2102 Corporate Access Point

Universal Access Point™

/ntermec

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Contents

About the 2102

Intermec's 2102 Corporate Access Point is a wireless local area network (LAN) product that lets your wireless end devices roam anywhere throughout an enterprise while maintaining a continuous, high-quality network connection.

Your 2102 has one of these radios installed:

- IEEE 802.11b High Rate

- 2.4 GHz OpenAir

The 2102 with an IEEE 802.11b High Rate radio installed is Wi-Fi™ certified for interoperability with other IEEE 802.11b wireless LAN devices.

2102G002.eps

The 2102 is fully compatible with Intermec's 2100 Industrial Access Point and 2101 Enterprise Access Point. You can install a combination of these access points in your network, depending upon your needs. All of these Intermec access points allow seamless roaming of end devices across subnetworks.

The 2102 ships with these additional items:

- Power supply (Part No. 3-304029-01) and AC power cord

- Mounting bracket

- Safety information

⚠ **CAUTION**

Caution
You must use the appropriate Intermec power supply with this device or equipment damage may occur.

Conseil
Vous devez utiliser la source d'alimentation Intermec adéquate avec cet appareil sinon vous risquez d'endommager l'équipement.

This user's guide provides basic configuration and installation instructions. For detailed information about the 2102, see the *21XX Universal Access Point Technical Reference Manual* (Part No. 067150).

Visit our Web site at www.intermec.com for online access to many of our manuals in PDF format. To order a printed version of the manual, contact your Intermec representative.

Using the 2102 in a Network

The 2102 transmits data between wireless end devices and wired devices that are on your Ethernet network. You can use the 2102 in a variety of network configurations.

Using the 2102 in a Simple Wireless Network

If you have an existing Ethernet network, you can use a 2102 to extend the network capability to include wireless end devices. The 2102 connects directly to the wired network, which then allows wireless end devices to form a wireless extension of the wired LAN.

Host

Ethernet

2102

2102G010.eps
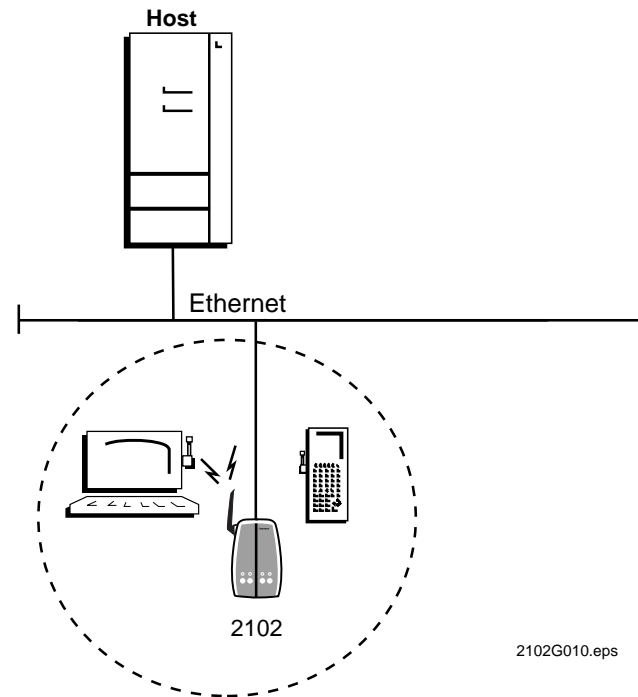
Using Multiple 2102s and Roaming End Devices

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

2102G008.eps
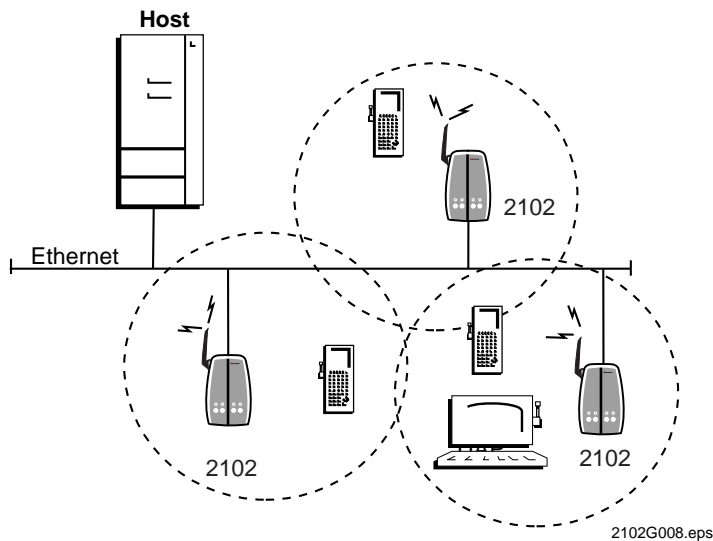
You can have more than one access point within the same cell to increase throughput. Or, you can overlap cells to provide redundancy for critical applications and ensure that coverage is not lost if a single access point or radio fails.

Understanding the 2102

This section explains the LEDs and connectors on the 2102. It also explains how to position the antenna.

Understanding the LEDs

The 2102 has four LEDs as shown next.

2102G003.eps

The following table describes the LED activity.

| LED	Description
Power	After the 2102 completes the boot process, this LED remains steadily on.
Radio	This LED flashes when a frame is transmitted or received on the radio port.
Wired LAN	This LED flashes when a frame is transmitted or received on the Ethernet port.
Root/error	This LED flashes if this access point is configured as the root. For more information about the root, see the *21XX Universal Access Point Technical Reference Manual*. This LED remains steadily on if an error has occurred.

Positioning the Antenna

The 2102 features a built-in antenna that rotates 180° as shown below. Follow these guidelines for positioning the antenna:

- Place the antenna at 0° when storing the 2102.

- Place the antenna at 90° when using the 2102 horizontally, for instance, when the 2102 is positioned on a desk or counter.

- Place the antenna at 180° when using the 2102 vertically, for instance, when the 2102 is mounted on a wall or cubicle.

2102G015.eps
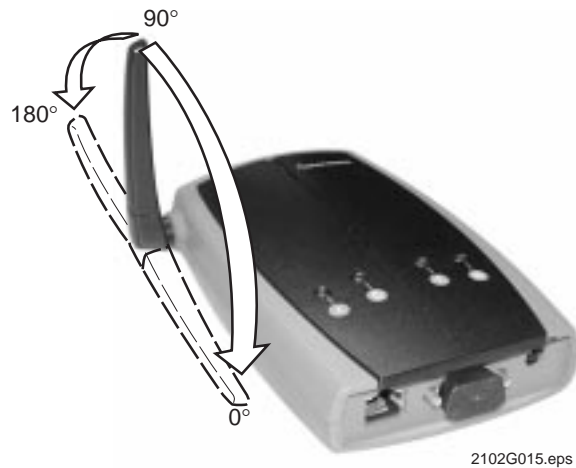
Note: Do not force the antenna past the hard stop at 0° or 180° or you may break the antenna connector.

For information about antenna options, contact your local Intermec representative.

⚠️ **CAUTION**

Caution
Government regulatory agencies mandate that the antenna not be alterable. Therefore, the access point uses a custom antenna connector. Do not attempt to use a different antenna or you may damage the connector and the access point.

Conseil
Les agences responsables de la réglementation gouvernementale exigent que l'antenne ne soit pas modifiable. Par conséquent, le point d'accès est doté d'un connecteur d'antenne personnalisé. Ne pas essayer d'utiliser une antenne différente au risque d'endommager le connecteur et le point d'accès.

Understanding the Connectors

You use the Power port and Serial port to configure the 2102 before you install it. You use the Power port and Ethernet port when using the 2102 in your network.

10BaseT   Serial   Power
Ethernet port   port   port

2102G001.eps
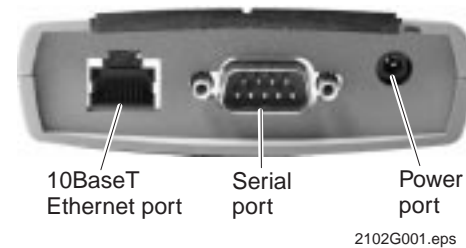
Configuring the 2102

This section lists the items that you must provide to configure the 2102, and it describes the configuration procedures.

Requirements for Configuring the 2102

To configure the 2102, you use a serial connection between a PC and the 2102. You need these items to configure the 2102:

- PC with open serial port

- RS-232 null-modem cable (Part No. 059167)

Steps for Configuring the 2102

The steps to configure the 2102 are summarized below and then described in more detail in the rest of this section.

To configure the 2102

1. Configure the communications parameters on your PC.

2. Attach cables and boot the 2102.

3. Log onto the 2102.

4. Configure the network parameters.

5. Configure the radio parameters.

6. Save the configuration.

Configuring the Communications Parameters on Your PC

Configure the serial port communications parameters on your PC to the following values:

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.

Attaching Cables and Booting the 2102

1. Attach an RS-232 null-modem cable to a serial port on your PC.

2. Attach the other end of the null-modem cable to the serial port on the 2102.

3. Plug the power supply into the power port on the 2102.

4. Plug the AC power cord into the power supply.

5. Plug the other end of the AC power cord into an AC power outlet. The 2102 has no On/Off switch, so it boots as soon as you apply power.

2102G005.eps
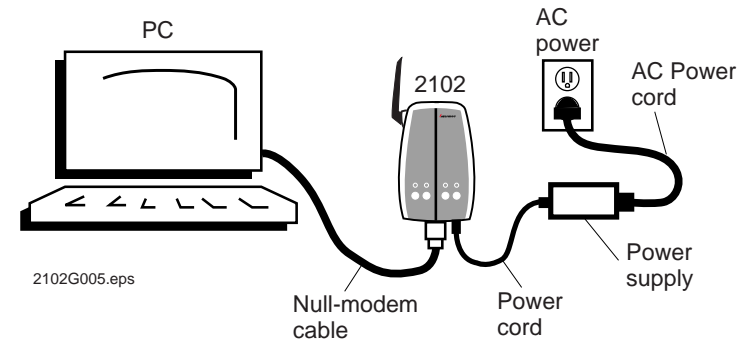
Logging Onto the 2102

- Press **Enter** when the following message appears on the PC screen:

  ```
  Starting system
  ```

  The logon screen appears. Type the default password `Intermec` and press **Enter**. The Configuration menu appears.

  ```
              Configuration of Universal Access Point
                      [Quick Start]
                      [Network Configuration]
                      [Bridge Configuration]
                      [Summary]
                      [Maintenance]
                       Save Configuration
                       Reboot
      ?-Help
  ```

Configuring the Network Parameters

You need to configure basic network parameters such as IP Address. If you have a DHCP server on your network, DHCP can assign values to the IP Address, IP Subnet Mask, and IP Router parameters, or you can assign these values manually.

To configure the network parameters

1. Use the arrow keys or the **Tab** key to position the cursor on the Network Configuration command and press **Enter**. The Network Configuration menu appears.

   ```
                [Network Configuration]
        IP Address            0.0.0.0
        IP Subnet Mask        255.255.255.0
        IP Router             0.0.0.0
        IP Frame Type         <DIX>
        DHCP                  <Enabled, if IP Address is zero>
        DHCP Server Name      ""
        Auto ARP Minutes      5
       [IDRS]
      ?-Help
   ```

2. To use DHCP for automatic address assignment, configure these parameters:

Parameter	Explanation
DHCP	Make sure this field is set to <Enabled, if IP Address is zero>.
DHCP Server Name	Enter the name of the DHCP server that the 2102 is to access for automatic address assignment. If no server name is specified, the 2102 responds to offers from any server.

   To assign IP addresses manually, configure these network parameters:

Parameter	Explanation
IP Address	Each device on the network must have a unique IP address. The default IP address is 0.0.0.0.
IP Subnet Mask	The IP subnet mask should match the other devices in your network. The default IP subnet mask is 255.255.255.0.
IP Router	If the 2102 will communicate with devices on a subnetwork, configure this parameter to the address of the router that will forward the frames. The default address is 0.0.0.0.

Configuring the Radio Parameters

This section contains procedures for configuring the radio parameters. Follow the procedure for configuring either the IEEE 802.11b High Rate radio or the 2.4 GHz OpenAir radio, depending upon the type of radio in your 2102.

To configure an IEEE 802.11b High Rate radio

- Choose the IEEE 802.11b High Rate command from the Quick Start menu and configure these parameters:

Parameter	Explanation
Network Name	All IEEE 802.11b High Rate radios must have the same network name to communicate. Network name may be up to 32 alphanumeric characters long. The default network name is INTERMEC (case sensitive).
Frequency	Frequencies range from 2400 to 2500 MHz and are country-dependent. Choose the frequency appropriate for your installation.

To configure a 2.4 GHz OpenAir radio

1. Configure the following parameter from the Quick Start menu:

Parameter	Explanation
LAN ID (Domain)	All 2.4 GHz devices on the same network must have the same LAN ID to communicate. Set the LAN ID to a number between 0 and 15. The default is 0.

2. Choose the 2.4 GHz OpenAir command from the Quick Start menu and then configure these parameters:

Parameter	Explanation
Channel	You can set the channel from 1 to 15. The default is 1.
Subchannel	You can set the subchannel from 1 to 15. The default is 1.
Security ID	All 2.4 GHz OpenAir devices must have the same security ID to communicate. The security ID may be up to 20 characters long. The default is no password or null.

Note: For optimal performance, you may need to set additional parameters. For more information, see the *21XX Universal Access Point Technical Reference Manual.*

Saving the Configuration

After you configure the 2102, you must save the configuration.

To save the configuration

1. From the main menu, choose the Save Configuration command.

2. Disconnect the power and null-modem cables.

You are now ready to install the 2102 in your network.

Installing the 2102

To install the 2102, you need to perform these tasks:

- Connect the 2102 to the Ethernet network.

- Mount the 2102.

- Apply power to the 2102.

These tasks are described in the remainder of this section.

Connecting the 2102 to the Ethernet Network

To connect the 2102 to your Ethernet network, attach one end of a 10BaseT cable to the Ethernet port on the 2102. Attach the other end to your Ethernet network.

Mounting the 2102

The 2102 ships with a mounting bracket so you can mount the 2102 on a wall or ceiling. The following instructions explain how to mount the 2102 using the mounting bracket that ships with it.

Install the mounting bracket and 2102 on a sturdy surface in accordance with local building codes. You need the following tools and materials to install the bracket:

- Two #5 or M3 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 2102 to a wall or ceiling

1. Use the mounting bracket as a template to mark the location of the mounting holes on the mounting surface.

2. Drill the mounting holes.

3. Position the bracket on the mounting surface.

Mounting bracket

2102 back panel

Screw (2 places)

Hook (2 places)

Slot (2 places)

Clip

2102G009.eps
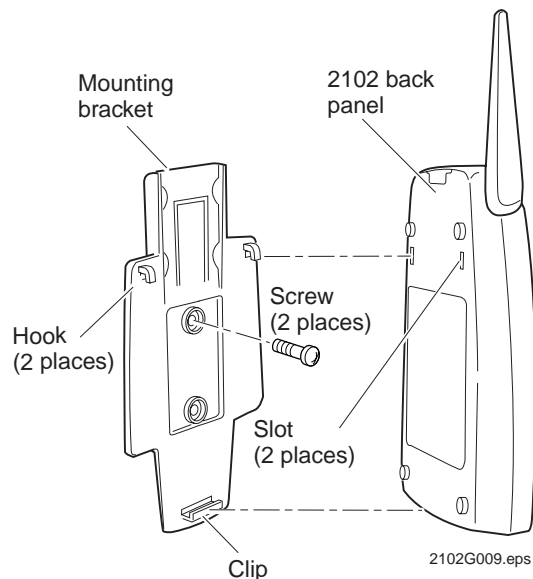
4. Using the screws you provided, secure the bracket to the wall.

5. Fit the slots on the back of the 2102 over the hooks on the mounting bracket.

6. Slide the 2102 up slightly and then press on the base of the 2102 until it clicks into the clip at the bottom of the mounting bracket.

These accessories are available for the 2102:

• Cubicle bracket kit (Part No. 070366) allows you to mount the 2102 on a cubicle wall.

• Power supply holder kit (Part No. 069893) allows you to secure the power supply to a wall.

For more information about mounting options, contact your Intermec representative.

Applying Power to the 2102

1. Plug the power supply into the power port on the 2102.

2. Plug the AC power cord into the power supply.

3. Plug the other end of the AC power cord into an AC power outlet. The 2102 has no On/Off switch, so it boots as soon as you apply power.

Your 2102 is now ready to begin transmitting data packets between your end devices and your wired network.

Accessing the 2102 Remotely

After you install the 2102 in your network, you can access it remotely using Telnet or a Web browser. You can view the current settings or reconfigure the 2102; however, you must know the IP address of the 2102 to access it remotely. If a DHCP server assigned an IP address to the 2102, you must obtain the IP address from the DHCP server.

Only one session can be active with the 2102 at a time. If your session terminates abruptly or a new logon screen appears, someone else may have accessed the 2102 or your access may have timed out.

Using Telnet to Access the 2102

To access the 2102 using Telnet, you need a PC that is on the Ethernet network and that is running Telnet software. The following example uses Microsoft Telnet.

To establish a Telnet session with the 2102

1. After the 2102 has been powered on and it has completed its boot sequence, open a Telnet session on the PC.

2. Choose Connect, and then choose Remote System. The Connect dialog box appears.

3. In the Host Name field, enter the IP address of the 2102.

4. Click Connect. The logon screen appears.

5. In the Password field, enter the password. The default is `Intermec`.

6. Press **Enter**. The Configuration menu appears.

You can now configure the 2102 remotely using Telnet. The same configuration menus that are available through a serial connection are available through the Telnet session.

If you are unable to use the arrow keys on your PC keyboard to navigate through the configuration menus, you may need to enable VT100 Arrows.

To enable VT100 Arrows

1. Choose Terminal from the Telnet toolbar.

2. Choose Preferences. The Terminal Preferences dialog box appears.

3. Select VT100 Arrows.

4. Click OK.

You can now navigate through the configuration menus using the arrow keys on your PC keyboard.

Using a Web Browser to Access the 2102

You can use a Web browser to access the 2102 configuration menus. Note that your session terminates if there is no activity for 15 minutes.

To access the 2102 using a Web browser

1. Open a Web browser session.

2. In the Address or Location field, enter the IP address of the 2102 and press **Enter**. The Enter Network Password dialog box appears.

3. In the User Name field, enter the user name. The default is `Intermec`.

4. In the Password field, enter the password. The default is `Intermec`.

5. Press **Enter**. The Universal Access Point Configuration Web page appears.

Several menu options appear on the Configuration Web page. You can configure the 2102, review the changes, write the changes, upgrade the firmware, and reboot the 2102.

2102 Specifications

This section lists the specifications for the 2102.

Physical

Dimensions	14.66 cm x 9.32 cm x 3.53 cm (5.77 in x 3.67 in x 1.39 in)
Weight	232 g (0.51 lb)

Environmental

Operating temperature	0°C to +40°C (+32°F to +104°F)
Storage temperature	-20°C to +70°C (-4°F to +158°F)
Relative humidity	10% to 90% (non-condensing)

Network

Data rate	10 Mbps (Ethernet)
Filtering rate	14,880 frames per second
Serial port maximum data rate	115,200 bps
SNMP agent	Version 1 RFC 1213
Ethernet interface	10BaseT
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.

2.4 GHz OpenAir Radio

Data rate	1.6 Mbps per channel 800 Kbps fallback rate for extended range
Channels	Supports 15 independent, non-interfering "virtual channels" (hopping patterns)
Range	Up to 150 m (500 ft) radius indoors Up to 300 m (1000 ft) radius outdoors
Frequency band	2.4 to 2.5 GHz (varies by country)
Radio type	Frequency hopping, spread spectrum
Radio power output	100 mW (20dBm)

IEEE 802.11b High Rate 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 (11 Mbps)	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 (varies by country)
Radio type	Direct sequence, spread spectrum
Radio power output	32 mW (15dBm)

Default Settings

This section lists the factory default settings.

Quick Start Menu Defaults

Parameter Name	Range	Default
IP Address	4 nodes, 0 to 255	0.0.0.0
IP Subnet Mask	4 nodes, 0 to 255	255.255.255.0
LAN ID	0 to 254	0
Access Point (AP) Name	0 to 16 characters	(UAP serial number)

Ethernet Port Configuration Menu Defaults

Parameter Name	Range	Default
Port Control	Enabled/Disabled	Enabled
Hello Period	1, 2, or 3 seconds	2
INCA Frame Type	DIX/SNAP	DIX

2.4 GHz OpenAir Port Configuration Menu Defaults

Parameter Name	Range	Default
Port Control	Enabled/Disabled	Enabled
Hello Period	1, 2, or 3 seconds	2
Security ID	0 to 20 characters	no password (null)
Node Type	Master/Station	Master
Channel	1 to 15	1
Subchannel	1 to 15	1
Wireless Hops	Enabled/Disabled	Disabled
MAC Configuration	Default/Manual/Interference/Throughput	Default

Parameter Name	Range	Default
Manual MAC Parameters		
Master Hop Period	100/200/400 ms	200 ms
Master Beacon Frequency	1 to 7	2
Master Deferral Slot	Default/1/3/7	Default
Master Fairness Slot	Default/1/3/7	Default
Fragment Size	1 to 1540	310
Transmit Mode	AUTO/BFSK/QFSK	AUTO
Normal Ack Retry	1 to 255	255
Fragmented Ack Retry	1 to 255	255
Normal QFSK Retry	1 to 255	255
Fragmented QFSK Retry	1 to 255	255

IEEE 802.11b High Rate Port Configuration Menu Defaults

Parameter Name	Range	Default
Port Control	Enabled/Disabled	Enabled
Hello Period	1, 2, or 3 seconds	2
Network Name	0 to 32 characters	INTERMEC
Frequency	Channel 1 to 14, 2400 to 2500 MHz	Channel 3, 2422 MHz
WEP Encryption	Enabled/Disabled	Disabled
WEP Configuration		
WEP Receive Data	Unencrypted Allowed/ Encryption Required	Encryption Required
WEP Transmit Key	1 to 4	1
WEP Default Key Configuration		
WEP Entry Mode	ASCII/hex	ASCII
WEP Key Size	64 Bit/128 Bit	64 Bit
WEP Key 1	5 ASCII characters or 5 hex pairs	80211

Parameter Name	Range	Default
Advanced Configuration		
Medium Reservation	Enabled/Disabled	Disabled
Distance Between APs	Small/Medium/Large	Large
Microwave Oven Robustness	Enabled/Disabled	Disabled
DTIM Period	1 to 65535	1
Multicast Rate	11 Mbits (High)/ 5.5 Mbits (Medium)/ 2 Mbits (Standard)/ 1 Mbits (Low)	2 Mbits (Standard)
Transmit Rate Configuration		
Transmit Rate	11 Mbits (High)/ 5.5 Mbits (Medium)/ 2 Mbits (Standard)/ 1 Mbits (Low)	11 Mbits (High)
Transmit Rate Fallback	Enabled/Disabled	Enabled

INCA/IP Port Configuration Menu Defaults

Parameter Name	Range	Default
Port Control	Enabled/Disabled	Enabled
Hello Period	1, 2, or 3 seconds	2
Mode	Originate If Root/Listen	Listen
IGMP	Enabled/Disabled	Disabled
IGMP Multicast Address	Any Class D multicast IP address	224.0.1.65

Network Configuration Menu Defaults

Parameter Name	Range	Default
IP Address	4 nodes, 0 to 255	0.0.0.0
IP Subnet Mask	4 nodes, 0 to 255	255.255.255.0
IP Router	4 nodes, 0 to 255	0.0.0.0
IP Frame Type	DIX/SNAP	DIX
DHCP	Enabled/Disabled/ Enabled (if 0)	Enabled (if IP Address = 0)
DHCP Server Name	0 to 31 characters	(blank)
Auto ARP Minutes	0 to 120	5
IDRS		
IDRS	Enabled/Disabled	Disabled
IDRS Server Address	4 nodes, 0 to 255	0.0.0.0
IDRS Scope	0 to 15 characters	INTERMEC

Bridge Configuration Menu Defaults

Parameter Name	Range	Default
LAN ID	0 to 254	0
Root Priority	0 to 7	1
Ethernet Bridging	Enabled/Disabled	Enabled
Secondary LAN Bridge Priority	0 to 7	0
Secondary LAN Flooding	Disabled/Enabled/ Multicast/Unicast	Disabled
Global Flooding		
Multicast		
Flood Mode	Hierarchical/Universal/ Disabled	Hierarchical
Outbound to Terminals	Enabled/Disabled	Enabled
Outbound to Secondary LANs	Set Locally/Enabled	Set Locally

Bridge Configuration Menu Defaults (continued)

Parameter Name	Range	Default
Global Flooding *(continued)*		
Unicast		
Flood Mode	Hierarchical/Universal/ Disabled	Disabled
Outbound to Terminals	Enabled/Disabled	Disabled
Outbound to Secondary LANs	Set Locally/Enabled	Set Locally
ARP Server Mode	Disabled/No Flooding/ Normal Flooding	Disabled
Filters		
INCA/IP IP Multicast	Drop/Pass	Drop
Global RF Parameters		
RFC1042/DIX Conversion	Enabled/Disabled	Enabled
RFC1042 Types to pass through	(any valid protocol type)	80 f3 and 81 37

Maintenance Menu Defaults

Parameter Name	Range	Default
Password	16 characters	Intermec
Web User Name	16 characters	Intermec
Service Password	Enabled/Disabled	Enabled

Part No. 070441-001

070441-001