

BLE Command App Note

Amp'ed RF Technology, Inc.

1. AT Commands

Note, all AT command except Escape, should terminate with a CRLF.

1.1. Escape

The `Escape` command is used to switch from bypass mode, to command mode. When the Escape Sequence is received while a connection is still active and there is no data for 2 seconds, `abSerial` will respond (after those 2 seconds of no data) with the `CommandMode` reply.

Syntax

`^#^$^%` (there is no CRLF after this sequence)

Responses

If the operation is successful, the response is:

AT-AB -CommandMode-

1.2. FactoryInit

The `FactoryInit` command is used to restore the configuration values to the factory settings value.

Syntax

`AT+AB FactoryInit`

Responses

If the operation is successful, the response is:

`AT-AB ResetPending`

`AT-AB -CommandMode-`

`AT-AB BDAddress [bd address]`

1.3. LeAdv

The `LeAdv` command is used to enable and disable LE advertising functionality.

Syntax

`AT+AB LeAdv [Enable/Disable]`

Responses

If the operation is successful, the response is:

`AT-AB AdvOk`

1.4. LeBypass

The `Bypass` command is used to switch from data command mode, to bypass mode.

Syntax

```
AT+AB Lebypass
```

Responses

If the operation is successful, the response is:

```
AT-AB -BypassMode-
```

If no connection is established, the response is:

```
No Connection
```

1.5. LeConnect

The `LeConnect` command is used to build a LE connection with a remote device. This command is valid in central mode (ProfileRole = c).

Syntax

```
AT+AB LeConnect [bd address]
```

Where [bd address] is the remote device's BD Address.

Responses

If the operation is successful, the response is:

```
AT-AB -BLE-ConnectionUp [bd address]
```

```
AT-AB -BypassMode-
```

1.6. LeDisconnect

The `LeDisconnect` command is used to disconnect from a remote LE device once connected.

Syntax

```
AT+AB LeDisconnect
```

Responses

If the operation is successful, the response is:

```
AT-AB -BLE-ConnectionDown
```

1.7. LeDiscovery

The `LeDiscovery` command is used to scans for remote devices. This command is valid in central mode (ProfileRole = c).

Syntax

```
AT+AB LeDiscovery
```

Responses

If the operation is successful, the response is:

```
AT-AB lescan pending
0. P [bd address] [Remote Device Name]
1. P [bd address] [Remote Device Name]
Total 2 devices found
```

Where [bd address] is the remote device's address.

1.8. LeSimpleSvcSend

The LeSimpleSvcSend command sends data to the default characteristic in the configuration, ServiceUUID, using a length and hex data field.

Syntax

```
AT+AB LeConnect [len] [data]
```

Where [len] is the number of bytes in the data field below in ascii hex, 2 bytes long, no formatting or spaces, 2 characters per byte.

And [data] is the set of ascii hex data to send, no formatting or spaces, 2 characters per byte.

1.9. AT-AB -BypassMode-Reset

The Reset command is used to reset the abSerial interface.

Syntax

```
AT+AB Reset
```

Responses

If the operation is successful, the response is:

```
AT-AB ResetPending
```

1.10. SetBdAddress

The SetBdAddress command is used to change the Bluetooth Address. The BD Address may only be changed one time from it's default setting.

Syntax

```
AT+AB SetBdAddress [bd address]
```

Where [bd address] is the new BD Address which will be set.

Responses

If the operation is successful, the response is:

```
AT-AB ResetPending
```

```
AT-AB -CommandMode-
```

```
AT-AB BDAAddress [bd address]
```

If the BD Address has been set, the response is:

```
BT address is already set
```

1.11. Sleep

The `Sleep` command is used to switch a device from normal mode to low power mode.

Syntax

```
AT+AB Sleep [When HostDeepSleepEn = 1]
```

Responses

No response

2. General Functions

2.1. Transmit and exchange data with IoT device.

In bypass mode, all characters are transmitted over the BLE data link. Received data is output on the main UART. Use Bypass and Escape commands to enter and exit bypass mode.

2.2. Low power mode.

Use the configuration parameter `HostDeepSleepEn` (see below), to turn on the low power mode.

2.3. Support IoT device's APP "Smart Find Me".

3. Configuration Commands

The section describes the system configuration variables of with their defaults and ranges. These values are stored in the non-volatile memory of the module.

3.1. Set/update

To set a configuration variable enter:

```
at+ab config xxxx = yyyy
```

Where "xxxx" is the variable name and "yyyy" is the value to set. A variable name may also be specified as "varzz". Where zz is the sequence number of the variable.

3.2. Inquiry

An inquiry may be made using:

```
at+ab config xxxx
```

Where "xxxx" is the variable name. The reply will be the current setting.

3.3. Configuration Parameters

Name	Default	Description
var01 BuildVersion	BLE_XXXXXX	Date code of the firmware (read only).
var02 BD_ADDR	000102030405	Bluetooth device address (read only).

var03 DeviceName	Amp'ed Up!	Code used for secure connection. Up to 20 characters are allowed (case sensitive).
Var04 StreamControl	true	Enabled does not use RTS/CTS flow control, disabled uses flow control.
var05 UartBaudrate	115200	Main UART baudrate: 1200 to 921,600 baud.
var06 UartParity	none	Enable/disable parity on the main UART.
var07 UartDataBits	8	Main UART data bits per character.
var08 UartStopBits	1	Main UART number of stop bits.
var09 HostDeepSleepEn	false	Enables deep sleep mode.
Var10 HostEvents	true	All host events are sent when set.
Var11 ProfileRole	P	Profile Role. P=peripheral, C=central role.
var12 AdvIntMin	256	Min advertising interval, 0.625 ms units: 20 ms to 10240 ms.
var13 AdvIntMax	512	Max advertising interval, 0.625 ms units: 20 ms to 10240 ms
var14 ScanInt	32	Scan Interval, 0.625 ms units: 2.5 ms to 10240 ms.
var15 ScanWindow	18	Scan Window, 0.625 ms units: 2.5 ms to 10240 ms.
var16 ConnectIntMin	16	Min connection interval, 1.25 ms units: 7.5 ms to 4000 ms.
var17 ConnectIntMax	16	Max connection interval, 1.25 ms units: 7.5 ms to 4000 ms.
var18 BatteryEnable	true	true: Battery service effective false: Custom service effective
var19 ServiceUUID	26cc3fc06241f5b453 4763a3097f6764	Custom service UUID.