



***BT-AP 111 User Manual***

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## 1. Product Specification

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The document describes the BT-AP111 Ethernet Access point and how to access and configure its parameters.



### 1.1. Description

The BT-AP-111 is a Bluetooth to Ethernet Bridge. Supporting up to 7 Simultaneous Bluetooth connections, our BT-AP-111 is a powerful, yet cost effective access point solution. The BT-AP-111 typically supports the Bluetooth SPP profile along with our proprietary *BlueGuard* security layer, which makes it ideal for Payment Card Industry applications.

### 1.2. Features

The BT-AP-111 ships as a ready to use platform with the following features:

- 1) 10/100 Mbit Ethernet port
- 2) Telnet Port configuration – up to 7 ports

#### 1.2.1. Serial Interface

- 1) UART, up to 230K bps
- 2) Power, traffic, and Bluetooth connection LED indicators
- 3) 7 Simultaneous BT Connections
- 4) Class I Bluetooth 100m range
- 5) Support our *BlueGuard* data security application
- 6) Internal antenna

#### 1.2.2. Software

- 1) IP configuration with static IP address or DHCP
- 2) Telnet server for access to serial port (VCP software included)
- 3) UDP responder for device discovery
- 4) Telnet client for Ethernet-based serial port extender

### **1.2.3. Dimensions**

- 1) Height – 1.1 inches
- 2) Length – 4.3 inches
- 3) Width – 3.2 inches

### **1.2.4. Power**

- 1) Uses a 5-9VDC power adaptor, with 2.1mm jack

### **1.2.5. LEDs**

- 1) BT Link
- 2) Power
- 3) Ethernet Connection
- 4) Ethernet Traffic

## 2. Accessing the Configuration Website

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You can access the BT-AP111 module's web-based configuration interface:

### 2.1. Using "My Network Places"

To access the configuration website without using the BT-AP111 configuration application, Windows must first be configured to show icons for networked UPnP devices. To do this in Windows XP, follow these steps:

- 1) Click **Start**, and then click **Control Panel**. Click **Add or Remove Programs**.
- 2) Click **Add/Remove Windows Components**.
- 3) In the **Components** list, click to select the **Networking Services** check box, and then click **Details**.
- 4) In the **Subcomponents of Networking Services** list, click to select **UPnP User Interface** check box and then click **OK**.

**NOTE:** To remove the UPnP UI components, click to clear the **UPnP User Interface** check box.

- 5) In the **Windows Components Wizard**, click **Next**.

For more information on Windows and UPnP, visit the Microsoft Help and Support website at <http://support.microsoft.com/>

To find the UPnP icon for the BT-AP 111 module, follow these steps:

- 6) Go to "My Network Places". "My Network Places" can typically be found by simply clicking **Start** and then **My Network Places**.
- 7) Look for a UPnP icon labeled "Luminary Micro Serial2Ethernet Module". The label should also include the IP address of the BT-AP 111 module. Double-clicking on the icon will bring up the configuration website served up by the BT-AP 111 module in a web browser.

### 3. BT-AP 111 (Access Point) Home Page

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Please enter the Specific IP address related to the BT-AP 111 into your browser,  
 You can find the page listed below.

## Amp'ed RF Bluetooth Access Point

### Status & Configuration

<b>Status</b>	<b>Name:</b> Bluetooth Access Point
<b>Telnet Settings</b>	<b>Firmware Revision:</b> 5011
<b>Misc Settings</b>	<b>IP Address:</b> 192.168.2.33
	<b>MAC Address:</b> 00-1a-b6-00-ff-ff
	<b>Inactivity Timeout:</b> 20 minutes

### Telnet Port Settings

<b>Baud Rate:</b>	115200 bits/second
<b>Data Size:</b>	8 bits/character
<b>Parity:</b>	None
<b>Stop Bits:</b>	1 bit(s)
<b>Flow Control:</b>	None
<b>Local Telnet Port Number:</b>	17000
<b>Remote Telnet Port Number:</b>	N/A
<b>Telnet Mode:</b>	Server
<b>Telnet Protocol:</b>	Raw
<b>Telnet Server IP:</b>	N/A
<b>Telnet Timeout:</b>	20 seconds

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## 4. Status & Configuration

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When you are on home page it is displayed above. This web page described the current status of the BT-AP 111.

In a top table the list of property described like the name, Firmware Revision, Inactivity timeout, IP address and MAC address.

1) **Name**

You can provide user defined name use of Misc Settings property. Default set to Bluetooth Access Point.

2) **Firmware Revision**

Which provide you firmware version installed in BT-AP 111. Users are not able to update firmware; they need to contact our customer support [support@ampedrftech.com](mailto:support@ampedrftech.com)

3) **IP Address**

Assigned IP address to BT-AP 111.

4) **MAC Address**

Assigned MAC address to BT-AP 111.

5) **Inactivity timeout**

It is related with the connection between client to server , If inactivity occurs 20 minutes long than it causes timeout or connection refused.

In a Telnet port settings table long list of property described like Baud Rate, Data Size, Parity, Stop bits, Flow control, Local Telnet Port number, Remote Telnet Port Number, Telnet Mode, Telnet protocol, Telnet Server IP and Telnet Timeout.

6) **Local Telnet Port Number**

*port* is generally a specific place for being physically connected to some other device, usually with a socket and plug of some kind. It is useful to provide unique port number to access the BT-AP 111. User can provide Telnet Port Number use of Telnet Settings.

7) **Remote Port Number**

*port* is generally a specific place for being remotely connected to some other device, usually with a socket and plug of some kind. To access the BT-AP 111 remotely you need to specify it's port number else it defined "N/A". Note: when Telnet Mode set to "client", afterwards you can defined Remote port number else leave it.

8) **Telnet Mode**

This mode defined the remote device or machine work as "server" or "client", default value is "server".

9) **Telnet Protocol**

TELNET is a network protocol used on the Internet or local area networks to provide a bidirectional interactive text-oriented communications facility via a virtual terminal connection. User data is interspersed in-band with TELNET control information in an 8-bit byte oriented data connection over the Transmission Control Protocol (TCP). When User set the Telnet Mode to "server" you have to set Telnet Protocol to "Telnet" else it is generating erroneous transmission over network. When you are setting the Telnet Mode to "Client" at this time please try to change Telnet Protocol to "RAW".

10) **Telnet Server IP**

When the Telnet Mode sets to "Client", you can specify the Telnet Server IP for telnet server.

11) **Telnet Timeout**

It is specifying inactivity of the telnet after specified seconds. Default is a "0" it means there is no timeout session used.

## 5. Telnet Settings

### Amp'ed RF Bluetooth Access Point

#### Status & Configuration

Status	Name: Bluetooth Access Point
Telnet Settings	Firmware Revision: 5011
Misc Settings	IP Address: 192.168.2.33
	MAC Address: 00-1a-b6-00-ff-ff
	Inactivity Timeout: 20 minutes

#### Telnet Settings

The current settings for the telnet port may be changed using the form below. To make the new settings apply each time the Hub is reset, ensure that "Make these the default settings" is checked before pressing the "Apply Changes" button. If this control is not checked, the changes are applied to the port but the existing defaults are used whenever the Hub is next reset.

Telnet	Current	Updated
Local Port Number:	17000	<input type="text" value="17000"/>
Remote Port Number:	N/A	<input type="text" value="9346"/>
Mode:	Server	<input type="text" value="Server"/>
Protocol:	Raw	<input type="text" value="Raw"/>
Server IP:	N/A	<input type="text" value="204"/> . <input type="text" value="232"/> . <input type="text" value="133"/> . <input type="text" value="26"/>
Telnet Timeout:	20 seconds	<input type="text" value="20"/> seconds (0 for no timeout)

Make these the default settings.

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- 1) **Local Telnet Port Number**  
Specifies the local telnet port number to be used.
- 2) **Remote Telnet Port Number**  
Specifies the remote telnet port number to be used when the "Telnet Mode" is set to "Server".
- 3) **Mode**  
Specifies whether the telnet mode for that port will be "Server" or "Client".
- 4) **Protocol**  
Specifies whether the data for the port will be "Telnet" or "Raw".

5) **Server IP**

Specifies the IP address of the telnet server when the “Telnet Mode” is set to “Client”.

6) **Timeout**

Specifies the telnet timeout in seconds. The default is 0 and specifies that no timeout is to be used.

**NOTE:** After changing the settings, click the “Apply Changes” button to cause the changes to take effect. If the “Make these the default settings” check box is checked before clicking the “Apply Changes” button, then the new settings are applied each time the BT-AP 111 module is reset. Otherwise, the existing defaults are used whenever the module is next reset. Before submitting your Telnet settings there is a check box to make a default settings for a BT-AP 111.

## 6. Miscellaneous Settings

When you are clicking on **Miscellaneous Settings** tab; you can find the web page same as on your right column. In a Misc Settings three types of settings included.

### Amp'ed RF Bluetooth Access Point

#### Status & Configuration

<b>Status</b>	<b>Name:</b> Bluetooth Access Point
<b>Telnet Settings</b>	<b>Firmware Revision:</b> 5011
<b>Misc Settings</b>	<b>IP Address:</b> 192.168.2.33
	<b>MAC Address:</b> 00-1a-b6-00-ff-ff
	<b>Inactivity Timeout:</b> 20 minutes

#### IP Address Selection

<b>Address Type:</b>	<input type="text" value="DHCP/AutoIP"/>
<b>Static IP Address:</b>	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/>
<b>Subnet Mask:</b>	<input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="255"/> . <input type="text" value="0"/>
<b>Default Gateway:</b>	<input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/> . <input type="text" value="0"/>

#### General Configuration Settings

<b>Module Name:</b>	<input type="text" value="Bluetooth Access Point"/>
<b>UPnP port number:</b>	<input type="text" value="6432"/>
<b>MAC Address Byte:</b>	<input type="text" value="ff"/> - <input type="text" value="ff"/>
<b>Inactivity Timeout:</b>	<input type="text" value="20"/> minutes

#### Restore Factory Defaults

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The "IP Address Selection" portion of the page allows configuration of the BT-AP 111 module to automatically obtain an IP address or use a static IP address at start up. If the "DHCP/AutoIP" option is chosen, the BT-AP 111 module will first attempt to get an IP address from a DHCP server. If a DHCP server cannot be located, the BT-AP 111 module will obtain a link local IP address using the AutoIP protocol.

If the "Static IP" option is chosen, then the "Static IP Address", "Subnet Mask", and "Default Gateway" fields need to be filled in.

### 1) Static IP address

Some infrastructure situations have to use static addressing, such as when finding the Domain Name System (DNS) host that will translate domain names to IP addresses. Static addresses are also convenient, but not absolutely necessary, to locate servers inside an enterprise. An address obtained from a DNS server comes with a time to live, or caching time, after which it should be looked up to confirm that it has not changed. Even static IP addresses do change as a result of network administration.

### 2) Subnet settings

All computers that belong to a subnet are addressed with an identical common, most-significant bit-group in their IP address, which is called their routing prefix.

### 3) Default gateway

A host uses a default gateway when an IP packet's destination address belongs to someplace outside the local subnet. The default gateway address is usually an interface belonging to the LAN's border router.

**NOTE:** Clicking the "Update Settings" button will cause the settings to be saved.

The "General Configuration Settings" portion of the page allows modification of the "Module Name" and "UPnP port number", "MAC Address Byte" and "Inactivity Timeout".

### 4) UPnP port

UPnP is an extension of plug-and-play, a technology for dynamically attaching devices directly to a computer, although UPnP is not directly related to the earlier plug-and-play technology. UPnP devices are "plug-and-play" in that when connected to a network they automatically established working configurations with other devices.

You defined the UPnP port number as per your network management requirements.

In BT-AP 111 manufacturer assigned MAC address byte but you can change the MAC address byte as per your requirements.

Inactivity timeout is related with the connection between client & server, if inactivity occurs 20 minutes long than it causes timeout or connection refused.

**NOTE:** Clicking the "Update Settings" button will cause the settings to be saved.

The "Restore Factory Defaults" portion of the page allows restoring all of the options to their default states.

## **7. Strong Data Security over *Bluetooth***

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New wireless data security guidelines are being discussed by the Payment Card Industry Data Security Standard, PCI DSS. Currently, with the formation of a Special Interest Group, SIG, they are reviewing the security needs and weaknesses found in WiFi wireless networks used for payment applications. *Bluetooth*, is also gaining strong market acceptance in the payments industry, and similar guidelines will likely be applied soon.

In order to advance *Bluetooth* wireless applications into this area now, Amp'ed RF is presenting a scheme for strong data security over a *Bluetooth* system, *BlueGuard*, described in this paper.

### **3-DES Encryption**

*BlueGuard* uses a 3-DES cipher, with a 16 byte, double length key strength. A 24 byte key is also optional. This fulfills the FIPS 140-2, Level 3 requirements for encryption algorithm and key strength.

The native link level security of *Bluetooth* is not sufficiently strong for the PCI industry.