



EthIR LAN™ User Guide

- ESB5001 and ESB5004

Infrared Ethernet Access Point for mobile device

V 1.7

Clarinet Systems, Inc.

Copyright

Copyright 2007 Clarinet Systems, Inc. All rights reserved. Information in this document is subject to change without notice. No part of this publication may be transmitted, transcribed, reproduced, stored in any retrieval system or translated into any language or computer language in any form or by any means, mechanical, electronic, optical, chemical, manual or otherwise, without the prior written permission of Clarinet Systems, Inc., 48834 Kato Road, #101A, Fremont, CA 94538

Clarinet Systems, EthIR LAN, EthIR Switch, EthIR Beam and EtherUSB are trademarks of Clarinet Systems, Inc.

All other company and product names are trademarks or registered trademarks of their respective owners.

Table of Contents

1	PRODUCT OVERVIEW	1
2	HARDWARE INSTALLATION	2
2.1	STATUS LED, PORT, AND BUTTON OF ESB5001/5004	2
2.1.1	<i>External Status LED</i>	<i>2</i>
2.1.2	<i>Ports</i>	<i>2</i>
2.2	HARDWARE INSTALLATION	3
3	CONFIGURATION	5
3.1	PDA SUPPORT	5
3.2	ETHIR LAN WEB-BASED ADMINISTRATION TOOL (ADMINTOOL)	5
3.3	ACCESS ADMINTOOL AND CHANGE ES5001/5004 INITIAL VALUES	5
4	SPECIFICATIONS AND PROVISIONS	7
4.1	DIMENSIONS	7
4.2	ENVIRONMENT SPECIFICATIONS	7
4.3	AC ADAPTER SPECIFICATIONS	7
4.4	SAFETY AND EMI CERTIFICATE	7
5	FUNCTIONS AND COMPATIBILITY	8
5.1	PROTOCOLS	8
5.1.1	<i>Communications protocols</i>	<i>8</i>
5.1.2	<i>Network protocols</i>	<i>8</i>
5.1.3	<i>Network connection side</i>	<i>8</i>
5.1.4	<i>PDA connection side</i>	<i>8</i>
5.1.5	<i>PDA Compatibility</i>	<i>8</i>
5.2	SOFTWARE ARCHITECTURE OVERVIEW	8
5.2.1	<i>Linux OS</i>	<i>8</i>
5.2.2	<i>Firmware Version</i>	<i>8</i>
	APPENDIX A – QUICK START GUIDE	9
	APPENDIX B – CONFIGURING POCKET PC	12
B.1	PPC PDA	12
B.2	CE5.0 PDA	12
B.3	WM5.0 PDA	13
B.4	WM5.0 SMART PHONE	13
	APPENDIX C – CONFIGURING PALM	14
C.1	PALM PDA	14

1 PRODUCT OVERVIEW

ESB5001 and ESB5004 are infrared to Ethernet access points for connecting PDAs or handheld computing devices to an Ethernet 10/100 Base-T network through the devices' IR ports running TCP/IP network protocol. ESB5001/5004 belongs to the EthIR LAN product line which contains single port ESB101/301/3011b/1000 and multi-port ESB208/216/608 early models.

ESB5001 is equipped with one USB IR ports, while ESB5004 is equipped with four USB IR ports, and two 10/100 Base-T one for uplink and one for PC.

Each connected mobile device can perform server synchronization, Internet browsing, and file transfer. The EthIR LAN provides an alternative network connection with high security and reliability standards. The EthIR LAN works perfectly for mobile users, field application staff, and in any environment that requires a high level of security and reliability.

This document "EthIR LAN ESB5001 5004 User Guide" is written for ESB5001/5004 although many concepts are the same as other EthIR LAN models. The users of the EthIR LAN single port ESB101/301/3011b/1000 and multi-port ESB208/216/608 shall reference "EthIR LAN ESB101-301-208-608 User Guide".

[Please contact Clarinet Systems for the availability of ESB5004 product.](#)

[For jump start, please refer to Appendix A – Quick Start Guide.](#)

2 HARDWARE INSTALLATION

Please confirm the following items have been included in the shipping box with the main product.

As for ESB5001

1. ES5001 and EB5000DT
2. 120cm (4') Ethernet cable
3. 5VDC/2A power adapter, 2.1x5.5mm plug, center positive polarity
4. A paper slip that indicates the website from which to download ESB5001 Users Manual (this manual), Quick Start Guide, and Data Sheet



As for ESB5004 ([Please contact Clarinet Systems for the availability of ESB5004 product.](#))

1. ES5004 and four EB5000DT (or EB5004WM)
2. 120cm (4') Ethernet cable and four USB cables
3. 5VDC/3A power adapter, 2.1x5.5mm plug, center positive polarity
4. A paper slip that indicates the website from which to download ESB5004 Users Manual (this manual), Quick Start Guide, and Data Sheet



2.1 Status LED, port, and button of ESB5001/5004

2.1.1 External Status LED

Signal Name	Status
Power	Solid after power on which indicates ready for operation Slow blink during operation Fast blink if power on self test fails – bad unit
Ethernet	Glows green once to confirm that a link has been established with another device
USB	Glows green if a USB connection has been made
IR (of EB5000)	Blinking if an IR connection and communication occurs

2.1.2 Ports

1. Two Ethernet RJ45 and four USB female connectors.
2. One DC power connector.

-
3. One Reset button: press and hold the Reset Button for 8 seconds, or longer, to set ES5001/5004 to factory default and then reboot.

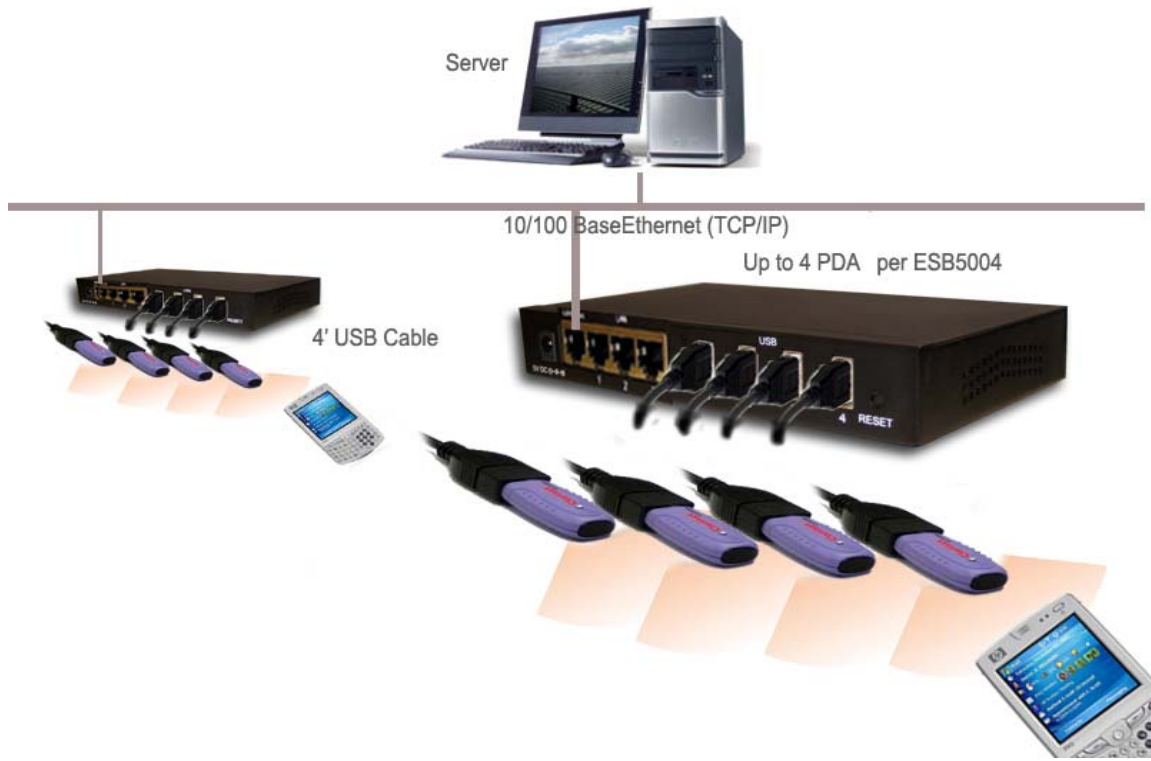
2.2 Hardware Installation

1. Connect the Ethernet cable to the ES5001/5004 and the other end to Ethernet switch *.
2. Connect EB5000 to the ES5001/5004 USB port.
3. Connect the power adapter to rear socket of the ES5001/5004, then into the wall outlet. If power is present, the ES5001/5004 will proceed with normal power on sequence - self test and boot up sequence within 20 seconds; once the Power LED is solid in color on the front panel, the unit is ready.
 - If the unit has a problem, the power LED will flash quickly.
 - If the network connection has a Link, the Ethernet LED will blink green.
 - If USB devices are connected & recognized by the ES5001/5004, the corresponding LED will illuminate on the front panel.

To shut down the ES5001/5004, disconnect the AC power adapter. Do not shut down the ES5001/5004 when there is a PDA performing data communications since this may cause data to be lost.

Note

* In non-DHCP environment, the system administrator has to set up an enclosed DHCP network to access ES5001/5004 configuration via administration tool.



ESB5004 system configuration

3 CONFIGURATION

3.1 PDA support

The ES5001/5004 currently supports PDA running Palm, Psion, PPC 2002/2003, CE/Net 4.1 & 4.2, CE5.0, and WM5.0.

3.2 EthIR LAN web-based Administration Tool (AdminTool)

EthIR LAN web-based Administration Tool can be accessed via IE browsers. This tool provides the following functions:

- Allow user to use static IP or DHCP for EthIR LAN
- Allow user to setup IP address, Subnet Mask, Gateway, WINS and DNS information when using static IP.
- Allow user to setup NAT configuration for the USB ports
- Allow user to setup network identification such as device name and domain name for the EthIR LAN
- Allow user to change password
- Allow user to review reports of critical changes
- Allow user to update firmware

3.3 Access AdminTool and change ES5001/5004 initial values

DHCP is the default setting in ES5001/5004 and it will obtain one IP address from DHCP server. IP addresses of USB ports are assigned by internal NAT. To change the setting, please access the ES5001/5004 through AdminTool. Further, please designate the URL using the IP_address or Device_name as shown below.

```
http://<ES5001/5004 IP_address>:9876 (Note syntax: http://<IP address><colon>9876/ )  
User ID: admin  
Password: password
```

If the network contains a WINS server, you may use the Device Name of the ES5001/5004 in place of the IP address.

All fields will be overwritten when restoring factory default by pushing the Reset Button for 8 seconds or longer.

The Default Factory Setting is as follow:

Device Name: <Serial Number>
Domain Name:
IP Mode: DHCP
IP Group: 193.168.10.0
User ID: Admin
Password: Password

Please refer to [EtherUSB AdminTool User Manual](#) for details.

4 SPECIFICATIONS AND PROVISIONS

4.1 Dimensions

- Dimensions (L x W x H in mm & in “) Weight in kg & in oz
ES5001/5004 152 x 88 x 25; 6” x 3.5” x 1” 0.5kg; 18 oz
EB5000DT 47 x 18 x 9; 1.85” x 0.7” x 0.35” 0.006kg;0.2 oz (include 4’ USB cable)
EB5000WM 70 x 28 x 114; 2.8” x 1.1” x 4.6” 0.8kg; 3 oz (exclude 4’ USB cable)

4.2 Environment Specifications

- Operating temperature: 0°C ~ 35°C
- Humidity: 10% ~90% RH (Non-condensing)
- Storage temperature: -20°C ~ 90°C

4.3 AC Adapter Specifications

- Input voltage & current: 5 VDC & 2 Amp maximum (3A for ESB5004), 2.1x5.5mm plug, center positive polarity
- Regulation: <PS>E for Japanese version only

4.4 Safety and EMI certificate

- CE and FCC – B
- VCCI (application in process)

Note: Please check the Data Sheet on [//www.clarinetsys.com](http://www.clarinetsys.com) to get updated info.

5 FUNCTIONS AND COMPATIBILITY

5.1 Protocols

5.1.1 Communications protocols

- HTTP, UDP

5.1.2 Network protocols

- TCP/IP, DHCP, WINS, DNS, NAT, IrDA SIR/FIR over PPP, IrNET

5.1.3 Network connection side

- IP Address: Acquired from DHCP server or manually set
- Applicable Standards : IEEE802.3 (10BASE-T), IEEE802.3u (100BASE-TX)

5.1.4 PDA connection side

- IP Address: WM5.0 uses assigned IP, PPC2003 and earlier uses NAT
- Data transmission speed: Max 12M (USB1.1 is currently enabled although USB2.0 capable)

5.1.5 PDA Compatibility

Windows Mobile 5.0, Windows Mobile for Pocket PC 2003/2003SE, Windows CE.NET4.1/4.2, CE5.0, Palm and Psion

5.2 Software Architecture Overview

5.2.1 Linux OS

5.2.2 Firmware Version

Firmware version: please check <http://www.clarinetsys.com>

APPENDIX A – QUICK START GUIDE

This guide shows you how to quickly connect the ESB5001/5004 to your network and to PDA devices with IR port.

Included in this box are:

- ES5001 or ES5004 EthIR Switch
- EB5000DT or EB5000WM EthIR Beam
- Power Adapter
- Ethernet cable and USB cable

Before you start ensure that:

1. You have at least one computer and a network
2. You have TCP/IP networking properly configured on your computer (please refer to Windows help for more information)
3. You have an Ethernet network and a spare port available on your Ethernet switch
4. You have a PDA device with IR port

Once you have all of this in place move to Step 1 below.

1. Connections

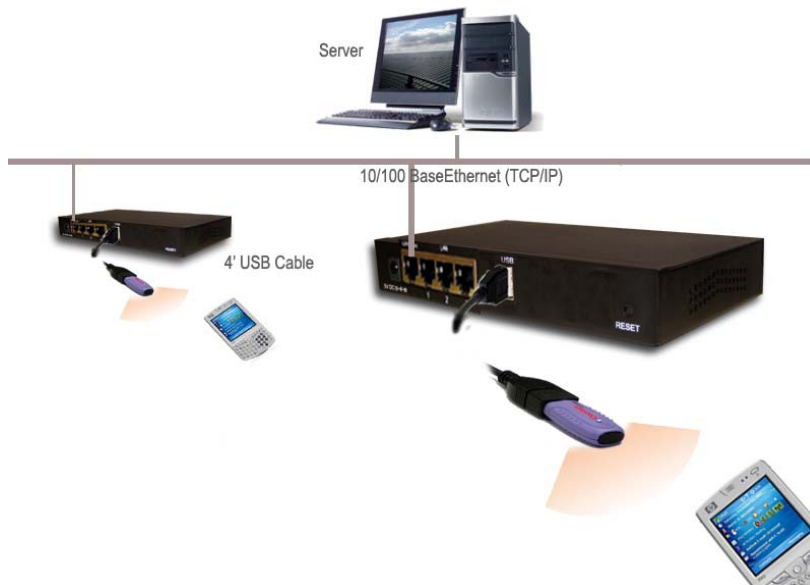
Connect the Ethernet cable into the 10/100 uplink port on the rear of the ES5001/5004. Connect the Ethernet cable into your switch or hub. Connect EB5000 to ES5001/5004. Connect the power to the back of the unit and plug the power cord into the wall socket. The power LED should blink slowly on the front of the unit - there is no on/off switch. The Network LED should now light on the front of the unit if the link is established.



In a DHCP environment, ES5001/5004 (default at DHCP mode) will obtain one IP address from the DHCP server after power-on. In a non-DHCP environment, the system administrator has to set up an enclosed DHCP network to access ES5001/5004 configuration via an administration tool as described later in this guide. The power-on process takes about 20 seconds. The ES5001/5004 can be reset to factory settings by pushing and holding the Reset Button for eight seconds or longer.

2. PDA connections

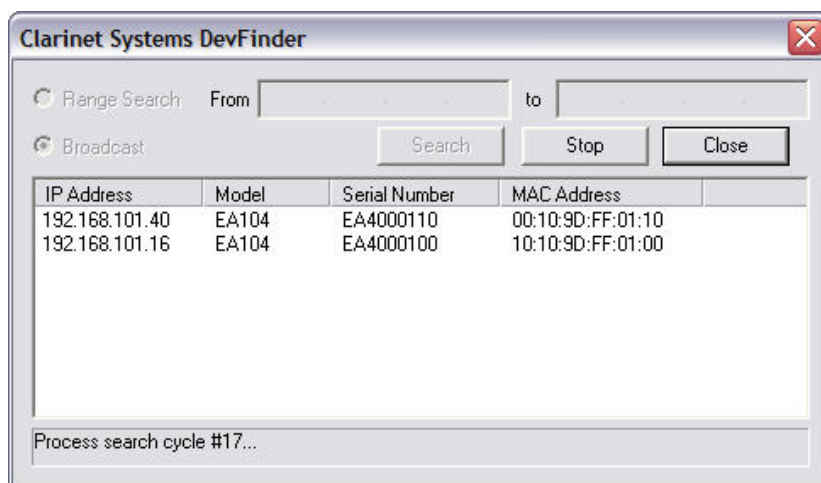
Now align IR port of your PDA devices to the lense of EB5000.



ES5004 has four USB host ports that simultaneously connect up to four PDAs through EB5000 to an Ethernet network. Each connected PDA can perform server synchronization, Internet browsing, and file transfer.

3. Clarinet Systems DevFinder (optional)

Download “Clarinet Systems DevFinder” from <http://www.clarinetsys.com> and launch the DevFinder application to locate the ES5001/5004 device and find its IP address. Choose the Default Search range as Broadcast, which is suitable for small networks. If your network is large, choosing Range Search to define and limit the search range is preferable.



4. Configuration (optional)

Now that ES5001/5004 is connected to your network and you know its IP address, open a browser window and enter the following into the URL area and then press enter. If the network contains a WINS server, you may use the serial number of the EA104 in place of the IP address. That is `http://<device name>:9876/`. For example: `http://EA4000100:9876`.

`http://<ES5001/5004_IPAddress>:9876/`
 User ID: admin
 Password: password

For example: `http://192.168.101.91:9876`



You will be presented with a Login Screen. The default Username and Password are admin/password. Click "OK" to continue. Once the correct username and password have been entered, you should see a status screen like this.

Identification	
Device Model:	EA104
Device Name:	EA4000100
Domain Name:	clarinetsys.com
System Location:	Jean's lab
Network Configuration	
Mac Address:	00:10:9D:31:30:30
IP Address:	192.168.101.36 Dynamic ip used
Subnet Mask:	255.255.255.0
Gateway:	192.168.101.3
WINS:	192.168.101.4 192.168.101.8
DNS:	192.168.101.4 192.168.101.8
USB Ports	
IP Group:	193.168.10.0
NetMask:	255.255.255.0
System	
Serial Number:	EA4000100
Option Key:	AAAAAA
Uptime:	0 days, 4:51:19

The status screen will display system information such as IP address and EtherUSB device identification. Please refer to EtherUSB AdminTool User Manual for details.

APPENDIX B – CONFIGURING POCKET PC

B.1 PPC PDA

1> Create new connection for the first time

Start/Settings/Connections/Connections/Add a new modem connection

Enter a name for the connection: name-xxxx

Select a modem: Generic IrDA

Next

Enter the number exactly as ...: you can enter a dummy phone number ex. 14081234567

Next

Finish

2> Make connection

Align PDA with EB5000 beam

Method a:

Start/Settings/Connections/Connections/Manage existing connections

Click and hold name-xxxx

connect

OK

Method b:

Pull down → icon on the screen, select “xxxx 14081234567”

←

2> Disconnect

Method a: disconnection by time out

Remove PDA from EB5000 beam

Method b: normal disconnection

Pull down → icon on the screen, select “Disconnect”, wait for ~3 seconds then remove PDA

←

Please refer to your user manual on how to setup Generic IrDA Modem connection.

B.2 CE5.0 PDA

Please refer to your user manual on how to setup Generic IrDA Modem connection.

B.3 WM5.0 PDA

1> Create new connection for the first time

Start/Settings/Connections/Connections/Add a new modem connection

Enter a name for the connection: name-xxxx

Select a modem: Generic IrDA

Next

Enter the number exactly as ...: you can enter a dummy phone number ex. 14081234567

Next

Finish

2> Make connection

Align PDA with EB5000 beam

Method a:

Start/Settings/Connections/Connections/Manage existing connections

Click and hold name-xxxx

connect

OK

Method b: n/a

2> Disconnect

Method a: disconnection by time out

Remove PDA from EB5000 beam

Method b: normal disconnection

Pull down → icon on the screen, select "Disconnect", wait for ~3 seconds then remove PDA

←

Please refer to your user manual on how to setup Generic IrDA Modem connection.

B.4 WM5.0 Smart Phone

Please refer to your user manual on how to setup Generic IrDA Modem connection.

APPENDIX C – CONFIGURING PALM

C.1 Palm PDA

Please refer to your user manual on how to setup network connection base on IR.