



BT-AP 111 User Manual

1. Product Specification

This 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

BT-AP111 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

Amp'ed RF Bluetooth Access Point

Status & Configuration

<ul style="list-style-type: none"> Status Telnet Settings Misc Settings 	Name: Bluetooth Access Point
	Firmware Revision: 5011
	IP Address: 192.168.2.33
	MAC Address: 00-1a-b6-00-ff-ff
	Inactivity Timeout: 20 minutes

Telnet Port Settings

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

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4. Status & Configuration

The home web page describes the current status of the BT-AP 111.

Refer to these items below:

1) **Name**

User defined name. Default set to Bluetooth Access Point.

2) **Firmware Revision**

Firmware version installed in BT-AP 111.

3) **IP Address**

Assigned IP address.

4) **MAC Address**

Assigned MAC address.

5) **Inactivity timeout**

This is the timeout applied to the connection between client and server.

6) **Local Telnet Port Number**

Port is a specific socket number applied to a connection to a network. It is useful to provide a unique port number to access the BT-AP 111 locally. User can provide Telnet Port Number and use the Telnet Settings.

7) **Remote Port Number**

Port is a specific socket number applied to a remote network connection. To access the BT-AP 111 remotely this *Port* number must be applied. Note: when Telnet Mode set to "client", this *Port* may be entered.

8) **Telnet Mode**

This mode applies to the remote device or machine: *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 Telnet Mode is *Server*, the Telnet Protocol is typically *Telnet*. When Telnet mode is *Client*, the Telnet Protocol is typically *Raw*.

10) **Telnet Server IP**

When Telnet Mode is *Client*, specify the Telnet Server IP for telnet server.

11) **Telnet Timeout**

This is the inactivity disconnection of the telnet, in seconds. Default is "0", no timeout applied.

NOTE: After changing the settings, click the "Apply Changes" button to take effect. "Make these the default settings" check box will apply the new settings each time the BT-AP 111 device is reset. Otherwise, the existing defaults are used after the next reset.

5. Miscellaneous 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

IP Address Selection

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

General Configuration Settings

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

Restore Factory Defaults

Restore all options to their factory default states:

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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.

Define the UPnP port number as per your network management requirements.

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.

6. Strong Data Security over *Bluetooth*

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.