
Overview

Welcome to the Intel® PRO/Wireless 5000 LAN Access Point *User's Guide*. This guide covers software installation, configuration, and troubleshooting.

To select a topic, click a link in the contents column to the left.

After installing the access point register your access point online. Go to the [Intel Product Registration Web site](#).

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Introduction

The 802.11a and 802.11b Intel® PRO/Wireless 5000 LAN Dual Access Point operates in the both 5 GHz and 2.4 GHz environment at speeds up to 54 Mbps (802.11a) and 11 Mbps (802.11b). It features a software configurable antenna and will supports IEEE 802.3af Power over Ethernet. Each access point uses eight non-overlapping transmission channels for support of up to 64 active users per access point. Placement can be on a desk or table, mounting on a wall or ceiling.

The PRO/Wireless 5000 LAN Access Point is compatible with other products supporting the IEEE 802.11a standard and 802.11b standard.

Security features include support for 128, 64, and 0-bit Wired Equivalent Privacy (WEP) encryption and Virtual Private Network (VPN) compatibility.

A browser-based user interface is provided for configuration of the access point. See the [installation](#) instructions for information on how to set up and configure one or more access points.

For information on how to set up a wireless LAN, see the [Administrator's Guide](#). The Administrator's Guide is intended for use by network administrators.

802.1x Authentication

The 802.11a Intel® PRO/Wireless 5000 LAN Dual Access Point supports 802.1x authentication for Windows operating systems.

802.1x authentication for wireless LANs has three main components: The supplicant (usually the client software); the authenticator (the access point); and the authentication server (usually a Remote Authentication Dial-In User Service or RADIUS server).

802.1x is a standards-based solution for port-level authentication for a wired or wireless Ethernet client systems.

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Installation

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Introduction

Your Intel® PRO/Wireless 5000 LAN Access Point, when used with Intel PRO/Wireless 5000 LAN Adapters or other 802.11a and 802.11b-compliant wireless LAN adapters, offers an easy and economical way to add secure wireless connectivity to a wired local area network (LAN) within a building or office.

For detailed hardware installation requirements and diagrams, see the printed Quick Installation Guide supplied with the access point.

Installation Options and Requirements

Review the following options and requirements for installation and configuration of the access point for connection over the wired LAN:

- **(Recommended)** For configuration of the access point, you will need a wired client workstation connected to the access point directly (recommended) or over the wired LAN to which the access point is connected. **Note:** Initial setup and configuration must be done over a wired connection, but subsequent changes to the configuration can be done over a wireless connection.
- **(Optional)** DHCP server support for automatic assignment of an IP address to the access point over the wired network. You can configure the access point to use DHCP to get its IP address. See [Using DHCP](#).

Connect and Power Up the Access Point

Connect the Access Point to the Wired Network

- Plug an RJ-45 Category 5 Ethernet cable into the RJ-45 connector on the bottom of the access point and into a 10/100 Ethernet wall connector or hub.

Connect the Access Point to a Source of AC Power

- Plug the power adapter into a wall outlet.
- Plug the power adapter cable into the power socket on the bottom of the access point.

LED Indicators

Once the access point is connected to a wired network and is powered on, check the LED indicators to verify that the unit is functioning correctly. If the access point fails to initialize, restart it by disconnecting and reconnecting the power.



The Intel® PRO/Wireless 5000 LAN Access Point can be mounted "right side up" on a desk or table or "upside down" on a wall or ceiling. The LED discussion that follows is based on a wall- or ceiling-mounted configuration in which the access point is "upside down." In this configuration the "Ready" LED will be the top LED and "Wired link" will be the bottom LED.

- The "Ready" LED should be lit.
- If the access point is connected to a LAN through an Ethernet cable, the "Wired link" LED should be lit (green for 10 Mbps, orange for 100 Mbps) and the "Wired network activity" LED should be blinking.
- If the access point is communicating with a wireless adapter, the "Wireless radio activity" LED should be flashing steadily. The Wireless radio activity LED blinks faster when the access point is sending or receiving information from a wireless adapter.
- Note that there are two sets of LEDs for "Wireless radio activity" and "Wireless radio association." The description indicates which models use which set or sets.

Viewed on a wall- or ceiling-mounted access point, the LED indicators have the following locations and functions.

Ready	Green. This indicator will stay illuminated after the access point has completed the initialization sequence. The Ready light flashes quickly 3 times during a reset to factory default settings .
Wireless radio activity (802.11a)	Yellow flashes steadily if no adapter associated, and more rapidly when transferring data. Applies to models WSAP5000 and WDAP5000.
Wireless radio association (802.11a)	Green will be ON if a client is associated to the access point and OFF if not. Applies to models WSAP5000 and WDAP5000.
Wireless radio activity (802.11b)	Yellow flashes steadily if no adapter associated, and more rapidly when transferring data. Applies to models WSAP2000 and WDAP5000.
Wireless radio association (802.11b)	Green will be ON if a client is associated to the access point and OFF if not. Applies to models WSAP2000 and WDAP5000.
Wired network activity	Yellow blinking shows activity.
Wired link	Green for 10 Mbps wired network speed and orange for 100 Mbps.

Configuring the Access Point for the First Time

1. Set up a portable or desktop computer as a configuration workstation from which to view the access point browser-based Configuration Management System and configure the access point:
2. Connect the configuration workstation to the access point over a wired LAN, either directly (using a crossover RJ-45 cable) or through a hub or switch (using a standard RJ-45 cable). (Modifications to the configuration can be done from a wireless workstation once the access point has been set up and configured on the network.)
3. The configuration workstation must be running Microsoft Windows XP, 2000, Me, or 98, and must have one of the following web browsers installed for access to the access point Configuration Management System: Microsoft Internet Explorer versions 5.5 or later or Netscape Navigator version 4.78 or later
4. In order to view the browser-based Configuration Management System and modify access point default settings, the configuration workstation must be configured initially with an IP address compatible with the **default IP address** and **subnet** of the access point. For example, based on the access point default IP address 192.0.2.1 and default subnet 255.255.0.0, the client workstation could be set to 192.0.2.2, 192.0.2.3, or a similar address not in use by another device.
5. Once the workstation has been configured as just described, type the default access point IP address as a URL in the browser address field: **http://192.0.2.1**.
6. To access the Express Setup pages, type a user name and a password. The default for both user name and password is **Intel** (upper case I, lower case ntel)
7. Use Express Setup to configure the access point with a **new IP address, subnet, and other settings** suitable for the network to which it will be permanently connected.
8. Click Apply first, then click Restart AP. After the access has restarted, connect it to the required network.



To ensure that your settings are saved, always click the Apply button after making changes to settings, then click OK to exit the page. If you click OK without clicking Apply, the new settings will not be saved.

9. Once the access point has been configured and connected on the network, the configuration interface can be viewed from any workstation on the same network segment or subnet. Open a browser and type the actual IP address of the access point as a URL in the address field.

View the Access Point Browser Interface

1. Make sure that the IP address of the computer you are using to configure the access point is on the same subnet or has access via a gateway to the subnet the access point is attached to (see instructions above for setting up a configuration workstation). Also make sure your proxy settings are correct. If you are not sure, contact your network administrator.
2. Launch one of the following Internet browsers: Netscape Navigator* 4.78 or later, or Microsoft Internet Explorer* 5.5 or later.
3. In the browser's address field, enter http://x.x.x.x, where x.x.x.x is the access point's IP address. The access point Configuration Management System main page will display.
4. Access the various screens using the tree located on the left.



To view configuration, function or option changes on the browser pages, turn off the browser's caching function.

- For Netscape, from the menu bar select Edit, Properties, Advanced, Cache, the select Document in cache is compared to document on network: Every time.
- For Internet Explorer, from the menu bar select View, Internet Options, Temporary Internet files, Settings, then select Check for newer versions of stored pages: Every visit to the page.

If this property or option is not turned off, the browser returns the previous view of the page without the changes.

Settings for First Time Configuration (Express Setup)

For complete coverage of access point settings see the [Access Point Help File](#).

Setting	Description
Default IP Address	The default IP address is 192.0.2.1. An IP address is not dynamically assigned to the access point under its default configuration. Use the default address initially, then change it to a valid address for the network to which the access point will be connected. For dynamic address assignment, see Using DHCP .
System Name	User-defined name for the access point. Any combination of letters and numbers from 1 to 32 characters. Default is the model number of the access point.
Default Subnet Mask	The default Subnet Mask is 255.255.0.0 if DHCP usage is Disabled or DHCP service is not available. Change this address to a valid address for the network to which the access point will be connected.
Default Gateway	There is no default gateway initially configured. Use a valid gateway address for the network to which the access point will be connected. If no valid gateway is defined on your network, use the default gateway 0.0.0.0. For gateway assignment via DHCP, see Using DHCP .
DHCP	The Dynamic Host Configuration Protocol (DHCP) dynamically assigns IP addresses on a network with a DHCP server. Default setting for the PRO/Wireless 5000 LAN Access Point is Disabled . If you wish to change this setting to Enabled and install the access point on a network using DHCP support, see Using DHCP .
Help URL	Location of the Help files accessible by clicking the Help button on a screen in the access point Configuration Management System. See Access Point Help File Installation .
SSID 11A	Service Set Identifier (also called Network Name, Network ID, ESSID) identifies the network to which the access point is connected. All access points and client workstations on the same wireless LAN must have the same SSID, which can be any combination of letters and numbers up to 32 characters. Default for Intel PRO/Wireless 5000 LAN devices is " 101 ." The default SSID is intended only for preliminary setups and connections; it should usually be changed to a descriptive name for the wireless LAN network in question.

Using DHCP

The Intel PRO/Wireless 5000 LAN Access Point can be configured to use DHCP to get its IP address, subnet mask, and default gateway:

1. Access the Express Setup page in the browser-based Configuration Management System as described in Steps 1-6 under [Configuring the Access Point for the First Time](#).

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2. Change the DHCP setting from Disabled to Enabled on the Express Setup page (or the Configuration page). Save the new settings by clicking Apply, then click Restart AP. After the restart, connect the access point to the network to which it will be permanently connected.
 3. The next time the access point is restarted after DHCP has been enabled, it will attempt to get its IP address, subnet mask, and default gateway from the DHCP server. If no server is available, the access point will use its Default IP Address and Default Subnet Mask settings.
 4. When the access point used DHCP to obtain its IP address, you will have to determine the IP address before you can access the configuration pages. There are several strategies you can use for this, based on the MAC address assigned to the access point:
 - Before connecting the "DHCP Enabled" access point to a DHCP network, ask your network administrator to reserve an IP address based on the MAC address for the access point in the DHCP "lease table." This will allow the DHCP server to recognize the access point when it is connected to the network and assign it a known IP address based on the MAC address.
 - You can also connect a "DHCP Enabled" access point to a DHCP network immediately, without reserving the MAC address before connection. In this case an address will be assigned automatically, but you will have to request the address from your network administrator who will obtain it from the DHCP "lease table."
 - You can also use the Intel Access Point Administration Tool AP Discovery to find the access point and display its IP address. See the [Administrator's Guide](#) for information.

The MAC Address

The Ethernet Media Access Control (MAC) address of an Ethernet or wireless LAN device is a hardware address unique to that device and permanently set when the device was manufactured. A MAC address is a 48-bit number written as six hexadecimal bytes separated by colons. For example:

00:A0:F8:24:9A:C8

The MAC address of the access point can be seen on the Configuration page, on the Ethernet Network Interface page, and on the label on the bottom of the access point.

Access Point Default Settings

System name	WDAP5000
IP address	192.0.2.1
Subnet mask	255.255.0.0
Default gateway	None
User	Intel (case sensitive)
Password	Intel (case sensitive)
SSID 11A	101
WEP 11A	Disabled

Restore Factory Defaults

The access point has a Reset button that can be used to perform a hardware reset or to restore the access point's factory default settings.

The Reset button is located in a pinhole on the bottom of the access point. Insert the end of an unbent paper clip into the hole and apply pressure as follows:

- Press and release the Reset button quickly to perform a hardware reset of the access point.
- Press and hold the Reset button until the "Ready" LED flashes quickly 3 times. This will restore all access point parameters to factory default settings, including the default user name, password, and IP address.

For detailed information on access point configuration parameters, see the [Access Point Help File](#).

Select a Location for Installation of the Access Point

PRO/Wireless 5000 LAN Access Points should be positioned for maximum throughput and range between access points and wireless client stations. Range and performance are dictated by the distance between the access point and client radios, and by obstacles that may be present in a specific building or office environment. The following positioning guidelines are suggested:

- If you're installing two or more access points to make up a single wireless Ethernet network, all access points must be connected to the same wired Ethernet subnet and must use the same network ID (SSID). If WEP security is used, all access points and clients must use the same WEP key.
- Make a chart documenting all the access points and client adapters you wish to include in your wireless network. Record the MAC address of each, and fill out the chart with the IP addresses of each (when set), as well as the network ID (SSID), subnet mask, gateway, and WEP key, if used.
- Use the Site Survey utility supplied on the Intel CD-ROM to analyze positioning and test signal strength at various locations. Modify the positioning of the access points and client stations as required for optimum performance. See the [Administrator's Guide](#) for information on this utility.
- Wired LAN (RJ-45) and power connections must be available for the access point at the desired location
- If building blueprints or floor plans are available, use them to define potential client workstation locations and likely roaming areas
- Identify possible obstacles or sources of interference that could affect signal strength (for example, walls, metal objects)
- Define preliminary access point positioning based on the range of access points and client adapters, which is approximately 150-300 feet (45-90 meters) between access points, depending on the environment (see Specifications for details).
- Mount the access point in the desired location using the bracket and mounting screws supplied. See the Quick Installation Guide for detailed instructions.
- The location of each access point must be dry and dust free (install in wet or dusty areas only with additional protection) and maintain a temperature range between 0° C and 55° C.
- Place the access point in a location clear of debris and away from office traffic.

Configuration

You configure an access point through the Access Point Configuration Management System. It contains several configuration screens, each of which is displayed in a browser.

The Access Point Online Help File

An online help file describes the features in each of the screens in the Access Point Configuration Management System. There are two ways to view the online help file.

- To view the Access Point online help file now, without using the Access Point Configuration Management System, [click here](#).
- To view the Access Point online help file as you are viewing or changing settings in the configuration screens, you have to install the online help file on a management client workstation or server and configure the Access Point Configuration Management System to display it. After the installation and configuration, click the Help button on a configuration screen to display help information pertinent to that screen. For instructions on how to install the help file, [click here](#).

To access the browser-based Configuration Management System built into the access point, see the [access point installation and setup](#) information .

Help File Installation

Install the Help file on a web server (recommended):

1. Create a directory for the Help file. For example: D:/Intel/Wireless/Ap/Help.
2. Create an alias for the Help path. For example: **HelpPath**.
3. Copy the file **WAP50HLP.HTM** from the directory **GUIDES/APHelp/5000** on the Intel CD-ROM to the directory created in Step 1.
4. On the Express Setup or Configuration screen in the access point Configuration Management System, enter the following URL in the field "Help URL": **HTTP://nnn.nnn.nnn.nnn/HelpPath**, where **nnn.nnn.nnn.nnn** is the IP address of the web server. Click Apply.

If no web server is available, install the Help file on a client workstation:



This option is only available if your browser is Internet Explorer.

1. Create a directory for the Help file. For example: C:/Intel/Wireless/Ap/Help.
2. Copy the file **WAP50HLP.HTM** from the directory **GUIDES/APHelp/5000** on the Intel CD-ROM to the directory created in Step 1.
3. On the Express Setup or Configuration screen in the access point Configuration Management System, enter the path to the directory created in Step 1 (**C:/Intel/Wireless/Ap/Help** in the example above) in the field "Help URL" and click Apply.



Be sure that the Help file installed on the local machine or web server is identical to the file found on the Intel CD-ROM.

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Troubleshooting

Installing the Access Point Administration Tools

The AP Administration Tools AP Discovery and Site Survey have to be installed using the Custom installation option during installation of the Intel® PRO/Wireless 5000 LAN CardBus Adapter. See [Installing Access Point Administration Tools](#) for information.

Installing the Access Point Help File

The Intel® PRO/Wireless 5000 LAN Access Point browser interface that features a Help button for access to configuration information. However, before you can use the Help button, the Help file has to be installed and the browser interface has to be configured with the path to its location.

See [Access Point Help File Installation](#) for instructions on how to install the Help file and configure the browser for access to it.

Troubleshooting Tips

Use the Latest Release of Your Intel Installation CD-ROM

If you have more than one Intel Installation CD-ROM for your Intel PRO/Wireless 5000 LAN products, always use the CD-ROM with the highest version number.

Access Point LED Functions

The front panel of the Access Point uses seven LEDs to indicate the current state of activity. The LEDs are grouped into three pairs, with an additional "Ready" LED at the bottom (when the access point is mounted on a desktop) or top (when mounted on a wall or ceiling). Usage of the second and third pair of LEDs varies with different access point models. One pair is used for 802.11a functions (models WSAP5000 and WDAP5000) and the other for 802.11b (models WSAP2000 and WDAP5000). On dual 802.11a and 802.11b access points (such as model WDAP5000), both the second and third pairs may be active. See [LED indicators](#) for a table of the access point LEDs and their functions.

Confirming Changes to AP Settings When Using Internet Explorer

In some versions of Microsoft* Internet Explorer, changes to Access Point parameters via the browser interface may not be retained unless they are explicitly applied. Therefore, after making changes on a page, make sure that you first click the **Apply** button, then the **OK** button to save the new settings before exiting the page.

Additional Sources of Information

Use the Help features (click Help or press F1) of installation and utility software to obtain additional information on the task you wish to perform.

Consult your computer and network documentation as needed. For the latest technical notes on PRO/Wireless 5000 LAN products, see the [Release Notes](#) on the Intel CD.

See [Intel Support Services](#) for additional information.

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Intel® PRO/Wireless 5000 LAN Products Specifications

Specifications by Model		
Models	Intel® PRO/Wireless 5000 LAN Dual Access Point model WDAP5000 Intel® PRO/Wireless 5000 LAN Access Point model WSAP5000 Intel® PRO/Wireless 5000 LAN CardBus Adapter model WCB5000 Intel® PRO/Wireless 5000 Mini-PCI Adapter model WM3A5000 Intel® PRO/Wireless 5000 LAN PCI Adapter model WPCI5000	
Access Point Physical Specifications	Form Factor	Access Point
	Dimensions	8.6" x 5.6" x 3.3" (22 cm x 14 cm x 8 cm)
	Weight	27 oz (765 g)
	Connector Interface	RJ-45
	LEDs	See LED Indicators
	Power	100-240 Volt AC Adapter
CardBus Adapter Physical Specifications	Form Factor	CardBus Type II Extended
	Dimensions	2.2" x 4.4" x 0.19" (54 mm x 112 mm x 5 mm) 1" (25 mm) on extended portion
	Weight	1.5 oz (43 g)
	Connector Interface	68-pin CardBus
	LEDs	See LED Indicators
	Power	3.3 V
PCI Adapter	Form Factor	PCI Adapter

Physical Specifications	Dimensions	8.4" x 4.8" x 0.8" (21 cm x 12 cm x 2 cm)
	Weight	3.4 oz (96 g)
	Connector Interface	PCI
	LEDs	Link, Activity
	Power	3.3 V
General Specifications		
Frequency and modulation	Frequency band	5.15 GHz to 5.35 GHz
	Modulation	BPSK, QPSK, 16 QAM, 64 QAM
	Wireless Medium	Orthogonal Frequency Division Multiplexing (OFDM) 5 GHz UNII
	Channels	8 Non-overlapping (4 non-overlapping in Japan)
Network	WLAN Standard	IEEE 802.11a
	Wired Standard	10/100BTx
	Architecture	Infrastructure, ad-hoc (peer-to-peer)
	Roaming	802.11a compliant for seamless roaming between access points
	Wired-to-wireless switching	Intel® PROSet II software
Security	Encryption	64-bit and 128-bit WEP
	802.11i (802.1x, Radius, EAP): enhanced wireless authentication security	Pending IEEE ratification in 2002
QOS	DCF	CSMA/CA
Range and Throughput	Data Rates	54, 48, 36, 24, 18, 12, 9, 6 Mbps
	Indoor Range	<ul style="list-style-type: none"> • 40 feet @ 54 Mbps • 300 feet @ 6 Mbps
	Outdoor Range	<ul style="list-style-type: none"> • 100 feet @ 54 Mbps • 1000 feet @ 6 Mbps
Power	Output Power	30 mW to 200 mW, depending on frequency channel
	Transmit	450-480 mA
	Receive	420-440 mA
	Idle	420 mA

	Standby	30 mA
Operating Temperature	CardBus and PCI Adapters	0 to 65 degrees Celsius
	Access Point	0 to 45 degrees Celsius
Humidity		10 to 90% non-condensing
Compatibility	OS	Microsoft Windows* 98SE*, Me*, 2000*, XP*
	WECA	Pending ratification of interoperability test and logo program by WECA (when 5 GHz standard is available)
	WHQL	Yes
Regulatory and Safety	Safety	UL, C-UL
	United States	FCC Part 15.247 and 15.249
	Canada	Industry Canada RSS-210
	Japan	VCCI, JATE, Telec
	Singapore	IDA
	Japan	A-tick

Intel® PRO/Wireless 2011B LAN Products Specifications

Specifications by Model		
Models	Intel® PRO/Wireless 2011B LAN Access Point model xxx Intel® PRO/Wireless 2011B LAN Adapter model xxx	
Access Point Physical Specifications	Form Factor	Access Point
	Dimensions	1.75" x 6" x 8.5" (4.4 cm x 15.2 cm x 21.6 cm)
	Weight (w/power supply)	1 lb (454 g)
	Connector Interface	RJ-45
	LEDs	See LED indicators .
	Power	110 Volt AC Adapter
Adapter	Form Factor	CardBus Type II, 3.3V

Physical Specifications	Dimensions	3.3" x 2.1" x 0.2" (85 mm x 54 mm x 5 mm)
	Weight	1.6 oz (45.4 g)
	Connector Interface	
	LEDs	See LED indicators .
	Power	
General Specifications		
Frequency and modulation	Frequency band	country dependent, typically 2412 MHz to 2462 MHz
	Modulation	Binary GFSK
	Wireless Medium	
	Channels	3 Non-overlapping
Network	WLAN Standard	IEEE 802.11b
	Wired Standard	10/100B Tx
	Architecture	Infrastructure, ad-hoc (peer-to-peer)
	Roaming	<ul style="list-style-type: none"> • 802.11b compliant for seamless roaming between access points • International roaming (802.11d)
	Wired-to-wireless switching	Intel® PROSet II software
Security	Encryption	64-bit and 128-bit WEP
QOS	DCF	
Range and Throughput	Data Rates	11 Mbps - Optional 5.5 Mbps - Optional 2 Mbps - Required 1 Mbps - Required
	Indoor Range	<ul style="list-style-type: none"> • 30 to 50 feet @ 11 Mbps
	Outdoor Range	<ul style="list-style-type: none"> • 100 feet @ 11 Mbps
	Throughput	Up to 11 Mbps
Power	Output Power	
	Transmit	
	Receive	
	Idle	
	Standby	
	Voltage	3.3 V

Operating Temperature	0 to 55° Celsius	
Humidity		10 to 95% non-condensing
Compatibility	OS	Windows 95C, 98SE, Me, 2000
	WECA	Yes
	WHQL	Yes
Regulatory and Safety	Safety	UL, C-UL
	United States	FCC part 15.247
	Canada	Industry Canada RSS-210
	Europe	ETS 300 320
	Japan	RCR STD-33

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Intel® PRO/Wireless LAN Products Safety and Regulatory Notices

This document contains regulatory notices for the following products:

- [Intel® PRO/Wireless 5000 LAN Products](#)
- [Intel® PRO/Wireless 2011B LAN Products](#)

Intel® PRO/Wireless 5000 LAN Products

This section provides the following safety and regulatory notices covering the following products: Intel® PRO/Wireless 5000 LAN Dual Access Point model WDAP5000, Intel® PRO/Wireless 5000 LAN Access Point model WSAP5000, Intel® PRO/Wireless 5000 LAN CardBus Adapter model WCB5000, Intel® PRO/Wireless 5000 Mini-PCI Adapter model WM3A5000, Intel® PRO/Wireless 5000 LAN PCI Adapter model WPCI5000.

Safety Notices

The FCC with its action in ET Docket 96-8 has adopted a safety standard for human exposure to radio frequency (RF) electromagnetic energy emitted by FCC certified equipment. The Intel PRO/Wireless 5000 LAN products meet the Human Exposure limits found in OET Bulletin 65, 2001, and ANSI/IEEE C95.1, 1992. Proper operation of this radio according to the instructions found in this manual will result in exposure substantially below the FCC's recommended limits.

- Do not touch or move antenna while the unit is transmitting or receiving.
- Do not hold any component containing the radio such that the antenna is very close or touching any exposed parts of the body, especially the face or eyes, while transmitting.

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- Do not operate the radio or attempt to transmit data unless the antenna is connected; if not, the radio may be damaged.
 - Use in specific environments:
 - The use of wireless devices in hazardous locations is limited by the constraints posed by the safety directors of such environments.
 - The use of wireless devices on airplanes is governed by the Federal Aviation Administration (FAA).
 - The use of wireless devices in hospitals is restricted to the limits set forth by each hospital.
 - Antenna use:
 - In order to comply with FCC RF exposure limits, low gain integrated antennas should be located at a minimum distance of 7.9 inches (20 cm) or more from the body of all persons.
 - High-gain, wall-mount, or mast-mount antennas are designed to be professionally installed and should be located at a minimum distance of 12 inches (30 cm) or more from the body of all persons. Please contact your professional installer, VAR, or antenna manufacturer for proper installation requirements.
 - Explosive Device Proximity Warning (see below)
 - Antenna Warning (see below)
 - Use on Aircraft Caution (see below)
 - Other Wireless Devices (see below)
 - Power Supply (Access Point) (see below)

Explosive Device Proximity Warning

Warning: Do not operate a portable transmitter (such as a wireless network device) near unshielded blasting caps or in an explosive environment unless the device has been modified to be qualified for such use.

Use On Aircraft Caution

Caution: Regulations of the FCC and FAA prohibit airborne operation of radio-frequency wireless devices because their signals could interfere with critical aircraft instruments.

Other Wireless Devices

Safety Notices for Other Devices in the Wireless Network: Refer to the documentation supplied with wireless Ethernet adapters or other devices in the wireless network.

Power Supply (Access Point)

Use manufacturer-provided power supply with output rating 5.0 VDC and 2.5 A.

FCC Regulations

FCC Regulations Part 15 Declaration of Conformity (DoC)

Intel Corporation declares that the equipment described in this document is within the requirements of the Code of Federal Regulations listed below:

Title 47 Part 15, Subpart B, Class B for a digital device.

This declaration is based upon the compliance of the Intel® PRO/Wireless 5000 LAN Access Point model WSAP5000, the Intel® PRO/Wireless 5000 LAN Dual Access Point model WDAP5000, the Intel PRO/Wireless CardBus Adapter model WCB5000, the Intel PRO/Wireless PCI Adapter model WPCI5000 and the Intel® PRO/Wireless 5000 Mini-PCI Adapter model WM3A5000 to the above standards. Intel has determined that the models listed have been shown to comply with the applicable technical standards if no unauthorized change is made in the equipment and if the equipment is properly maintained and operated.

These units are identical to the units tested and found acceptable with the applicable standards. Records maintained by Intel continue to reflect that units being produced under this Declaration of Conformity, within the variation that can be expected due to quantity production and tested on a statistical basis, continue to comply with the applicable technical standards.

Warning

To comply with the FCC and ANSI C95.1 RF exposure limits, it is recommended for the following products: Intel® WCB5000 PRO/Wireless 5000 LAN CardBus Adapter, Intel® PRO/Wireless 5000 LAN Access Point, Intel® PRO/Wireless 5000 LAN Dual Access Point, Intel® PRO/Wireless 5000 LAN PCI Adapter and Intel® PRO/Wireless 5000 Mini-PCI Adapter model WM3A5000. These mobile device uses radio transmissions to operate. Please keep it at least 20 cm from any persons during operation. This Adapter has passed all necessary tests, and FCC applications are pending to classify the product as a portable device that can be operated in close proximity to the human body. The adapter is a wireless device with an integrated antenna. To comply with the FCC and ANSI C95.1 RF exposure limits, when using such a wireless device inserted into a laptop computer, it is recommended that the antenna should not be positioned closer than 20 cm (8 inches) from your body or nearby persons. It is recommended that the user limit exposure time if the antenna is positioned closer than 20 cm (8 inches). Installers and end-users must follow the installation instructions provided in this user guide.

Radio Frequency Interference Requirements

This device is restricted to indoor use when used over its full frequency bandwidth capabilities (5.15 to 5.35 GHz) due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to be used indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems. The product can be used outdoors **only** if the frequency range is limited to 5.26 to 5.35 GHz. In addition, it should be noted that high power radars are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and /or damage this device. See the Online User's Guide for information on specifying the radio frequency to be used.

FCC Rules and Regulations - Part 15

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and,
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that

interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Intel could void the user's authority to operate this device.

Canadian Department of Communications Industry Canada (IC) Notice

These digital apparatuses do not exceed the Class B limits for radio noise emissions from digital apparatuses set out in the Radio Interference Regulations of the Canadian Department of Communications.

Les présents appareils numériques n'émettent pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

These devices comply with Class B Limits of Industry Canada. Operation is subject to the following two conditions:

1. The device may not cause harmful interference, and
2. The device must accept any interference received, including interference that may cause undesired operation.

These devices are certified to the requirements of ANSI/IEEE C95.1-1992 and RSS-210 Issue 5 for LELAN devices. The use of these devices in a system operating either partially or completely outdoors may require the user to obtain a license for the system according to the Canadian regulations. For further information, contact your local Canada Industry office.

Japan Regulatory Notices

TELEC

This equipment has been certified to conform with the technical regulations of the specified radio equipment under the radio law of Japan. If you open the case to modify the circuit, you may be punished by law.

This equipment is for indoor use only under the Radio Wave law.

JATE

Refer to the JATE approval number on the equipment.

Intel® PRO/Wireless 2011B LAN Products

Radio Frequency Interference Requirements – USA

This device uses, generates and radiates radio frequency energy. The radio frequency energy produced by this device is well below the maximum exposure allowed by the Federal Communications Commission (FCC).

This device complies with the limits for a Class B digital device pursuant to Part 15 subpart C of the FCC Rules and Regulations. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

The FCC limits are designed to provide reasonable protection against harmful interference when the equipment is installed and used in accordance with the instruction manual and operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular commercial installation, or if operated in a residential area.

If harmful interference with radio or television reception occurs when the device is turned on, the user must correct the situation at the user's own expense. The user is encouraged to try one or more of the following corrective measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that on which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Radio Frequency Interference Requirements – Canada

This Class B digital apparatus complies with Canadian ICES-003, Issue 2, and RSS-210, Issue 5 (Nov. 2001).

“To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.”

Cet appareil numérique de la classe B est conforme à la norme NMB-003,

No. 2, et CNR-210, No. 5 (Nov. 2001).

« Pour empêcher que cet appareil cause du brouillage au service faisant l'objet d'une licence, il doit être utilisé à l'intérieur et devrait être placé loin des fenêtres afin de fournir un écran de blindage maximal. Si le matériel (ou son antenne d'émission) est installé à l'extérieur, il doit faire l'objet d'une licence. »

Radio Frequency Interference Requirements – European Union

CE Marking & European Union Compliance



Products intended for sale within the European Union are marked with the Conformance Europeene (CE) Marking, which indicates compliance with the applicable Directives and European Normes, and amendments, identified below.



This equipment also carries the Class 2 identifier.

English

This product follows the provisions of the European Directive 1999/5/EC.

Danish

Dette produkt er i overensstemmelse med det europæiske direktiv 1999/5/EC

Dutch

Dit product is in navolging van de bepalingen van Europees Directief 1999/5/EC.

Finnish

Tämä tuote noudattaa EU-direktiivin 1999/5/EC määräyksiä.

French

Ce produit est conforme aux exigences de la Directive Européenne 1999/5/EC.

German

Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 1999/5/EC.

Greek

Το προϊόν αυτό πληροί τις προβλέψεις της Ευρωπαϊκής Οδηγίας 1999/5/EC.

Icelandic

Þessi vara stenst reglugerð Evrópska Efnahags Bandalagsins númer 1999/5/EC.

Italian

Questo prodotto è conforme alla Direttiva Europea 1999/5/EC.

Norwegian

Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 1999/5/EC.

Portuguese

Este produto cumpre com as normas da Diretiva Europeia 1999/5/EC.

Spanish

Este producto cumple con las normas del Directivo Europeo 1999/5/EC.

Swedish

Denna produkt har tillverkats i enlighet med EG-direktiv 1999/5/EC.

Applicable Directives

Electromagnetic Compatibility Directive 89/336/EEC

Low Voltage Directive 73/23/EEC

Radio and Telecommunication Terminal Equipment 1999/5/EC

Applicable Standards

EN 50 082-1 – 1997 Electromagnetic Compatibility – Generic Immunity Standard, Part 1: Residential, Commercial, Light Industry

EN61000-4-2 – Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 2: Electrostatic Discharge Requirements

EN61000-4-3 – Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 3: Radiated Electromagnetic Field Requirements

EN61000-4-4 – Electromagnetic Compatibility for Industrial Process Measurement and Control Equipment, Part 4: Electrical Fast Transients Requirements

EN61000-4-5 – Surge Immunity Tests Basic EMC Standard

EN61000-4-6 – Immunity to Conducted Disturbances, Induced by Radio Frequency Fields

EN61000-4-11 – Voltage Dips, Short Interruptions and Voltage Variations
EN 300 328-2 V1.1.1 (2000-07) – Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2.4 GHz ISM band and using spread spectrum modulation techniques
ETS 300 826:1997 – Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for
2.4 GHz wideband transmission systems and High Performance Radio Local Area Network (HIPERLAN) equipment. This is a basic standard called out by EN 301 489-17.
EN 301 489-17 v1.1.1 (2000-09) – Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for Wideband data and HIPERLAN equipment.
EN 55022:1998 – Information technology equipment – Radio disturbance characteristics – Limits and methods of measurement
EN 55024:1998 – Information technology equipment – Immunity characteristics – Limits and methods of measurement
EN 61000-3-2:1995 +A14 – Electromagnetic compatibility (EMC)
Part 3-2: Limits – Limits for harmonic current emissions (equipment input current up to and including 16 A per phase)
EN 61000-3-3:1995 – Electromagnetic compatibility (EMC),
Part 3-3: Limits – Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current up to 16 A
EN 60950:1992 + A1 – A4, A11 – Safety of Information Technology Equipment, including Electrical Business Equipment

European Economic Area Restrictions

The European variant is intended for use throughout the European Economic Area; however, authorization for use is restricted as follows:

European standards dictate maximum radiated transmit power of 100mW EIRP and frequency range 2.400 to 2.4835 GHz.

In France, the equipment must be restricted to the 2.4465 to 2.4835 GHz frequency range and must be restricted to indoor use.

In Belgium when used outside, the equipment must be restricted to the 2.460 to 2.4835 GHz frequency range.

Operation in Italy requires a user license.

In Hungary, Processing gain minimum 10 dB, integral or external antenna with maximum 6 dBi gain.

In the Netherlands, 10 mW indoor and outdoor with no license. 100 mW indoor with no license. 100 mW with license outdoor within 2451 - 2471 MHz.

Japanese Notices

この機器の使用周波数帯では、電子レンジ等の産業・科学・医療用機器のほか工場の製造ライン等で使用されている移動体識別用の構内無線局(免許を要する無線局)及び特定小電力無線局(免許を要しない無線局)が運用されています。

- 1 この機器を使用する前に、近くで移動体識別用の構内無線局及び特定小電力無線局が運用されていないことを確認して下さい。
- 2 万一、この機器から移動体識別用の構内無線局に対して電波干渉の事例が発生した場合には、速やかに使用周波数を変更するか又は電波の発射を停止した上、下記連絡先に御連絡頂き、混信回避のための処置等(例えば、パーティションの設置など)についてご相談して下さい。
- 3 その他、この機器から移動体識別用の特定小電力無線局に対して電波干渉の事例が発生した場合など何かお困りのことが起きたときは、次の連絡先へお問い合わせ下さい。

連絡先:

インターネットサイト サポート
<http://support.intel.co.jp>

インテル ホットラインサービス
電話番号 0120-868686 (土、日、祝日を除く、9:00から17:00まで)

2.4 DS 4

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RF Devices

Intel Radio Frequency (RF) products are designed to be compliant with the rules and regulations in the locations where they are sold and are locally labeled as required. The majority of Intel RF devices are type-approved and do not require the user to obtain license or authorization before using the equipment. However, any changes or modifications to Intel equipment not expressly approved by Intel could void the user's authority to operate the equipment.

Caution: Do not attempt to operate this device with a modified or damaged antenna.

Warning: To comply with FCC rules for RF exposure, maintain a minimum separation distance of 20 cm (8 inches) between the Intel® PRO/Wireless 2011B LAN Access Point radiating elements and nearby persons.

Intel® PRO/Wireless LAN Products Hardware Warranties

- [Intel® PRO/Wireless LAN Adapters - Limited Lifetime Hardware Warranty](#)
- [Intel® PRO/Wireless LAN Access Point - Limited Hardware Warranty \(3 Years\)](#)

Intel® PRO/Wireless LAN Adapters - Limited Lifetime Hardware Warranty

Intel warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product. Intel reserves the right to fill your order with a product containing new or remanufactured components.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF NONINFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

This warranty does not cover replacement of hardware products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation, or improper testing.

If the hardware product is found to be otherwise defective, Intel, at its option, will replace or repair the hardware product at no charge except as set forth below, provided that you deliver the hardware product along with a Return Material Authorization (RMA) number (see below), either to the company from whom you purchased it or to Intel (North America only). If you ship the hardware product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge.

Intel may replace or repair the hardware product with either new or remanufactured product or parts, and the returned hardware product becomes Intel's property. Repaired or replaced products will be returned at the same revision level as received or higher, at Intel's option. Intel reserves the right to replace discontinued product with an equivalent current generation product.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this hardware product are covered by Intel's limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new. For warranty information call the number below.

Returning a defective product

From North America:

Before returning any hardware product, contact Intel Customer Support to obtain a Return Material Authorization (RMA) number by calling +1 916-377-7000.

If the Customer Support Group verifies that the hardware product is defective, they will have the RMA department issue you an RMA number to place on the outer package of the hardware product. Intel cannot accept any product without an RMA number on the package.

All other locations:

Return the hardware product to the place of purchase for a refund or replacement.

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INTEL'S SOLE LIABILITY HEREUNDER SHALL BE LIMITED TO DIRECT, OBJECTIVELY MEASURABLE DAMAGES. IN NO EVENT SHALL INTEL HAVE ANY LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE

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Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

Critical Control Applications

Intel specifically disclaims liability for use of the hardware product in critical control applications (including, for example only, safety or health care control systems, nuclear energy control systems, or air or ground traffic control systems) by you or your customers, and such use is entirely at the user's risk. You agree to defend, indemnify, and hold Intel harmless from and against any and all claims arising out of use of the hardware product in such applications by you or your customers.

Software

Software provided with the hardware product is not covered under the hardware warranty described above. See the applicable [software license agreement](#) which shipped with the hardware product for details on any software warranty.

Intel® PRO/Wireless LAN Access Point - Limited Hardware Warranty (3 Years)

Intel warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship for three (3) years following the latter of: (i) the date of purchase only if you register by returning the registration card as indicated thereon with proof of purchase; or (ii) the date of manufacture; or (iii) the registration date if by electronic means provided such registration occurs within thirty (30) days from purchase. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product. Intel reserves the right to fill your order with a product containing new or remanufactured components.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF NONINFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

This warranty does not cover replacement of hardware products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation, or improper testing.

If the hardware product is found to be otherwise defective, Intel, at its option, will replace or repair the hardware product at no charge except as set forth below, provided that you deliver the hardware product along with a Return Material Authorization (RMA) number (see below), either to the company from whom you purchased it or to Intel (North America only). If you ship the hardware product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge.

Intel may replace or repair the hardware product with either new or remanufactured product or parts, and the returned hardware product becomes Intel's property. Intel warrants the repaired or replaced hardware product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original three (3) year warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this hardware product are covered by Intel's limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new. For warranty information call the number below.

Returning a defective product

From North America:

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Return the hardware product to the place of purchase for a refund or replacement.

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Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

Critical Control Applications

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