Technologies International

3e

3e-250
Bluetooth to RS-232 Cordless Adaptor

User's Guide

3e Technologies International
700 King Farm Blvd.
Rockville, MD 20850
(301) 670-6779
www.3eti.com

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Introduction

The 3e-250 Bluetooth to RS-232 Cordless Adapter is a Plug and Play adapter that allows you to use your RS-232 (serial) port to communicate wirelessly between multiple pieces of equipment.

In itself, the 3e-250 requires no installation of software or drivers on the host machine. It doesn't initiate communications, but simply acts as a substitute for a wired serial connection. As such, it allows direct communication between equipment such as data recorders, computers, handheld devices, test electronics equipment, measurement devices and the like.

It enables users to connect measurement devices wirelessly to a central analysis and recording area, eliminating the need to download information from an unconnected measurement device.

The adapter incorporates a Bluetooth solution containing a BT 1.1 compliant transceiver operating in the 2.4 GHz range using frequency-hopping at 1600 times/sec among the available frequency ranges.

The operating range of the 3e-250 is up to 30m or 100 feet. It provides link control functionality and supports operation within a Bluetooth piconet in a slave mode. It supports all Bluetooth data rates of up to 723 Kbits/sec.

Installation

The 3e-250 Cordless Adapter comes preconfigured with certain basic parameters. No setup is required unless you wish to change these presets.

The pre-configured parameters are:

- **Device Name**
  The default name is 3ETI Serial Device. This name will be presented to other devices which are trying to connect to it. (You might want to change this name if you are going to use a number of these Adapters.)
- **RS-232 baud rate**
  The default baud rate is 9600, 8-N-1. (You might need to change this default setup depending on the device that you will be attaching it to.)

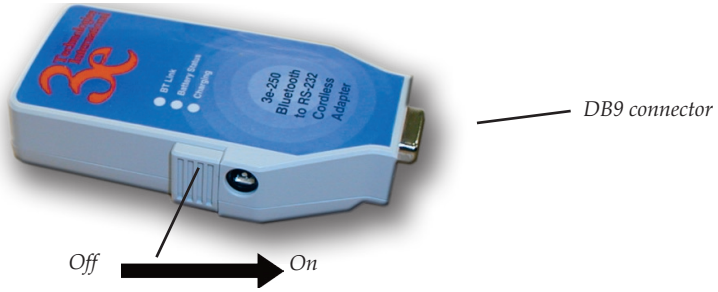
If any change to the configuration is required, or you plan to imple-

ment more than a direct RS-232 cable replacement function, you will need to install at least one remote Bluetooth master device on a PC.

The Bluetooth master, such as the 3e-240 Bluetooth USB Dongle, installs on a USB port on your laptop and comes with software that allows you to manage up to 7 slaves. Some examples of possible configurations are shown below.

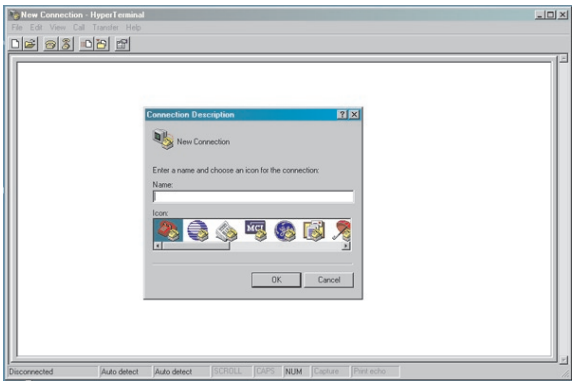
Initial Setup

If some setup is required or you want to ensure the Adapter is working, move the power switch to the "on" position and attach the DB9 serial port to a serial port on your computer.



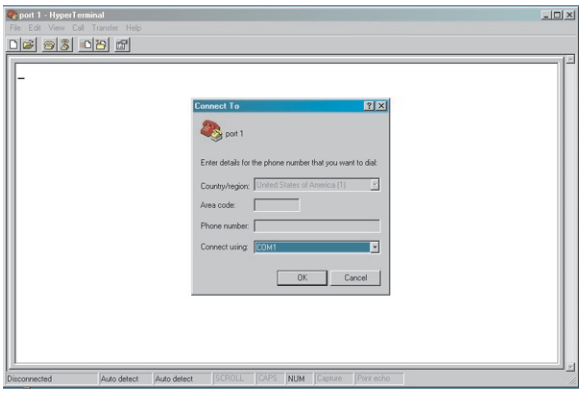
To verify that the device is working, open a "Hyper Terminal" application on your computer. You will usually find this application by following the path, **Start →Programs → Accessories → Communications.**

With your 3e-250 Adapter on and attached to your COM port, the Hyper Terminal window should prompt you to connect to, for instance, Com 2 (if that is where your device is plugged in) as shown in the following picture.



The New Connection wizard will ask you to name your session and give you a choice of icons to associate with it. You can call it anything that will readily identify it for you. We chose "port1."

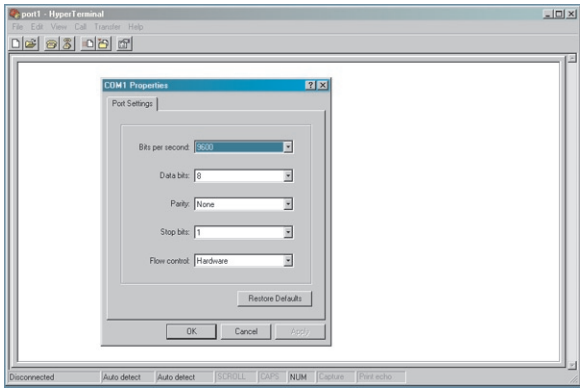
Click **OK** to begin the Hyper Terminal session.



You will next see a "connect to" screen. Select the COM port to which the 3e-250 is connected and click **OK**.

Set the "connect using" dropdown menu to the COM port you are using on your computer. This is usually COM1 or COM2.

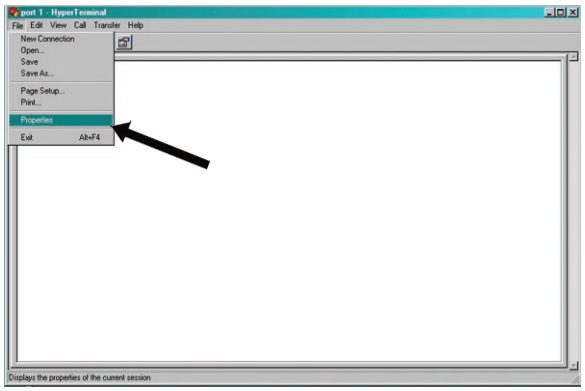
Click OK to go to the COM2 Properties screen.



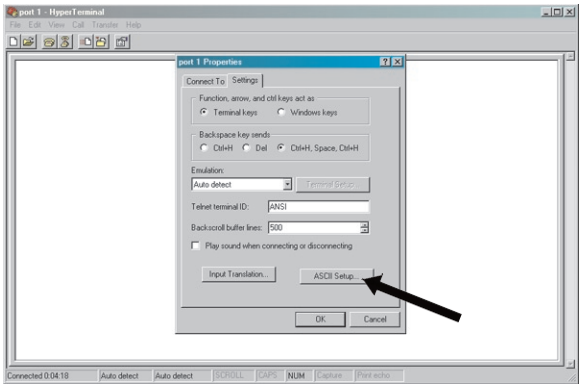
Initially, set the properties to 9600 8-N-1 with flow control at **Hardware**.

If you will be using the 3e-250 Adapter with test equipment and you know that it requires a different baud rate than 9600, you can change that later, using the Hyper Terminal session. Normally, the only things that you will need to change are the baud rate and the device name.

Click **OK** to save your settings and select **Properties** from the File dropdown menu.

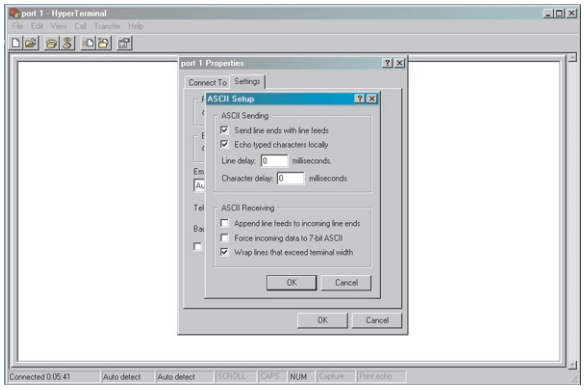


In the **Properties** window, select the **Settings** tab. In the **Backspace Key Sends** section, select the "Ctrl+H, Space, Ctrl+H" radio button. And click on the **ASCII Setup** button.

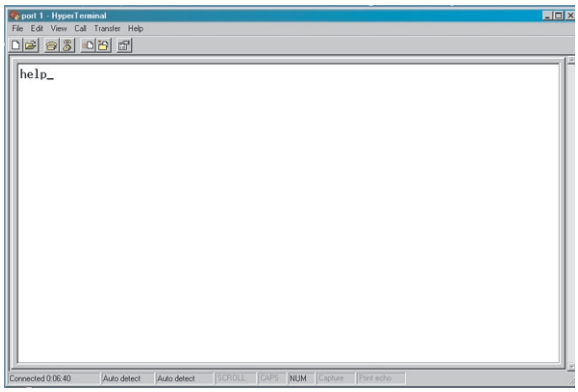


In the ASCII Setup window, make sure you check the selection for "Send line end with line feeds" and "Echo typed characters locally." Checking these options will provide feedback when you issue commands in hyperterminal. (This is very useful as a means of checking that your command has been accepted.

Important Note: If you are working in Windows XP, and your hyperterminal software will not access the Bluetooth device, you may have to set the MODE switches to the ON position for both DSR and CTS.



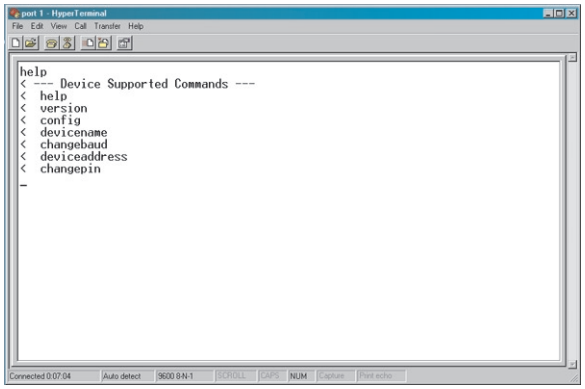
Then click **OK** and **OK** to close the Properties menu and return to the main Hyper Terminal screen.



In the Hyper Terminal window, you can now type the command

help

and when you press the Enter key on your computer, you will get a list of the commands available to the 3e-250 device in the Hyperterminal session.



You may want to save the Hyperterminal setup on your desktop so that you can use it to set up a number of the Adapters.

To save it, go to **File→Save** and save to the Desktop. You will see an icon similar to the following on your desktop.

After a Hyper Terminal session, you may also see two other icons on your Desktop. These two files, which should look similar to the two shown to the right, can be dropped in the Recycle Bin.

Operation and Maintenance

Transferring data from PC to PC

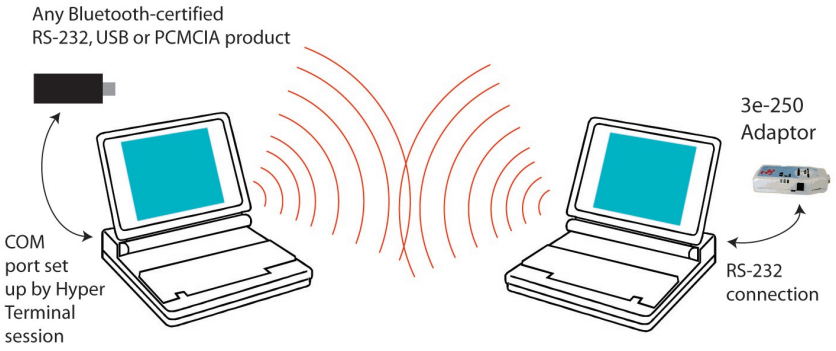
The 3e-250 Bluetooth to RS-232 Cordless Adapter can be used, with another Bluetooth device, installed on another computer, to transfer data between the two machines. The other Bluetooth adapter can be the 3e-240 Bluetooth Dongle or any Bluetooth-certified RS-232, USB, or PCMCIA product. Refer to the manual that came with the other Bluetooth device for instructions on its installation and operation.

Once the other device is installed, let it discover all available devices.

(**NOTE**: If there is more than one Bluetooth device for it to discover, you may want to use your Hyper Terminal session to rename your 3e-250 Adapter, using the **devicename** command. See the table of commands on page 9 for more information.)

Select the 3e-250 Adapter from the list of discovered devices by its name and double-click it to initiate the process of connecting to the Adapter. The Adapter provides the service "serial port."

Double-click on the "serial port" service icon and the local device will connect to the Adapter and set up the serial port service, using a local COM port for the connection. Make a note of the COM port number selected and open a Hyper Terminal session. Connect to the virtual COM port you have just set up, using the procedure detailed in the section **Initial Setup.** You can set the baud rate for this COM port to any value up to 115200.



At this point, you have completed the communication setup between the 3e-250 Adapter and the other Bluetooth device.

To verify the connection, type some characters in the Hyper Terminal window on one of the computers. The same characters should be visible in the Hyper Terminal window on the other computer. Whole files can be transferred using the **Transfer → Send File** option in the Hyper Terminal window.

Connecting to a Test Instrument

Connecting to a test instrument can be a bit more complex than connecting from PC to PC, because you will need to know the RS-232 signals supported by the particular instrument. Each test instrument has its own mechanism which that instrument uses for hardware flow control (RTS/CTS and DTR/DSR).

Before installing the 3e-250 Adapter on a test device, research the required settings for that test device in its documentation.

The 3e-250 Adapter has two dipswitch settings accessible on the back (bottom) of the device.

The dipswitches allow you to configure for the particular device. The DTR/DSR switch is set to the ON position by default. The RTS/CTS switch is set OFF by default.

Once you have configured the dipswitches, connect the 3e-250 to the DB9 connector on the test instrument. If there is not enough space to directly connect to the DB9 connector, use a 9-pin straight cable with a male connector at one end and a female connector at the other. (This is not included in the install kit.)

You can now communicate to the 3e-250 from the Bluetooth device on the host PC.

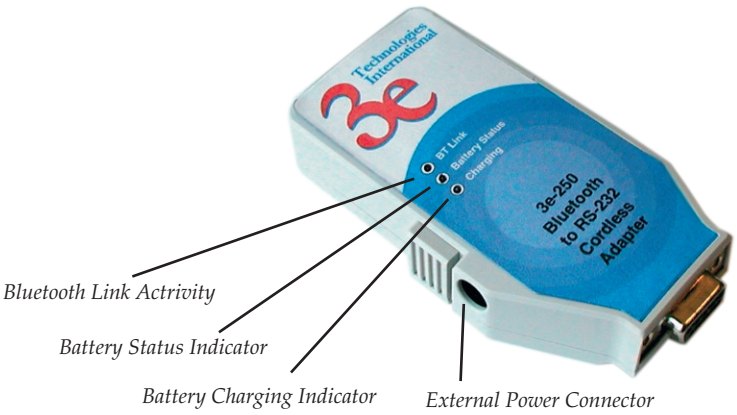
Using the LEDs

There are three LEDs on the 3e-250.

- Bluetooth Link Activity Indicator
- Battery Status Indicator
- Battery Charging Indicator

The following chart gives the variables for the indicator lights.

3e-250 LED Description Table		
LED	**Activity**	**Description**
Bluetooth Link Activity Indicator	Flashing Green No light	Indicates link activity Indicates OFF
Battery Status Indicator	Green Orange Red	Battery is 75-100% charged Battery is 25-75% charged Battery charge less than 25%
Battery Charging Indicator	Red No light	Charging from external power source No external hookup or fully charged



Maintaining Battery Life

You can recharge the internal rechargeable batteries at any point. If the Battery Status Indicator turns red, you should recharge at your earliest convenience. Plug in the 120V AC / 9V DC power adapter shipped with the 3e-250 and charge fully (may require up to 3 hours). Recharging should be done in conditions of less than 113 ° F (45 ° C) to ensure proper charge.

There is an RS-232 Trickle-Charge on-off switch on the back of the 3e-250 which is provided as a discretionary battery power conservation device. The default position is OFF. And this switch should be left in the off position if you are running the device connected to any piece of test equipment that runs on battery power, as it will "steal" the power from the parent device in order to "trickle-charge" the 3e-250 battery. However, if you are running the 3e-250 on a host device that can spare power, you can conserve battery power extensively by setting the RS-232 Trickle-power switch to on. When the 3e-250 is charging from an AC power outlet, the switch can be either on or off. It does not matter. See the picture of the back of the device on the preceding page for the location of the Trickle-Charge switch. Move the switch with a small point object like a paper clip or pen point.

Configuration Commands for the 3e-250 Bluetooth RS-232 Adapter	
Command	**Description**
help	• lists all the supported commands
version	• displays the version of the software running on the device
config	• places the device in configuration mode. In this mode the Bluetooth Radio function is inactive; no remote device can connect to it. • the device will not be able to go into deep sleep in this mode • syntax for this mode is "config <start|end>". The "start" argument places the device in configuration mode and the "end" command exits the configuration mode. • arguments for this command are not optional. An error message is echoed to the host when no arguments are supplied with the command.
devicename	• allows user to change default name (up to 50 characters). • default device name is "3ETI Serial Device." • command syntax is "devicename [new name for device]". • arguments are optional. Using devicename without argument simply displays current name. • if new devicename is set, it will be echoed back to the host.
changebaud	• allows change to baud rate. (Default baud rate is 9600; maximum baud rate is 115200). • command syntax is "changebaud <baud rate>". • arguments are not optional. Failure to supply argument causes an error message to echo back to the host. An example of correct use would be: "changebaud 115200". Baud rate will change to 115200 bits/sec. • once baud rate is changed, the host application will have to change its baud rate and reset the device to effect the baud rate change.
deviceaddress	• displays the 48bit Bluetooth device address for the device. • no arguments are used with the command.
changepin	• allows user to change the default PIN "3eti" to set authentication and encryption between two Bluetooth devices. Usage of this PIN is optional and will be executed only if the remote device requests authentication and encryption of all communications on the link. • command syntax is "changepin <user pin>". The use of the argument is not optional. PIN name can be from 4 to 16 alphanumeric characters.

Configuration Commands for the 3e-250 Adapter

There are some configuration commands that can be useful in changing or adapting configuration settings on the 3e-250 Adapter. You can access these commands by plugging the 3e-250 into a laptop and opening a Hyper Terminal window (as described in the **Setup** section).

NOTE: The Adapter will only interpret these commands when there is no Bluetooth connection between it and a remote Bluetooth device.

The chart on the following page contains a description of the currently available commands. You can also access these commands by typing **help** in the Hyper Terminal window.

Troubleshooting

Manufacturer's Statement

The 3e-250 Bluetooth to RS-232 Cordless Adapter is provided with warranty. It is not desired or expected that the user open the device. If malfunction is experienced and all external causes are eliminated, the user should return the unit to the manufacturer for service and replace it with a functioning unit. If you are experiencing trouble with this unit, the point of contact is:

support@3eti.com

or visit our website at

www.3eti.com

Advices and Warnings

Opening the case of the 3e-250 Adapter voids the warranty.

The internal batteries must be in place for the Adapter to work, even in AC Power mode.

Return the device to the manufacturer for service.

REGULATORY COMPLIANCE

FCC Part 15 Declaration of Conformity (DoC)

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warning: This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the Federal Communications Commissions Rules and Regulations. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Relocate this device
- Increase the separation between the device and the receiver
- Connect the device into an outlet on a circuit different from that of other electronics
- Consult the dealer or an experienced radio technician for help.

FCC Radiation Exposure Statement

Important Note: To comply with FCC RF exposure compliance requirement, the antenna used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other transmitter.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Caution: Changes or modifications not expressly approved by 3e Technologies International could void the user's authority to operate the equipment.