How to get started With

CB-1-PBT Peripheral Board Promi ESD-02 Bluetooth Module



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1. Introduction.

The document describes how to establish Bluetooth connection between a CB-1 peripheral board with a pre-installed Promi ESD-02 Bluetooth module and a standard Bluetooth serial dongle connected to a PC's USB port.

The complete hardware test setup consists of the following parts:

- MINI-MAX/ARM-C board;
- 6VDC power supply;
- CB-1-PBT peripheral board with Promi ESD-02 Bluetooth module;
- PC with Bluetooth serial dongle.

ARM7 development system from BiPOM Electronics provides the complete firmware test setup.

2. USB serial dongle setup.2.1. Connect a Bluetooth serial dongle to a PC's USB port and install all necessary drivers according to instructions provided by a manufacturer.

2.2. To get started the dongle should provide 1 incoming COM port at the 1st stage.

Please click either Bluetooth icon on system tray or Bluetooth devices under Control Panel.



and check properties

Bluetooth Devices	<
Devices Options COM Ports Hardware	
This computer is using the COM (serial) ports listed below. To determine whether you need a COM port, read the documentation that came with your Bluetooth device.	
Port Direction Name	
COM11 Incoming	
A <u>d</u> d	
Learn more about <u>Bluetooth COM ports</u> .	

Also, please check if external Bluetooth devices can find a PC.

luetoot	n Device	5		
Devices	Options	COM Ports	Hardware	•
Disco	very			
To al follov	low Blueto ving check	oth devices t . box.	o find this o	computer, select the
VI	urn discov	ery on		
⚠	To protec want a Bli	t your privacy uetooth devic), turn on di e to find th	scovery only when you is computer.
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🔽 Al	llow Blueta	oth devices t	o <u>c</u> onnect	to this computer
🔽 Al	lert me who	en a new Blu	etooth devi	ce <u>w</u> ants to connect
Sho	w the Blue	tooth icon in	the <u>n</u> otifica	tion area
Learn m	nore about	Bluetooth set	ttings.	Restore Defaults
		ОК		Cancel Apply

2.2. Check if the incoming COM port is visible under Device Manager window.



3. Software setup.3.1. Download and install ARM Development System from http://www.bipom.com/armdev.php
3.2. Download and install GNU ARM C compiler from <u>http://www.bipom.com/devsys/gnuarm7gcc_4.1.1.exe</u> Please install the compiler to its default location "C:\Program Files\GNUARM".

4. Hardware setup.

4.1. Install Promi ESD-02 module, JP4 & JP8 jumpers to CB-1-PRB board according to the picture.



- 4.2. Connect a NULL-modem cable between MINI-MAX /ARM-C and a PC's COM port.
- 4.3. Install a CB-1-PRB peripheral board on top of Mini-Max/ARM-C board.
- 4.4. Power the setup

5. Firmware Setup.

To get started with the setup it is necessary to download the firmware to Mini-Max/ARM-C board.

5.1. Run Micro-IDE and open C:\bipom\devtools\GCC\LPC_2000\Examples\CB-1\bluetooth\promi\cb1promi.prj using Project->Open Project menu option. Press "Build-All" icon button

Compiling C:\bipom\devtools\GCC\LPC_2000\Examples\CB-1\bluetooth\promi\cb1promi.c... Linking cb1promi.out ... GNU ld version 2.17 Generating 'cb1promi.hex'...

This project builds cb1promi.hex file

5.2 Check Loader options

Options	
Editor Terminal Loader	
Communication Baud Rate [115200]]	
OK Cancel Apply H	lelp

Check Terminal options	
ons	
or Terminal Loader	
Communication	
Baud Rate Parity Com Port	
115200 I R None COMI C COM	
	DM7
Echo Stop Bits	
Logging	
🗖 Log to file	
Log file name: C:\bipom\src\mgm_firmware\ARM7\log.txt	Browse
Tent Calastin	
Sample	
AaBbCcXxYyZz	
OK Cancel Apply	Help
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5.5 Check if download is completed



5.6 Press "Connect" icon button and change "Set Mode" icon button to GREEN. The example should start sending messages to Micro-IDE terminal.



5.7. Check if D1 LED on CB-1 board is switched ON.

6. Connection from the setup to PC.

6.1 Run HyperTerminal under Start->Accessories->Communications-> HyperTerminal and create new connection



6.2 Press "Call" icon button to connect HyperTerminal to COM11.



6.3 Switch to Micro-IDE terminal and check if a CB-1 board replies. Just type AT and press <ENTER>.

Terminal —

BIPOM MINI-MAX/ARM-C CB-1 BLUETOOTH PROMI-ESD Detecting moduleOK BaudRate is 9600 Please send AT commands
->AT OK

6.4. AT+BTNAME="name" command can be used to assign user friendly device name.

AT+BTNAME="CB-1 board" OK

6.5 AT+BTKEY="key" command can be used to change a passkey.

AT+BTKEY="1" OK

6.6 AT+BTMODE, MODE command can be used to change current mode.

AT+BTMODE,0

ΟΚ

MODE 0 is the default.

MODE 1, a board will try to make connection to most recently connected Bluetooth device. MODE 2, a board will wait connection from most recently connected Bluetooth device MODE 3, a board does INQUIRY SCAN and PAGE SCAN alternately.

6.7 To obtain information about the internal status AT+BTINFO? command can be used.

AT+BTINFO?

000B53132B46,CB-1 board,MODE0,STANDBY,0,0 OK

The response is comprised of BD_ADDR, Device Name, Operating Mode, Operating Status, Authentication and Encryption flags. To make connection to other Bluetooth devices, the operating status should be 'STANDBY'. A 'PENDING' operating status indicates the unit is busy with another operation. In this case, cancel the ongoing operation by entering the 'AT+BTCANCEL' command.

6.8. AT+BTINQ? can be used to search (INQUIRY) other Bluetooth devices nearby.

AT+BTINQ? 000A3A5E10D6,VITALIY,020104 OK

6.9 **000A3A5E10D6** is 48-bit BD_ADDR address of Bluetooth serial dongle. ATD BD_ADDR command can be used to make connection with the given BD_ADDR.

ATD 000A3A5E10D6 OK

As soon as the command is executed the board will request to connect to a PC.

Click the message



Enter a passkey which is defined by AT+BTKEY="key" command

Add Bluetooth Device Wizard	X
Enter the passkey for the Bluetooth device.	B
CB-1 board	
Use the same passkey that you entered on the device.	
Passkey: 1	
You should always use a <u>passkey</u> , unless your device does not support one. We recommend using a passkey that is 8 to 16 digits long. The longer the passkey, the more secure it will be.	
< <u>B</u> ack <u>N</u> ext > Cance	

When the connection is established Micro-IDE terminal will show

CONNECT 000A3A5E10D6

It means the connection is established. D1 LED will get OFF.

6.10. Try to type any messages on Micro-IDE terminal. They will appear on HyperTeminal window.

Try to type any messages on Hyper Terminal window. They will appear on Micro-IDE terminal.



6.11 Type +++ on Micro-IDE terminal to change from ONLINE STATUS to STANDBY STATUS.

6.12 Execute ATH command to release the current Bluetooth connection.



7. Connection from PC to the setup.

7.1. Click either Bluetooth icon on system tray or Bluetooth devices under Control Panel



7.2. Click CB-1 board and press Properties

Bluetooth Devices	×
Devices Options COM Ports Hardware	_
Phones and modems	
Vitaliy Passkey enabled	
All other devices	
CB-1 board Passkey enabled	
Add <u>R</u> emove <u>Properties</u>	
OK Cancel Apply	

7.3. Check Serial port (SPP) "Generic Serial" box and press Apply

CB-1 board Properties	?×
General Services	
This Bluetooth device offers the following services. To use a service, select the check box.	
✓ Serial port (SPP) 'Generic Serial'	
Learn more about <u>Bluetooth services</u> .	
	pply

7.4. 2 COM ports should be visible under COM Ports tab

Bluetooth Devices	×
Devices Options COM Ports Hardware	_
This computer is using the COM (serial) ports listed below. To determine whether you need a COM port, read the documentation that came with your Bluetooth device.	
Port Direction Name	
COM11 Incoming COM13 Outgoing CB-1 board 'Generic Serial'	
Add <u>Remove</u> Learn more about <u>Bluetooth COM ports</u> .	
OK Cancel Apply	

We will use COM13 (outgoing port) to establish connection from PC's side. We use COM11 (incoming port) to establish connection from board's side. In other words, COM11 is a LISTEN port of PC. 7.5 Check if the outgoing COM port is visible under Device Manager window



7.6 The current mode of the CB-1 board should be changed to MODE 3



7.7 Run HyperTerminal under Start->Accessories->Communications->HyperTerminal and create new connection

Connection Description	
New Connection	
Enter a name and choose an icon for the connection:	
Name:	
COM13_OUT_BT	
<u>I</u> con:	_
	×
OK Cance	
Connect To	
🗞 сом13_оит_вт	
Enter details for the phone number that you want to dial:	
Country/region: United States (1)	
Ar <u>e</u> a code: 8	
Phone number:	
Phone number:	

7.8 The connection should be established automatically



D1 LED will get OFF.



7.9 Any message typed on HyperTerminal window would appear on Micro-IDE terminal.

Terminal BIPOM MINI-MAX/ARM-C CB-1 BLUETOOTH PROMI-ESD Detecting module...OK BaudRate is 9600 Please send AT commands ->AT OK AT+BTMODE.3 OK ATZ OK CONNECT 000A3A5E10D6 hello from hyper terminal

7.10 Press "Disconnect" icon button on HyperTerminal toolbar. DISCONNECT message will appear on Micro-IDE terminal. D1 LED will get ON.

8. PromiWin software.

It is possible to configure PROMI ESD-02 module using a special utility called PromiWIN that provides a comfortable GUI.

- 8.1 Download and install http://www.sena.com/download/software/setup_esd_conf-v4.0.exe.
- 8.2 Remove JP1 jumper from Mini-Max/ARM-C board.
- 8.3 Power the setup.
- 8.4 Run Start->initium->Promi-ESD->PromiWin4.0 utility.
- 8.5 Change baudrate to 115200

Application Set	ting 🛛 🔀
* Please se configur	tup serial port for ing Promi-SD.
Serial Port	COM1 -
BaudRate	115200 💌
Parity	None 💌
StopBit	1
ОК	

8.6 If the hardware is present the dialog box will appear showing INFO about CB-1 board Serial port was open: COM 1, 115200, No Parity, One Stopbit

PromiWIN

Device Setting



Connection(in)

Device Hardware Address	000853132846
Current Mode	MODE3
Current Status	Standby
Security	
Security	Don't use
Encryption	Don't use
Uart Setting	
Baud Rate :	115200
StopBit :	One Stopbit
Parity :	No Parity
H/W Flow control :	Use

8.7 All settings can be changed under Device Setting

Serial port was open: C PromiWIN	COM 1, 115200, No Parity, One Stopbit
Information information information information information information information information information information information information	Hard Reset Return Promi-SD to factory default setting. Operation Mode • • MODE0 (Standby status for Bluetooth connection) • • MODE1 (This Promi-SD shall connect to the last connected device only) • • MODE2 (This Promi-SD shall be connected from the last connected device only) • • MODE3 (Allow any Bluetooth devices discover/connect to this Promi-SD) • • You must be in Pending status in MODE3 to be discoverable/connectable. To be in Pending status, please click MODE3 and press "Apply" button. Uart Device Name CB-1 board Baud Rate 115200 • Parity None Security Option AT Command • Authentication • Encryption • ON • H/W Flow Control • Password • OFF
	PromiWIN 🔀 Configuration has been applied OK

Important note. If baudrate of CB-1 board is changed it is necessary to recycle power line to the setup. Baudrate of PromiWin is always fixed (115200). It can't be changed. To avoid any problems it is recommended to set baudrate to 115200.

Extra information on PROMI ESD module can be obtained from http://www.sena.com/

PROMI ESD User Manual:

http://www.sena.com/download/manual/manual promi esd-v2.0.0.pdf

PROMI ESD Data Sheet:

http://www.sena.com/download/datasheet/ds promi esd.pdf