

## **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 Conection
```

## 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. 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
```

#### 1.9. SetBdAddress

The `SetBdAddress` command is used to change the Bluetooth Address. The BD Address may only be changed one time from its 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
```

#### 1.10. 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<br>false: Custom service effective |
| var19 ServiceUUID     | 26cc3fc06241f5b453<br>4763a3097f6764 | Custom service UUID.   |