

ebSerial Firmware

Quick Start Guide

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Introduction

The ebSerial firmware is used across a number of modules and adapters. This quick reference guide provides an overview of the command interface and other quick reference information for the ebSerial firmware.

A7's ebSerial firmware is designed to abstract the details of Bluetooth and to make setup and connection to other ebSerial based devices and other standard Bluetooth a simple task.

The ebSerial firmware supports two main operating modes: EasyConnect mode and Command mode. EasyConnect mode is generally used in simple cable replacement scenarios; while Command mode provides a rich set of functions that allow programmatic control.

For complete details of the ebSerial firmware please consult the ebSerial Firmware Reference Manual which is available on the A7 website at www.a7eng.com.

HLP Provides help information.

HLP<CR>

LST Returns a list of Bluetooth devices.

LST *trusted* | *visible* [*name*] [*timeout*]<CR>

<i>trusted</i>	List all trusted devices.
<i>visible</i>	List all visible devices.
<i>name</i>	Include the names of visible devices.
<i>timeout</i>	Number of seconds before aborting the list visible attempt.

RET Returns the local device to data mode if there is an active connection.

RET<CR>

RST Resets the local device.

RST [*factory*]<CR>

<i>factory</i>	Restore factory default settings.
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SET Updates local device settings.

SET *variable* *value*<CR>

<i>variable</i>	Specifies the local variable to be retrieved.
<i>value</i>	Specifies the new value for the variable.

The Commands

CON Establishes a connection to another Bluetooth device.

CON *address* [*profile*] [*timeout*]<CR>

<i>Address</i>	Bluetooth address of the remote device.
<i>Profile</i>	Bluetooth profile to connect with. Must be either SPP or DUN.
<i>Timeout</i>	Number of seconds before aborting the connection attempt.

DEL Deletes trusted devices.

DEL *trusted* *all* | *address*<CR>

<i>all</i>	Remove all trusted devices.
<i>address</i>	Bluetooth address of the trusted device to delete.

DIS Closes the connection with a remote Bluetooth device.

DIS<CR>

SET Cont'

The variable parameter can be one of the following values.

BAUD	Sets the baud rate for UART communications.
CONNECTABLE	Sets the connectable mode setting.
ENCRYPT	Sets the encrypt mode setting.
ESCCHAR	Sets the current escape sequence character.
FLOW	Sets the flow control setting.
LINKTIMEOUT	Sets the link timeout setting.
NAME	Sets the local device name.
PASSKEY	Sets the local device passkey.
SECURITY	Sets the security mode setting.
TXPOWER	Sets the transmit power setting.
VISIBLE	Sets the visible mode setting.

GET Retrieves local and remote device settings.

GET *variable*<CR>

<i>variable</i>	Specifies the local variable to be retrieved.
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The variable parameter can be one of the following values.

ADDRESS	Returns the local or remote device address.
CONNECTABLE	Returns the connectable mode setting.
ENCRYPT	Returns the encrypt mode setting.
ESCCHAR	Returns the current escape sequence character.
FLOW	Returns the flow control setting.
LINKTIMEOUT	Returns the link timeout setting.
NAME	Returns the local device name.
SECURITY	Returns the security mode setting.
TXPOWER	Returns the transmit power setting.
VISIBLE	Returns the visible mode setting.

SET Cont'

The value parameter must be one of the following values.

BAUD	Any standard rate from 1200 through 460800.
CONNECTABLE	ON, OFF.
ENCRYPT	ON, OFF.
ESCCHAR	Any single character.
FLOW	NONE, HARDWARE.
LINKTIMEOUT	An integer between 1 and 40.
NAME	A new device name of up to 32 characters.
PASSKEY	A new device passkey of up to 16 characters.
SECURITY	ON, OFF.
TXPOWER	An integer between 1 and 10.
VISIBLE	ON, OFF.

VER Retrieves the current firmware version.

VER [*all*]<CR>

<i>all</i>	Specifies to return detailed version information.
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<CR> Cancels any command that is currently in progress.

Sample Command Scenario

```
1. List devices that are currently visible.
2. Connect to a device.
3. Send data over the wireless link.
4. Get the address of the device connected to.
5. Send more data over the wireless link.
6. Disconnect.
7. List the trusted devices.

>lst visible name 15<CR>
ACK<CR>
00:0C:84:00:05:29 MyCellPhone<CR>
00:80:C8:35:2C:B8 JoesLaptop<CR>
>con 00:0C:84:00:07:D7<CR>
ACK<CR>
>This text sent wirelessly<CR>
<1 sec>+++<1 sec><CR>
>get addr<CR>
ACK<CR>
00:0C:84:00:05:29<CR>
>ret<CR>
ACK<CR>
>This text sent wirelessly<CR>
<1 sec>+++<1 sec><CR>
>dis<CR>
ACK<CR>
>lst trusted<CR>
ACK<CR>
00:0C:84:00:05:29<CR>
>
```

EasyConnect: Cable replacement with ebSerial devices

In order to use the devices in this scenario the device must go through the following one time setup procedure. This procedure assumes that the devices are in the factory default state.

- 1. Power up the ebSerial based device.
- 2. Received the prompt character ">" from the serial connection to the ebSerial based device.
- 3. Set the flow control and baud rate using the serial connection to the ebSerial based device.
- 4. (Note that once the "SET BAUD" is used to change the baud rate, the host connected to the serial interface will have to set the new baud rate as well.)
- 5. Reset the ebSerial based device while activating the EasyConnect line of the device.
- 6. Once the indicator line is asserted the EasyConnect line must be deactivated.
- 7. Repeat the above steps 1 – 6 for the second ebSerial based device.
- 8. Wait a few moments while the devices complete their pairing.

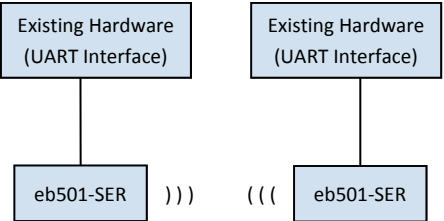
Error Codes

Code	Description
1	General connection failure.
2	Connection attempt failed.
3	Command not valid while active.
4	Command only valid while active.
5	An unexpected request occurred.
6	Connection attempt failed due to a timeout.
7	Connection attempt was refused by the remote
8	Connection attempt failed because the remote
9	An unexpected error occurred when deleting
10	Unable to add a new trusted device.
11	Trusted device not found.
12	Command not valid during startup.

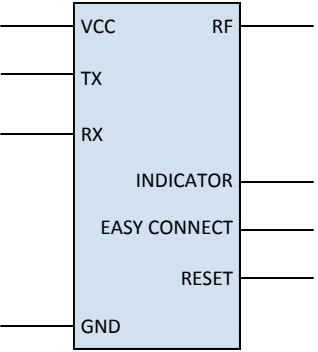
For more details see the ebSerial Firmware Reference Manual.

- 9. Notice that the indicator line on both devices begin to toggle at approximately two second intervals.
- 10. The devices are now paired and may be for data connection. The connection will automatically be attempted each time the two devices are powered up until the devices are factory reset.

Typically the EasyConnect line is connected to a push button switch and the indicator line is connected to an LED so that this process can easily be initiated by a user. See the eb501-SER documentation for a sample adapter implementation.



Typical ebSerial based device connections



Factory Default Settings

Baud = 9600
Flow = None
Security = On
PIN = 0000

Note: Modules with ebSerial firmware may be ordered with custom factory default settings for a nominal fee.

Factory Reset

To reset the ebSerial firmware to the factory settings the following procedure may be used.

- 1. Active the reset pin of the device implementing ebSerial firmware. (Continue to activate this line through the next 2 steps.)
- 2. While continuing to activate the reset line the indicator line will be asserted within one second.
- 3. While continuing to activate the reset line the indicator line will be de-asserted.
- 4. Deactivate the reset line.
- 5. The device will now be in the factory reset state. In the factory reset state the device will boot to Command Mode.

Firmware Upgrade

Periodically A7 releases new versions of the ebSerial firmware to provide enhancements to the eb100 based products. These new versions and the instructions for upgrading the adapters are available on the A7 web site.

To check the version of the firmware that you are currently running you may follow the following steps.

- 1. Connect the eb501 to a serial port on your PC using a straight-thru serial adapter cable. (The eb501 may also be directly connected to a PC serial port without an adapter cable if space permits.)
- 2. Apply power to the eb501. (If the eb501 is set to EasyConnect Mode you will need to perform a factory reset.)
- 3. Type ver all at the ">" prompt and press the return key.
- 4. The version of ebSerial firmware will be displayed.

For Additional Information

visit our website at:
www.a7eng.com

Schematics
Design files
White papers
Other Documentation

