Intermec

User's Guide

MobileLAN™access 2101

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Canadian service and technical support: 1-800-668-7043
Canadian media supplies ordering information: 1-800-268-6936

Outside U.S.A. and Canada: Contact your local Intermec service supplier.

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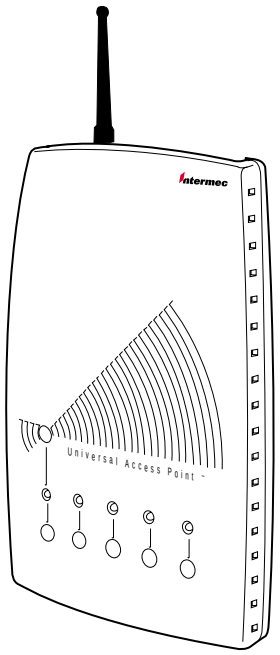
About the MobileLAN™access 2101

The MobileLAN access 2101 access point allows your wireless end devices to communicate with devices on your wired network. The access point communicates with end devices over the radio network, and it communicates with wired devices over the Ethernet network.



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The 2101 supports enterprise roaming and provides wireless access for end devices anywhere in your work environment. It can be installed in locations that do not require environmental packaging.

The 2101 supports IEEE 802.11b and WLI Forum OpenAir radios. For more information about radios, see “Radio Specifications” later in this guide.

You can wire the 2101 directly into your existing network, or you can configure it as a wireless access point (WAP). A WAP acts as a repeater, transmitting data between your end devices and other access points wired to your Ethernet network.

The 2101 with an IEEE 802.11b radio installed is Wi-Fi certified and is interoperable with all other Wi-Fi certified products.

See www.wi-fi.com for more information.

Your access point ships with these items:

- Power supply and power cord
- Antenna
- Wall bracket
- Shoulder screws (4)
- Safety information

This user's guide provides basic information about using the 2101 in your network, as well as configuration and installation instructions.

For detailed information about the 2101, see the *21XX Universal Access Point Technical Reference Manual* (Part No. 067150). To order a printed version of the manual, contact your Intermec representative. Visit our Web site at www.intermec.com for online access to many of our manuals in PDF format.

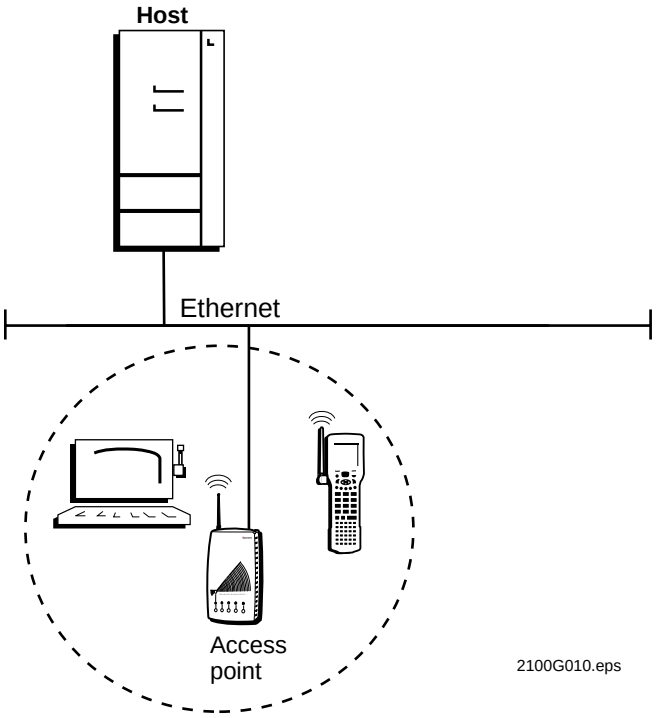
Using the 2101 in a Network

In general, the 2101 transmits data between wireless end devices and the wired network. You can use the 2101 in a variety of network configurations.

Using the 2101 in a Simple Wireless Network

If you have an existing Ethernet network, you can use a 2101 to extend the network capability to include wireless end devices. The 2101 connects directly to your wired network, which then allows the wireless end devices to form an extension of the wired LAN.

Using the 2101 in a Simple Wireless Network

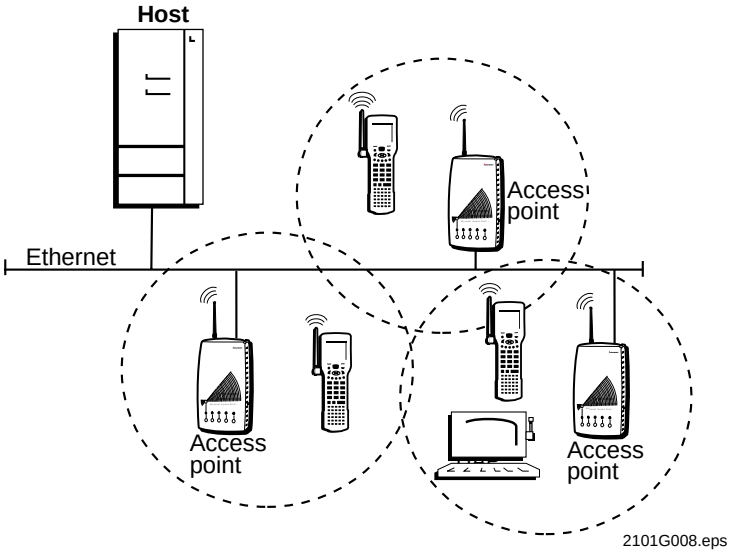


Using Multiple Access Points and Roaming End Devices

For larger or more complex environments, you can install multiple access points so end devices can roam from one access point to another and maintain network communications. Multiple access points establish coverage areas or cells similar to those of a cellular phone network. End devices can connect with any access point within range that belongs to the same network.

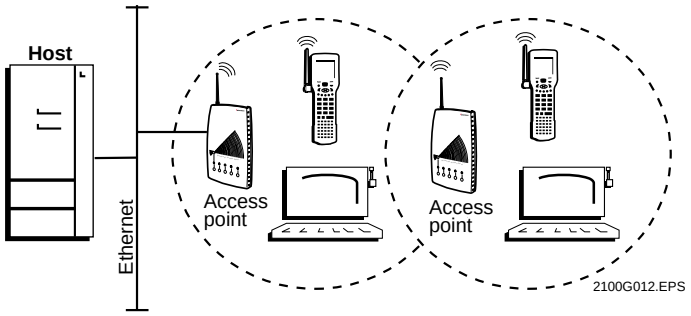
You can have more than one access point within the same cell area to increase throughput. You can also overlap cells to provide redundancy for critical applications, ensuring that coverage is not lost if a single access point or radio fails.

Using Multiple Access Points and Roaming End Devices



Using the 2101 as a WAP

In locations where distance or physical layout makes extending a wired network difficult, you can use the 2101 as a WAP. You can strategically position a WAP, which requires no Ethernet connection, to receive data from wireless end devices. The WAP then uses a wireless link to forward the data to an access point on the wired network.



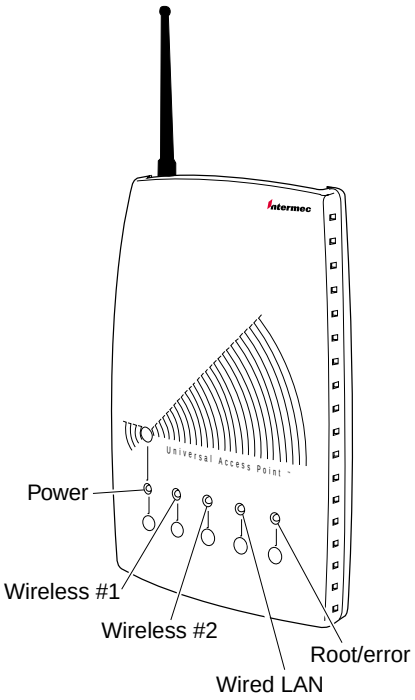
Note: You can configure the access point as a WAP if it has two 802.11b radios or two OpenAir radios.

Understanding the 2101

This section explains the LEDs and connectors on the 2101.

Understanding the LEDs

The 2101 has five LEDs as shown next.



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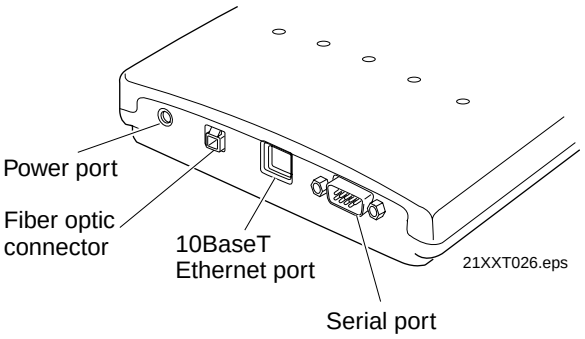
When you apply power to the access point, all LEDs light as the access point performs a self-test. When the self-test is complete, only the Power LED remains on. The Root/error LED flashes if this access point is configured as the root for the network. For more information about the root, see the *21XX Universal Access Point Technical Reference Manual.*

During normal operation, the LEDs flash on and off as the access point transmits data. The following table describes each LED.

LED	Description
Power	Remains on when power is applied.
Wireless #1	Flashes when a frame is transmitted or received on the radio in slot 1.
Wireless #2	If the access point has a second radio, this LED flashes when a frame is transmitted or received on the radio in slot 2.
Wired LAN	Flashes when a frame is transmitted or received on the Ethernet port.
Root/error	Flashes if this device is configured as the root.

Understanding the Connectors

The 2101 has a Power port, a fiber optic connector (optional), a 10/100BaseT Ethernet port, and a Serial port.



Typically, you use the MobileLAN™access Utility to configure the 2101 initially. You can also use the Power port and Serial port. You use the Power port and 10/100BaseT Ethernet port or fiber optic connector when you install the 2101 in your network.

Configuring the 2101

You may need to configure the 2101 before you install it in your network. If ALL the following conditions are true, you do NOT need to configure the 2101.

- You have only one access point on this network.
- You will use the default settings. For a list of the default settings, see the *21XX Universal Access Point Technical Reference Manual*.
- You do not need to set any filters.
- You do not want to manage the access point remotely using SNMP, Telnet, or a Web browser.

If you do not need to configure the 2101, see "Installing the 2101," later in this guide. If you are configuring the 2101 as a WAP, refer to the *21XX Universal Access Point Technical Reference Manual* for detailed instructions.

You can configure the 2101 using either the MobileLAN™access Utility or a serial connection.

Configuring the 2101 Using the MobileLAN access Utility

Using the MobileLAN access Utility, you can set an initial IP address for the access point using the Ethernet or radio link, set an access point to factory defaults, and upgrade the access point software. To configure the 2101 using the MobileLAN access Utility, you need to first install the 2101, and then download the utility from mobilelan.intermec.com.

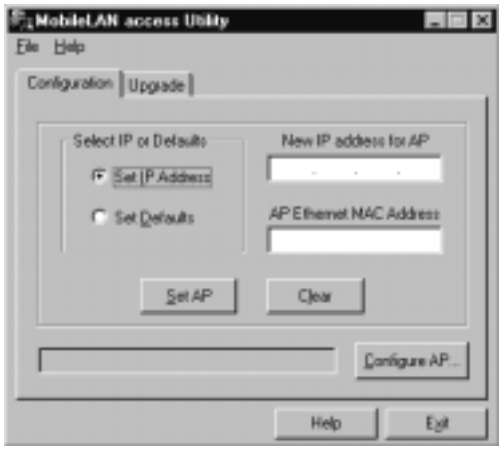
Note: Your access point must be equipped with software version 1.61 or newer.

Note: Your PC and access point must be on the same physical Ethernet segment.

To configure the 2101 using the MobileLAN access Utility

1. Install the 2101. For help, see "Installing the 2101," later in this guide.

2. Download the utility.
   a. Point your Web browser to mobilelan.intermec.com.
   b. Click Software Downloads, and then click MobileLAN access utility. Follow the instructions that appear on your screen to download the utility.
3. Start the utility. The MobileLAN access Utility screen appears.



4. Click Set IP Address, and then enter the IP address for the access point in the New IP address for AP field.
5. Enter the MAC address for the access point in the AP Ethernet MAC Address field. The MAC address is located on the bottom of the access point.
6. Click Set AP to set the IP address. The status bar indicates the progress.
7. Click Configure AP to use the Web browser interface to continue configuring the access point. See the *21XX Universal Access Point Technical Reference Manual* for more information.

Configuring the 2101 Using a Serial Connection

You need these items to configure the 2101 using a serial connection:

- RS-232 null-modem cable (Part No. 059167)
- PC with open serial port

You should read this entire section before you configure the 2101. The steps to configure the 2101 are summarized below. Each step is described in more detail in the rest of this section.

To configure the 2101 using a serial connection

1. Attach the cables.
2. Configure the communications parameters on your PC.
3. Log on to the 2101.
4. Configure the network parameters.
5. Configure the radio parameters.
6. Save your configuration.

Attaching the Cables

1. Attach one end of an RS-232 null-modem cable to the Serial port on the 2101.
2. Attach the other end of the null-modem cable to a serial port on your PC.
3. Plug the power cord into the power supply.
4. Plug the power supply into the Power port on the 2101.
5. Plug the other end of the power cord into an AC power outlet. The 2101 has no On/Off switch, so it boots as soon as you apply power.

Configuring the Communications Parameters on Your PC

Configure the communications parameters for the serial port on your PC to:

Parameter	Setting
Baud	9600
Data bits	8
Parity	none
Stop bit	1
Flow control	none

If you are using a PC with Microsoft® Windows™, you can use the HyperTerminal accessory application to configure the communications parameters.

Logging On to the 2101

Unplug the access point and plug it in to reboot it. The access point logon screen appears on your PC. Type the default password `Intermec` and press **Enter**. The Configuration menu appears.

Note: Your menus may have different options than those shown here.

Configuring the Network Parameters

Use the arrow keys or the **Tab** key to position the cursor on the TCP/IP Settings command and press **Enter**. The TCP/IP Settings menu appears.

Configure these parameters:

Parameter	Explanation
IP Address	Each device on the network must have a unique IP address.
IP Subnet Mask	The IP subnet mask should match the other devices in your network.
IP Router (Gateway)	The address of the router that will forward frames to another subnet (if the 2101 will communicate with devices on the other side of a router).

Press the left or right arrow key to return to the configuration menu, and then use the arrow keys or **Tab** key to position the cursor on the Spanning Tree Settings command and press **Enter**. The Spanning Tree Settings menu appears.

The Spanning Tree Settings Menu

Configure the LAN ID (Domain) parameter. All MobileLAN access points that will be in the same spanning tree must have the same LAN ID. All of your access points should be in the same spanning tree.

Configuring the Radio Parameters

If you are using IEEE 802.11b radios, press the left or right arrow key to return to the configuration menu, and then use the arrow keys or **Tab** key to position the cursor on the IEEE 802.11b command, and press **Enter**. Configure these parameters:

Parameter	Explanation
SSID (Network Name)	All 802.11b radios must have the same network name to communicate. Network name may be up to 32 alphanumeric characters long. You can configure network name in the access point to ANY so it will communicate with all end devices that have 802.11b radios, regardless of the network name configured in each end device.
Frequency	Frequencies range from 2400 to 2500 MHz and are country-dependent. Choose the frequency appropriate for your installation.
WEP Key	Determines which of the four default WEP keys this access point uses to transmit data.

If you are using OpenAir radios, press the left or right arrow key to return to the configuration menu, and then use the arrow keys or **Tab** key to position the cursor on the OpenAir command, and press **Enter**. Configure these parameters:

Parameter	Explanation
Channel	You can set the channel from 1 to 15.
Subchannel	You can set the subchannel from 1 to 15.
Security ID	All OpenAir devices must have the same security ID to communicate. The security ID may be up to 20 characters long.
Node Type	You can configure the node type as either master or station. Configure node type as master if this radio will communicate with end devices. If you are configuring a WAP and this radio will communicate with an access point on the wired network, set node type to station.

Saving Your Configuration

From the configuration menu, choose the Save Configuration command to save your settings. After you have saved the configuration, choose Reboot to reboot the access point.

You have now configured the 2101 and are ready to install it in your network. You can remove the null-modem cable and disconnect power.

Installing the 2101

To install the 2101, you need to perform these tasks:

- Attach an antenna or antenna cable to each radio.
- Connect the 2101 to the Ethernet network unless you will be using the 2101 as a WAP.
- Connect the 2101 to the fiber optic network, if necessary.
- Mount the 2101.
- Apply power to the 2101.

These tasks are described in the rest of this section.

Attaching an Antenna

The 2101 ships with a dipole antenna. Attach the dipole antenna or an appropriate antenna cable to the radio on the 2101 by inserting the antenna or cable through the hole in the radio door and then into the radio.

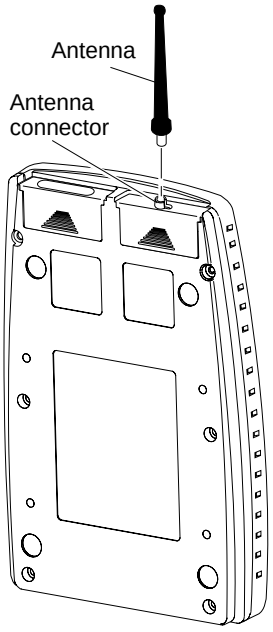
Caution
Use only the dipole antenna that ships with your 2101.

Utilisez seulement le dipôle qui est livré avec votre 2101.

Caution
Be sure your 2101 is at least one meter (three feet) away from any other antennas.

Assurez-vous que votre 2101 se trouve à un mètre (3 pieds) minimum de toute autre antenne.

Attaching an Antenna



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If your 2101 has two radios, you need to connect an antenna to each radio. The 802.11b radio features antenna diversity, so you can attach two antennas to each 802.11b radio.

Intermec offers a variety of antennas and antenna accessories. For information about antenna options, contact your Intermec representative. For the recommended antenna separation for access points with multiple antennas, refer to the *21XX Universal Access Point Technical Reference Manual*.

Connecting the 2101 to the Ethernet Network

To connect the 2101 to your Ethernet network, attach one end of a 10/100BaseT cable to the 10/100BaseT Ethernet port on the 2101. Attach the other end to your Ethernet network.

Connecting the 2101 to the Fiber Optic Network

To connect the 2101 to your fiber optic network, attach one end of a fiber optic cable to the fiber optic connector on the 2101. Attach the other end to a fiber optic adapter. For more information, see *Connecting Fiber Optic Access Points Instructions* (Part No. 072226).

Mounting the 2101

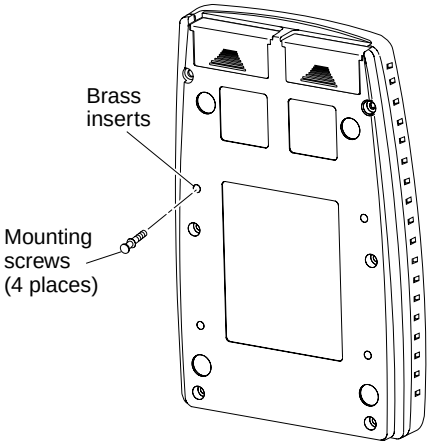
The 2101 ships with a wall bracket and four shoulder screws. The following instructions explain how to mount the 2101 using the wall bracket. You can also mount the 2101 to a cubicle wall using the cubicle mounting bracket kit (Part No. 069926). For more information about mounting options, contact your Intermec representative.

Mount the wall bracket and 2101 to a sturdy surface in accordance with local building codes. You need the following tools and materials to install the bracket:

- Two to six #8 or M4 screws. The screws should be appropriate for the surface on which you are mounting the bracket.
- Drill and drill bit appropriate for the mounting screws
- Screwdriver

To mount the 2101 vertically to a wall or beam

1. Insert one shoulder screw into each of the threaded brass inserts on the back of the 2101 and tighten securely.



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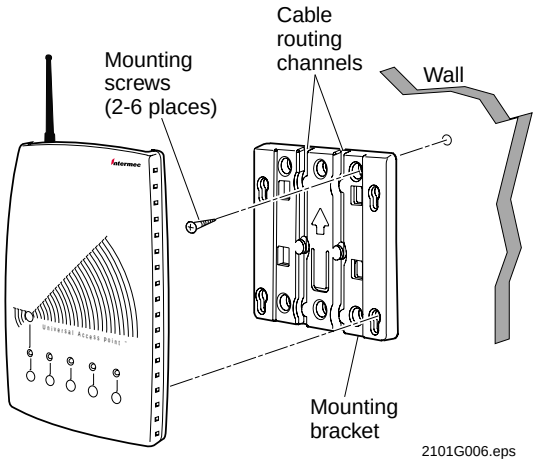
2. Use the mounting bracket as a template to mark the location of the mounting holes on the mounting surface.
3. Drill the mounting holes.
4. Position the bracket on the wall with the arrow pointing up.



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5. Using the screws you provided, secure the bracket to the wall.

6. Route the power and Ethernet cables through the cable routing channels in the mounting bracket, if desired.
7. Mount the 2101 in the bracket by inserting the shoulder screws into the keyhole slots in the bracket. Slide the 2101 down until it is firmly seated in the bracket.

Applying Power to the 2101

1. Plug the power cord into the power supply.
2. Plug the power supply into the Power port on the 2101.
3. Plug the other end of the power cord into an AC power outlet. The 2101 has no On/Off switch, so it boots as soon as you apply power.

Your 2101 is now ready to begin transmitting data packets between your end devices and your wired network.

Note: You can also power the 2101 using a power over Ethernet splitter. For more information, see mobilelan.intermec.com.

Accessing the 2101 Remotely

After you install the access point in your network, you can access it remotely using a Web browser. You must know the IP address of the access point to establish remote access.

Only one session can be active with the 2101 at a time. If your session terminates abruptly or a new logon screen appears, someone else may have accessed the 2101. Your session also terminates if there is no activity for 15 minutes.

To access the 2101 using a Web browser

1. Open a Web browser session.
2. In the Address or Location field, enter the IP address of the 2101 and press **Enter**. If a security screen appears, type `Intermec` as the user name and password and press **Enter**. The TCP/IP Settings screen appears.

The TCP/IP Settings Screen

Use the AP Configuration menu on the left side of the screen to further configure the access point. For more information, see the *21XX Universal Access Point Technical Reference Manual*.

You can also manage your entire network using MobileLAN™manager. For more information, see mobilelan.intermec.com.

Specifications

This section lists the specifications for the 2101.

Physical

Dimensions	250 mm x 38 mm x 160 mm (9.84 in x 1.49 in x 6.27 in)
Weight	526 g (1.16 lb)

Environmental

Operating temperature	-20°C to +65°C (-4°F to +149°F)
Storage temperature	-40°C to +70°C (-40°F to +158°F)
Relative humidity	10% to 90% (non-condensing)

Network

Data rate	10/100 Mbps (Ethernet)
Filtering rate	Full Ethernet rate
Serial port maximum data rate	115,200 bps
SNMP agent	Version 1 RFC 1213
Ethernet interface	10/100 BaseT
Media Access protocol	CSMA/CD

Electrical

Electrical rating	~100 to 240V 1.0 to 0.5A 50 to 60 Hz

Radio Specifications

This section lists the radio specifications.

OpenAir Radio

Data rate	1.6 Mbps
Channels	15
Range	Up to 150 m (500 ft) indoors
Frequency band	2.4 to 2.5 GHz (varies by country)
Radio type	Frequency hopping, spread spectrum
Radio power output	100 mW

IEEE 802.11b Radio

Data rate	11 Mbps (High), 5.5 Mbps (Medium), 2 Mbps (Standard), 1 Mbps (Low) with automatic fallback for increased range
Channels	11 (North America), 13 (Europe), 4 (France), 1 (Japan)
Range:	160 m (525 ft) open environment 50 m (165 ft) semi-open environment 24 m (80 ft) closed environment
Frequency band	2.4 to 2.5 GHz world-wide
Radio type	Direct sequence, spread spectrum
Radio power output	32 mW (15dBm)

Intermec

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