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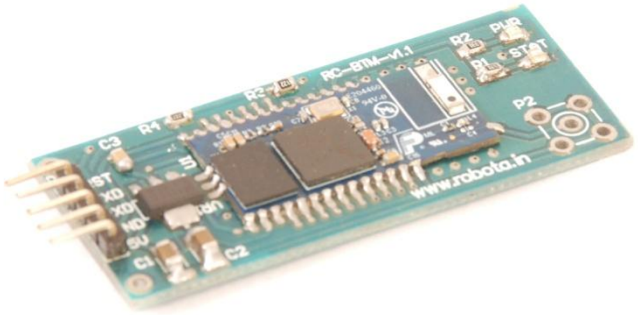
Date: 13-10-2011

Model: BluCOM
Version: 11

BluCOM - Bluetooth Module

-User manual



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Introduction

BluCOM is a compact Bluetooth Module (5V Serial TTL) from Robota Corporation. The module has built-in Voltage regulator and 5Vto 3V3 level converter that can be used to interface with 5V Microcontrollers. The module has only 5 pins (Standard 2.54mm berg strip) VCC, GND, TX, RX and RESET.

The BluCOM is a Drop-in replacement for wired serial connections, transparent usage. You can use it simply for serial port replacement to establish connection between MCU and your embedded project / Robot etc. Any serial stream from 2400 to 115200 bps can be passed seamlessly from your PC/PDA/MOBILE to your target board!

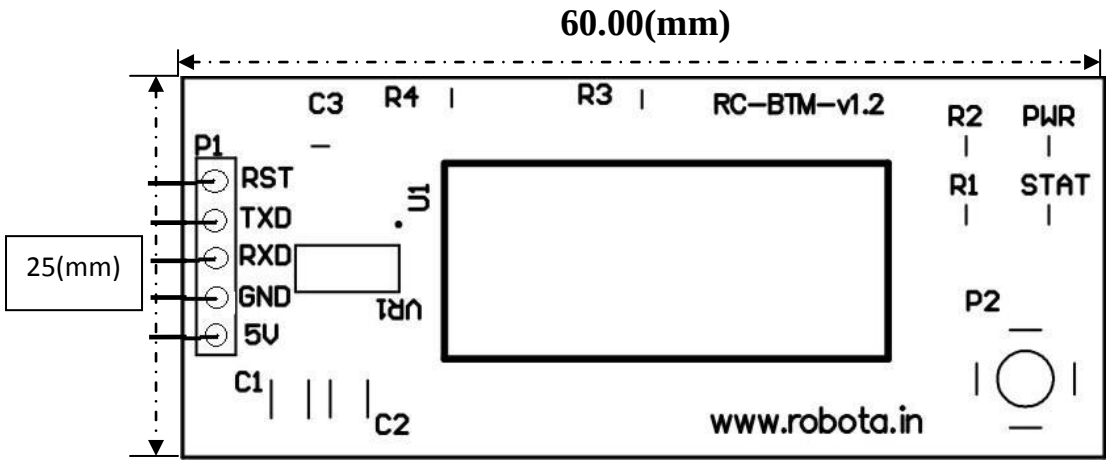
FEATURES

- 5-Pin Standard Bergstrip
- Bluetooth core V 2.0 compliant
- SPP (Serial Port Profile) support
- Support UART interface to host system
- Serial communications @ 9600-115200bps
- Breadboard Compatible
- Onboard Status and Power LED
- Encrypted connection
- Frequency: 2.4~2.524 GHz
- Built-in Chip antenna
- PCB Antenna
- Power Supply: 5V
- Dimension: 60mm x 25mm x 3.2 mm
- Operating Temperature: -40 ~ +70C

Pin Definitions

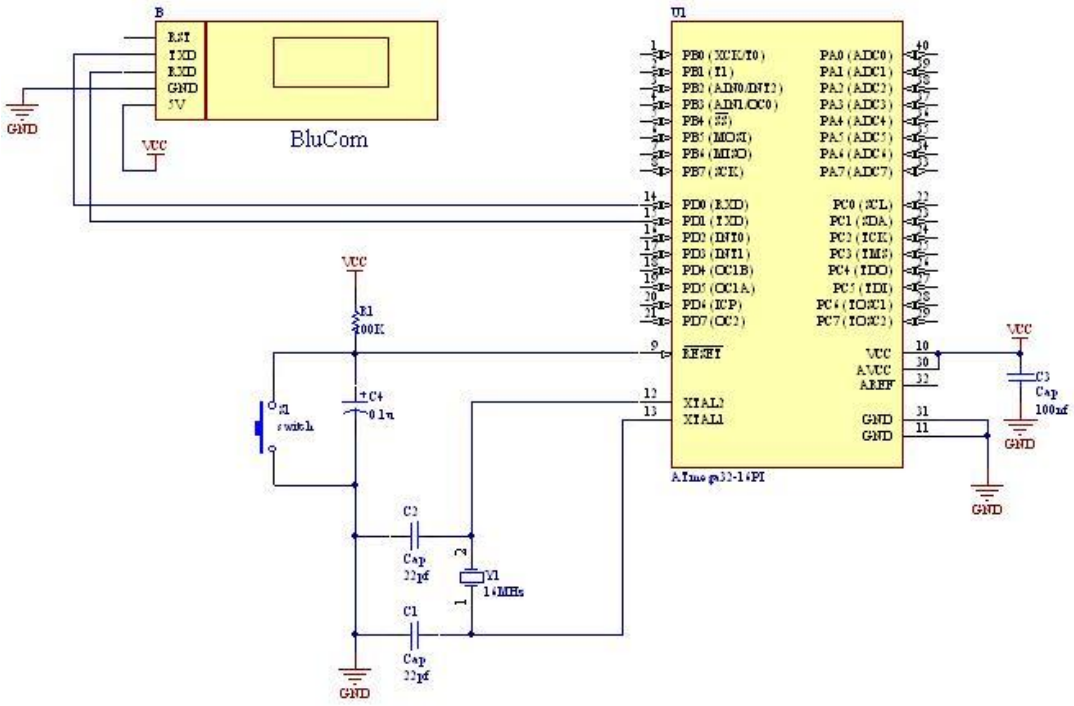
Pin No	Designators	Details	DETAILS
1	RST	Reset	Reset pin
2	RXD	Receive	Receive Pin
3	TXD	Transmit	Transmition Pin.
4	GND	Ground	Ground
5	VCC	5v DC supply	Supply voltage 5V

Dimensions



Interfacing details (Microcontroller Fig. 1)

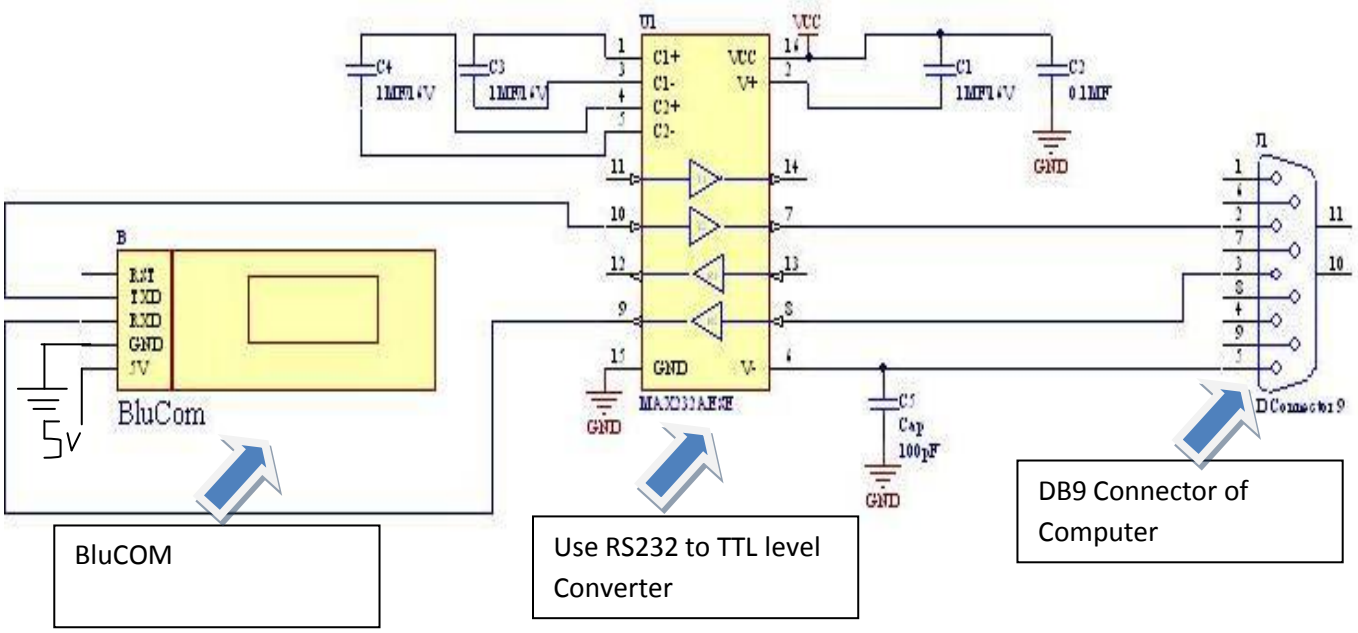
- Below is an example of BluCOM connected to AVR ATmega32.



Note: TXD of BluCOM→RXD of microcontroller

RXD of BluCOM→TXD of microcontroller

- Following is the Connection diagram of BluCOM to Computer's Serial Port DB9 Connector at back of CPU:(Fig.2)



DC Characteristics

Parameter	Condition	Specification			Unit
		Min.	Typical	Maximum	
Supply Voltage	VCC	4.5	5.0	5.5	Volt -V
Power Consumption at 5V		40	50	60	mA.

Configuring BluCOM

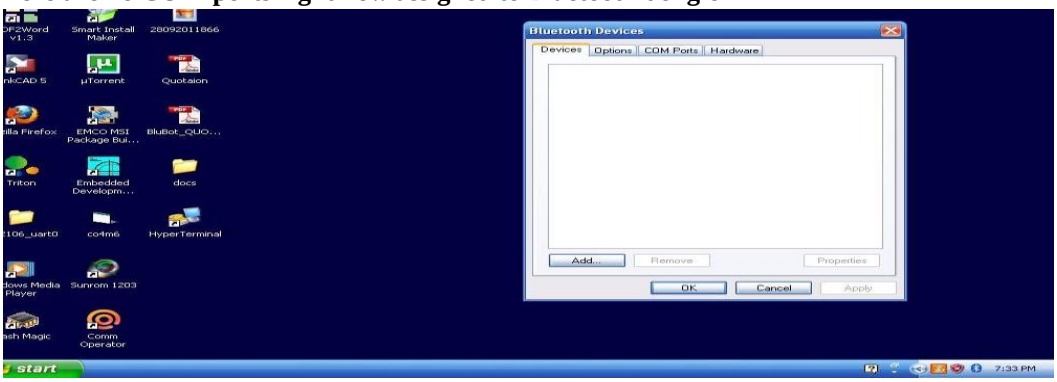
A: BluCOM in Slave mode: BluCOM receives connection from other end like Computer.

1. Connect a Bluetooth dongle to Computer at USB port.

2. In the taskbar click on the Bluetooth icon and open Bluetooth settings.

Click on COM ports tab in setting window

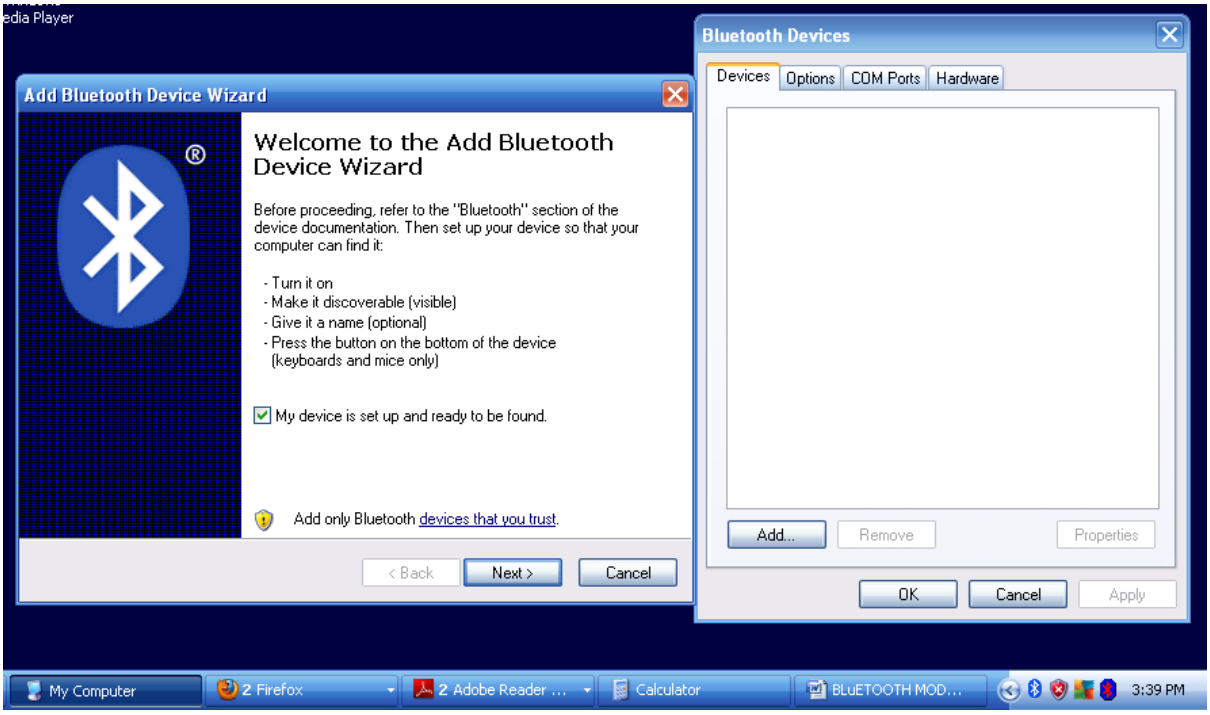
Here are no COM ports right now assigned to Bluetooth dongle



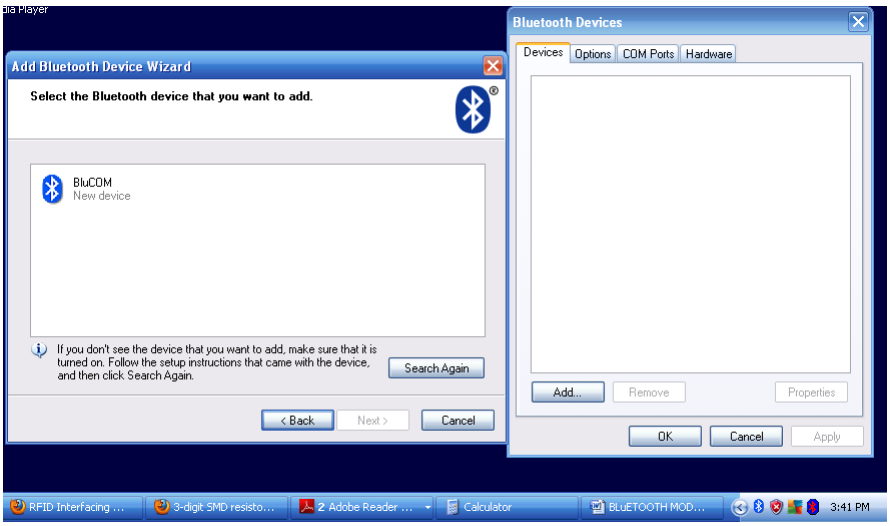
3. Power on the BluCOM, click on Add device in Bluetooth setting on computer

Check my device is turned ON and ready to connect

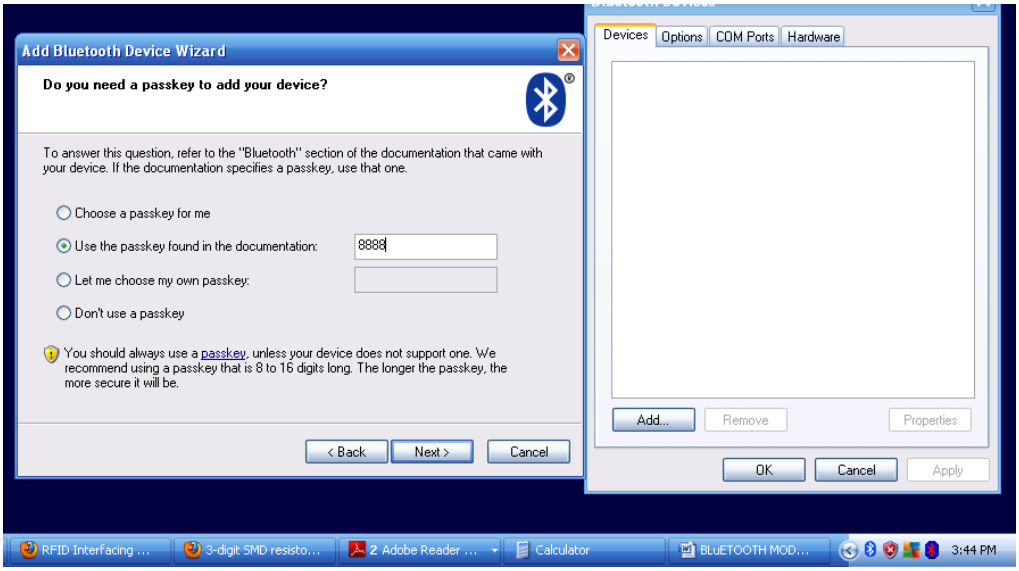
Click next



4. After searching for devices ,next window shows BluCOM as a device found.

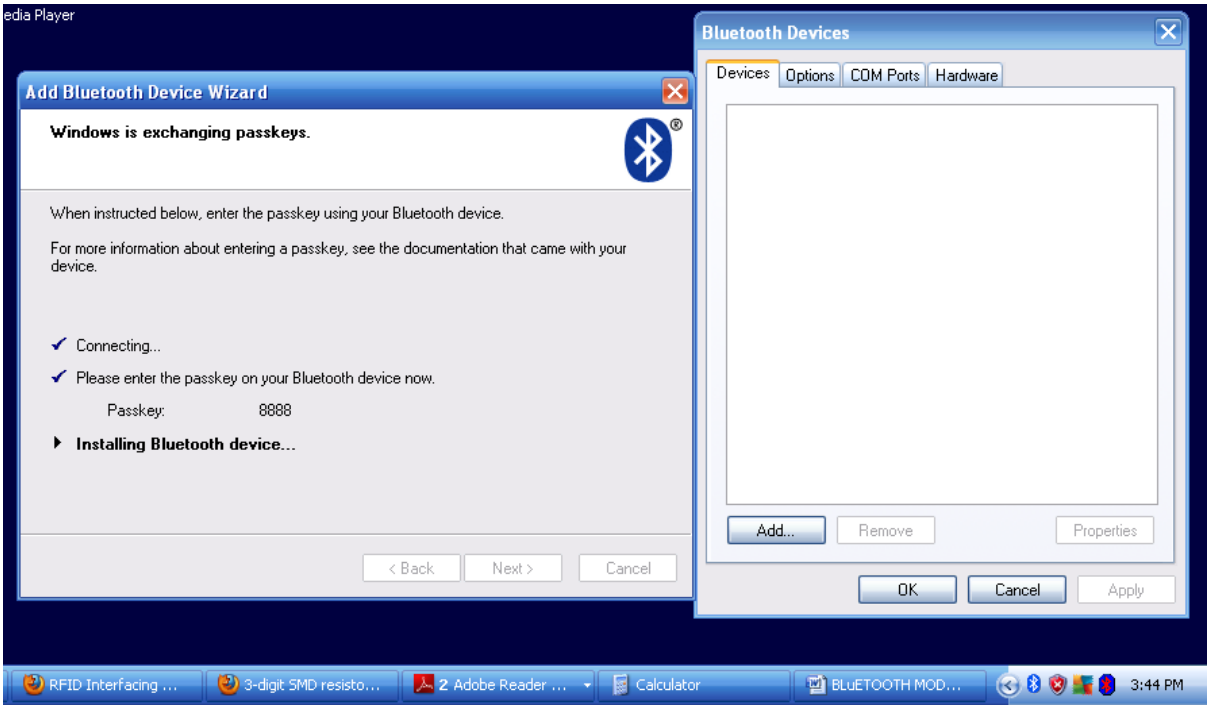


5. Click on the BluCOM and click next, following window will appear

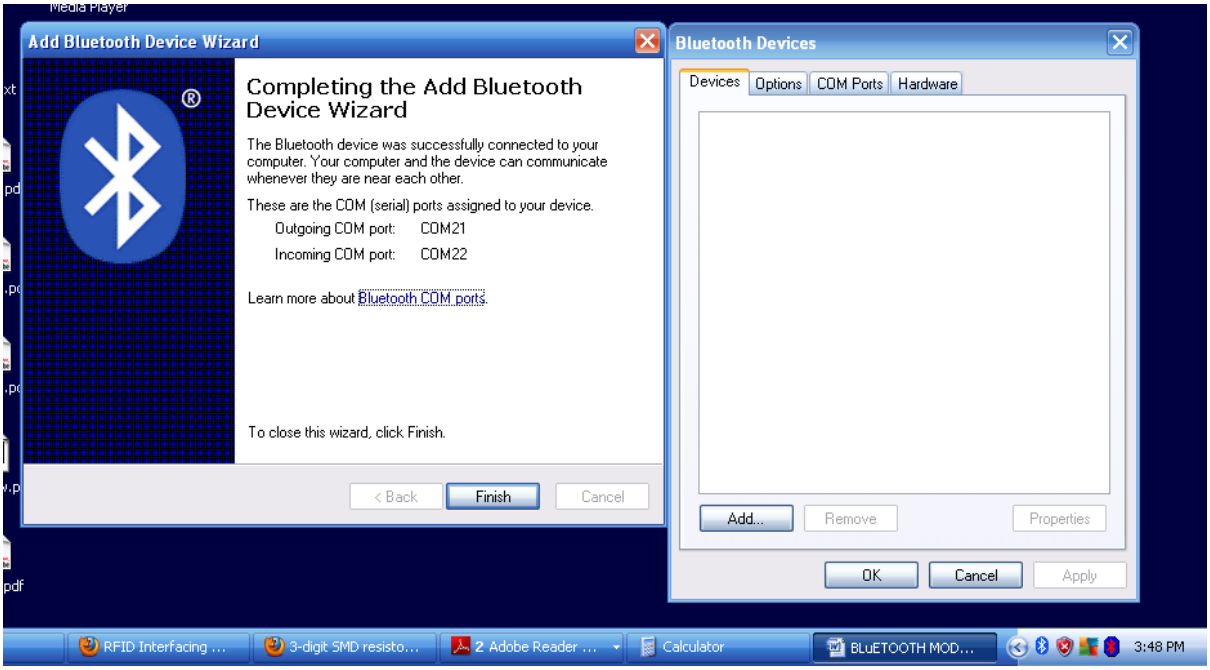


6. Check “use pass key found in the documentation” and enter 8888.

Click next



7. **After connecting following window will appear**



We can see the COM ports assigned to the Bluetooth dongle as COM 21 as Outgoing and COM22 as Incoming.

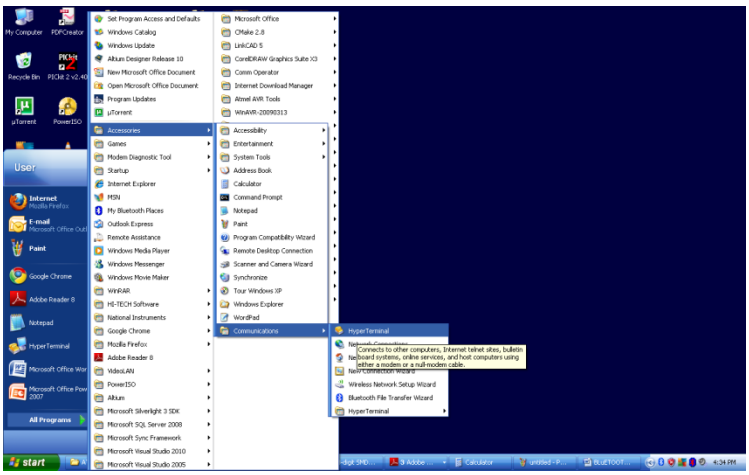
This is how BluCOM gets connected, in slave mode to the PC.

B. BluCOM in Master Mode:

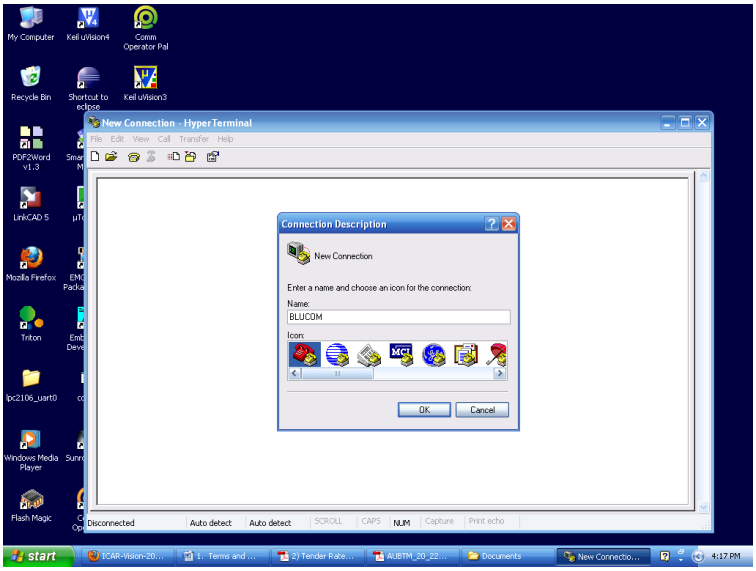
BluCOM in master mode can initiate connection and sends request to other devices to connect.
1. Connect BluCOM to serial port of computer via MAX232 level translator as shown in fig 2 .
2. Connect a Bluetooth Dongle to the USB of computer.
The sequence of commands used to configure the BluCOM Module in Master Mode is listed below. These commands can be passed from any microcontroller (UART) or from PC using serial communication software.(Refer Fig.1 and 2.)

Note: cr=carriage return =0x0d lf= line feed =oxoa
While entering these commands through HyperTerminal press Enter key for cr and ctlr+j keys for lf. Before and after each command

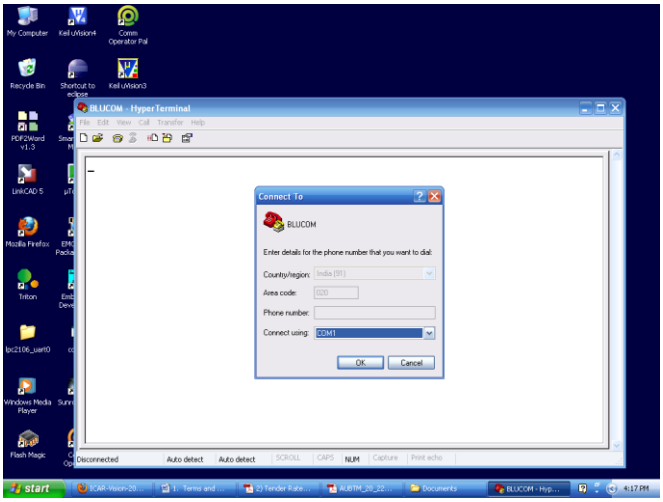
1. **Open HyperTerminal from start menu**



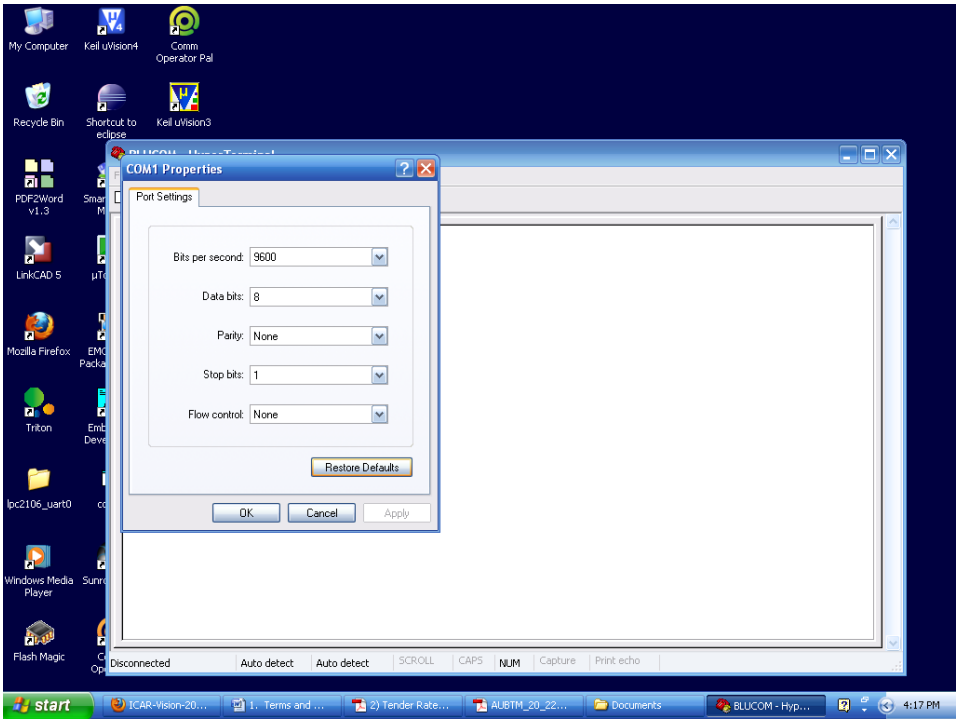
2.Give a name to connection



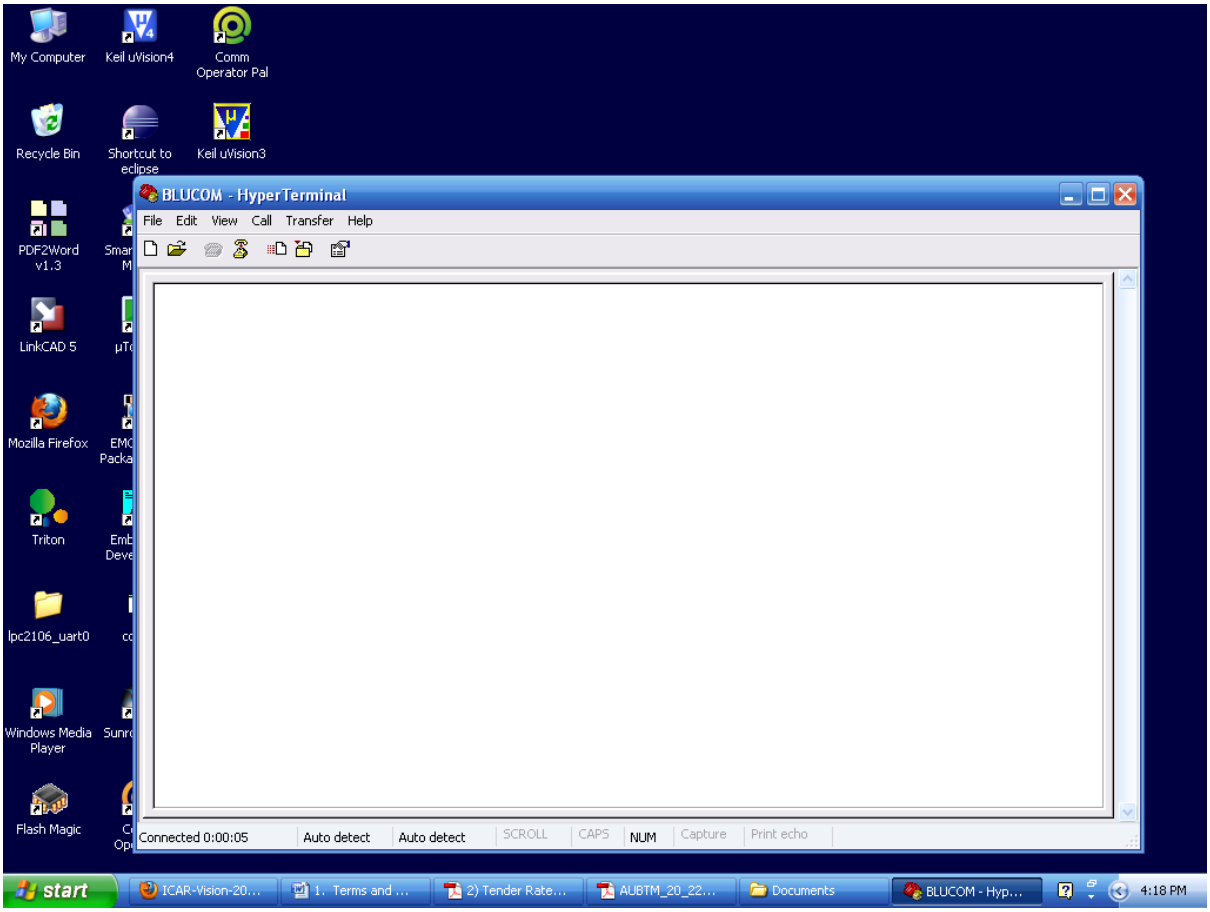
3.Select the COM port where you have connected BluCOM



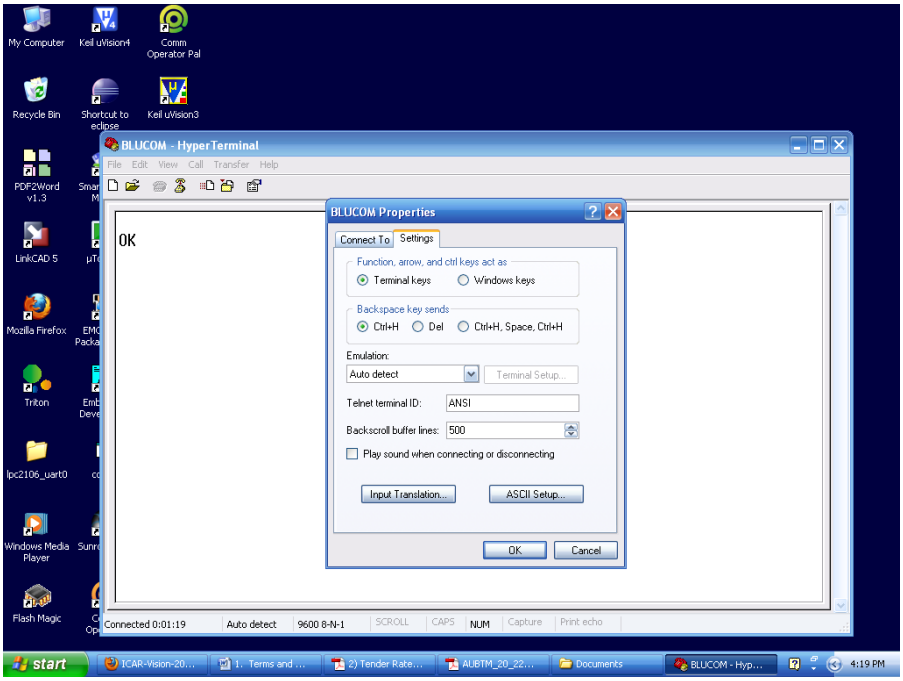
4.Select 9600 Baudarte,parity none, stop bits 1,flow control none

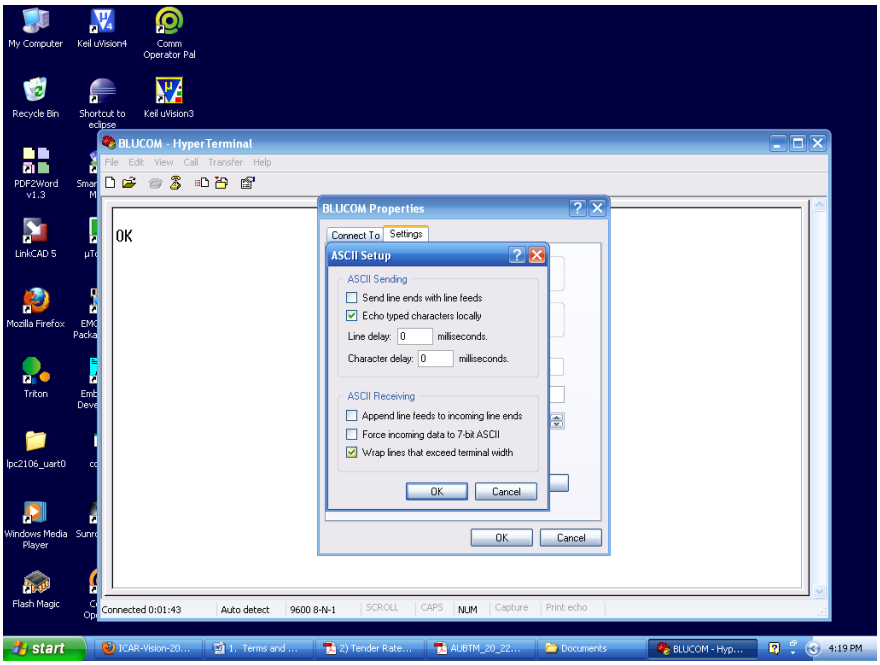


Click OK following window will appear

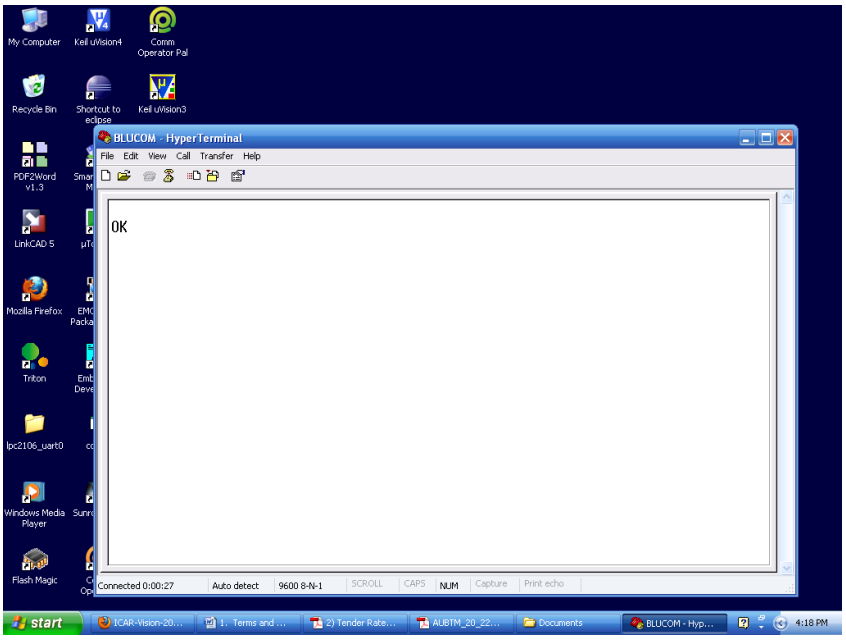


Click on properties icon select settings click on ASCII setup then check on Echo type characters locally click OK. So you can see characters you are typing





5.Power On BluCOM which is connected to selected COM port .
HyperTerminal will show OK.

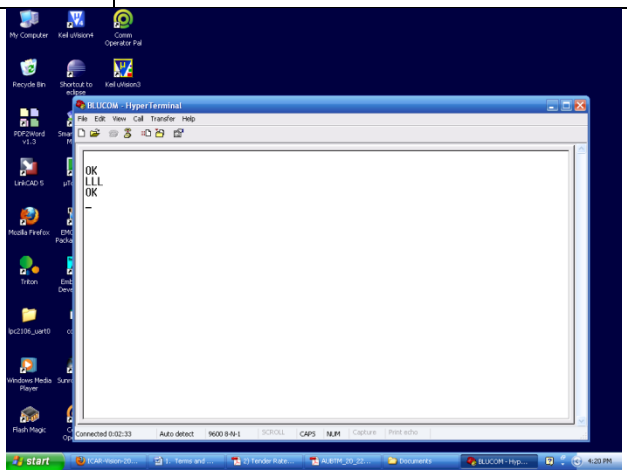


ENTERING COMMANDS TO BluCOM

NOTE: For all Supported AT commands please refer External AT commands of AUBTM- 20 .

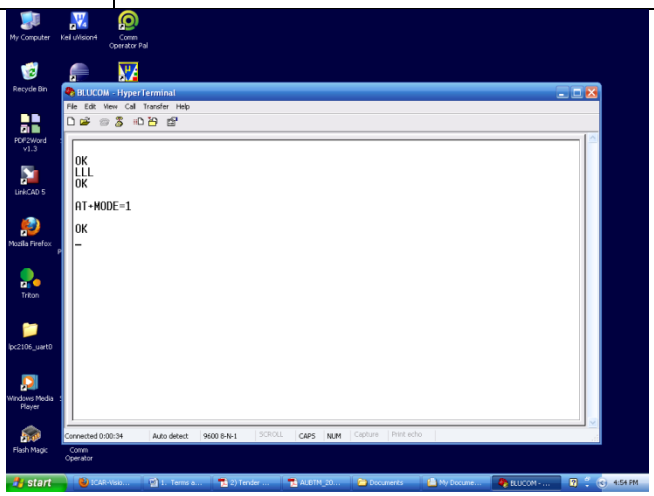
1. Set BluCOM in Command Mode.

Command	LLL
Description	Enter the Command Mode.
Result Code	<cr><lf>OK<cr><lf>



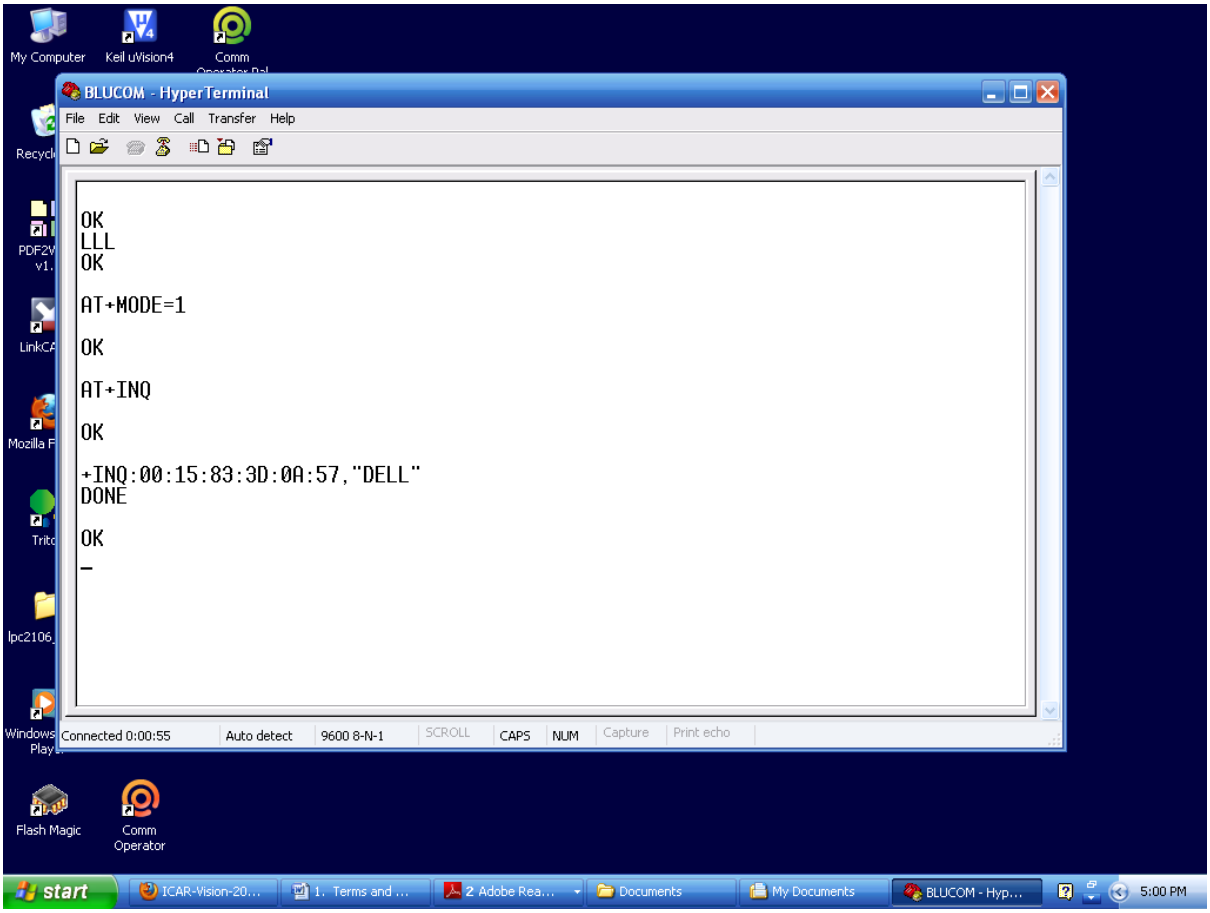
2. Set BluCOM in Master Mode.

Command	<cr><lf>AT+MODE=1<cr><lf>
Description	Set BluCOM in Master Mode
Result Code	<cr><lf>OK<cr><lf>



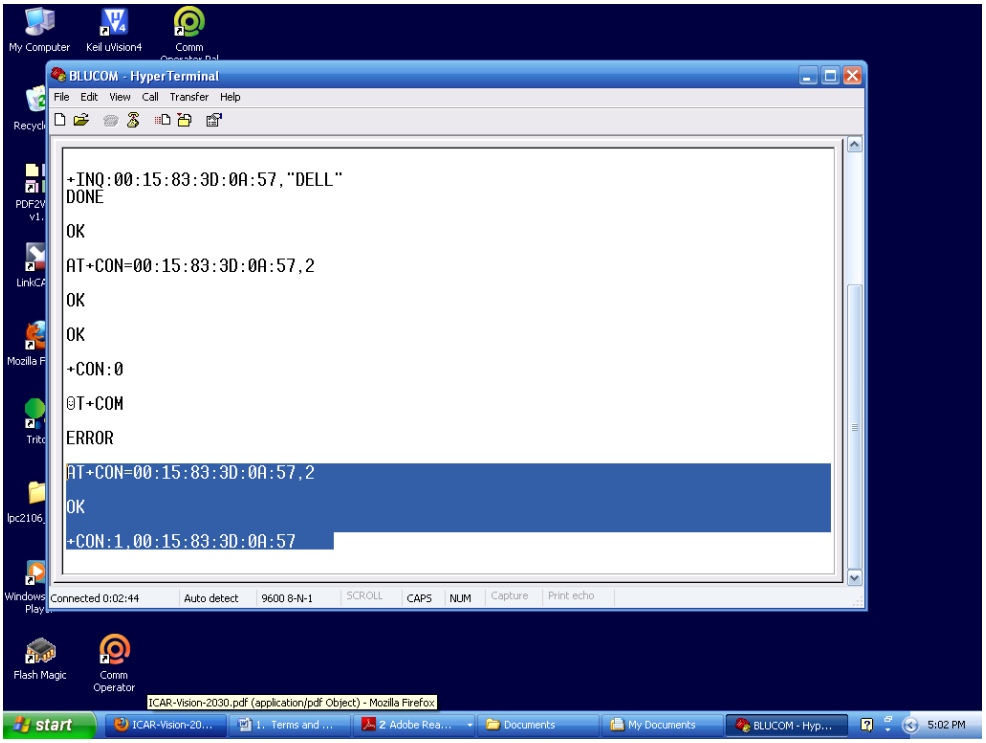
3. Search for the nearby Bluetooth devices around BluCOM.

Command	<cr><lf>AT+INQ<cr><lf>
Description	Inquire/search Bluetooth devices nearby.
Result Code	<cr><lf>OK<cr><lf>
	<cr><lf>+INQ:00:83:32:57:0a:45,”DeviceName”<cr><lf>

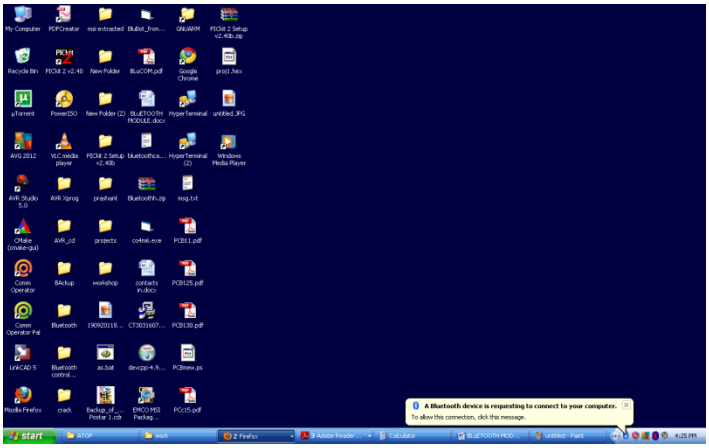


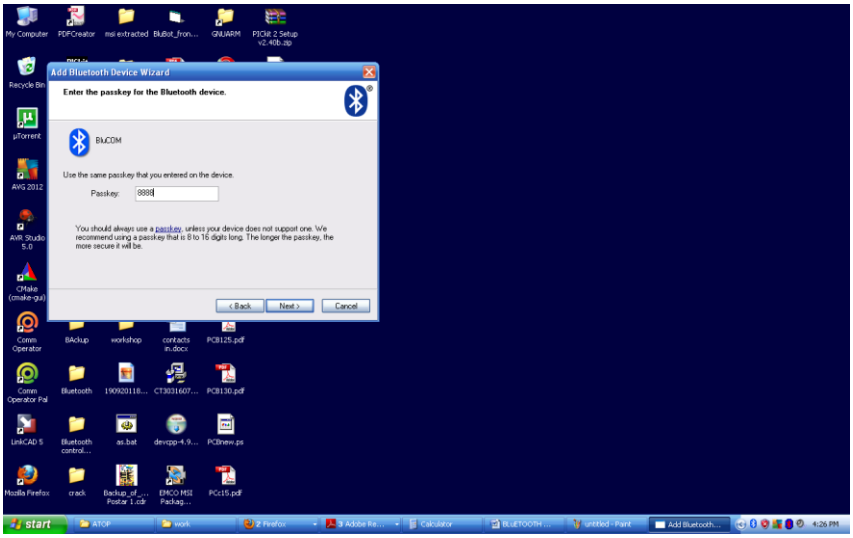
4. Connect to Bluetooth device in SPP profile

Command	<cr><lf>AT+CON=00:83:32:57:0a:45,2<cr><lf>
Description	Connect to Bluetooth devices whose address is 00:83:32:57:0a:45 In SPP profile (No. '2').If BluCOM returns +CON:1,connection is established, if +CON:0 then connection has not been established.
Result Code	<cr><lf>OK<cr><lf>
	<cr><lf>+CON:1<cr><lf>



The Computer will pop up a small notification on task bar asking to allow BluCOM to computer's Bluetooth dongle
, click on it and enter pass key for



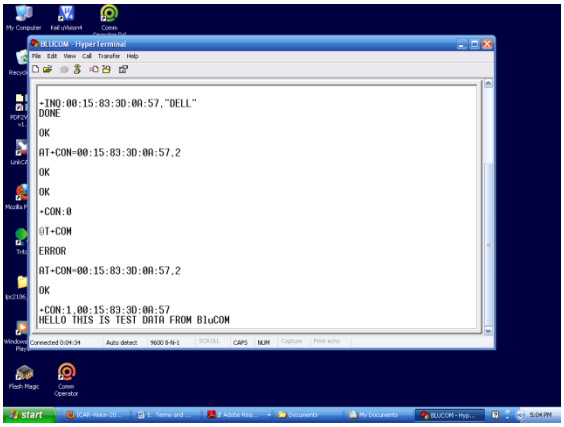


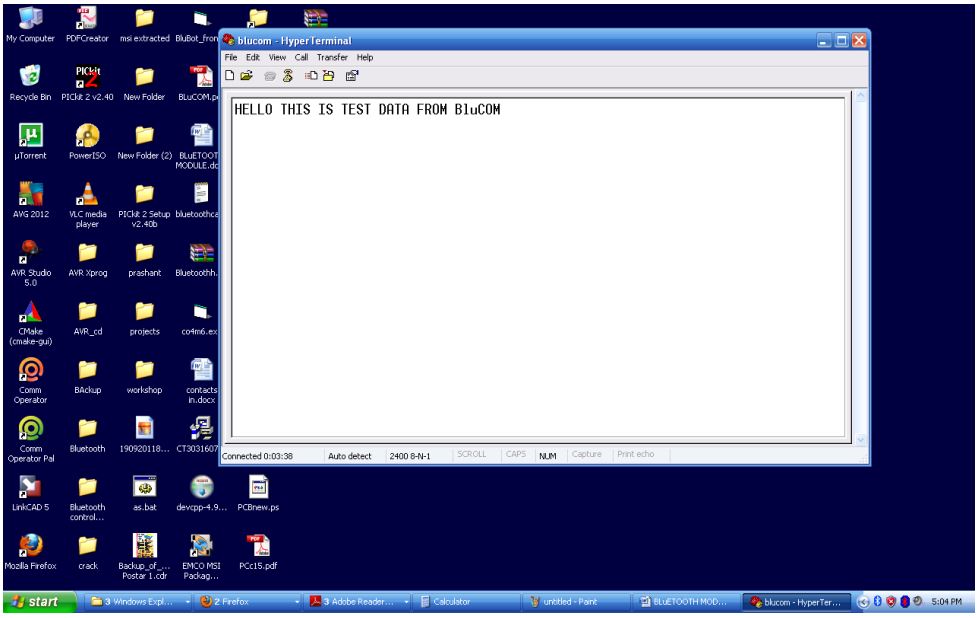
AS we will click on finish the hyper terminal will show +CON:1 if connection is successful , enter pass key fast so avoid no connection.

Now open a new HyperTerminal connection and select com port where Bluetooth dongle is connected (check in COM PORT tab of Bluetooth setting.)

Connect on 9600 baud rate no parity 1 stop bit none flow control and click ok.

AS connection has been established between BluCOM and USB Bluetooth dongle type anything in any one HyperTerminal ,that same data will be available at other HyperTerminal.





Exit from Command mode.

Command	===
Description	Exit from Command mode
Result Code	<cr><lf>OK<cr><lf>
	Exits the BluCOM from command mode

Once connection is established successfully between BluCOM and Bluetooth device in SPP profile, then Data can be communicated between both of them serially.

Data transfer using Microcontroller

The BluCOM should be connected to the UART module of the microcontroller (Baud Rate 9600).The connections should be made as per the circuit diagram in this manual(Fig.1).
The BluCOM should be connected to the UART module of the microcontroller or Serial Port of the PC (Baud Rate 9600). When the module is powered up, it returns an "**OK**" (ASCII Format) on HyperTerminal screen set at 9600 baud rate

The host can check for this data. The Module is configured using **AT** (Attention) Commands. For this the
Module should enter the command mode.

The command for entering the Command Mode is LLL.

The module would parse the stream received on the UART and looks for this command during

The **first 60 seconds (1 Min)** after the module is powered up. The module would react to other commands only after it receives this command. The command mode would **end only after the Module receives Exit** command (===). During command mode, the user could issue any commands

to configure and operate the module. After the module leaves the command mode, the module would start the 60 seconds timer again and could enter command mode again if this command is received again.

- The format of an AT command from the HOST to the module shall be:
  <cr><lf><AT command><cr> <lf>

- The format of the OK code from the module to the HOST shallbe:
  <cr><lf>OK<cr><lf>

- The format of the generic ERROR code from the module to the HOST shall be:
  <cr><lf>ERROR<cr> <lf>

- The format of an unsolicited result code from the module to the HOST shall be:
  <cr><lf>RESULT CODE<cr> <lf>

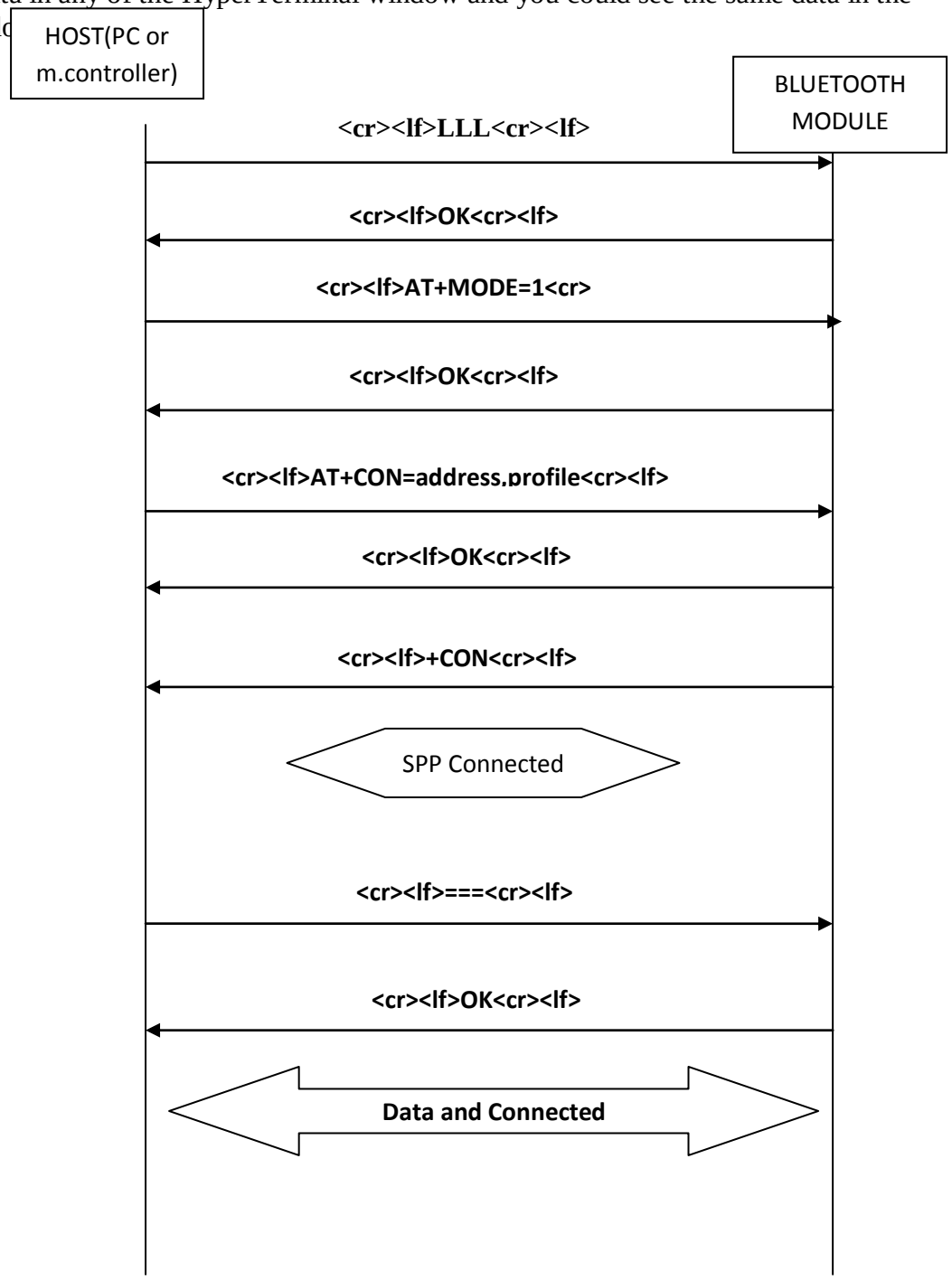
POINTS TO NOTE

- Do not attach this device directly to a PC RS-232 Port. You require an RS-232 to TTL converter (Refer Fig.2) Circuit if you need to attach this to a computer.

- The Reset (RST) pin in theBluCOM module is internally pulled up. A low input on this pin from any host device will reset the module.
- The default passkey for establishing connection is 8888. All default settings will be displayed using AT+SETUP command.
- External Command set is given as a separate document. Please refer it for further study.

Quick Start

1. Connect the BluCOM module to a PC Com port (using RS-232 to TTL converter circuit-fig2) and Power it Up.
2. Create a HyperTerminal (Windows tool for serial port communications) connection with Baud rate 9600 and connect it to the Com Port to which BluCOM is connected.(usually COM1 :check in your system).
3. Connect the Bluetooth Dongle to the USB port of another PC and check for the Com port assigned to this dongle in Bluetooth setting. Create a new HyperTerminal connection in this PC at 9600 baud rate and connect to same com port which is shown in Bluetooth setting.
4.Establish the connection procedure by passing commands from hyperterminal of BluCOM.
4. During connection process, the module asks for **passkey in other PC**. **The default pass key is 8888**.
5.As you enter the pass key connection establishes between BluCOM and Bluetooth Dongle .
6. Type data in any of the HyperTerminal window and you could see the same data in the other windo



ELECTROSTATIC WARNING:

The **BluCOM** board is shipped in protective anti-static packaging. The board must not be subject to high electrostatic potentials. General practice for working with static sensitive devices should be applied when working with this board.

Technical Support

If you are experiencing a problem that is not described in this manual, please contact us. *support@robota.in*. We will be happy to assist you.

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