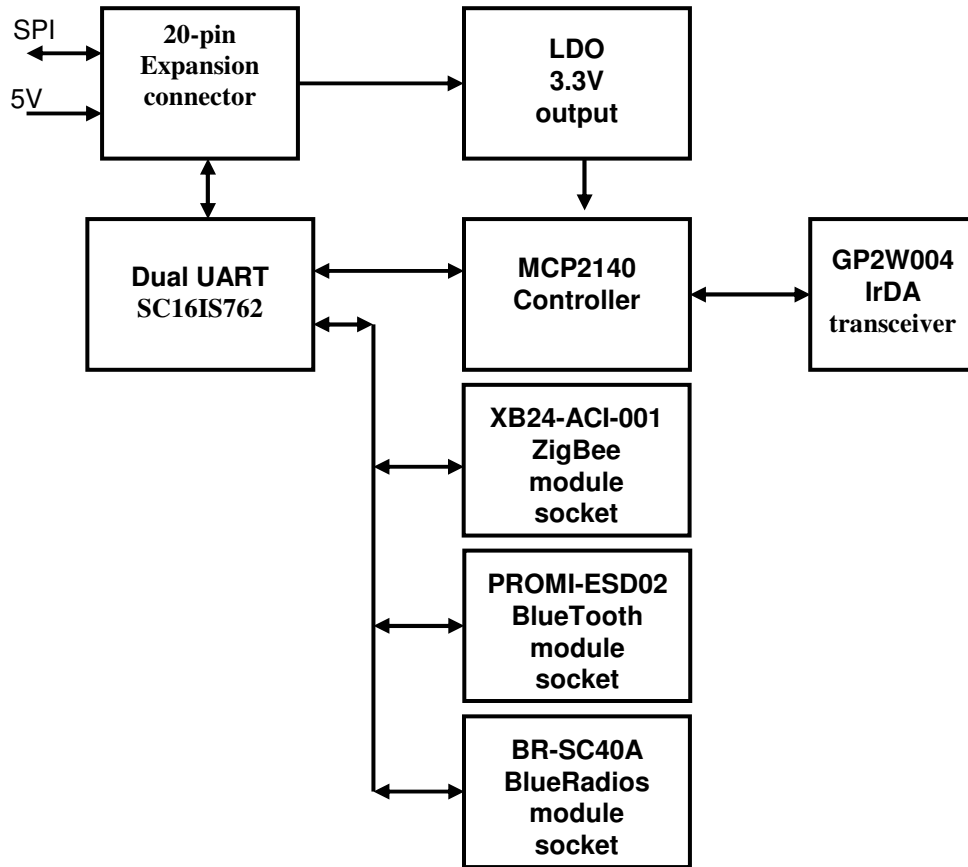Figure 1 shows the block diagram of the CB-1 peripheral board

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
INT51 (Interrupt pin for 8051 family of MINI-MAX boards)	18	17	**MISO**
SCK	16	15	**CS1**
CS2	14	13	**MOSI**
INTAVR (Interrupt pin for AVR family of MINI-MAX boards)	12	11	Unused
Unused	10	9	Unused
INTARM (Interrupt pin for ARM family of MINI-MAX boards)	8	7	Unused
Unused	6	5	Unused
Unused	4	3	**GND**
VCC (+5V)	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.
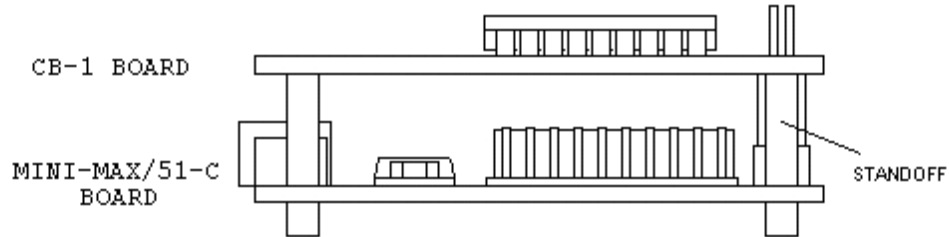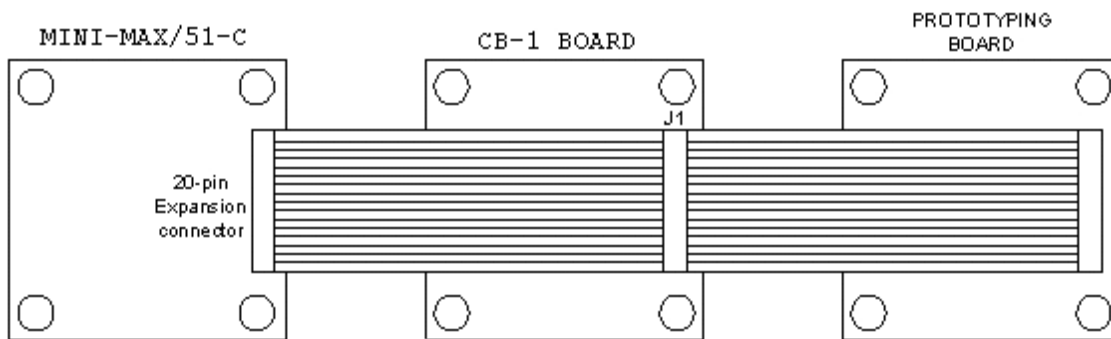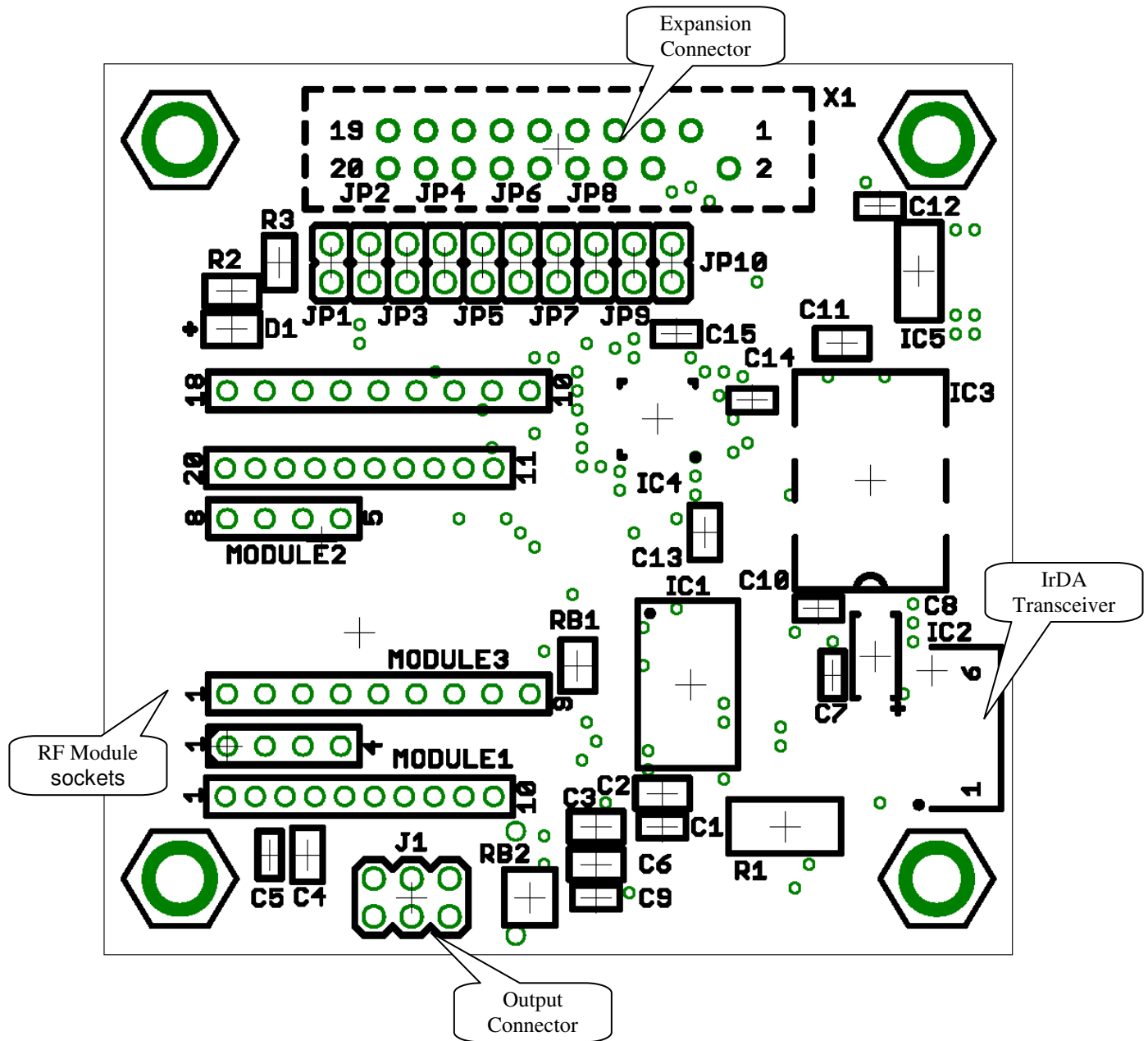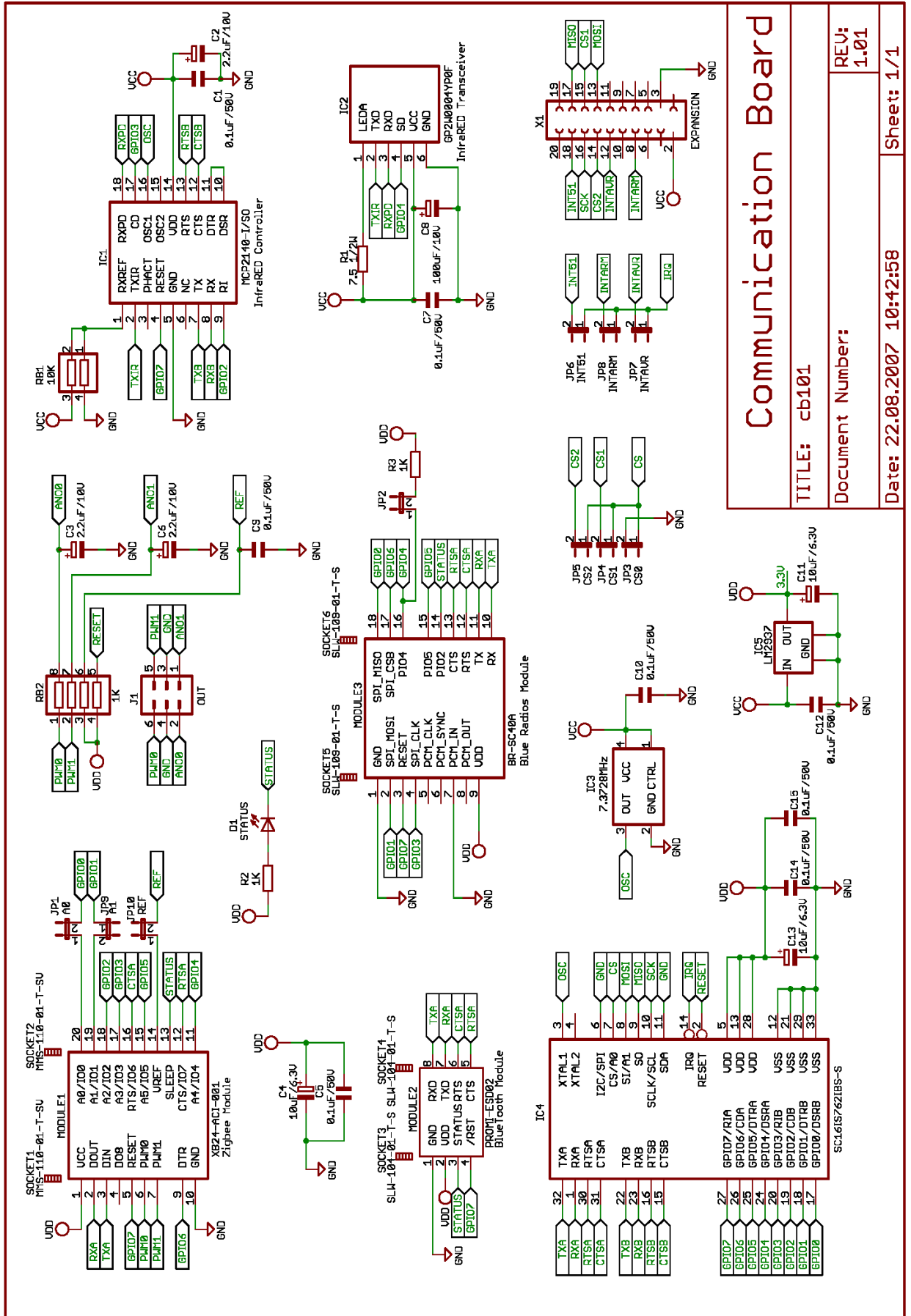

Figure 2

Figure 3

More details concernig BiPOM Peripheral boards are available from the link below:
http://www.bipom.com/periph_boards.php

5. Board Layout

Layout of CB-1 board is shown below:

6. Schematics

Communication Board

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