Installation Manual

Tektronix

BPA100
Bluetooth Protocol Analyzer

071-1115-00

This document supports software version 2.2 and above.

Check for regular BPA Series software updates at www.tektronix.com/bpa_software

www.tektronix.com

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General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

To Avoid Fire or Personal Injury

Observe All Terminal Ratings. Connect the ground lead of the probe to earth ground only.

Do Not Operate With Suspected Failures. If you suspect there is damage to this product, have it inspected by qualified service personnel.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Safety Terms and Symbols

Terms in This Manual. These terms may appear in this manual:

WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*

CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Symbols on the Product. These symbols may appear on the product:

CAUTION
Refer to Manual

Preface

This manual provides the information you need to install and operate the Tektronix BPA100 Bluetooth Protocol Analyzer for the first time.

For instructions on how to use the Bluetooth Protocol Analyzer following installation, refer to the online help and the *BPA100 Bluetooth Protocol Analyzer User Manual*. The user manual is available in Portable Document Format on the *BPA100 Bluetooth Protocol Analyzer Product Software CD-ROM* that shipped with your product.

Contacting Tektronix

Phone	1-800-833-9200*
Address	Tektronix, Inc. 14200 SW Karl Braun Drive P.O. Box 500 Beaverton, OR 97077 USA
Web site	www.tektronix.com
Sales support	1-800-833-9200, select option 1*
Service support	1-800-833-9200, select option 2*
Technical support	Email: techsupport@tektronix.com 1-800-833-9200, select option 3* 6:00 a.m. – 5:00 p.m. Pacific time

*** This phone number is toll free in North America. After office hours, please leave a voice mail message.**

Outside North America, contact a Tektronix sales office or distributor; see the Tektronix web site for a list of offices.

BPA100 Bluetooth Protocol Analyzer Set Up and Installation

This manual contains the following information:

- Overview of the BPA100 Bluetooth Protocol Analyzer
- Instructions for unpacking the product
- Requirements of the host computer
- Instructions for setting up hardware
- Procedures for installing software
- Instructions for starting up and exiting the software

Product Overview

The Bluetooth Protocol Analyzer facilitates the development of Bluetooth devices by providing a tool that can nonintrusively and independently intercept the baseband traffic, log, decode, and analyze the packet data transmitted and received over a Bluetooth piconet. The Bluetooth Protocol Analyzer can also function as a prototype debugging tool that is capable of participating in a piconet, either as a master or a slave, to initiate various modes of operation, introduce intentional errors, and act as a known reference device.

The Bluetooth Protocol Analyzer product consists of a Bluetooth Air Probe with USB connector, a custom USB cable, and a CD-ROM containing application software and the user manual.

Product Features

The following list notes the key features of the BPA100 Bluetooth Protocol Analyzer:

- Complies with Bluetooth 1.1 specification.
- Provides reliable analysis using a fully-compliant product based on proven Digianswer technology.

- Operates in either Independent or Piconet (master/slave) mode allowing maximum test and debug flexibility.
- Allows you to use advanced triggering and filtering to capture, log, and display only those events or transactions of interest, making it easier to locate faults and optimize storage.
- Allows you to use the Free Run Analyzer Display function for real-time monitoring of the latest session transactions while continuously logging to your PC hard drive.
- Provides maximum log history file size by directly logging to your PC hard drive. This allows long-term monitoring of packet traffic to uncover intermittent problems.
- Captures and logs all baseband packets transmitted within a Bluetooth piconet (including retransmitted packets) allowing full session transaction audits.
- Isolates, decodes, and displays baseband, LMP, L2CAP, RFCOMM, SDP, OBEX, TCS, HDLC, and PPP commands, events, and data packets providing effective visibility into higher protocol layers.

The Bluetooth Specification

The Bluetooth Specification is a standard containing the information required to ensure that diverse devices supporting the Bluetooth wireless technology can communicate with each other, regardless of the manufacturer. This document is divided into the following parts:

- *Volume 1, Core.* This is a lengthy and detailed document that specifies components such as the radio and baseband specifications, link manager protocol, service discovery protocol, transport layer, and interoperability with different communication protocols. It also provides three chapters on test and qualification, including *Bluetooth Test Mode*, *Bluetooth Compliance Requirements*, and *Test Control Interface*.
- *Volume 2, Profiles.* This document specifies the protocols and procedures required for different types of Bluetooth applications, such as service discovery, cordless telephony, serial port, and synchronization profiles.

To access this two-part specification on the World Wide Web, go to the following URL:

http://www.bluetooth.com

Bluetooth Protocol Analyzer Configurations

You can operate the BPA100 Bluetooth Protocol Analyzer in either of the following configurations.

Independent Mode. Configured as an independent unit, the Bluetooth Protocol Analyzer does not interact directly in a piconet. Instead, after synchronizing to the net it passively monitors and logs all baseband packets transmitted between the master and the slaves comprising the piconet. By using the advanced triggering and filter features, you can identify the data you want to log, and then analyze it following the session.

Piconet Mode. Configured as a participant in the piconet, the Bluetooth Protocol Analyzer uses a full-protocol stack and participates as the master or a slave in the piconet.

As a master, the Bluetooth Protocol Analyzer logs all baseband packets between itself and the piconet slave device(s). When set up as a slave, it logs all packets between itself and the piconet master as well as between the master and all other slave devices.

For information on how to configure the piconet mode of your analyzer, refer to the *BPA100 Bluetooth Protocol Analyzer User Manual* (.pdf file) available on the *BPA100 Bluetooth Protocol Analyzer Product Software CD-ROM* that shipped with your product.

Unpacking

The BPA100 Bluetooth Protocol Analyzer package contains the following items as shown in Figure 1:

1. BPA100 Bluetooth Air Probe
2. CD-ROM containing product software
3. BPA100 Bluetooth Protocol Analyzer installation manual
4. Custom USB cable

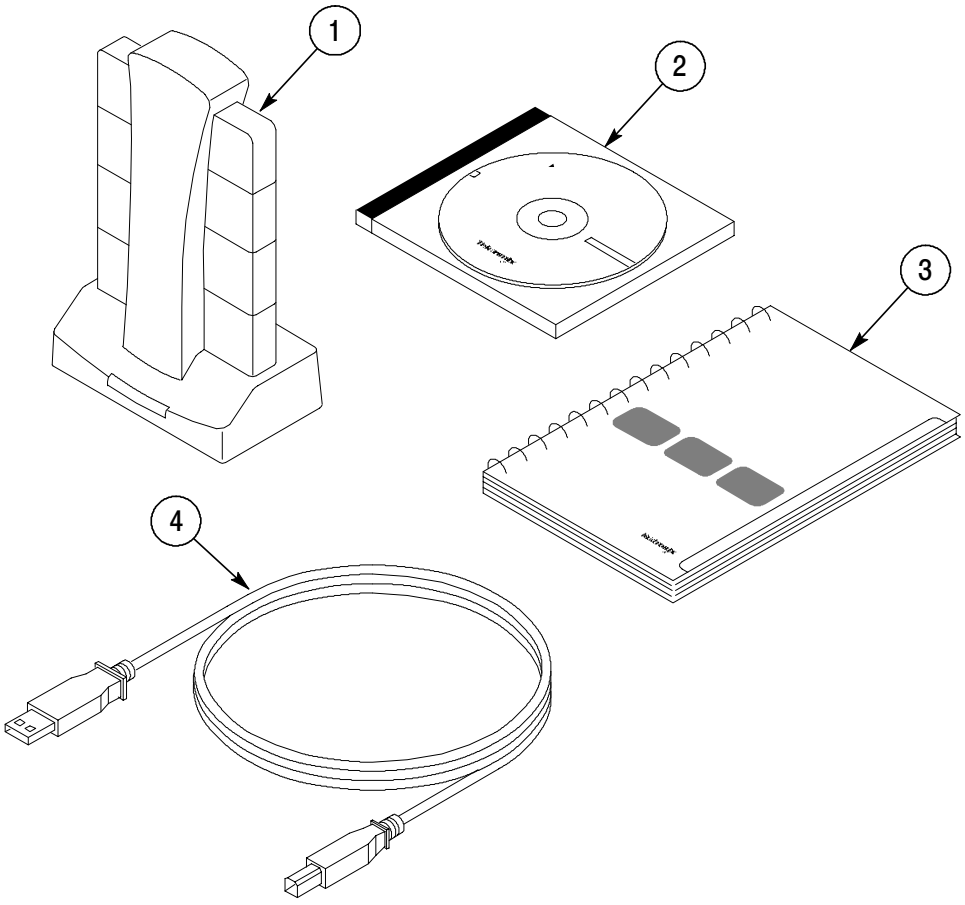

Figure 1: Bluetooth Protocol Analyzer components

System Requirements

To install and use the BPA100 Bluetooth Protocol Analyzer software, your system should meet the following minimum requirements:

- PC with 500 MHz or faster Pentium III processor. You can use a slower microprocessor but the analyzer will operate slower in Free Run mode
- Microsoft Windows 98, ME, or 2000 operating system
- 128 MB RAM
- Minimum of 200 MB of free space on the hard-disk
- Monitor resolution of 1024 by 768 pixels or higher

CAUTION. *To ensure compliance with regulatory emissions statements, the custom USB cable included with the BPA100 Bluetooth Protocol Analyzer has additional shielding. Do not use a standard USB cable with this product.*

Setting Up the Product

Setting up the BPA100 Bluetooth Protocol Analyzer consists of locating and configuring hardware components and installing the application software and drivers. If you are installing this product for the first time, see the *Installation Procedure for New Installations* beginning on page 6.

When a new version of the BPA100 software is released for upgrading, it may be necessary to update the Air Probe firmware as well as the application software. See the *Installation Procedure for Upgrades* beginning on page 7.

***NOTE**. If a Digianswer Bluetooth DemoCard is installed on your computer, you must uninstall it before installing the Bluetooth Protocol Analyzer software. See* Uninstalling DemoCard Software *on page 9.*

If you have an older version (v1.0) of Bluetooth software installed, see Uninstalling Earlier Versions of Bluetooth Software *on page 9.*

For later releases, the installation program uninstalls older software for you.

Installation Procedure for New Installations

1. Insert the Bluetooth Protocol Analyzer CD-ROM into the CD-ROM drive of your PC.
2. Follow the on-screen steps to complete the installation.
3. Restart your computer when prompted.
4. Use the USB cable to connect the Bluetooth Air Probe to an available USB port on the computer.
5. Follow the instructions to install the necessary drivers.

***NOTE**. Before starting this procedure, locate your MS Windows installation disk. You may need it to install drivers not found on your hard drive.*

For Windows 2000, the driver installation takes place in several steps, including USB device, Bluetooth USB Device, Bluetooth NAT Protocol, Bluetooth Ethernet Adapter, Bluetooth RFCOMM Protocol, and Bluetooth SDP Protocol.

***NOTE**. If you need to install any drivers manually, they are located on the CD-ROM at D:\Drivers\Win9x for Windows 98 and ME and at D:\Drivers\Win2K for Windows 2000 (where D: is your CD-ROM drive).*

6. Restart your computer.

You are now ready to operate your Bluetooth Protocol Analyzer.

***NOTE**. Close all Bluetooth Neighborhood and Bluetooth Protocol Analyzer applications before disconnecting the Bluetooth Air Probe from the computer.*

Installation Procedure for Upgrades

1. In the menu bar of the BPA100 Bluetooth Protocol Analyzer, select **System > System Properties** and note the version of the software and firmware you are running.

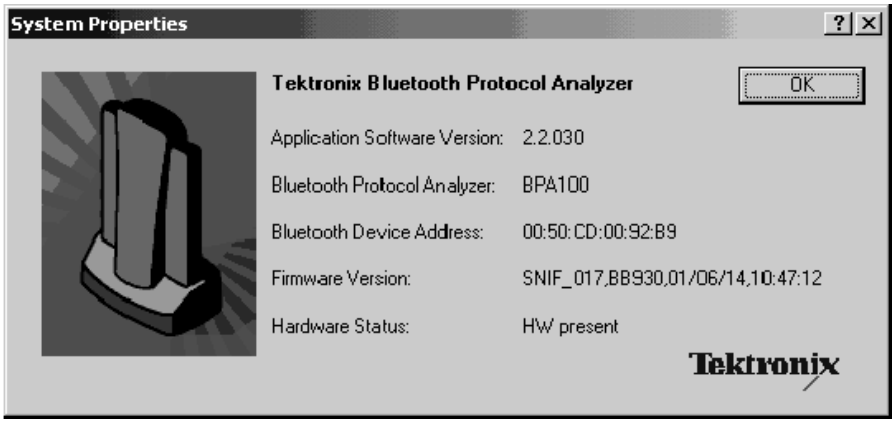

Figure 2: Bluetooth Protocol Analyzer System Properties dialog box

2. In the menu bar of the Bluetooth Protocol Analyzer select **Help > Technical Support**. This connects you to the BPA100 Series Support website. Select the **Software and Drivers** link to obtain information on the latest BPA100 Series software release.

3. If needed, download the latest version of the BPA100 from the website.

***NOTE**. You can also order a BPA100 Bluetooth Protocol Analyzer product software CD-ROM (Tektronix part number 063-3469-xx) through your local Tektronix representative. See page vi for information on contacting Tektronix.*

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4. Unzip the downloaded file into a directory of your choice.
5. Browse to the directory where you unzipped the file and run the usbflash.exe program. Select the **Update Flash SW** button and follow the prompts. This upgrades the Bluetooth Air Probe firmware to the latest version.

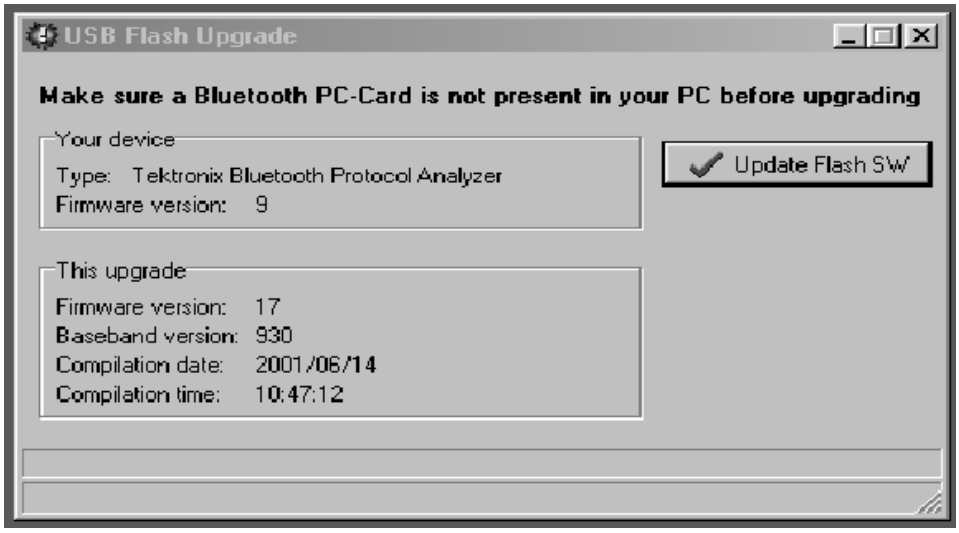

Figure 3: USB Update Flash screen

6. Browse again to where you unzipped the files and run the setup.exe program.
7. The setup program asks if you want to remove the previous version of software. Follow the on-screen steps to remove the previous version. When prompted, restart your computer.

8. The installation procedure should automatically restart after your computer reboots. If not, run the setup.exe program to continue the installation process. Follow the on-screen prompts and restart your computer when prompted.

You are now ready to operate your Bluetooth Protocol Analyzer.

Uninstalling DemoCard Software

If a Bluetooth DemoCard is installed on your computer, you must uninstall it before you can install the Bluetooth Protocol Analyzer.

1. Insert the DemoCard.
2. From your PC desktop, select **Start > Settings > Control Panel**.
3. Open the Add/Remove Programs icon.
4. Select Bluetooth DemoCard from the list and follow the on-screen instructions.
5. Remove the DemoCard.
6. Restart your computer.

Uninstalling Earlier Versions of Bluetooth Software

To uninstall the earlier version of the Bluetooth software do the following:

1. From your PC desktop, select **Start > Settings > Control Panel**.
2. Open the Add/Remove Programs icon.
3. Select the Bluetooth software from the list and follow the on-screen instructions.
4. Restart your computer.

NOTE. *As an alternate way to uninstall older software, select the Uninstall Bluetooth Software Suite in the program folder.*

You may now install the Bluetooth Protocol Analyzer as described in the *Installation Procedure for New Installations* on page 6.

Starting the Software

You have the following options to start the BPA100 software:

- Double-click the **Bluetooth Protocol Analyzer** icon on your Windows desktop.
- In the taskbar, select **Start > Programs > Tektronix Bluetooth Protocol Analyzer > Bluetooth Protocol Analyzer Application**.

Exiting the Software

To quit the BPA100 Bluetooth Protocol Analyzer software, select **File** in the menu bar; then select **Exit**.

Software and Data Files Available on Disk

The CD-ROM that ships with the BPA100 Bluetooth Protocol Analyzer contains the software applications and data files discussed below.

BPA100 Bluetooth Protocol Analyzer. Use the BPA100 software to set up a log session and intercept all data transmitted between the devices forming a Bluetooth piconet. You can then display and analyze all baseband packets logged and isolate, decode, and display LMP, L2CAP, RFCOMM, SDP, OBEX, TCS, HDLC, and PPP packets.

Digianswer Bluetooth Software Suite. The Bluetooth Software Suite is a collection of Bluetooth applications created by Digianswer and is composed of the following applications:

- Bluetooth Neighborhood
- Bluetooth Configuration Tool
- Object Editor

You can also use the *Bluetooth Neighborhood* application to do the following:

- Device discovery: Determine which remote Bluetooth devices are available within the range of your Air Probe.

- Service discover: Determine which services (applications) a remote device facilitates.
- Links: Establish links to remote devices.

You can use the *Bluetooth Configuration Tool* to associate one or more appropriate profiles with a Bluetooth COM port and then add the COM port to your Local Services bar in the Bluetooth Neighborhood window.

You can use the *Object Editor* to send objects like messages, notes, or business cards if you do not have Microsoft Outlook installed on your system.

For an overview (Beginner's Guide) and detailed information when using the Bluetooth Neighborhood, select the **Help** button within the application. In addition, three portable document format (.pdf) files are installed with the Bluetooth software. These are printable versions of the Help files and the BPA100 user manual.

- Bluetooth Beginner's Guide (an introduction to the Bluetooth Technology)
- Bluetooth Software Suite User's Manual
- BPA100 Bluetooth Protocol Analyzer User Manual

NOTE. *While using the Bluetooth Protocol Analyzer, you are advised not to run applications on your computer other than the Bluetooth Protocol Analyzer and the Bluetooth Neighborhood.*

HCI Terminal. This Digianswer application allows you to interact with the hardware using an interface similar to the that provided by an AT Terminal application when communicating with a modem. This facilitates sending HCI commands from your computer to a Bluetooth device and receiving responses, allowing you to test your own Bluetooth hardware. The *HCI Terminal Guide* provides instructions.

***NOTE**. The HCI Terminal and Bluetooth Neighborhood applications use different means to create connections and generate traffic. You can only run one application at a time.*

Do not attempt to run HCI Terminal and Bluetooth Neighborhood at the same time.

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