Allied Telesis™

iMG2400 Series

- AT-iMG2426F

Installation Guide

613-001727 Rev. D

Electrical Safety and Emissions Standards

This product meets the following standards.

U.S. Federal Communications Commission

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 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.

Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment

This Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.

EMI/RFI: FCC Class B, EN55032 Class B, VCCI Class B, CISPR Class B

Immunity: EN55024

Electrical Safety: UL60950 (cTUVus), CSA, C-TICK, CE

Translated Safety Statements

Important: The ☞ indicates that a translation of the safety statement is available in a PDF document titled "Translated Safety Statements" on the Allied Telesis web site at http://www.alliedtelesis.com/support.

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Preface

This guide contains instructions on how to install the AT-iMG2400 series models. Instructions for both outdoor and indoor installation are included.

A unit is installed in the following enclosure:

- ❒ Outdoor Enclosure, model number AT-EN-SFR-ONT

Safety Symbols Used in this Document

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Warning
Warnings inform you that an eye and skin hazard exists due to the presence of a Class 1/1M Laser device.

Safety Precautions

Review the following safety precautions before you install the gateway.

Note
The ℘ indicates that a translation of the safety statement is available in a PDF document titled "Translated Safety Statements" (613-000405) on the Allied Telesis website at http://www.alliedtelesis.com.

Warning
Class 1 Laser product. L1

Warning

For SFP model AT-SPBD20EPON-13:

Laser Radiation.
Do not view directly with optical instruments.
Class 1M Laser product.

Rayonnement Laser.
Ne pas observer directement à l'aide d'instruments d'optique.
Appareil à Laser de classe 1M.

Warning
To prevent electric shock, do not remove the cover. No user-serviceable parts inside. This unit contains hazardous voltages and should only be opened by a trained and qualified technician. To avoid the possibility of electric shock, disconnect electric power to the product before connecting or disconnecting the LAN cables.

Warning
Do not work on equipment or cables during periods of lightning activity.

Warning
Class I equipment. This equipment must be grounded. The AC power plug must be connected to a properly wired earth ground socket outlet. An improperly wired socket outlet could place hazardous voltages on accessible metal parts.

Additional notes and precautions:

- Only trained and qualified personnel are allowed to install or to replace this equipment.
- The uninterrupted power supply (UPS) unit must be mounted indoors, within 30 cable feet of the gateway.
- The power cord for the UPS is 8 feet long. The UPS must be mounted within 8 feet of a power outlet.
- The iMG can be installed indoors or outdoors.
- If using a pluggable external AC power supply (PSU) to provide power, both the iMG and the AC PSU must be mounted indoors. Refer to "Using an indoor AC Power Supply Unit (PSU) with the iMG" on page 26.

- All installation methods shall be in accordance with national and local regulations and practices. The wiring method should include the use of Listed wire/cable acceptable for the application per the National Code, and should be one that an Authority Having Jurisdiction (AHJ) can approve per the Code.
- Per NEC section 800.90 all exposed cables, service wires, or drops when entering a building must have primary over voltage protection if they are classified as exposed plant.
- All iMG products have surge protection built in to meet EN55024.
- AT-iMG2400 series products meet NEBS GR1089 Section 4.12, 6KW Lightning Protection on the AC interface, when used with the AT-iMG008 series UPS.
- Allied Telesis does not warrant against lightening and/or power surges causing damage to the iMG. Such damage will be the responsibility of the equipment owner.
- Ground resistance from the building primary bonding point to earth should be less than 25 ohms.
- If the distance between the iMG and the AC meter ground connection is greater than 12-16 feet (the length of the #6 solid copper wire, not the point to point distance), a separate ground stake should be installed for the iMG ground connection. In this case, it is imperative that the AT-iMG008/AT-iMG008NB UPS be used, as it will prevent any ground loop currents from flowing between the iMG and the AC ground system.

Contacting Allied Telesis

If you need assistance with this product, you may contact Allied Telesis technical support by going to the Services section of the Allied Telesis web site at http://www.alliedtelesis.com/. You can find links for the following services on this page:

- 24/7 Online Support - Enter our interactive support center to search for answers to your questions in our knowledge database, check support tickets, learn about Return Merchandise Authorization (RMA), and contact Allied Telesis technical experts.
- USA and EMEA phone support - Select the phone number that best fits your location and customer type.
- Hardware warranty information - Learn about Allied Telesis warranties and register your product online.
- Replacement Services - Submit an RMA request via our interactive support center.
- Documentation - View the most recent installation guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates - Go to http://www.alliedtelesis.com/support/software/restricted to download the latest software releases for your product. You must have an account to access the restricted site.

For sales or corporate contact information, go to http://www.alliedtelesis.com/purchase.

Chapter 1

Technical Specifications

Electronics Overview

The AT-iMG2400 series models provide six 10/100/1000T LAN ports.

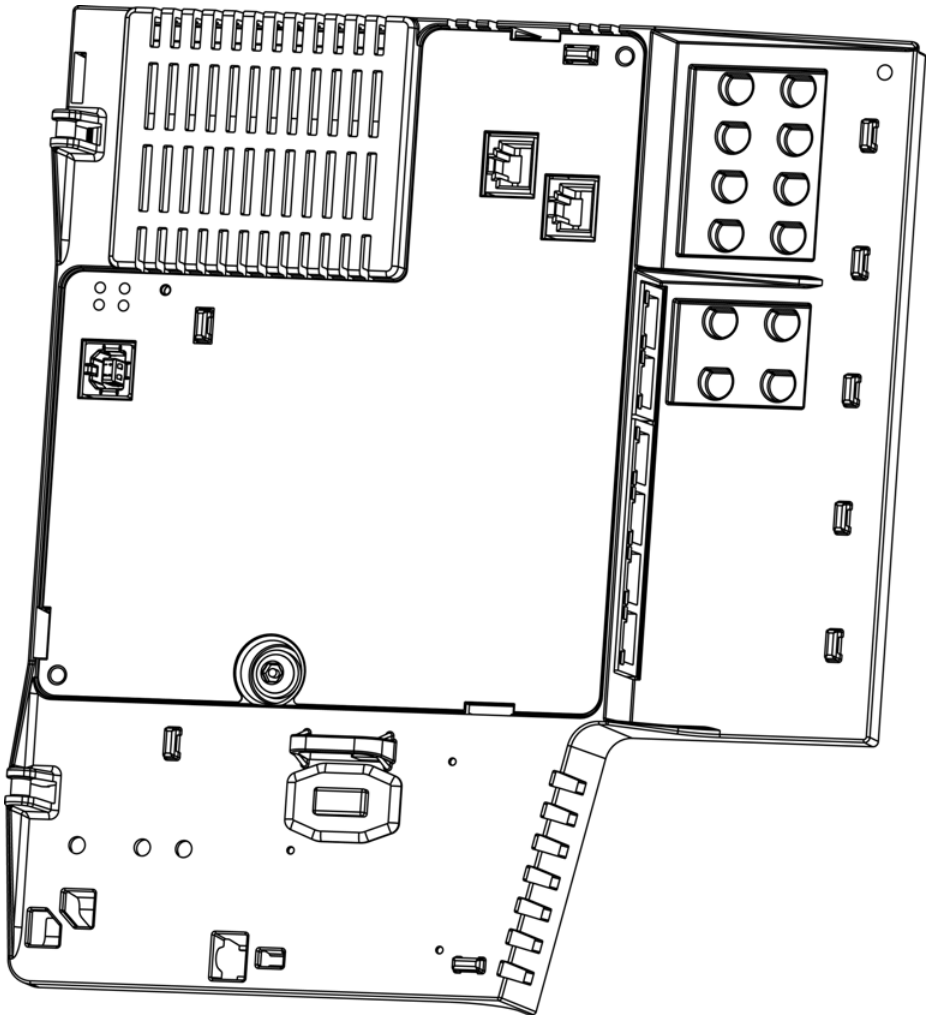

Figure 1: AT-iMG2426F Electronics Unit

Physical Specifications

Dimensions: 9.1 in x 8.0 in x 1.7 in

Weight: 0.51 kg (1.13 lb = 1 lb 2.0 oz)

Environmental Specifications

Operating Temperature: -40° C to 60° C (-40° F to 140° F)

Storage Temperature: -40° C to 70° C (-40° F to 158° F)

Operating Humidity: 5% to 95% non-condensing

Storage Humidity: 5% to 95% non-condensing

Operating Altitude Range: Up to 3,000 m (9,843 ft)

Power Specifications

Input Supply Voltage: 12 V DC

Power Consumption: 10W typical, 18W max

Safety and Electromagnetic Emissions Certifications

EMI/RFI: FCC Class B, EN55032 Class B, VCCI Class B, CISPR Class B

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 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.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Immunity: EN55024

Electrical Safety: UL60950 ($_{c}$TUV$_{us}$),CSA, C-TICK, CE

Power Cord Wiring

To wire the terminal block for the gateway to the terminal block for the power supply cord, refer to Figure 2 and Table 1.

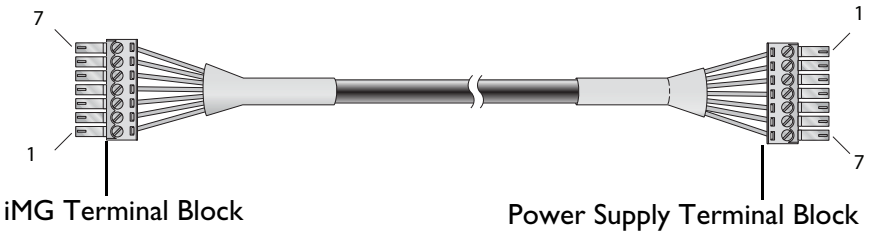

Figure 2: Gateway Terminal Block to Power Cord Terminal Block Wiring Diagram

Table 1: Gateway Terminal Block to Power Cord Terminal Block Wiring

Circuit	Gateway Terminal Block	Color (* = determined by Customer)	Power Cord Terminal Block
+12VDC	1	RED	1
RET	2	BLACK	2
GND	3	GREEN	3
ON BATT	4	*	4
REPLACE BATT	5	*	5
BATT MISSING	6	*	6

Table 1: Gateway Terminal Block to Power Cord Terminal Block Wiring

Circuit	Gateway Terminal Block	Color (* = determined by Customer)	Power Cord Terminal Block
LOW BATT	7	*	7

Note
If you want to make your own cable, we recommend 16 AWG wires.

Local Management Connection

The MGMT port is a standard USB-B for a Telnet connection.

Chapter 2

Installing the Gateway

Outdoor Installation

Required Tools and Supplies

Have the following tools on hand before you install the enclosure or gateway:

- ❒ 5/32 in. hex-pin security screwdriver

You may also need the following supplies:

- ❒ Silicone sealant
- ❒ UV-rated wire ties
- ❒ USB-B console cable
- ❒ AT-iMG017 15' cable for UPS - or customer built
- ❒ Single-fiber cable with UPC/SC connectors. This acts as a jumper cable from the enclosure to the electronics unit, and must be at least 1 meter long.

> **Note**
> A jumper cable is not required, but the fiber cable in the enclosure must have a UPC/SC connector and be long enough to connect to the electronics unit.

- ❒ Fiber cleaning materials

Step 1: Check Package Contents

The following items are included in the electronics package. If any item is missing or damaged, contact your Allied Telesis representative for assistance.

> **Note**
> Store the packaging material in a safe location. You must use the original shipping material if you need to return the unit to Allied Telesis.

- ❒ AT-iMG2426F electronics
- ❒ Accessory Kit that includes:
  - ❒ 2 POTS terminal bridges (if applicable)
  - ❒ 7-pin DC terminal block

Step 2: Examine Outdoor Enclosure Configuration

The installer should have the Enclosure (AT-EN-SFR-ONT) configured as shown in the following figure.

Caution

Installation instructions are included with the Enclosure. You should follow all of its rules and recommendations, such as using at least 6AWG copper for the ground wire.

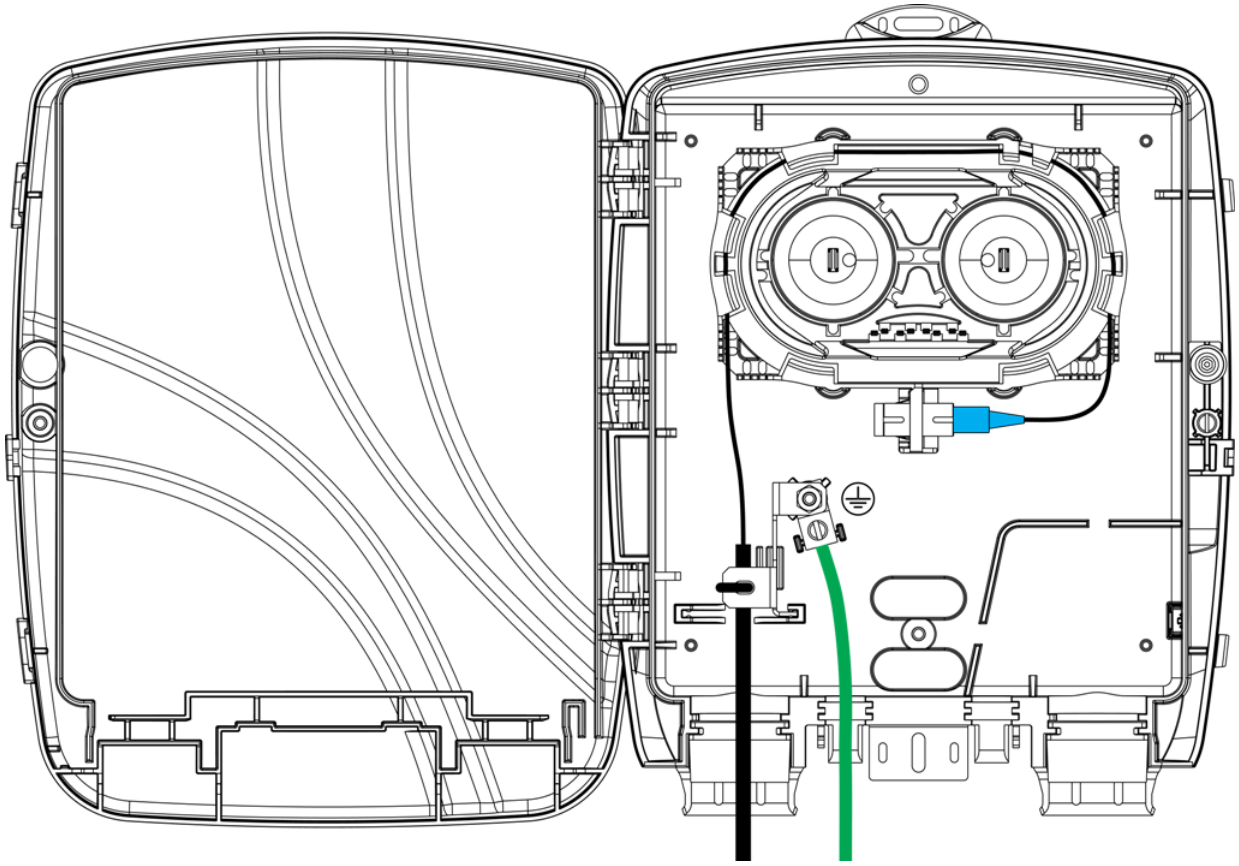

Figure 3: Enclosure (AT-EN-SFR-ONT) - Ready for the Electronics Unit

Step 3: Check Power and Grounding

Battery Backup

The electronics unit is designed to be deployed with an uninterrupted power supply (UPS). You can purchase an approved UPS from Allied Telesis (model number AT-iMG008/AT-iMG008G and AT-iMG008NB/AT-iMG008GNB). Install the UPS according to the manufacturer's instructions included in the package. (If you wish to use any other UPS product, consult your Allied Telesis representative.)

Note
The NB product is shipped without batteries, to help prevent installing a UPS with a discharged battery. The battery can be ordered separately (model number AT-iMG019).

Caution
Run the iMG BOND wire to the AC service bonding point to avoid exposing the iMG to GND currents. (For example, do not ground the iMG to a connecting wire between two ground rods.) Do not connect any other GND sources (ground rods) between the iMG and the AC meter box.

Option 1: Ungrounded UPS (Recommended)

Note
This is the preferred option, using the approved AT-iMG008 or AT-iMG008NB UPS.

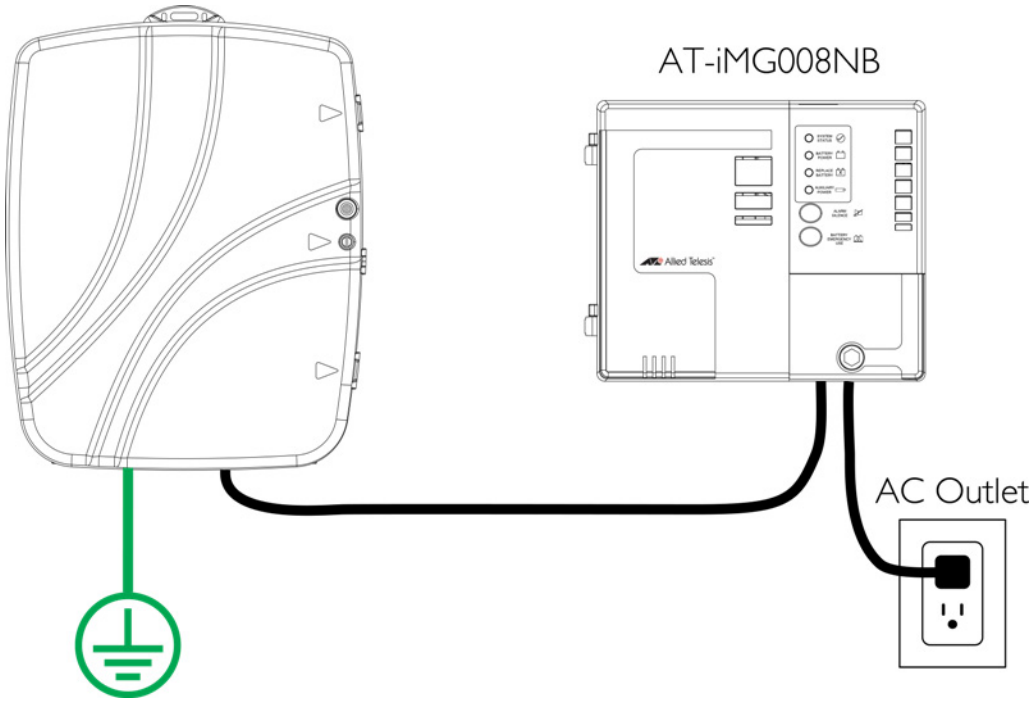

Figure 4: Ungrounded UPS Configuration (Recommended)

Option 2: Grounded UPS

A grounded UPS (AT-iMG008G/AT-iMG008GNB) can be installed with the unit. The ground contact of the AC receptacle that the iMG008G is plugged into must be verified to have a connection through the building AC wiring system to the BPG.

Caution
This is acceptable only if required by local codes.

Note
Wire from the UPS to the iMG must be kept short in this topology. Recommended max distance is 30 feet (9 m).

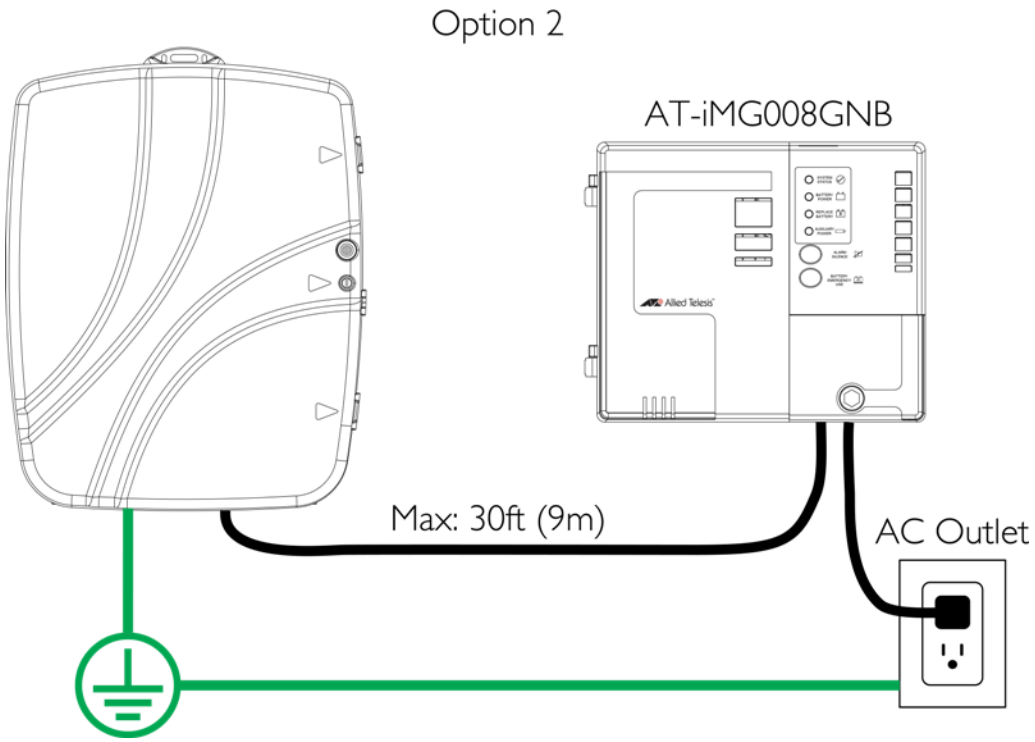

Figure 5: Grounded UPS Configuration

Step 4: Install the Electronics Unit into the Enclosure

Note Connection Placement

Figure 6 shows the connections for the power, grounding, and WAN interface.

Note
In the enclosure there are two cable entrances. The left entrance is for power, grounding, and the fiber cables. The right is for all telephone and LAN cables. Refer to Figure 7.

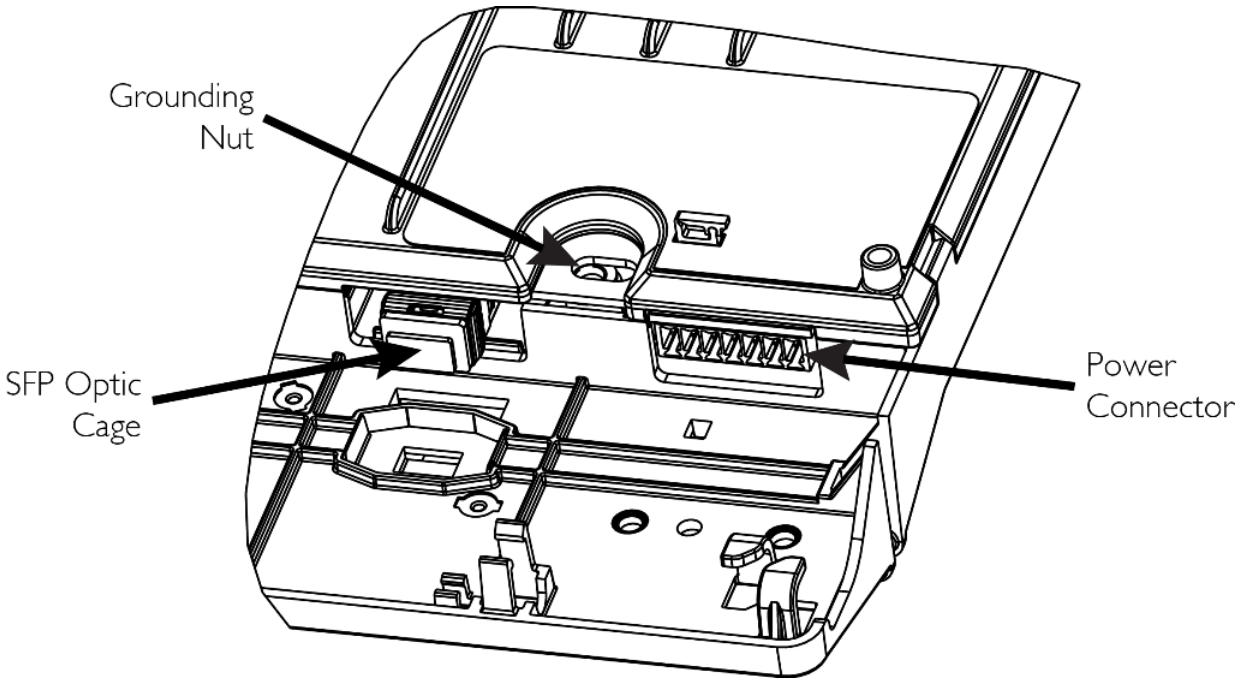

Figure 6: Rear Connections

Note Slot Placement

Figure 7 shows the slot numbering for the grommets and the types of connections to use.

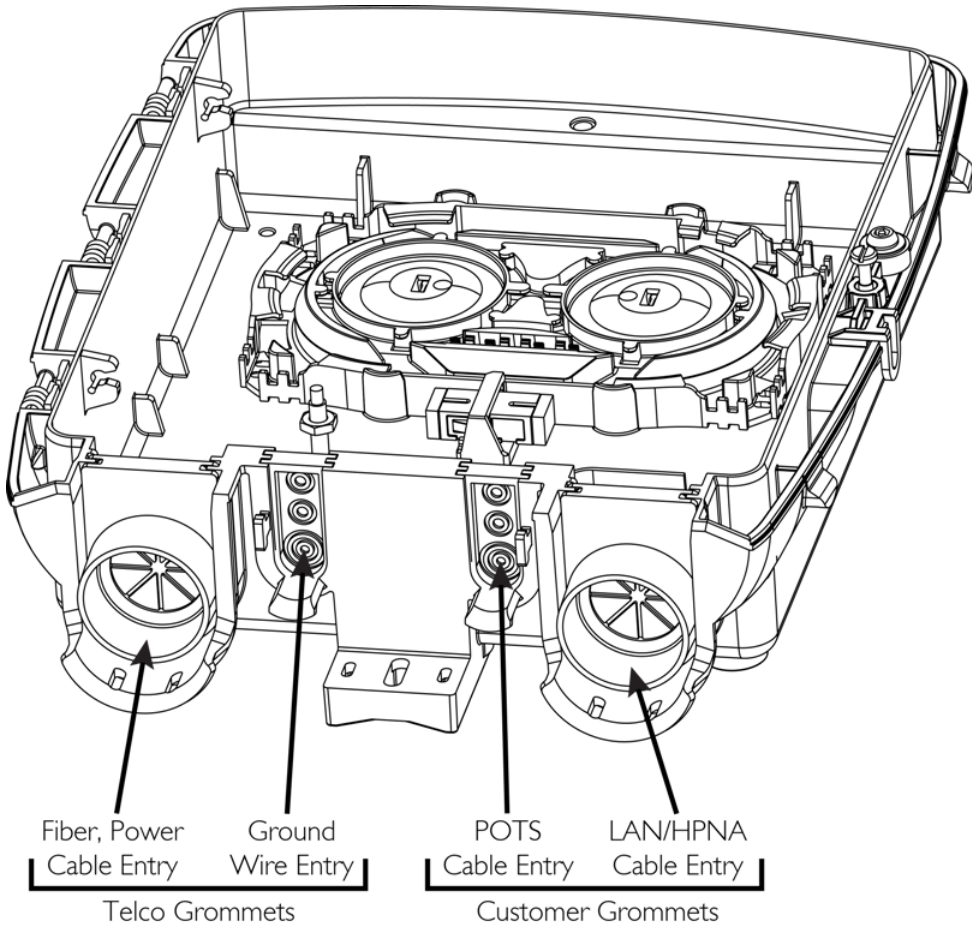

Figure 7: Slots for Connections

Snap the Unit into the Enclosure

To install the gateway, perform the following procedure:

1. Open the enclosure door and locate the hinge points at the left side of the enclosure base.
2. Align the tabs of the gateway with the hinges and snap into place. Refer to Figure 8.

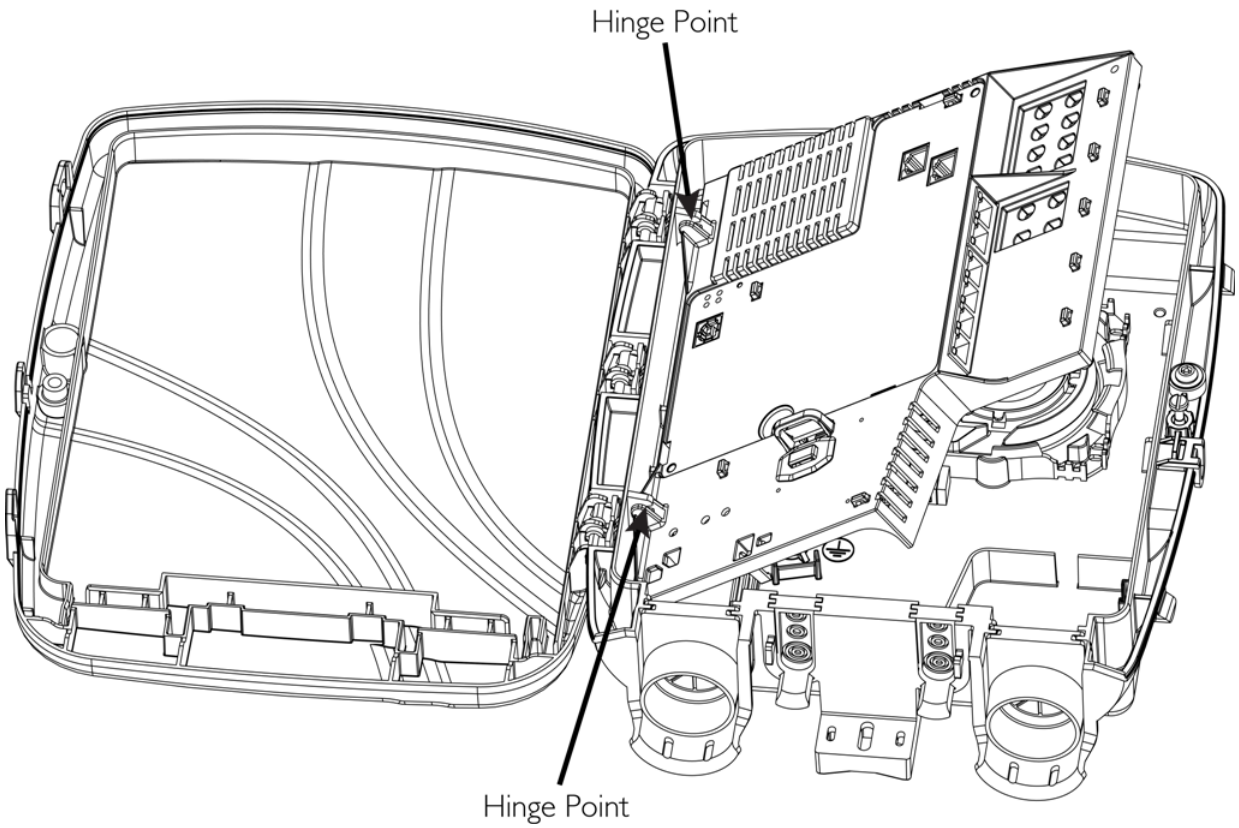

Figure 8: Snapping the gateway into the Enclosure

Connect the Power Cord

Allied Telesis sells a 15 ft. power cable (model number AT-iMG017). Alternatively, you can make custom length power cables. The power connectors (7-pin terminal blocks) are supplied with the UPS and the gateways. For lengths up to 30 ft., use wire with a minimum 18 AWG. Figure 2 on page 13 provides a detailed wiring diagram.

To connect the power cord, perform the following procedure:

1. Note that the Enclosure has the fiber entrance configured and there is already a hole that has been punched in the far left grommet.
2. Slide either end of the power cable through the far left grommet and into the back of the electronics unit.
3. Plug the terminal block into the DC power socket, as shown in Figure 9.
4. Tie-wrap the power cable, as shown below.

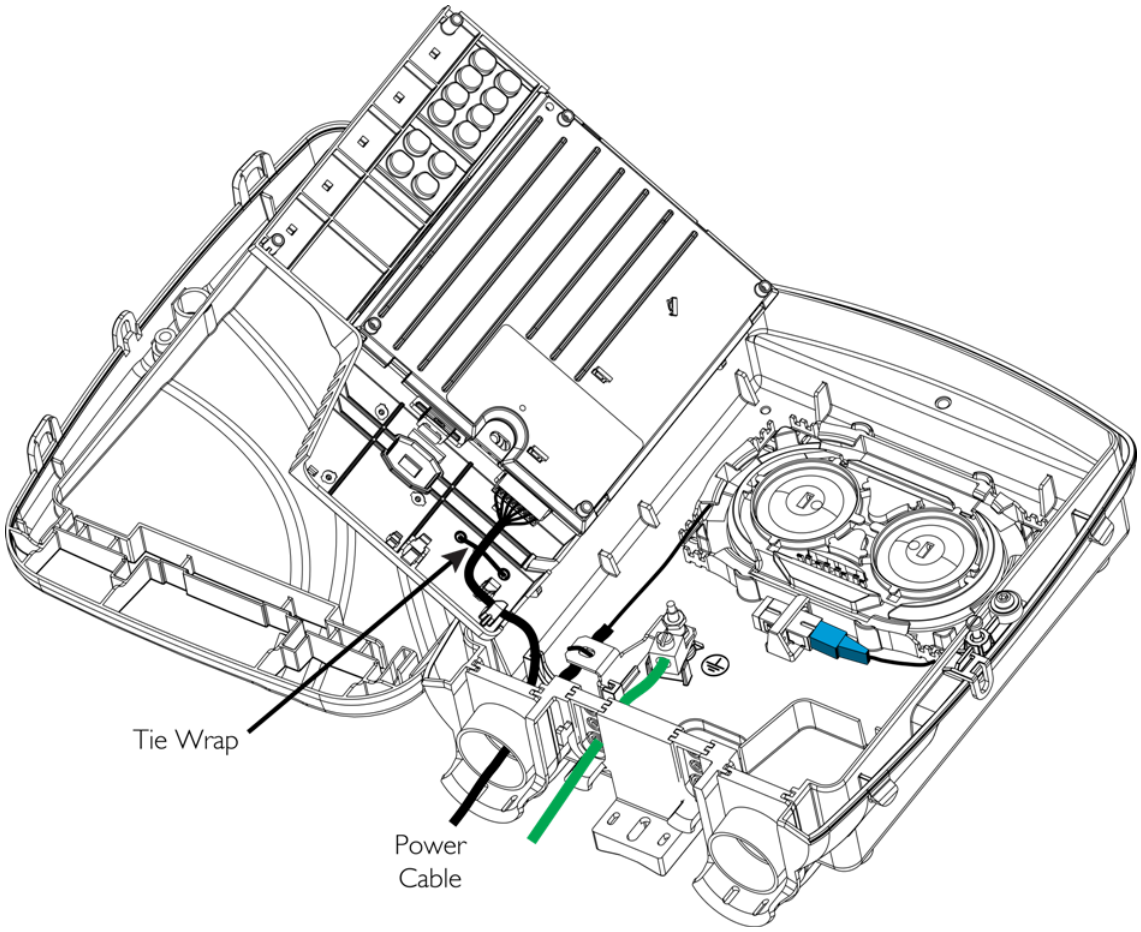

Figure 9: Plugging in the DC Terminal Block

Route the Fiber Jumper Cable

Connect the fiber jumper cable (from the "Electronics In" side of the SC fiber coupler) to the WAN fiber port of the electronics unit. Use the guides to ensure there are no crimps in the cable. Refer to Figure 10.

Note
Ensure the fiber does not become pinched between the bottom of the electronics unit and the splice tray.

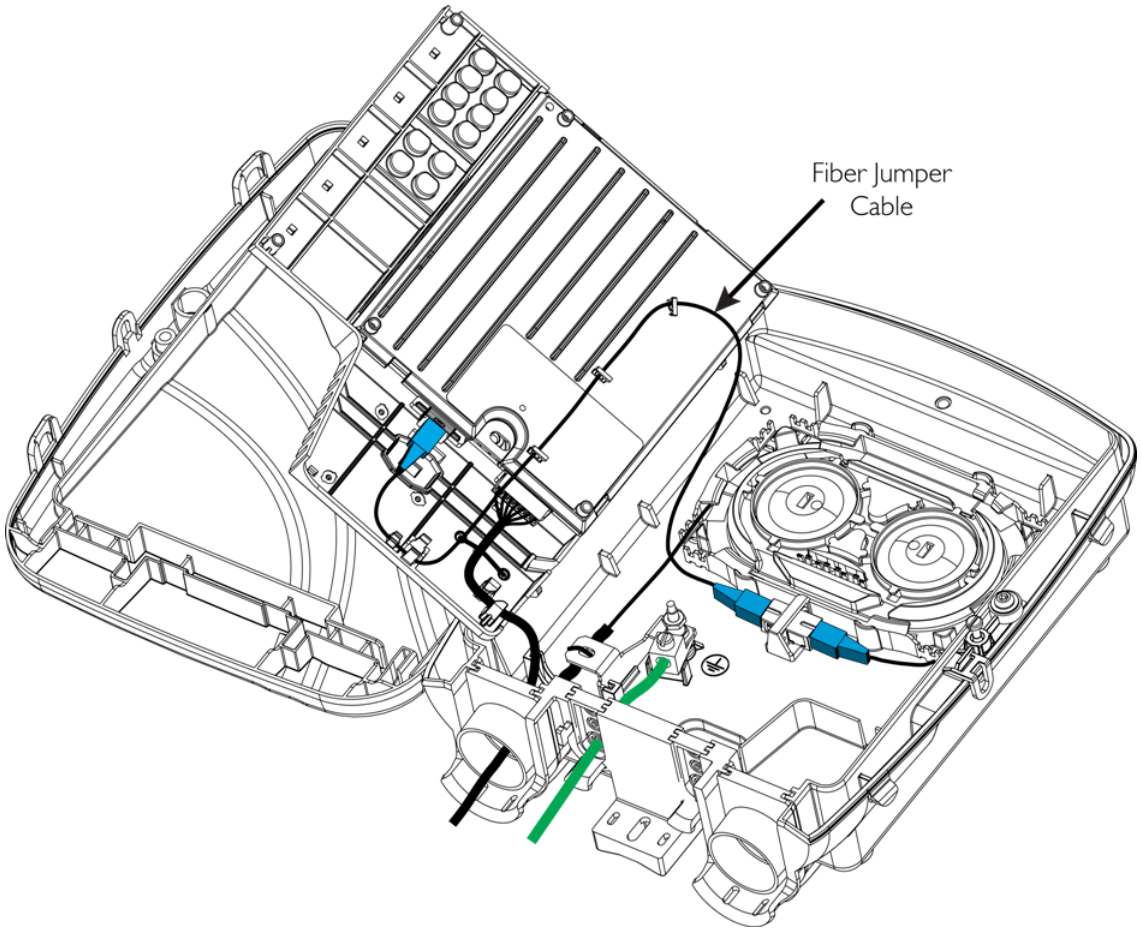

Figure 10: Routing the Jumper Cable through the Guides

Close and Ground the Unit

The ground wire (6AWG) should already be installed as part of the enclosure setup.

After closing the unit, use the hex-pin security screwdriver to fasten the ground nut that is located below the ground symbol. When this is tightened, (suggested maximum torque of 18.6 in-lbs) the unit is grounded.

Warning
If the inner unit is not snapped in place with the ground screw securely fastened it has no ground connection. This can present a hazardous situation. Service personnel should minimize the amount of time the unit remains in this state.

Connect the Telephone Wires

To connect the telephone wires, perform the following procedure:

1. Insert the RJ11 terminal bridges into the electronics unit, as shown in Figure 11.
2. Remove the grommet from slot 3 of the wire entrances.
3. Punch a small hole in the center of the entrance circle using a pencil point.
4. Feed the telephone wire(s) through the entrance hole, and attach the wire to the RJ-11 terminal bridge.
5. Secure the wires with a wire tie, then trim the wire tie.
6. Reinsert the grommet, and then seal the grommet with tape and silicone sealant.
7. Plug the RJ11 connectors into the "TEL" ports of the electronics unit.

Primary Protector Requirements (POTS Line)

For indoor or outdoor installations, if the customer has a POTS line that is run in an aerial fashion outside the home for any distance, or if the POTS line is run on the exterior of the building for greater than 20 feet, the service provider must install a primary protector on the POTS line before it is connected to the iMG. The primary protector must be installed in a "service personnel only" enclosure to ensure the end customer is not exposed to hazardous voltages. The primary protector must be installed per manufacturer guidelines and all local codes.

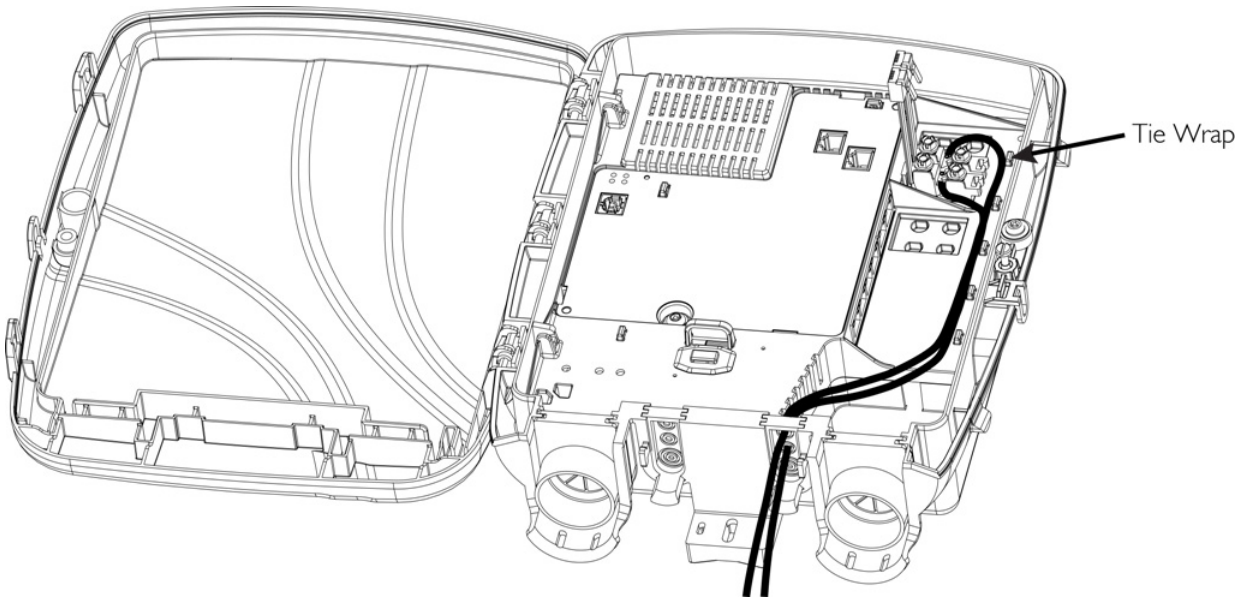

Figure 11: Connecting the Telephone Wires

Connect the LAN Cables

To connect the LAN cables, perform the following procedure:

1. Remove the grommet from the LAN cable entrance.
2. Punch a small hole in the center of the entrance circle using a pencil point.
3. Pull the LAN cables through the hole in the grommet. Allied Telesis recommends that you fully wire all LAN ports to allow for easy service expansion in the future.
4. Connect the LAN cables to the RJ-45 ports on the gateway.
5. Insert a UV-rated wire tie through the bottom of the cable entrance.
6. Secure the wires with a wire tie, as shown in Figure 12.

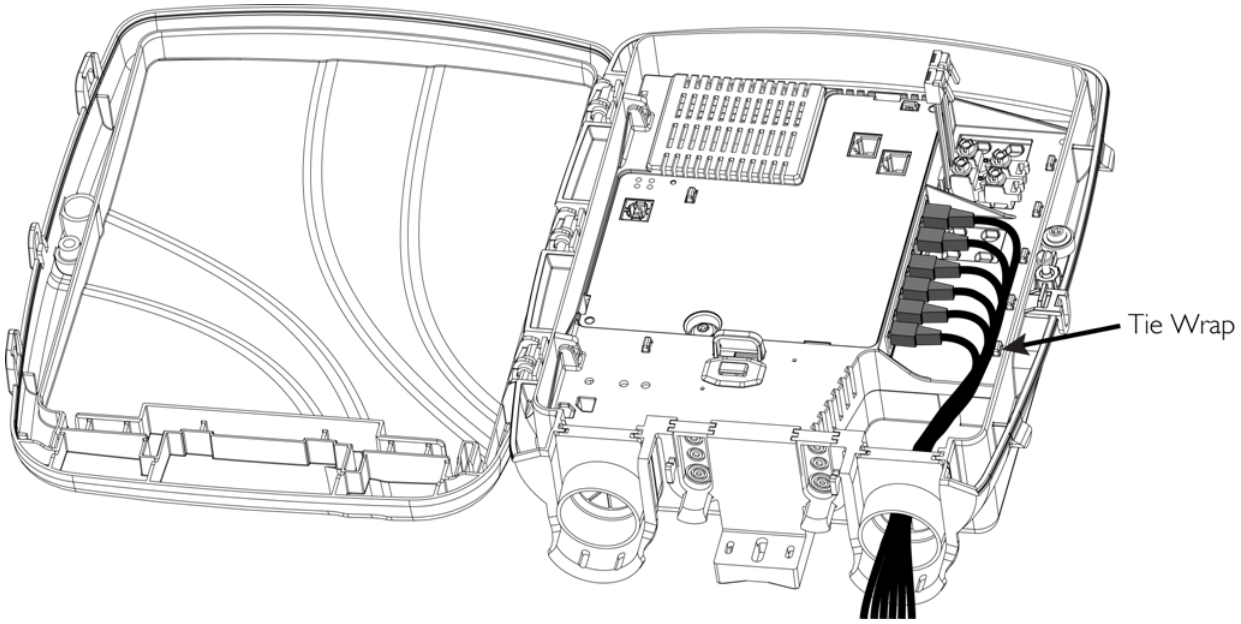

Figure 12: Connecting the LAN Cables

7. Trim the wire tie and seal the grommet with tape and silicone sealant.

Prepare for Initial Startup

To complete the installation, perform the following procedure:

1. Install an approved uninterrupted power supply according to the manufacturer's instructions.
2. If necessary, plug the management cable into the MGMT port. For networks with remote management enabled, no local configuration is required.

3. The physical installation is now complete, as shown in Figure 13.

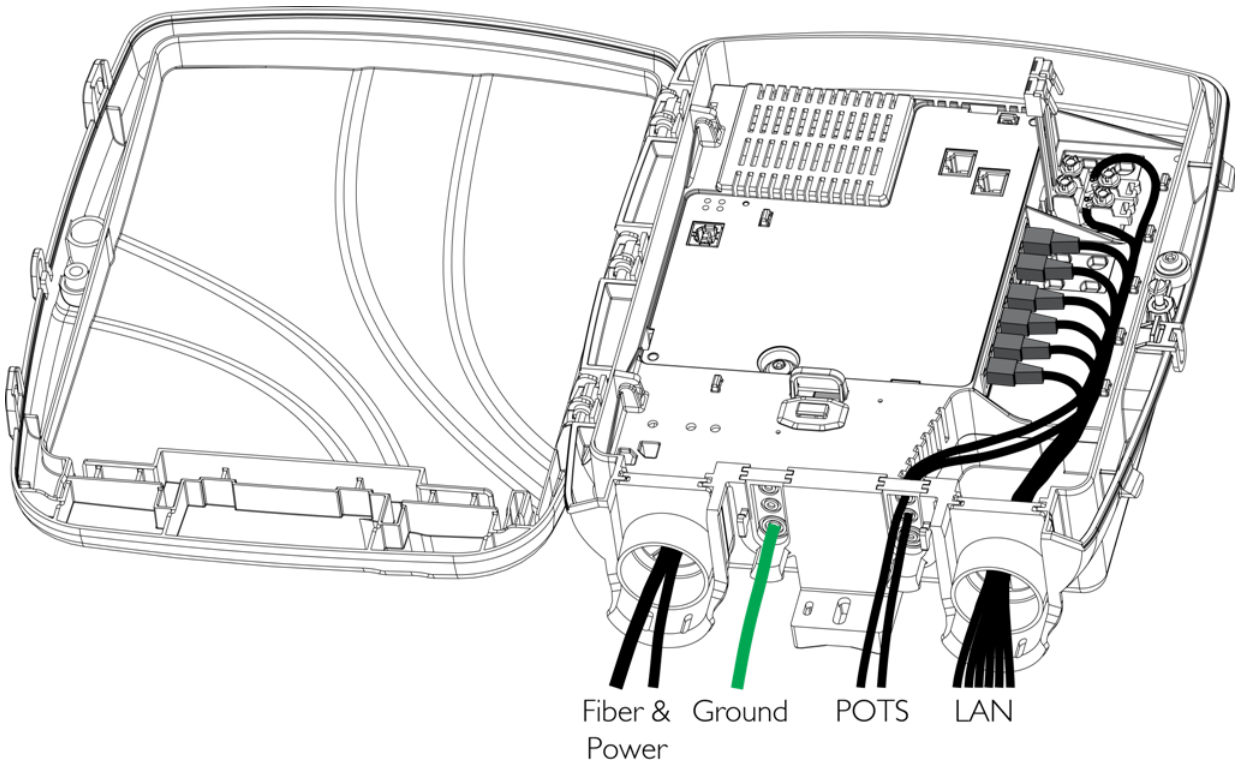

Figure 13: Example of Completed Configuration

Indoor Installation

For indoor mounting, Allied Telesis recommends the use of Corning's Optiway Electronic Enclosure Adapter Housing, part number FN1-NG-ADPT-01. This can be purchased under model number AT-iMG024.

The installation of the iMG into the adapter housing is very similar to installation of the outdoor enclosure. Connection of power cables, fiber cables, telephone wires, and LAN cables is the same.

Using an indoor AC Power Supply Unit (PSU) with the iMG

When the iMG is mounted indoors, it may be powered with an approved AC PSU that does not provide battery backup. Allied Telesis currently has certified operation using the AT-iMG023-xx PSU for this application (xx = AC connector style). The AC PSU must be rated at 2.75A, 33W. The AC PSU to be used shall be plugged into a properly wired AC receptacle located within 15 feet of the iMG. The DC power cord from the AC PSU must be terminated into the 1 x 7 terminal block.

The iMG must be grounded when used with an AC PSU.

The AC PSU cannot be used with an iMG that is mounted outdoors.

Chapter 3

Turn-Up and Troubleshooting

Turn-up Sequence

The product is shipped with software already installed for the default configuration. For information on loading software, refer to the *Allied Telesis Gateway Product Family Software Reference*, available from the Allied Telesis website at http://www.alliedtelesis.com/. To configure a large numbers of units, consider using the AlliedView Network Management System (NMS).

> **Note**
> You can provision the iMG using the local command set. From the local terminal, download software drivers from the restricted Allied Telesis website, located at http://www.alliedtelesis.com/support/software/restricted.

1. Ensure the UPS device has the battery connected so that the battery can provide power if necessary. The battery must be plugged in and charged.
2. Turn on the power supply. (The PWR LED turns green.)
3. The SYST LED turns red. Once the boot-up sequence is complete, the SYST LED is green.
4. To override the configured settings and load the default configuration:
   a. Press and hold the reset button, power the unit on, and wait until the SYST LED goes orange. (around 10 seconds).
   b. Release the reset button.
   c. Wait while the SYST LED turns red (booting), then green (configuration file is loaded).
5. The LEDs should now reflect normal activity, as shown in the following table. Refer to the Troubleshooting section if an LED is not in the expected state.

> **Note**
> After booting, if the DHCP server has been appropriately configured, the iMG may detect a software update. The SYST LED sequence will be 4Hz red while files are being downloaded and 2Hz red while files are being written to flash memory. This sequence may repeat if any other designated files are being updated. Once files are downloaded, the system will restart.

6. To test the battery backup, unplug the UPS. If the iMG continues to function normally, reconnect the UPS. If the iMG loses power, replace the UPS and return to step 1.

7. The iMG now has power and the correct loads, and can provide some level of service if it is provided in the downloaded files.

Understanding the LEDs

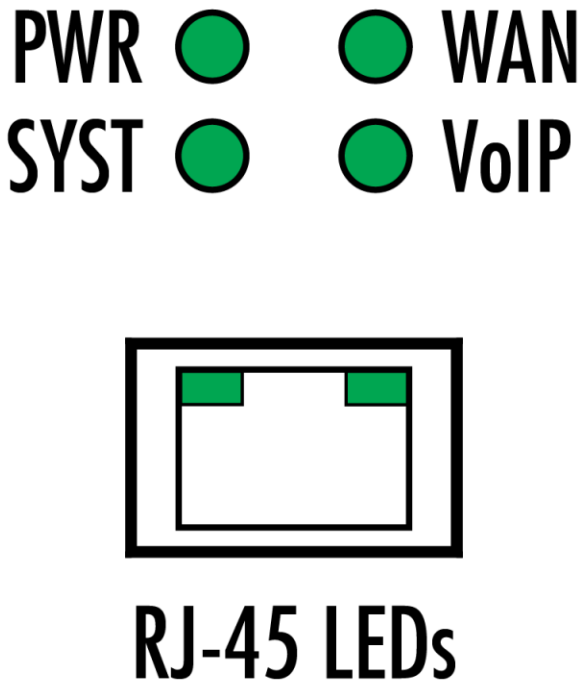

Figure 14: LEDs

Table 2: LEDs

LED	Meaning
PWR	ON - The iMG is receiving power and the voltage is within the acceptable range. OFF - The unit is not receiving power.
SYST	ON and Green - System is working normally If LED is red, the status can be: - ON – System is in Boot Phase - Blinking (2Hz) Files are being written to FLASH - Blinking (4Hz) Files are being downloaded If light is orange, the status can be: - Blinking – System at the Boot Loader Prompt - ON – Need to release the reset button so the default configuration will be loaded

Table 2: LEDs (Continued)

LED	Meaning
WAN	ON - A WAN link has been established OFF -A WAN link has not been established
VoIP	ON - One or all of the VoIP lines are off-hook OFF - The endpoint is not registered Blinking -The VoIP network is available.
RJ-45 LED (LAN)	**Right**: - Link Speed Green – 1 Gig link Orange – 100 Meg link None – 10 Meg link or no link **Left**: - Link/Activity On - Link established: Blinking – Traffic If LED is off and traffic is not 10 Meg, ensure the connected devices are powered on, have no problems with their network interface cards, and have LAN cables attached to the correct port.

Troubleshooting

Problem: Gateway is not operating correctly.
Solution: Reset the unit by disconnecting and then reconnecting the power cable.

Problem: The PWR LED is off.
Solution: Check the power cable to verify that it is not damaged and that it is connected correctly.

Problem: The SYST LED is on and is red.
Solution: Unplug the power cable and plug it in again after 20 seconds. If the LED does not turn off, unplug the power cable and contact Allied Telesis.

Problem: The WAN LED is off.
Solution: Check the following:

- ❒ Verify that the fiber optic port and fiber connector on the pigtail from the splice tray are clean.
- ❒ Verify that the connector is properly seated in the fiber optic port.
- ❒ Verify that the fiber optic cable has an active light source.

Problem: The VOIP LED remains off when you lift up the receiver on the connected telephone.
Solution 1: Verify that the telephone cable is correctly connected, that the correct cable is being used, and that the cable is not damaged.
Solution 2: Unplug the RJ-11 pigtail for the telephone circuit in question. Plug a POTS telephone into the RJ-11 jack. If the VOIP LED lights up when you lift the receiver, then there may be a problem with the telephone cable. If the VOIP LED does not light up, then there may be a problem with the iMG. Contact Allied Telesis.

Solution 3: Verify the configuration. If problems persist, reset the iMG to its factory defaults. Use the command sequence `>system` (to enter the Privileged Exec Mode), `>configure terminal` (to enter the Global Configuration Mode), and then `>boot config-file default.cfg` If problems still persist, contact Allied Telesis.

Problem: There is a problem with the telephone service.
Solution: Check the following:

- ❒ Swap out the cable for a known good cable.
- ❒ For POTS phones and fax machines, verify that the dial mode for the telephone and fax are correct, according to the manual that was supplied with the telephone or fax.
- ❒ Check the telephone or fax machine for problems.

Note
If you need further assistance, please contact Allied Telesis Technical Support. Refer to "Contacting Allied Telesis" on page 10.