

Intermec



User's Guide

MobileLAN™power

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There are U.S. and foreign patents pending

Manual Change Record

This page records the changes to this document. The manual was originally released as version 001.

Version	Date	Description of Change
002	03/03	Updated information to remove references to the Power Not Active LED. Made other small changes.

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Before You Begin

Before You Begin

This section introduces you to standard warranty provisions, safety precautions, and about this guide.

Warranty Information

To receive a copy of the standard warranty provision for this product, contact your local Intermec sales organization. In the U.S., call 1-800-755-5505, in Canada, call 1-800-668-7043.



Note: Opening this product may void the warranty. The internal workings of this product can only be accessed by Intermec service personnel. Radio replacements and upgrades require Intermec service personnel.

Safety Summary

Your safety is extremely important. Read and follow all warnings and cautions in this book before handling and operating Intermec equipment. You can be seriously injured, and equipment and data can be damaged if you do not follow the safety warnings and cautions.

Do not repair or adjust alone

Do not repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

First aid

Always obtain first aid or medical attention immediately after an injury. Never neglect an injury, no matter how slight it seems.

Resuscitation

Begin resuscitation immediately if someone is injured and stops breathing. Any delay could result in death. To work on or near high voltage, you should be familiar with approved industrial first aid methods.

Before You Begin

Energized Equipment

Never work on energized equipment unless authorized by a responsible authority. Energized electrical equipment is dangerous. Electrical shock from energized equipment can cause death. If you must perform authorized emergency work on energized equipment, be sure that you comply strictly with approved safety regulations.

Warnings, Cautions, and Notes



Warning

A warning contains directions that must be followed for personal and product safety. Follow all directions carefully.

Avertissement: Les avertissements comprennent des instructions qui doivent être respectées pour assurer la sécurité des personnes et de l'équipement. Respectez scrupuleusement toutes les instructions.



Caution

A caution alerts you to an operating procedure, practice, condition, or statement that must be strictly observed to prevent equipment damage or destruction, or corruption or loss of data.

Attention: Une précaution vous avertit d'une procédure de fonctionnement, d'une méthode, d'un état ou d'un rapport qui doit être strictement respecté pour empêcher l'endommagement ou la destruction de l'équipement, ou l'altération ou la perte de données.



Note: Notes either provide extra information about a topic or contain special instructions for handling a particular condition or set of circumstances.

Before You Begin

About this Guide

This document provides information and procedures regarding installation, configuration, and management of the MobileLAN™ power bridge.

Prerequisite Skills and Knowledge

This guide is intended for use by network administrators who are responsible for installing network equipment; consequently, it assumes a basic working knowledge of LANs (Local Area Networks).

To use this document effectively, you should have a working knowledge of Ethernet infrastructures. In addition, you should have a working knowledge of

- basic electronics and mechanical assembly, as well as an understanding of related local building codes.
- local operating and troubleshooting procedures.

Before You Begin



1 Introduction

This chapter introduces the MobileLAN™ power bridge and explains how it can be used in your network. This chapter covers these topics:

- About the Power Bridge
- Power Bridge—front view detail
- Power Bridge status indications
- Power Bridge—rear view detail
- Powering Ethernet devices

About the Power Bridge

The Power Bridge is a single Ethernet channel power-feeding device. It is designed for use with a 10BaseT/100BaseTx standard Ethernet network over a standard TIA/EIA-568 Category 5 (or higher) cabling plant. The DC operating power for the data terminal units is fed through the unused pairs (7/8 and 4/5).

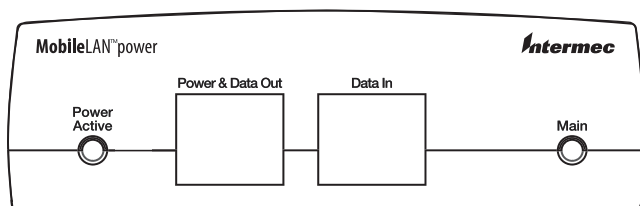
The Power Bridge normally powers devices that are Power over Ethernet Enabled; that is, they are equipped to receive power over Ethernet. Devices that are not equipped to receive power over Ethernet can be powered by the Power Bridge, but they require an external splitter.

The Power Bridge has the following features:

- Remote power feeding of Ethernet terminals
- A single 10BaseT/100BaseTx data + power combined channel
- Universal 90 to 264 VAC, 50 to 60 Hz power input
- Port overload and short-circuit protection
- Port status LEDs
- 15.4W minimum allowable output power
- Free-standing or wall-hanging mounting

The Power Bridge also eliminates the need for terminal's AC outlets, UPS, and AC/DC adapters.

Power Bridge—Front View Detail



MLP001.eps

10BaseT/100BaseTx Power & Data Out Port, Left Connector

The Power Bridge has a single Power & Data port configured as MDI (non-crossover). This port is designed to carry Ethernet data over the standard 2-wire pairs (RJ-45 pins 1/2 and 3/6) and DC power source over the spare wire pair (RJ-45 pins 4/5 and 7/8).

The maximum segment length from the switch/hub to the Network Interface Card (NIC), including the Power Bridge, is 100m (328 ft), per the IEEE 802.3 standard.

10BaseT/100BaseTx Data In Port, Right Connector

The Power Bridge has a single 10BaseT/100BaseTx data input port configured as Media Dependant Interface (MDI) (non-crossover). This port is designed to carry Ethernet data only (Tx/Rx) over the standard 2-wire pairs (RJ-45 pins 1/2 and 3/6).

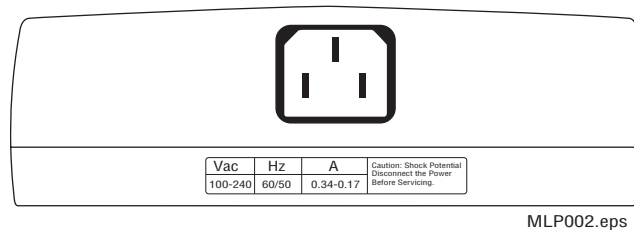
Power Active LED

The Power Active LED (green) indicates the terminal unit has been identified as Power Enabled and is active and receiving power. For more information, see “Power Bridge Status LEDs” on page 5.

Main LED

The Main LED (green) provides the Power Bridge’s AC power status. For more information, see “Power Bridge Status LEDs” on page 5.

Power Bridge—Rear View Detail



AC Power Receptacle



Electrocution Hazard. Before connecting power to the Power Bridge, please refer to the safety information in Appendix A.

Avertissement: Risque d'électrocution. Avant de connecter l'alimentation au Pont d'alimentation, veuillez consulter les informations relatives à la sécurité à l'annexe A.

The Power Bridge automatically adjusts its power setting to any supply voltage from 90 to 240 VAC.

See Appendix A for proper selection of a power cord.

Supply Data Label

The Supply Data label contains information regarding the total AC power input (100 to 240 VAC), power frequency (60/50 Hz), and the corresponding amperes.

See Appendix A for proper selection of a power cord.

Information Label

The Information label (located on the bottom of the Power Bridge) shows the following:

- Part number of the Power Bridge
- Serial number of the Power Bridge and date code
- Electrical and safety compliance

You may need this information for reporting purposes.

Power Bridge Status LEDs

These tables contain Power Bridge status information as presented by the front panel LEDs during normal operation.

Power Active LED Table

Power Active LED Status	Port Load Conditions	Port Voltage
Off	Non-active load or unplugged port	No DC voltage is present over the wires
On	Active load is plugged in and complies with normal load conditions	Continuous nominal DC voltage is present on the spare pairs
Blinking	Overload conditions or shorted terminal port or forced external voltage feed (constant DC) into the port	Power to the port is disconnected No DC voltage is present on the spare pairs

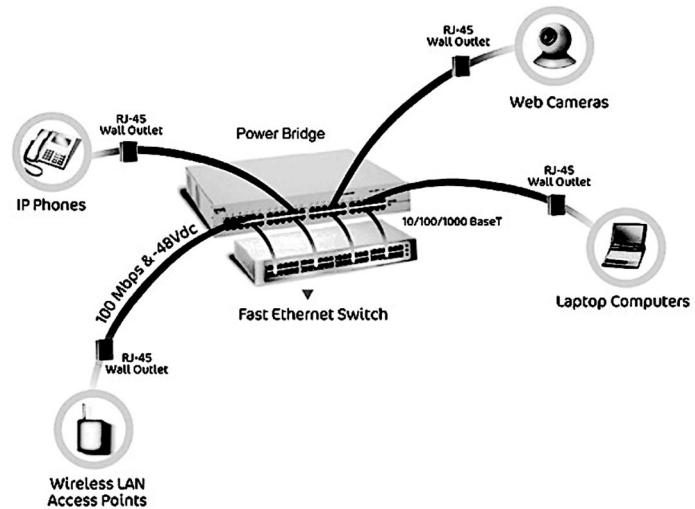
Main LED Table

Main LED Status	Main Power Status	Remarks
Off	Main internal power supply unit is unplugged or faulty	AC input is not active
On	Main power supply unit is plugged in and under normal operating conditions	Main voltage is 44V to 57V
Blinking and Power Active LED off	Main power supply unit voltage exceeds specified limits	Main voltage is under 46V or above 57V; port's power is disabled

For more information on using the LEDs to troubleshoot, see Appendix B, “Specifications and Troubleshooting.”

Powering Ethernet Devices

The Power Bridge can be used to power access points or other end devices such as IP phones, web cameras, laptop computers, and others. That is, the Power Bridge can be used to power any Ethernet device with power requirements that are within the specified powering capabilities.



This illustration shows examples of network configurations.



2 Installing the Power Bridge

This chapter contains information needed to install the Power Bridge. This chapter covers these topics:

- Verifying kit contents
- Recording identification information
- Choosing a suitable site
- Mounting the Power Bridge
- Powering up the Power Bridge
- Cabling the Power Bridge

Verifying Kit Contents

Unpack the kit and verify that these items are present:

- Power Bridge
- Rubber feet
- User's guide (this manual)

Recording Identification Information

Before proceeding with the Power Bridge placement and installation, record the serial number here for future reference. The serial number is located on the Information label on the bottom of the Power Bridge.

Serial Number

Choosing a Suitable Site



Warning

Read the safety information provided in Appendix A before carrying out any installation, removal, or any maintenance procedure on the Power Bridge.

Avertissement: Vous devez lire toutes les informations concernant la sécurité à l'annexe A avant d'entreprendre l'installation, le retrait ou toute procédure d'entretien du Pont d'alimentation.

The Power Bridge is suited for use in an office environment where it can stand alone (free stand) or hang from a wall.

When deciding where to position the Power Bridge, be sure that

- the Power Bridge is accessible and cables can be connected easily.
- the ambient room temperature is less than 40°C (104°F); however, the recommended room temperature is 25°C (77°F) or less.

Chapter 2 — Installing the Power Bridge

- airflow is not restricted around the Power Bridge or through the vents in the side of the Power Bridge. We recommend that you provide a minimum of 25 mm (1 in) clearance around the two sides and the back of the Power Bridge, excluding mounting surfaces.
- water or moisture cannot enter the case of the Power Bridge.

In addition, be sure that cabling is away from

- sources of electrical noise such as radios, transmitters, and broadband amplifiers.
- power lines and fluorescent lighting fixtures.

Mounting the Power Bridge



Caution

Disconnect all cables from the Power Bridge before continuing.

Attention: Déconnectez tous les câbles du Pont d'alimentation avant de continuer.

There are two ways that you can mount the Power Bridge:

- Free-stand mounting
- Wall hanging

Free-Stand Mounting

- Place the self-adhesive rubber feet provided in the kit on the underside of the Power Bridge. Be sure to place the rubber feet on their markings.

Wall Hanging

- 1 Drill two 6 mm (.24 in) holes.
- 2 Insert a screw (not included) in each hole, leaving 0.5 cm (.2 in) of the screws protruding out of the wall.
- 3 Hang the Power Bridge on the screws.

Cabling the Power Bridge

This section describes how to get the Power Bridge powered on, connected to the network, and connected to the end device. Once you get it connected, it is ready for operation.



Caution

The Power Bridge has no ON/OFF switch. To connect or disconnect power to the Power Bridge, simply insert or remove the power cable from the AC power receptacle on the rear of the Power Bridge.

Attention: Le Pont d'alimentation n'est pas muni d'un interrupteur Marche/Arrêt. Pour connecter ou déconnecter l'alimentation du Pont d'alimentation, veuillez tout simplement brancher ou retirer le câble d'alimentation de la prise de courant alternatif située à l'arrière du Pont d'alimentation.

To power on the Power Bridge

- 1 Insert a power cord into the power receptacle on the rear of the Power Bridge.
- 2 Insert the other end of the power cord into the wall AC power outlet. The Power Bridge powers up and runs through its Power On Self Test (POST), which takes less than 10 seconds. During the POST, the port is disabled and the LEDs light up in the following sequence:
 - a The Main LED lights up.
 - b The Active LED light up.
 - c The Main LED and Active LED turn off.
 - d The Main LED lights up and remains lit.
 - e The Active LED is ready for normal indications. For more information, see the “Power Active LED Table” on page 5.

Connecting Cables to the Power Bridge

The ports on the front of the Power Bridge are configured as data route through ports for all data wires (pins 1, 2, 3, and 6).

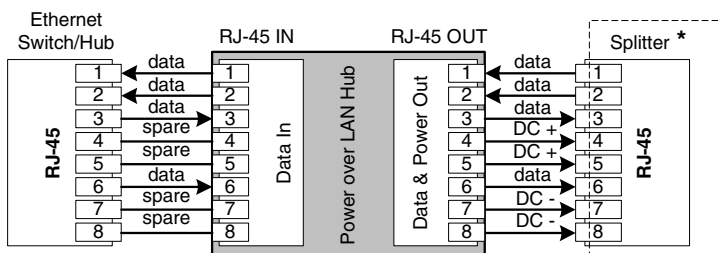
Be sure to use a standard Category 5 (or higher) straight-through cable including all 8 wires (four pairs) as shown in the next illustration.

Data In Ports

Using a standard Category 5 (or higher) straight-through cable, connect the cable leading from the Ethernet Switch/Bridge to the Data In port.

Power & Data Out Ports

Using a standard Category 5 (or higher) straight-through cable, connect the cable leading to the remote device to the Power & Data Out port.



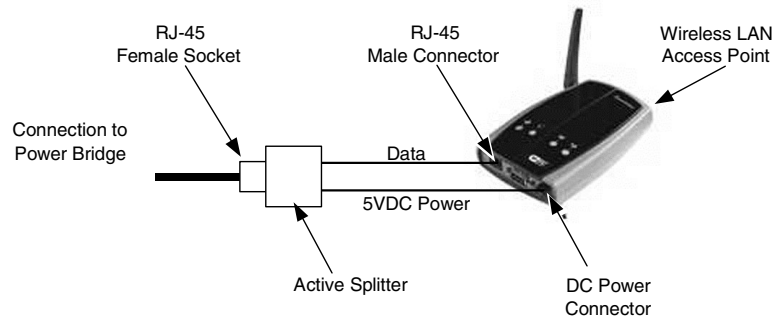
Connecting Cables to End Devices

The Power Bridge contains proprietary line sensing capabilities that enable it to send power only to end devices that know how to receive power. These end devices, termed Power Enabled, receive power once they are connected to the Power Bridge.

Chapter 2 — Installing the Power Bridge

The Power Bridge detects devices that are not enabled, and the Power Bridge will not send power to those devices. Data continue to flow via the Category 5 (or higher) cabling regardless of the status of the end device.

End devices that have not been enabled to receive power directly may receive power and data through an external splitter. The external splitter separates the power and data prior to connection to the end device. See the next illustration.



Connecting end devices to the power bridge. Since the 2102 is not Power over Ethernet Enabled, it must be connected to a splitter before it can be connected to the Power Bridge.

Before connecting end devices to the Power Bridge, determine if the end device is Power over Ethernet Enabled or not.



Note: If the end device is not Power over Ethernet Enabled, the end device may be safely connected; however, the port supplies no power, and it functions as a normal Ethernet data port.

In addition, be sure that

- the end device either requires an external splitter or requires only a single RJ-45 connection. If an external splitter is needed, be sure to use a splitter with the correct connector and polarity.
- the end device's power requirements are consistent with the Power Bridge voltage and power ratings. See Appendix B for voltage and power ratings.

Chapter 2 — Installing the Power Bridge

To connect end devices to the Power Bridge

- 1** Connect a Category 5 (or higher) cable to the end device directly (if the device is Power over Ethernet Enabled) or by using an external splitter.
- 2** Connect the opposite end of the same cable to the RJ-45 wall outlet. Monitor the port LEDs. If the Power Active LED lights, the Power Bridge has identified your end device as Power over Ethernet Enabled, and the port is sending power. Refer to Appendix B, if needed.

Chapter 2 — Installing the Power Bridge



A Safety Information

This chapter explains safety information.

Important Safety Information

Installation and removal of the Power Bridge must be carried out by qualified personnel only.

You must read the following safety information before installing, removing, or maintaining the Power Bridge.



Warning

Read the installation instructions in Chapter 2 before connecting the Power Bridge to its power source.

Avertissement : Veuillez lire les instructions d'installation au chapitre 2 avant de connecter le Pont d'alimentation à sa source d'alimentation.



Warning

Follow basic electricity safety measures whenever you connect the Power Bridge to its power source.

Avertissement : Respectez les mesures de sécurité de base en matière d'électricité lorsque vous connectez le Pont d'alimentation à sa source d'alimentation.



Warning

This product relies on the building installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductor.

Avertissement : Ce produit suppose qu'une protection contre les courts-circuits (surcharges) est assurée par le bâtiment. Assurez-vous qu'un fusible ou un disjoncteur ne dépassant pas 120 VCa, 15A aux É.-U. (240 VCa, 10A au niveau international) est utilisé sur le conducteur de phase.



Warning

Do not work on the system or connect or disconnect cables during periods of lightning activity.

Avertissement : N'utilisez pas le système ou ne connectez ou ne déconnectez pas les câbles en cas d'éclairs à l'extérieur.

Appendix A — Safety Information



A voltage mismatch can cause equipment damage and may pose a fire hazard. If the voltage indicated on the label is different from the power outlet voltage, do not connect the Power Bridge to this power outlet.

Avertissement : La non concordance de la tension peut endommager l'équipement et entraîner des risques d'incendie. Si la tension indiquée sur l'étiquette ne correspond pas à la tension de la prise d'alimentation, ne branchez pas le Pont d'alimentation sur cette prise de courant.



For equipment that is free standing, be sure that the surface is stable and strong enough to support the equipment.

Avertissement : Pour tout équipement autonome, assurez-vous que la surface est stable et suffisamment solide pour soutenir l'équipement.



Ultimate disposal of this product should be handled according to all national laws and regulations.

Avertissement : L'élimination de ce produit doit respecter les lois et les règlements du pays en question.



The Power Bridge Data In and Power & Data Out ports are shielded RJ-45 data sockets. They cannot be used as Plain Old Telephone Service (POTS) telephone sockets. Only RJ-45 data connectors may be connected to these sockets.

Avertissement : Les ports d'entrée de données du Pont d'alimentation et de sortie de l'alimentation sont munis de prises de données blindées RJ-45. Ces prises ne peuvent pas être traitées comme de simples prises de téléphone ordinaires. Utilisez seulement des connecteurs de données RJ-45 avec ces prises.

Appendix A — Safety Information

Power Cord Set

The power cord must be approved for the country in which it is used.

Country	Requirements
U.S.A. and Canada	The cord set must be UL-approved and CSA certified. The minimum specification for the flexible cord is: No. 18 AWG Type SV or SJ 3-conductor The cord set must have a rated current capacity of at least 10A.
Denmark	The supply plug must comply with section 107-2-D1, standard DK2-1a, or DK2-5a.
Switzerland	The supply plug must comply with SEV/ASE 1011.

- The appliance coupler (the connector to the unit and not the wall plug) must have a configuration for mating with an EN60320/IEC320 appliance inlet.
- The socket outlet must be near to the unit and easily accessible. You can only remove power from the unit by disconnecting the power cord from the outlet.
- This unit operates under SELV (Safety Extra Low Voltage) conditions according to IEC 950. The conditions are only maintained if the equipment to which it is connected also operates under SELV conditions.
- Switzerland only:
The supply plug must comply with SEV/ASE 1011.
- U.K. only:
The Power Bridge is covered by Ofcom General Approval, NS/G/12345/J/100003, for indirect connection to a public telecommunications system. This connection can only be achieved using the console port on the unit and an approved modem.



B Specifications and Troubleshooting

This appendix lists Power Bridge specifications and troubleshooting.

Appendix B — Specifications and Troubleshooting

Technical Specifications

The next tables list the hardware specifications of the Power Bridge. This section also gives Ethernet interface information.

Physical Specifications

Dimensions	Height: 38.5 mm (1.5 in) Width: 106 mm (4.2 in) Length: 140 mm (5.5 in)
Weight	0.27 kg (0.55 lb)

Environmental Specifications

Operating	0 to 40°C (32 to 104°F)
Storage	-20 to 70°C (-4 to 158°F)
Humidity	10 to 90% (no condensation allowed)

Electrical Specifications

Input Voltage	90 to 264 VAC (47 to 63 Hz)
Input Current at 110 VAC	0.34 Amperes maximum
Input Current at 220 VAC	0.17 Amperes maximum
Total Power Consumption, Continuous, port at full load	22.4 Watts maximum
Output Power, per port	15.4 Watts
Nominal Output Voltage, per port	48 VDC (±4V)

Ethernet Interface

Input (Data In): 24 ports; Ethernet 10BaseT/100BaseTx	RJ-45 female socket
Output (Data & Power Out): 24 ports; Ethernet 10BaseT/100BaseTx, and 48 VDC	RJ-45 female socket with DC voltage on pins 7/8 and 4/5

Troubleshooting

This section provides a symptoms and resolutions to help you troubleshoot minor operating problems. If the provided resolutions do not solve your problem, call your local Intermec representative for further assistance.

If you encounter problems

- be sure that power is applied to the Power Bridge.
- be sure that a “crossover” type Ethernet cable is not used.
- be sure that the input Ethernet cable is connected to the Data In port.
- be sure that the output Ethernet cable is connected to the Power & Data Out port.

Symptom	Resolution
Power Bridge is plugged in to the main AC inlet but does not power up.	<p>Verify that the AC power cord is correct and functioning and that it has a solid ground connection.</p> <p>Verify that the AC inlet is supplying power (test with a different device) and that the voltage is between 100 to 264 VAC (50 to 60 Hz).</p> <p>Reconnect the Power Bridge to the AC inlet and verify the LED power up sequence.</p>
Power Bridge operates, but the Main LED is off.	You may have an internal power supply fault.
The Power Active LED is lit but the end device does not operate.	The Power Bridge has successfully identified the end device as Power over Ethernet Enabled and is providing power. Try to connect a different end device to the port—if the new device operates, you probably have an internal fault in the previous end device.
The port is powering an end device without turning the Active LED on.	If possible, reconnect the end device to a different bridge—if the LED lights, the previous bridge’s port is faulty.

Appendix B — Specifications and Troubleshooting

Troubleshooting (continued)

Symptom	Resolution
The Power Active LED is not lit and the end device does not operate.	<p>The port is not providing power because the Power Bridge did not detect a connected end device.</p> <p>Verify that you are using a standard UTP Category 5 (or higher) cable, including all eight wires (four pairs).</p> <p>If you are using an external splitter, replace it with a new splitter. If the end device works, discard the faulty splitter.</p> <p>Verify that you are not using a crossover twisted pair wire.</p> <p>Verify that the end device is connected to the Data & Power Out port (left RJ-45 connector).</p> <p>Try to bypass the long twisted pair cable and bring the end device close to the Power Bridge. Connect it to the port using a short cable—if it works, you probably have a faulty connection or short on the long cable, or a bad RJ-45 connection along the line.</p> <p>If possible, try to connect the end device to a different Power Bridge—if it works, the Power Bridge is probably faulty. Try to power it up again and verify a correct power up LED sequence.</p> <p>Wait for 5 to 10 seconds. If the Power Active LED lights, there was a charged capacitor in the end device, which was discharged after being plugged in. The end device can then be detected and activated.</p>

Appendix B — Specifications and Troubleshooting

Troubleshooting (continued)

Symptom	Resolution
The end device operates, but there is no data link.	<p>Verify that the Active LED on the Power Bridge front panel is lit continuously.</p> <p>If you are using an external splitter, replace it with a new splitter. If the end device works, discard the faulty splitter.</p> <p>Verify that you are using a standard UTP Category 5 (or higher) cable, including all eight wires (four pairs). Also, be sure that the cable between the switch and the end device is longer than 100 m (109 yards).</p> <p>Verify that you are not using any crossover twisted pair wires.</p> <p>Verify that the Power Bridge is connected to a switch/hub with a good RJ-45 patch cord connection.</p> <p>Try to bypass the long twisted pair cable and bring the end device close to the Power Bridge. Connect it to the port using a short cable—if it works, you probably have a faulty connection or short on the long cable, or a bad RJ-45 connection along the line.</p> <p>Try to connect a different end device to the port—if it works and the link is established, you probably have a faulty data link in the end device.</p> <p>If possible, try to re-connect the end device to a different Bridge. Remember to move the Data In port of the switch/hub accordingly—if it works, a Power & Data Out or Data In port in the Power Bridge is probably faulty, or you have a bad RJ-45 connection.</p>



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