



# INSTALLATION GUIDE

## HomePortal Intelligent Gateway

i3822V

i38HG

iPSU

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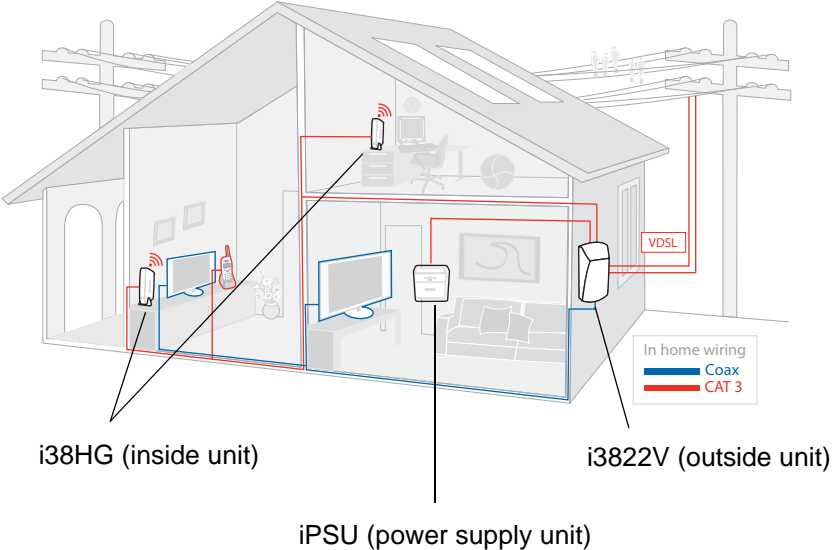
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# Introduction

# 1

The HomePortal® iNID (intelligent Network Interface Device) system includes three components: the i3822V (outside unit), the iPSU (power supply unit), and the i38HG (inside unit). These components depend on each other and do not have standalone functions. These components provide triple-play service (voice, data, and video) to the subscriber's home.



## i3822V (outside unit)

The i3822V is the gateway that acts as the network interface device. It is installed by the service provider technician on the outside of the home. The i3822V includes a broadband interface and high-speed coaxial and phone line network capabilities to deliver data service to the home. The i3822V has two accessible areas, one for service provider personnel and the other for subscribers.

## Subscriber access

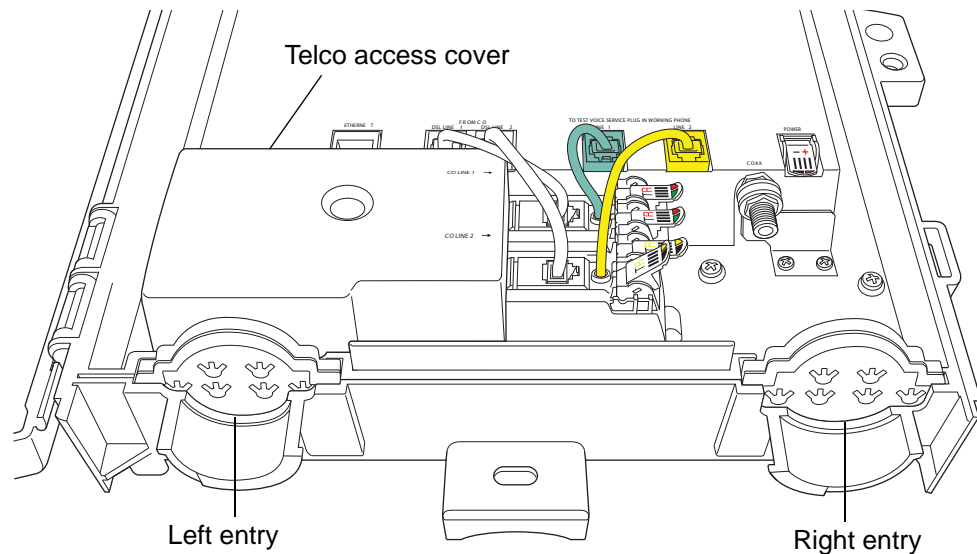
The subscriber area is accessible by the homeowner. This panel displays indicators that show the operational status of the i3822V. Some indicators on the i3822V have the same functions as the indicators on the i38HG (inside unit). The subscriber area is fastened with a screw that can be unfastened with any flat-blade screwdriver. To prevent any unauthorized access, the subscriber area can be locked with any common household locking devices (such as a padlock or a combination lock).



**Note:** Call your service provider if any i3822V indicators signify failures. Do not attempt to repair the i3822V. The unit must be serviced by your service provider.

## Service provider access

The service provider Telco access area is locked. Service provider personnel can access this area by removing the Telco access cover. The i3822V has two cable entries to provide wiring from the service provider and to inside the home. The left entry provides the VDSL cable connection from the service provider to the i3822V. The right entry provides a coaxial wiring connector that feeds the inside of the home and a power connection for the power supply unit. It also provides connection access to the customer premises phone wiring.



## iPSU (power supply unit)

The Power Supply Unit (iPSU) supplies power to the i3822V and is installed by the service provider. Unlike the i3822V, the iPSU must be installed in a sheltered area, either inside the garage or home. If the iPSU is equipped with a backup battery, during a temporary AC power outage, the power source is switched to the battery without any interruption to subscribed services. When the AC power is restored, the power source is switched back to the AC power supply. The switchover between the AC power supply and the battery is automatic and without interruption of service.



The iPSU itself requires no regular maintenance; however, the battery inside the iPSU requires periodic replacement. See “Replacing the battery” on page 35 for instructions to replace the backup battery.



**Note:** The battery provides power for voice services during a power outage. Subscribers are responsible for monitoring and replacing the battery when needed. The service provider does not monitor the battery and is not responsible for its replacement.

## i38HG (inside unit)

The i38HG is the unit that goes inside the subscriber’s home and can be installed by the subscriber or by the service provider. Working together with the i3822V, the i38HG is a home networking hub that provides an 802.11b/g Wi-Fi access point and Ethernet switch functions for connecting personal computers and other in-home networked devices to the service provider’s network. The i38HG has four Ethernet ports for directly connecting computers or devices.

The i38HG includes an integrated wireless access point to provide wireless connectivity throughout the home or office. High-powered wireless technology virtually eliminates wireless “coldspots” in the home. The i38HG high-power 400mW transmitter ensures that you benefit from increased wireless bandwidth throughout the coverage area. In addition, the i38HG employs a special triple antenna design. The third antenna is used only for transmitting packets, thus mitigating the power loss associated with switching the antenna use back and forth between transmit and receive. This results in greater access point sensitivity, as antenna placement can be better optimized with a dedicated set of receive-only antennas.

To expand the wireless coverage in a home or add additional Ethernet ports in different locations in the home, you can connect multiple i38HG devices to different in-home phone jacks. Each i38HG is automatically configured to operate on the same wireless network, and the devices can be centrally configured and managed at <http://gateway.2wire.net>.

**Note:** Contact the service provider for information about implementing multiple i38HG devices.



## Gathering items for installation

The installation chapters for the i3822V and iPSU components are written primarily for technicians who are installing the i3822V and connecting it to the power supply unit. The installer should be familiar with the appropriate VDSL test tools, installation practices, and service verification procedures before starting this installation.

The following items are required for installing the i3822V outside unit and the iPSU unit:

- 5/32" tamper proof hex screwdriver (booth wrench)
- Phillips screwdriver
- Flat-blade screwdriver
- 5/16" nut head screwdriver
- 1/8" drill
- 3/8" hex or flat-blade screwdriver
- 1/4" nut or flat-blade screwdriver
- Torque wrench
- Computer
- Electrical outlet tester

- Test toolkit (VDSL test set)
- Mounting screws and washers for the i3822V
  - two #10x2 1/2" hex tap screws
  - two #10 regular flat washers
  - two rubber washers
- Two SAE #10 mounting screws for the power supply unit

# Installing the i3822V (Outside Unit)

# 2

Use the information in this chapter to install the i3822V component on the outside of the subscriber's home.

## Installation overview

To install the i3822V component, you will do the following:

- “Mounting the i3822V” on page 12
- “Connecting network cables” on page 14
- “Connecting power supply wires” on page 17
- “Connecting the coaxial cable” on page 19
- “Connecting the insulation-displacement connectors” on page 20
- “Securing the i3822V” on page 22



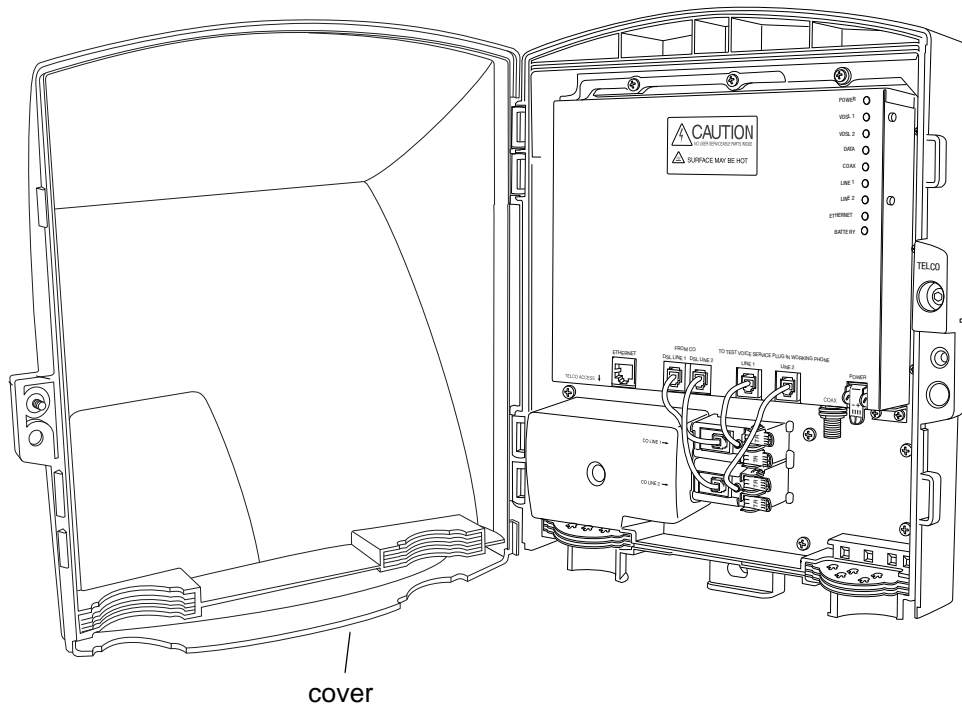
**WARNING:** To reduce the risk of fire, use 24 AWG or larger telecommunication line wire.

## Mounting the i3822V

The i3822V is housed in a protective casing that can be mounted on any flat surface (wood, brick, or stone) of an outside wall. To mount the i3822V:

1. Locate a wood stud in an exterior wall where you want to mount the i3822V.
2. Use the 5/32” tamper-proof hex screwdriver to loosen the screw on the cover.

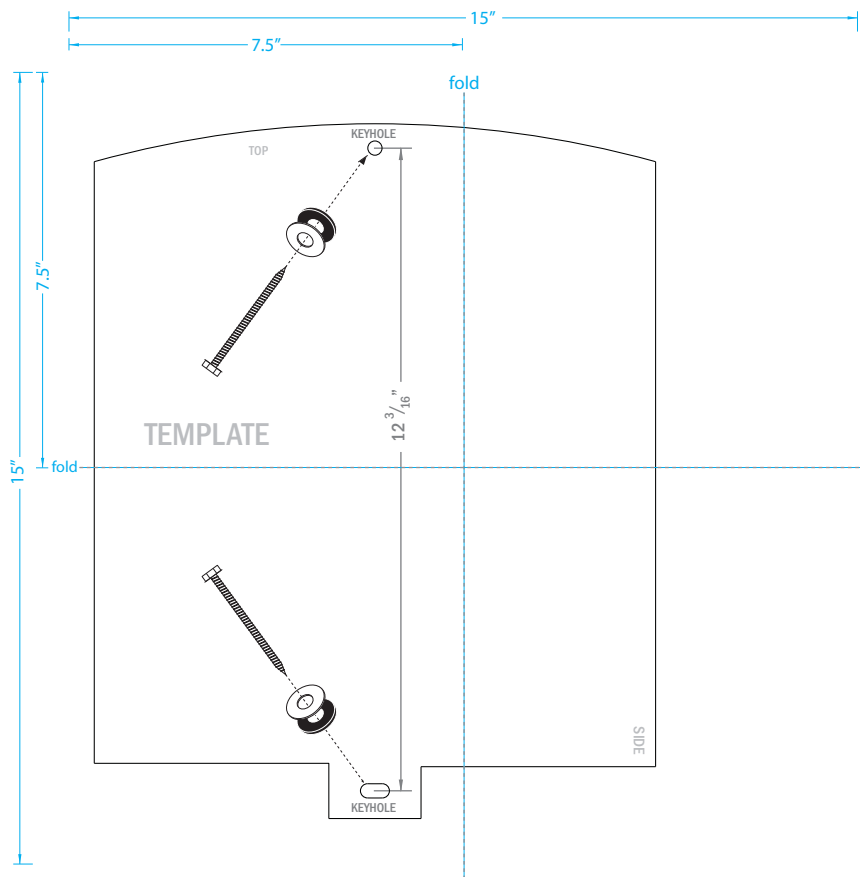
3. Open the cover at a 90° angle or greater, lift off the cover, and set it aside.



4. Mount the i3822V with the following hardware and follow the instructions on the mounting template included with the i3822V packaging.
  - 2 #10x2 1/2" hex tap screws
  - 2 #10 regular flat washers
  - 2 rubber washers

**Note:** Mount the i3822V vertically for convection cooling. Allow sufficient space so the i3822V front cover can be opened for connection and testing purposes as well as for subscribers to place a lock on the right side of the device.

Use appropriate fasteners to secure the i3822V when it is mounted on a brick or stone surface.



## Connecting network cables

The i3822V can accommodate up to two pairs of inside wiring per line. If the subscriber requires more than two lines (any combination of VoIP or PSTN), the lines must be bridged between a normal Network Interface Device (NID) and the i3822V's connectors. If the home runs are on the outside of the home, terminate them before connecting to the i3822V.

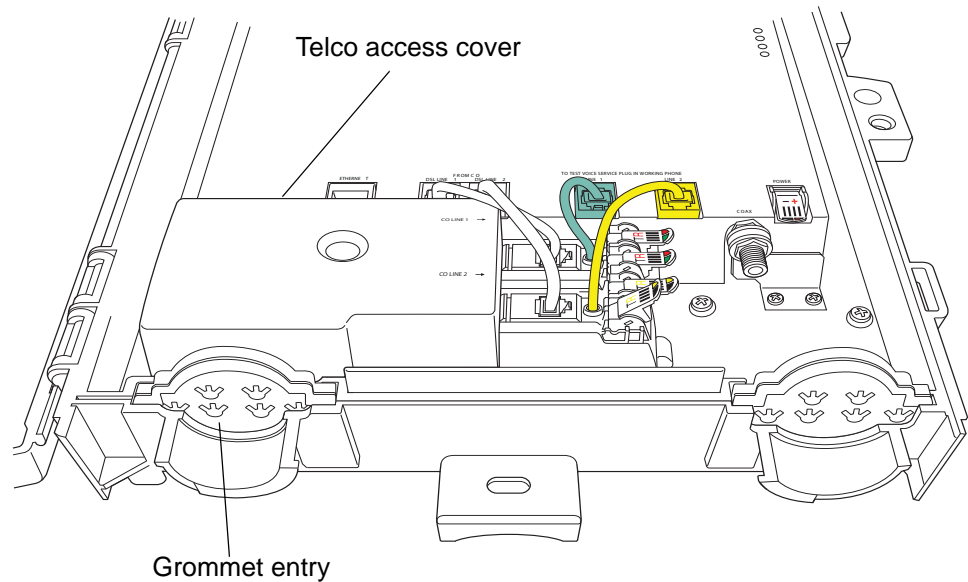
**Note:** The bridging procedures are outside the scope of this document.

The VDSL area is protected with a cover to prevent subscriber access. There are two pairs of binding posts for attaching the i3822V to two separate pairs of Cat 3 telephone wiring from the network that carry PSTN and VDSL2. The connection to the second pair is required to enable a second PSTN line and VDSL pair bonding (when available).

**Note:** The VDSL area is accessible only to the telco personnel.

To connect the network cables:

1. Unfasten the screw that secures the Telco access cover with a 5/32" tamper-proof hex screwdriver (booth wrench).



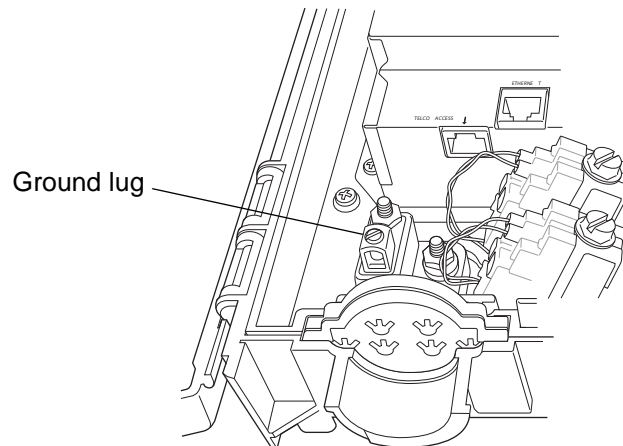
2. Cut two openings on the left grommet entry for the network cable and the 10 AWG ground wire to fit through.

**Note:** Use an appropriate tool to cut or punch through the grommet. Make the cuts just large enough for the cables to fit through. The grommet pad prevents insects from entering the inside of the unit. Make sure to seal any extra gaps on the cuts using the approved sealant that complies to your local requirements.

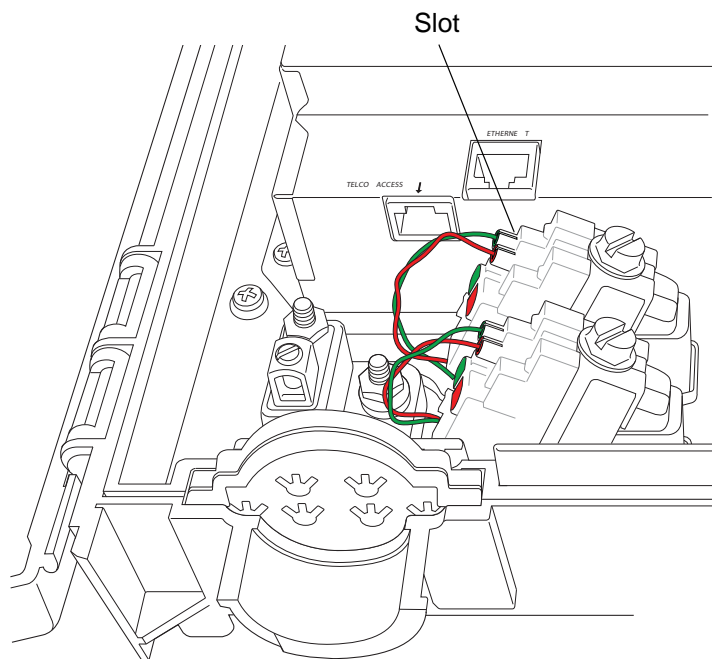


**WARNING:** You must permanently connect the ground lug to an approved Telephone Ground. (Refer to the appropriate local installation practice).

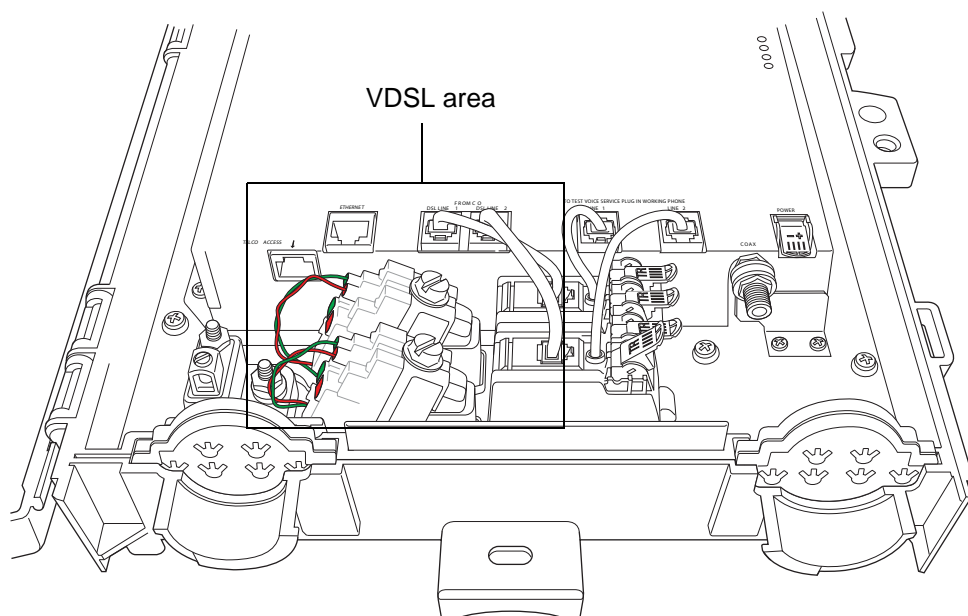
3. Insert the 10 AWG ground wire through one of the openings of the grommet entry and connect it to the ground lug in the lower left portion of the i3822V.



4. Insert the drop wire from the network through the other opening on the grommet entry.
5. Make sure that the red and green wires installed in the top round holes on each station protector are firmly seated in the slots along the top of the holes. This prevents them from dislodging when the nut on the top of the station protector is loosened.



6. Use a 3/8" hex or flat blade screwdriver to loosen one of the station protectors by turning it counter-clockwise to a full upright position.





**Note:** Do not remove the protective gel-filled insulation around the holes; it acts as a moisture barrier and prevents unwanted small particles from having direct contact with the wires.

7. Insert approximately 1-1/2 inches of the un-stripped color-coded wire pair of the VDSL lines from the network provider through the corresponding color-coded holes of the station protectors, green to tip and red to ring.

**Note:** You may feel an initial resistance when inserting the wires into the protector. Do not stop there. If you do, the connectors might close on the insulation, but no contacts are made. Make sure that the inserted wire ends are straight and have no curls on them. If the wires are bent upward or curled when inserted, they will not make proper contact. This may result in the wires passing the pull test even though there is no connection.

8. Peek through the side of the station protector and make sure that the wires have pierced the gel-filled insulation and that contacts are made.
9. Hold the two wires in place; use a 3/8" hex or flat blade screwdriver and turn clockwise to tighten the station protector.
10. Tug gently at the inserted wires to make sure that they are securely seated.
11. Repeat Step 6 through Step 10 for the second VDSL pair.
12. Secure all cables and wires to the strain relief bar at the top of the grommet.
13. Attach the Telco access cover that you removed in step 1 with a 5/32" tamper-proof hex screwdriver (booth wrench).

## Connecting power supply wires

This section provides instructions for connecting the power supply wires to the i3822V.

The power supply connector on the i3822V and the iPSU are colored with the same polarity: red is positive and black is negative. If the phone cable that you are using does not have red and black wires, make note of the color coding on the wires connected to the red and black holes in the i3822V power connector. The same color wire connected to the red hole in the i3822V power connector must be connected to the red terminal in the iPSU, and the same color wire connected to the black hole in the i3822V power connector must be connected to the black terminal in the iPSU.

The cable connecting the iPSU and the i3822V must be a dedicated pair and must not appear at any phone jacks in the home. Run a new cable between the iPSU and the i3822V if no dedicated pair is available. The cable must be 24 AWG and can be a maximum of 100 feet long. The power pair must not have any impairments such as shorts to ground.

**Note:** Do not use a wire thinner than 24 AWG; it compromises the maximum wiring length and the battery backup duration.

**CAUTION:** When connected, the i3822V receives power from the iPSU. Make sure that the AC power adapter and the battery on the iPSU are not connected, or an electrical shock may result.

To connect power supply lines:

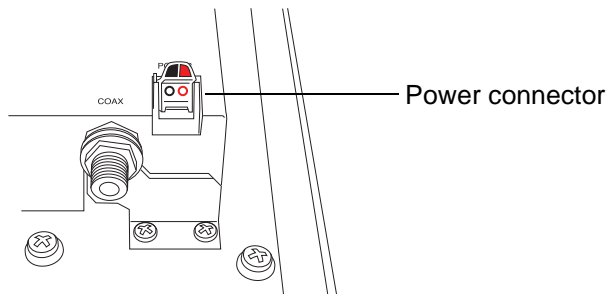
1. Cut an opening on the right grommet entry for the power supply line to fit through.

**Note:** Use an appropriate tool to cut or punch through the grommet. Make the cut just big enough for the line to fit through. The grommet prevents insects from entering the inside of the unit. Make sure to seal any extra gaps on the cuts.

2. Insert the power supply line through the opening of the grommet entry.

**Note:** Do not remove the protective gel-filled insulation around the holes; it acts as a moisture barrier and prevents unwanted small particles from having direct contact with the wires.

3. Lift up the POWER connector plastic rocker tab to expose the color-coded holes on the right side of the unit.



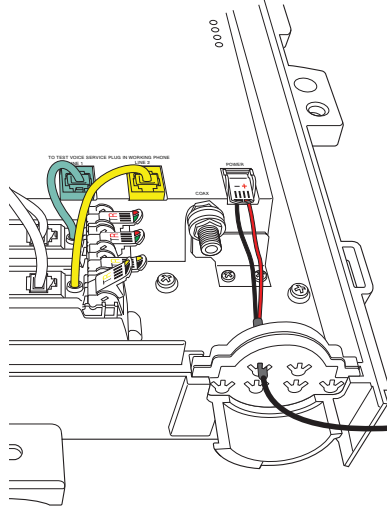
4. Insert the un-stripped color-coded power supply wire pair as far as it can go into each hole that matches the wire color: red is positive and black is negative.

You may feel an initial resistance when inserting the wires into the connector. Do not stop there. If you do, the connectors might close on the insulation, but no contacts are made.

Make sure that the wires have pierced the gel-filled insulation and that the inserted wire ends are straight and have no curls on them. If the wires are bent upward or curled when inserted, they will not make proper contact. This may result in the wires passing the pull test even though there is no connection.

**Note:** The power supply insulation-displacement connector (IDC) on the i3822V and the iPSU are colored with the same polarity. Make sure to maintain polarity: red is positive, black is negative. If wires are reversed, the i3822V will not power up.

5. Press the tab downward to lock the wires into the connector.



6. Tug gently at the inserted wires to make sure that they are securely seated.

## Connecting the coaxial cable

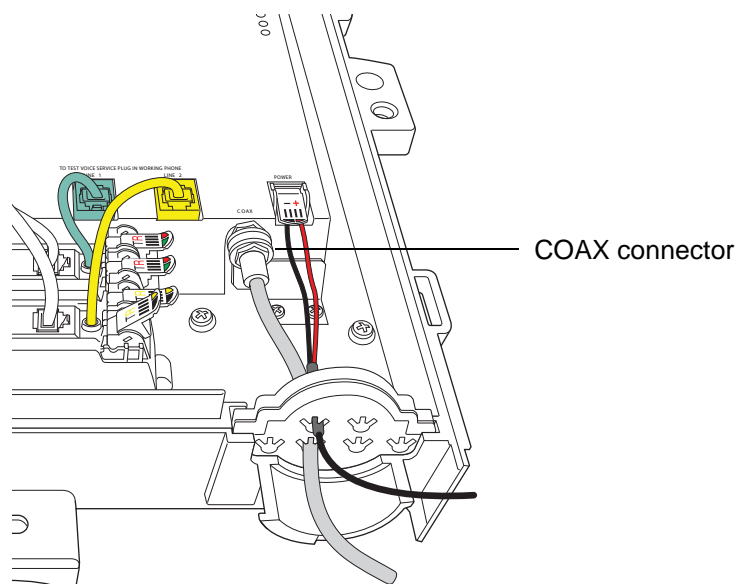
To connect the coaxial cable to the i3822V:

1. Cut an opening on the right grommet entry for the coaxial cable to fit through.

**Note:** Use an appropriate tool to cut or punch through the grommet. Make the cut just big enough for the cable to fit through. The grommet prevents insects from entering the inside of the unit. Seal any extra gaps on the cuts.

2. Insert the cable through the opening on the grommet entry.

3. Connect the coaxial cable to the COAX connector located on the right side of the unit.



4. Tighten the coaxial cable with a torque wrench.
5. Connect the other end of the cable from the i3822V to the IN port of the coaxial splitter.

**Note:** The COAX connector is very sensitive to loose or improperly terminated connectors; tighten it with a torque wrench at a minimum 15 in-lb but do not exceed 20 in-lb.

## Connecting the insulation-displacement connectors

The subscriber part of the network access area has two customer bridge modules, each with a pair of insulation-displacement connectors (IDCs). Each bridge module supports a separate line and can connect to up to two inside wire pairs.

Each IDC is connected as a separate phone line consisting of two wires. Line 1 (green/red) is used for HPNA over twisted pair for data distribution and voice traffic (PSTN or VoIP) inside the home. Line 2 (black/yellow) is used for voice traffic (PSTN or VoIP).

1. Cut an opening on the right grommet entry for the PSTN lines to fit through.

**Note:** Use an appropriate tool to cut or punch through the grommet. Make the cut just big enough for the cable to fit through. The grommet prevents insects from entering the inside of the unit. Seal any extra gaps on the cuts.

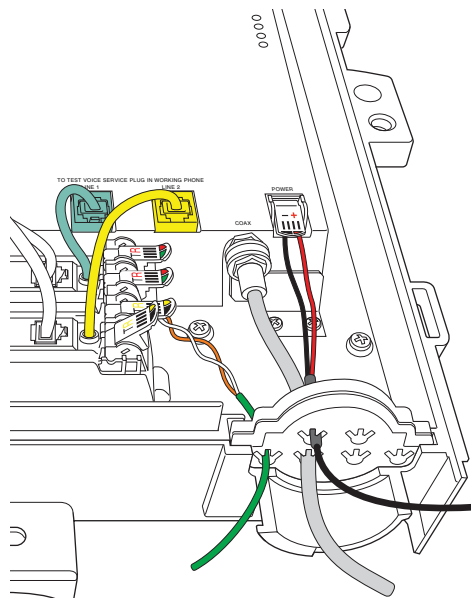
2. Insert the subscriber's inside wire through the opening of the grommet entry.

**Note:** Do not remove the protective gel-filled insulation around the holes; it acts as a moisture barrier and prevents unwanted small particles from having direct contact with the wires.

3. Lift up one of the color-coded plastic rocker tabs of the IDC and insert approximately 1-1/2 inches of an un-stripped wire into each hole that matches the wire color of the tab.

You may feel an initial resistance when inserting the wires into the tabs. Do not stop there. If you do, the connectors might close on the insulation, but no contacts are made. The wire needs to be inserted past that point so that it is completely through the vertical metal piece and can be clamped into place. Make sure that the inserted wire ends are straight and have no curls on them. If the wires are bent upward or curled when inserted, they will not make proper contact.

If the subscriber's wiring colors do not match these tab colors, inspect how a phone jack inside the home is wired and attach the colored wires similarly to this device. A typical example would be white with blue stripe to green; blue with white stripe to red; white with orange stripe to black; orange with white stripe to yellow.



4. Look through the plastic and make sure that the wire passes through the IDC blade.
5. Press down the tab to lock the wire.
6. Tug gently at the wires to make sure that they are securely seated.
7. Repeat Step 3 through Step 6 for the second line.
8. Secure all cables and wires to the strain relief bar at the top of the grommet.

## Securing the i3822V

To secure the i3822V unit:

1. Align the cover at a 90° angles to the unit.
2. Push the cover downward toward the locking area on the left of the i3822V.
3. Fasten the screw that secures the cover with the 5/32" tamper-proof hex screwdriver.

**Note:** Make sure that the cover is securely fastened to prevent any unauthorized access.

# Installing the iPSU (Power Supply Unit)

# 3

This chapter provides instructions to install the Intelligent Power Supply Unit (iPSU) in a protected location and connect it to the i3822V component.

## Installation overview

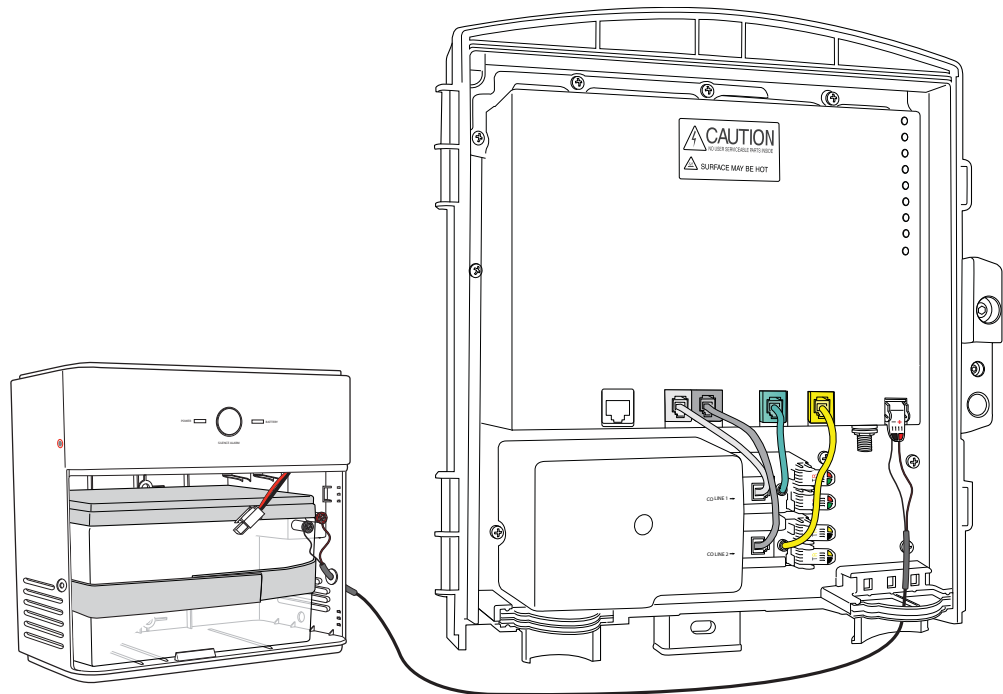
To install the iPSU component, you will do the following:

- “Preparing the installation site” on page 24
- “Mounting the power supply unit” on page 25
- “Connecting the power cables” on page 27

The intelligent Power Supply Unit (iPSU) delivers DC power to the i3822V using a single dedicated pair of 24 AWG (minimum) phone cable. The power supply operates on 120V AC, 60 Hz power, and supplies 29V DC nominal to the i3822V.

If the power supply unit is equipped with a battery backup, during a temporary AC power outage, the power source is switched to the battery without interruption of service. When the AC power is restored, the power source is switched back to the AC power supply. The switchover between the AC power supply and battery is automatic and instantaneous.

The following figure shows the connection between the power supply unit and i3822V.



## Preparing the installation site

Unlike the i3822V, the iPSU must be installed in a sheltered area, either inside the garage or home. The iPSU with a battery installed weighs approximately 11 pounds. Make sure that the selected wall stud is strong enough to support the weight.

## Locating a proper site

You can mount the iPSU on any flat surface (wood, brick, or stone) and at any height level, from eye to floor level. Unless it is demanded by the subscriber that the iPSU be mounted on the floor level, mount the iPSU above the floor level and away from any areas with a potential for standing water.

The life of the battery is affected by the local environment; select a site that is away from excessive heat, machinery, and vibration. Locate a stud wall inside the home or garage that is within eight feet of the nearest electrical outlet (the length of the supplied power adapter) and strong enough to support 11 pounds (the weight of iPSU with a battery installed).

**Note:** Do not use an extension cord.

The iPSU contains live electronics. Any standing water that is above four inches from the bottom edge of the iPSU can damage the iPSU wiring, which might affect the performance of the i3822V. The lead-acid battery is sealed and will not be damaged by the water exposure.



## Testing the electrical outlet

Test the electrical outlet you intend to use with an electrical outlet tester to ensure that it is working.

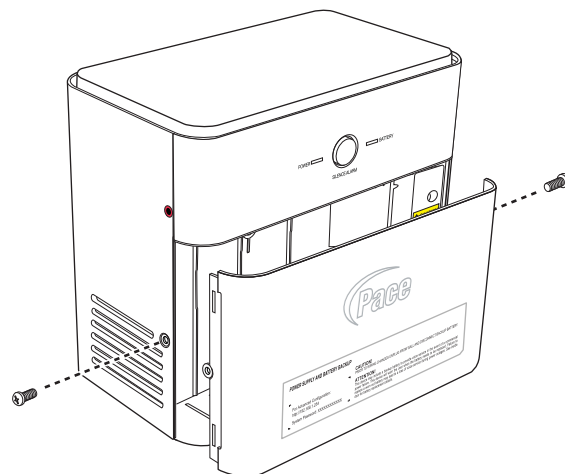
## Mounting the power supply unit

This section assumes that the i3822V has been mounted and that the power supply line on the i3822V has been connected. An 8-foot AC power adapter is shipped with the power supply unit. Allow slack (about 2 inches) for the power plug when mounting the power supply unit.

**Note:** Unless you are advised from the battery manufacturer, do not install batteries measuring less than 12.75V. Measure the open circuit battery voltage to make sure that it has not significantly discharged before installation.

To mount the iPSU:

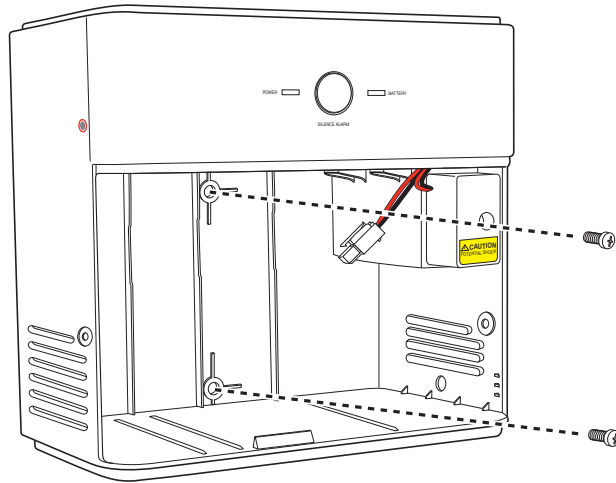
1. Use a Phillips screwdriver to unfasten the two screws (one on each side) securing the power supply unit cover and put them in a safe place until they are needed.



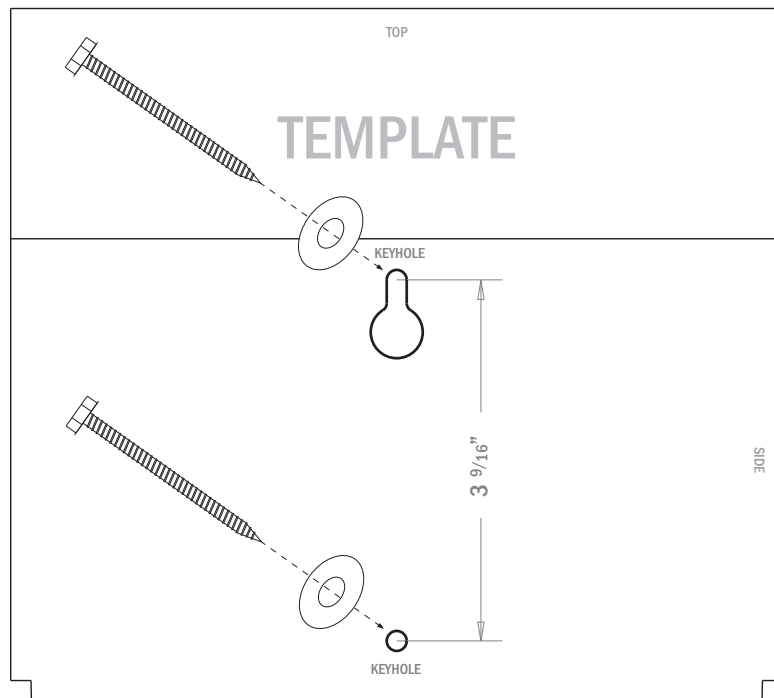
Remove screws from both sides of the unit to remove the front cover.

**CAUTION:** The iPSU with a battery installed weighs approximately 11 pounds. To prevent potential personal injury or equipment damage, mount the iPSU to a wall stud that is strong enough to support the weight.

2. Place the back of the iPSU against the wall stud.



3. Mark and drill holes for the mounting screws using the template that is included in the iPSU package.



4. Fasten the iPSU to the wall using SAE #10 (or equivalent) mounting screws.

## Connecting the power cables

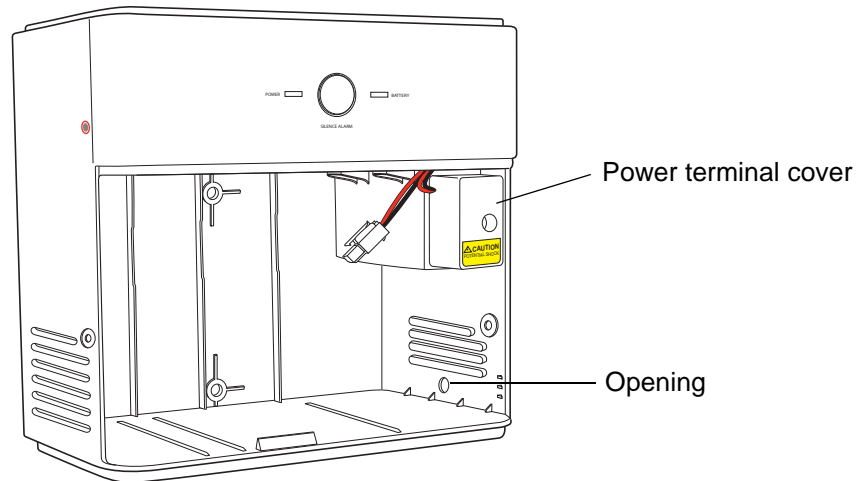
After the iPSU is mounted, connect the following three sets of cables to begin supplying power to the i3822V:

- The power line between the iPSU and i3822V
- The AC power cord to the AC outlet
- The battery cable

## Connecting the power supply to the i3822V

To connect the iPSU unit to the i3822V:

1. Use a Phillips screwdriver to unfasten the screw securing the power terminal cover.
2. Insert the end of the power cable from the i3822V through the round opening on the right panel of the iPSU.



3. Strip 3/8" to 5/8" on the power cable pair to expose the wires.
4. Connect the color-coded wires that correspond to the color-coded binding posts of the power terminals to the outside unit.

**Note:** Make sure to maintain polarity: red is positive, black is negative. If the wires are reversed, the i3822V will not power up.

5. Place the cover back on the power supply post and make sure that it is properly seated.

**Note:** Do not pinch the wires.

6. Fasten the screw to secure the power terminal cover.

## Connecting the iPSU to the electrical outlet

Insert the AC power plug into an electrical outlet. Observe the POWER indicator on the iPSU; it should light red (if power is present) and turn to green within two minutes.

# Verifying the i3822V and iPSU Installations

# 4

This chapter provides instructions to verify the installation of the i3822V (outside unit) and the Intelligent Power Supply Unit (iPSU). It also includes sections that provide procedures for connecting the iPSU backup battery and general iPSU maintenance.

## Verification overview

To install the iPSU component, you will do the following:

- “Starting the i3822V component” on page 29
- “Interpreting the i3822V indicators” on page 30
- “Enabling the ETHERNET port” on page 31
- “Interpreting the iPSU indicators” on page 32
- “Connecting the backup battery” on page 33
- “iPSU maintenance” on page 34
- “Replacing the power supply unit” on page 37

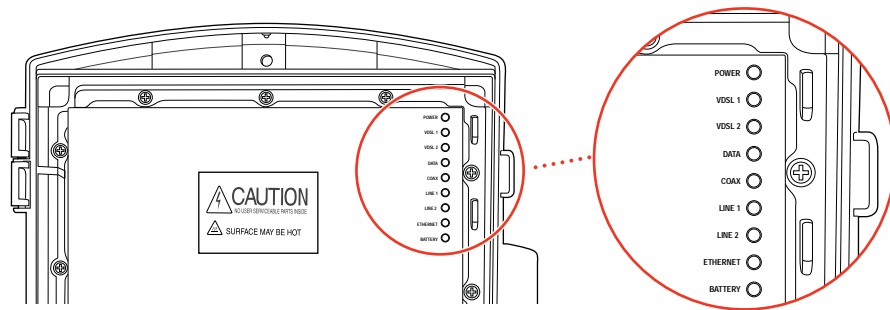
## Starting the i3822V component

After you connect the necessary cables, and connect the i3822V to the power supply unit, the i3822V component powers up automatically. For information about installing the power supply unit, see “Connecting the power cables” on page 27.

# Interpreting the i3822V indicators

The following table describes the indicators on the i3822V. The indicators on the component behave differently depending on the current state of the gateway.

**Note:** The indicators on the i3822V are not active until you connect the i3822V to the power supply unit. For information about installing the power supply unit and connecting it to the i3822V, see “Installing the iPSU (Power Supply Unit)” on page 23.



| Indicators        | Description   |
|-------------------|---|
| POWER             | <p>The POWER indicator turns red when the power is first applied, and changes to green within two minutes of power application.</p> <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The power is on and initialization has been completed successfully.</li> <li>• <i>Flashing green.</i> The iNID is booting.</li> <li>• <i>Red.</i> A Power-On Self-Test (POST) failure (the device is unbootable) or another malfunction has occurred during self initialization.</li> </ul>  |
| VDSL 1 and VDSL 2 | <p>These two indicators flash after 60 seconds of power application for one to two minutes and cycle three times.</p> <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The broadband connection is trained.</li> <li>• <i>Flashing green.</i> The broadband connection is being attempted (DSL attempting to synchronize).</li> <li>• <i>Alternating flashing green and steady red.</i> The broadband connection failed to establish for more than three consecutive minutes. This pattern continues until the broadband connection is successfully established.</li> <li>• <i>Flashing red.</i> There is no DSL signal on the line.</li> </ul> <p>The BROADBAND indicator on the i38HG mirrors one or both of the VDSL indicators, whichever is in the “best” state.</p> |
| DATA              | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> A device is connected (such as i38HG).</li> <li>• <i>Flashing green.</i> There is inbound activity associated with the data port (that is, the green LINE 1 connection). The flickering of the light is synchronized to the actual data traffic.</li> <li>• <i>Red.</i> A device failed to be authenticated or successfully connected.</li> </ul>  |

| Indicators        | Description   |
|-------------------|---|
| COAX              | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> A device is connected (such as a set-top box).</li> <li>• <i>Flashing green.</i> There is inbound activity associated with the COAX port. The flickering of the light is synchronized to the actual data traffic.</li> <li>• <i>Red.</i> A device failed to be authenticated or successfully connected.</li> </ul> |
| LINE 1 and LINE 2 | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The associated voice line has been registered with the network and is ready for use.</li> <li>• <i>Flashing green.</i> A phone is in use on the associated voice line.</li> </ul> <p>These two indicators mirror LINE 1 and LINE 2 indicators on the i38HG.</p>  |
| ETHERNET          | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> A device (such as a computer) is connected to the ETHERNET port.</li> <li>• <i>Flashing green.</i> There is inbound activity from devices connected to the ETHERNET port. The flickering of the light is synchronized to the actual data traffic.</li> </ul>   |
| BATTERY           | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The AC power is connected and healthy.</li> <li>• <i>Flashing red.</i> The backup battery is being used for power.</li> </ul>  |

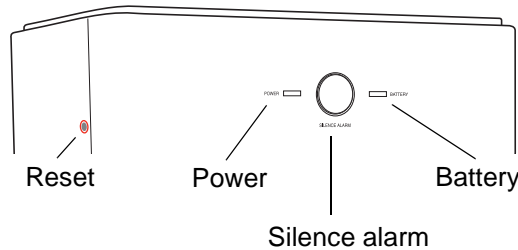
## Enabling the ETHERNET port

The ETHERNET port is disabled by default. This port is used only if the subscriber has Cat 5 wiring throughout the home that is terminated on the side of the home. It supports other Ethernet devices, such as switches or hubs.

To enable the ETHERNET port:

1. Open a browser and enter <http://gateway.2wire.net> or <http://172.17.0.1> as the URL.
2. On the **Settings** tab, click the **LAN** tab, and then click **Wired Interfaces**.
3. Click the **Auto MDIX** check box to enable the ETHERNET port on the i3822V.
4. Click **Save**.

## Interpreting the iPSU indicators



The indicators on the iPSU behave differently depending on the current state of the unit, as shown in the following table:

| Indicators and Buttons | Description   |
|------------------------|---|
| RESET Button           | A RESET button is located on the upper left side panel, highlighted by a surrounding red circle. When pressed for up to 9 seconds, the RESET button reboots the outside unit. If the button is pressed for 10 or more seconds, it resets the outside unit to the factory default settings. Do not press the RESET button unless you are instructed to do so. Doing so may reset the outside unit to the factory default settings, which means you will lose your personal settings.   |
| POWER                  | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The power supply is running on AC power.</li> <li>• <i>Off.</i> The power supply is not receiving power from either AC or the battery.</li> <li>• <i>Flashing red.</i> The power is provided by the backup battery or the outside unit is not yet communicating with the iPSU.</li> </ul>  |
| SILENCE ALARM Button   | <p>The SILENCE ALARM button is located between the POWER and BATTERY indicators.</p> <ul style="list-style-type: none"> <li>• If AC power is interrupted for any reasons, a continuous tone indicates that the power supply is running on the backup battery. Pressing the SILENCE ALARM button within 15 seconds immediately silences the audio alert. (The tone stops automatically after 15 seconds.)</li> <li>• When the battery needs replacing, a chirp sounds intermittently unless you press the button to silence it for 12 hours. The chirp resumes after 12 hours if the battery is not replaced.</li> </ul> |
| BATTERY                | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The battery is installed and functioning properly.</li> <li>• <i>Off.</i> No battery is installed.</li> <li>• <i>Flashing red.</i> The battery needs to be replaced.</li> </ul> <p><b>Note:</b> The BATTERY indicator works properly only when the iPSU is connected to and communicates with the i3822V.</p>  |



## Connecting the backup battery

**CAUTION:** Follow the manufacturer's safety statements when handling the lead-acid battery.

**Note:** The battery must be approved for use in the iPSU.

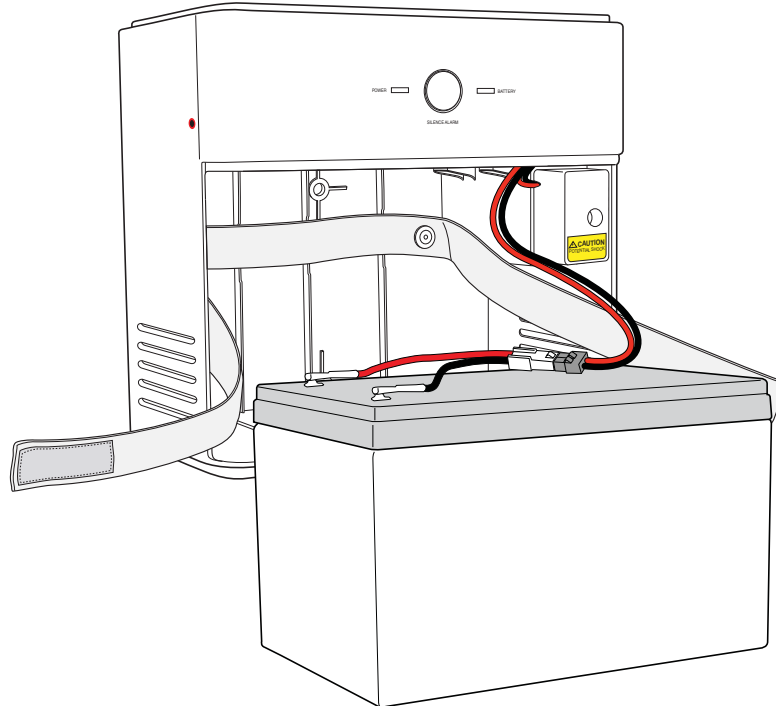
Unless you receive an advisement from the battery manufacturer (they are liable for warranty service), do not install batteries measuring less than 12.75V, which represents a charge of approximately of 80% of the rated capacity. Measure the open circuit battery voltage to make sure that it has not significantly discharged before installation.

To connect the backup battery:

1. Verify that the AC power plug is plugged into a working electrical outlet.
2. Use a Phillips screwdriver to unfasten the two screws (one on each side) securing the power supply unit cover and put them in a safe place until they are needed.
3. Insert the battery gently into the iPSU.

**Note:** Make sure to place the battery inside the raised lip of the unit.

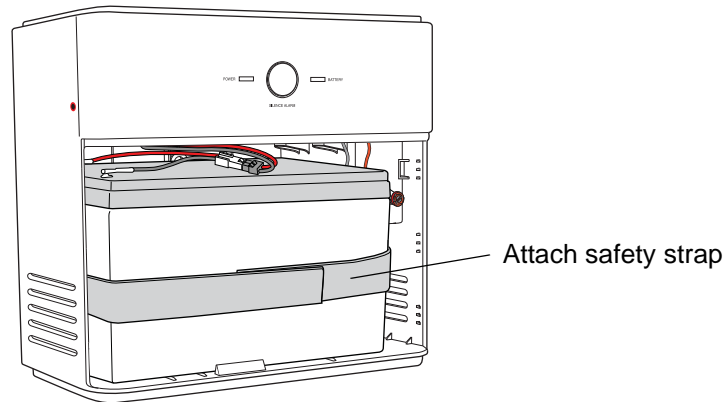
4. Connect the backup battery connector from the iPSU to the connector on the battery.



5. Observe the BATTERY indicator on the iPSU; it should light green.

**Note:** A faulty battery is indicated if the BATTERY indicator does not light green within five minutes (assuming the iPSU is plugged into a functioning AC power outlet).

6. Secure the battery with the safety strap.



7. Place the housing cover over the unit and press gently on it until it snaps into place.
8. Fasten the cover with the screws you removed earlier.

## iPSU maintenance

The iPSU needs no maintenance other than regular battery inspection and replacement. If the power supply unit is equipped with a backup battery, it continues to provide power to the i3822V during a power outage so that a phone call can be made in the event of an emergency. During a temporary AC power outage, the iPSU power source is switched to the battery without interruption of services. When the AC power is restored, the iPSU power source is switched back to AC power. The switchover between the AC power and the battery is automatic and instantaneous.

**Note:** Reserve the battery charge during a power outage. Do not access the Internet when the power is running on the battery. Doing so will discharge the battery at a much faster rate and shorten the voice service time.

You are solely responsible for periodically replacing this battery to provide uninterrupted voice services during a power outage. Your service provider does not monitor the battery and is not responsible for its replacement.

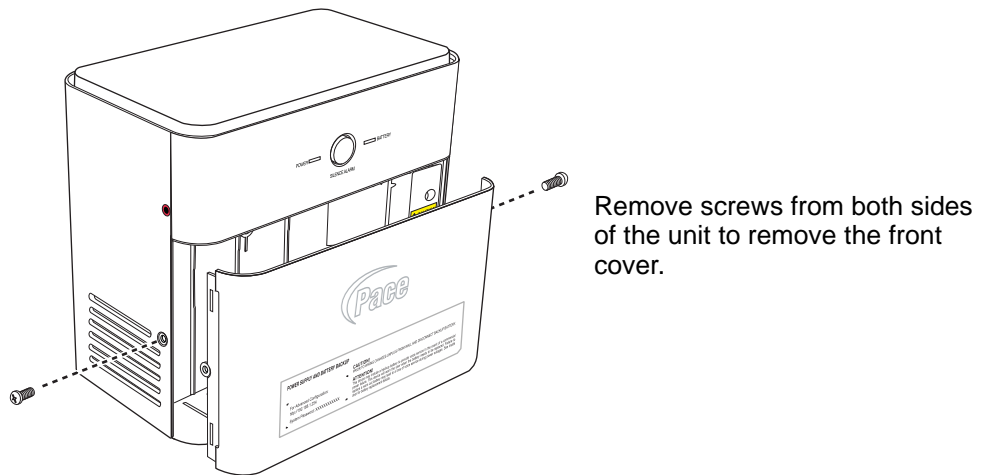
## Replacing the battery

The battery is rated for a service life of up to five years, which varies depending on operational and environmental conditions. The battery life expectancy depends on the operating environment as temperature extremes shorten the battery life.

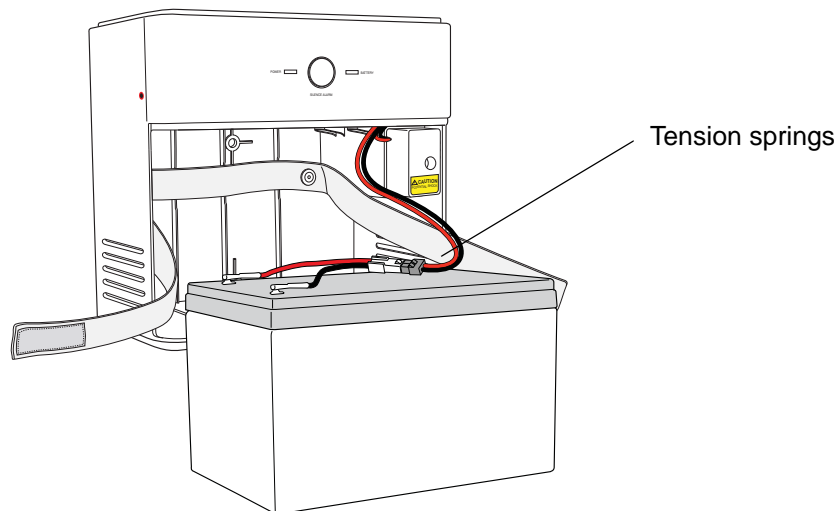
The battery is specifically designed to use with the iNID system. Refer to the label inside the front cover of the iPSU or contact your service provider for battery replacement information.

To replace the battery:

1. Use a Phillips screwdriver to unfasten two screws (one on each side) securing the power supply battery cover, and put them in a safe place.



2. Adjust the battery cable and battery cable connector so that it is visible (located on top of the backup battery).
3. Press down on the tension springs and pull to disconnect the battery cable connector from the battery cable.



4. Release the safety strap securing the battery.

- Remove the old battery from the housing and put it safely aside.

**Note:** Be careful when removing the battery; it is heavy.

- After removing the old battery, verify that the BATTERY indicator is completely extinguished (not green or blinking red).

**Note:** It can take up to three minutes before the BATTERY indicator is completely off and the Power Supply Unit is ready to accept the new battery.

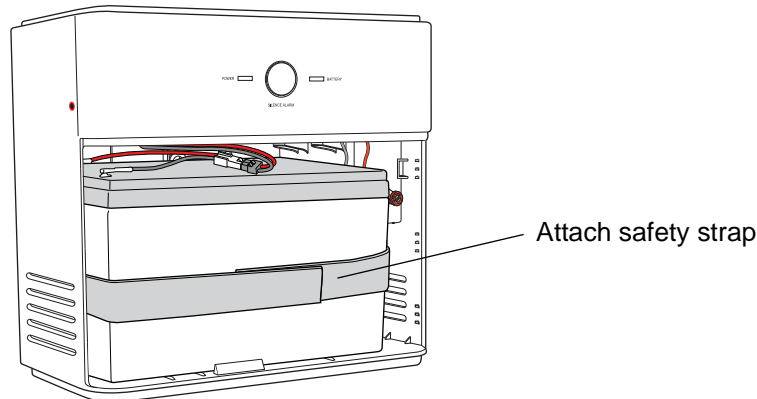
- Insert the new battery gently into the housing.

**Note:** Be sure to place the battery inside the raised bottom edge of the case.

- Connect the battery cable connector to the battery cable.
- Observe the BATTERY indicator on the iPSU, it should light green when the i38HG and i3822V are communicating properly.

**Note:** A faulty battery is indicated if the BATTERY indicator does not light green within five minutes (assuming the iPSU is plugged into a functioning AC power outlet).

- Secure the battery with the safety strap.



- Place the housing cover over the unit and press gently on it until it snaps into place.
- Fasten the cover with the two screws you removed earlier.

**Note:** If you have disabled the alert earlier, make sure to enable the alert.

## Disabling the alert

By default, the audible alert is enabled to warn you when the battery is exhausted. It is recommended that you do not disable the audible alert unless you intend to replace the battery within a short time. A chirping tone sounds when the battery is exhausted and needs replacing. The duration of the chirping sound is 0.2 seconds and it happens once every five seconds. You can turn off the chirping sound to disable the alert for 12 hours or permanently.

If you disabled the alert and did not replace the backup battery in a timely manner, you may not have voice services in case of emergency during an AC power outage.

**CAUTION:** Disable the audio alert with caution. The battery must be replaced within a short period of time after the audio alert begins indicating a bad battery. The automatic battery backup feature may not work during an AC power outage, causing the voice and data services to stop.

To disable the alert:

1. Open a browser and enter `http://gateway.2Wire.net` as the URL.
2. On the **Settings** page, click **System Info**, and then click **Battery Backup**.
3. Click **Disable Alert for 12 hours** to turn off the low-battery notification or deselect the **Enable** check box to disable the alert permanently.
4. Click **Save**.

## Enabling the alert

To enable the alert:

1. Open a browser and enter `http://gateway.2Wire.net` as the URL.
2. On the **Settings** page, click **System Info**, and then click **Battery Backup**.
3. Click the **Enable** check box to enable the battery audible alert.
4. Click **Save**.

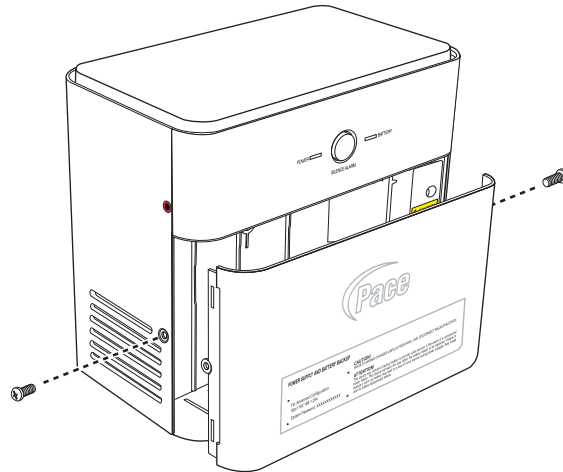
## Replacing the power supply unit

The Intelligent Power Supply Unit (iPSU) provides power to the i3822V (iNID Outside Unit). When the iPSU is disconnected from the i3822V, all Internet access and data traffic will be stopped until power is restored.

**Note:** After the iPSU is replaced, the old system password is automatically configured to the new iPSU; therefore, no reconfiguration is required. Through the gateway user interface, you can set a custom password to match the one printed on the iPSU label.

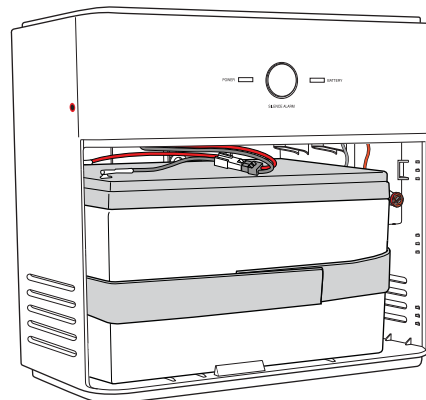
To replace the iPSU:

1. Disconnect the iPSU AC power plug from the electrical outlet.
2. Use a Phillips screwdriver to unfasten two screws (one on each side) securing the power supply unit cover.



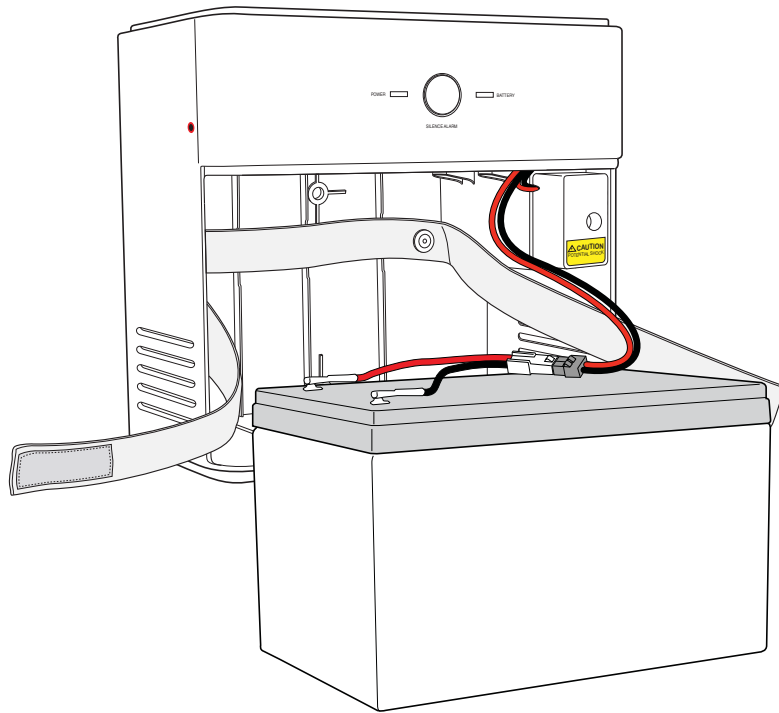
Remove screws from both sides of the unit to remove the front cover.

3. Loosen the battery safety strap.



4. Lift the backup battery out from the iPSU.

5. Disconnect the backup battery connector from the iPSU to the connector on the battery.



6. Unfasten the screw securing the power terminal cover.
7. Disconnect the power supply to the i3822V.
8. Loosen the mounting screws and dismount the iPSU.
9. Follow the procedures outlined in the “Installation overview” on page 23 to install a new iPSU.

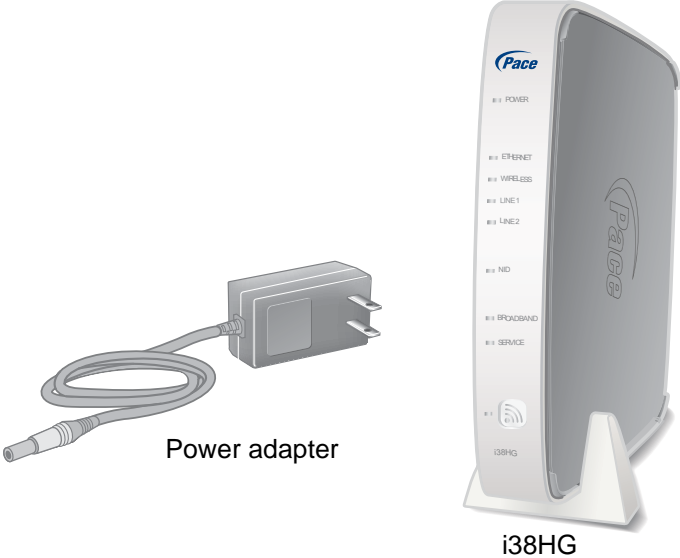
# Installing the i38HG (Inside Unit)

# 5

The i38HG is the unit that goes inside your home and can be installed by you or your service provider. The i38HG includes an integrated wireless access point to provide wireless connectivity throughout the home or office. It is a home networking hub that provides an 802.11b/g Wi-Fi access point and Ethernet switch functions for connecting personal computers and other in-home networked devices to the service provider's network.

Before installing the i38HG, review the package contents and ensure that you have available the items shown below.

**Note:** The i38HG and the stand are packaged separately in the container. You should place the i38HG on the stand.





# Gathering items for installation

Installation of the i38HG requires the following items:

- A gateway and stand
- A power adapter
- A data cable (phone cable)

Optional installation items include:

- An Ethernet cable, if you are connecting a computer directly to the gateway

## Installation overview

To install the i38HG component, you will do the following:

- “Finding a suitable location” on page 41
- “Connecting the data cable” on page 42
- “Connecting the power adapter” on page 43
- “Connecting your computer to the i38HG” on page 43
- “Configuring non-Pace wireless adapters” on page 44
- “Understanding the i38HG indicators” on page 45

## Finding a suitable location

Wireless signals are affected by many items in households. Reliability and performance are the major considerations when planning your wireless network location.

### Avoiding interference

Wireless signals are subject to interference from other electronic devices including (but not limited to) microwave ovens, cordless telephones, and garage door openers. Proper installation will minimize interference. Place your i38HG at least five feet from cordless phones, microwaves, or other electronic devices to avoid potential interference, and more than six inches away from a television to avoid audio hissing or static.

**Note:** Whenever possible, use the stand provided with the i38HG and install it in the vertical position. If that is not possible, be sure that it is installed in a place where nothing can be stacked on the top of it. The i38HG generates substantial amounts of heat and could possibly damage items stacked on it.

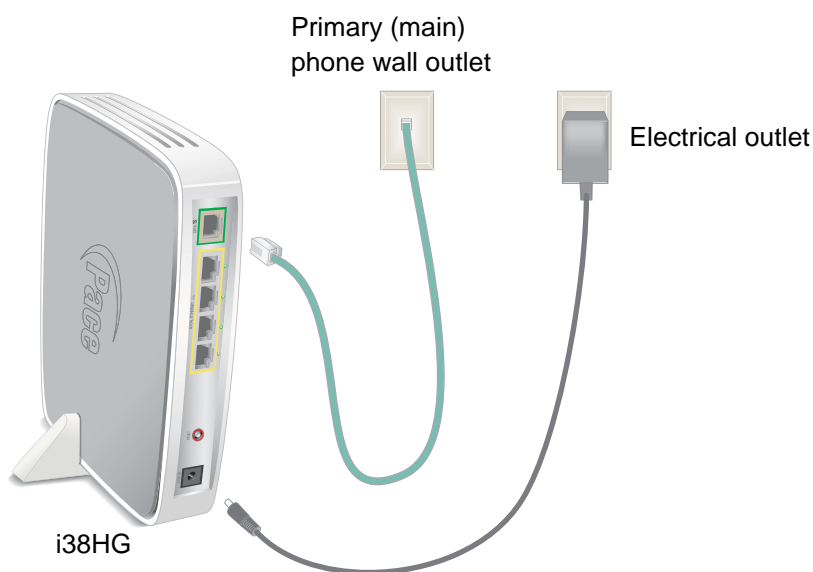
## Avoiding obstructions

The wireless signal degrades with distance and obstructions (such as ceilings, walls, and furniture). Consider the layout of your home or business when deciding where to place your i38HG.

- Consider where you will use your wireless devices when placing your i38HG. In a single-story building, place the i38HG as high and as close to each wireless computer as possible. To minimize interference, do not place the i38HG behind large objects or other obstructions.
- Place the i38HG in an open area where the wireless signal will not be directly affected by surroundings. Wireless signal strength is much stronger in an open area as opposed to an area with obstructions.
- Keep the i38HG away from any large metal objects. Because metal objects can reflect or obstruct signals, wireless signal quality and speed may be adversely impacted.

## Connecting the data cable

The data cable (phone cable) carries data from the i3822V to the i38HG through your in-home phone wiring.



**Note:** The phone cable is supplied by your service provider.

To connect the data cable:

1. Connect one end of the phone cable (green) to the phone wall outlet.
2. Connect the other end of the phone cable to the DATA port (green) of your i38HG.

## Connecting the power adapter

To connect the power adapter:

1. Connect one end of the power adapter to the POWER port of your i38HG.
2. Connect the other end of power adapter to a working electrical outlet.
3. Observe the **POWER** indicator; it flashes red once, followed by flashing green, then remains solid green.
4. Check the NID, BROADBAND, and SERVICE indicators. They light green when communication is established between the i38HG and i3822V (usually within one minute).

## Connecting your computer to the i38HG

There are two ways to connect your computer to the i38HG: through Ethernet or wireless. With either connection, the first computer you connect to the network is used to configure the i38HG for proper operation.

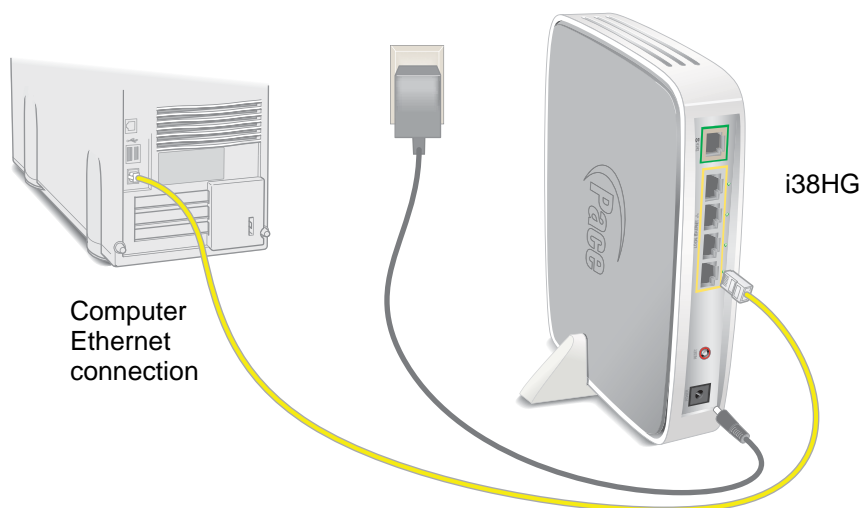
### Connecting directly

You can connect up to four computers to the i38HG using the Ethernet connection.

to connect directly through Ethernet:

1. Connect one end of the Ethernet cable (yellow) to any available ETHERNET port (yellow) on the i38HG.
2. Connect the other end of the Ethernet cable to the computer's Ethernet port. You are now ready to start your system.

**Note:** The Ethernet cable is supplied by your service provider. Use a Cat 5 cable if you need an additional or longer Ethernet cable.



## Connecting through wireless

Your i38HG has an integrated wireless access point (AP) that enables you to connect your wireless-enabled computers to your home network. By default, the i38HG is shipped with WPA-PSK and WPA2-PSK enabled and a preconfigured network name.

You can connect multiple i38HGs in your home. When multiple APs are detected, they are automatically synchronized across all managed access points to create a single wireless network for easier device connectivity. The default service set identifier (SSID) and wireless key is based on the last three digits of the serial number on the first access point that was connected. If you have multiple APs installed, refer to the label on your first installed AP only. All subsequent access points are automatically synchronized with the default SSID or with any custom SSID you define subsequent to initial installation.

Most laptop computers are equipped with an internal 802.11b/g card. If your computer is not equipped with an internal card, you can install an external wireless adapter for wireless networking. The Pace wireless adapter provides a Pace Setup Wizard that automatically configures it to communicate with the i38HG during setup. If you are using a non-Pace wireless adapter, you must manually configure it to communicate with the i38HG. See “Configuring non-Pace wireless adapters” on page 44 to configure a wireless network adapter.

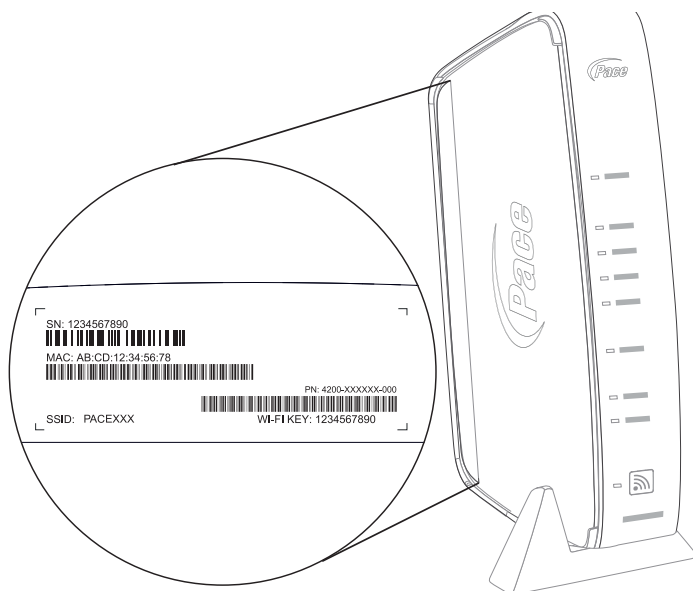
## Configuring non-Pace wireless adapters

If you are using a non-Pace wireless adapter, you must manually configure it to communicate with the i38HG. This section provides instructions to configure your adapter with WPA. You can use WEP if your wireless adapter does not support WPA; however, this decreases the level of security provided for wireless traffic.

To install the non-Pace wireless adapter:

1. Install and configure your wireless adapter according to the manufacturer's instructions.
2. Use the network adapter configuration software or Windows network connection wizard to set the network name (SSID) and encryption key (WPA).
3. Locate the SSID identified on the bottom label of your i38HG and enter it as the network name.

**Note:** If you have multiple APs, use the last three digits of the first i38HG connected to the network.



4. Enter the encryption key that is located inside the brackets beneath the bar code on the bottom of your i38HG (for example, 1234567890).

**Note:** For Mac OS X users, you may need to enter the “\$” character at the beginning of the encryption key (for example, \$1234567890).

## Understanding the i38HG indicators

The indicators on the iPSU behave differently depending on the current state of the unit, as shown in the following table:

| Indicators | Description  |
|------------|--|
| POWER      | <p>The POWER indicator turns red when the power is first applied, and changes to green within two minutes of power application.</p> <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The power is on.</li> <li>• <i>Red.</i> A Power-On Self-Test (POST) failure or another malfunction has occurred.</li> </ul> |
| ETHERNET   | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> A device (such as a computer) is connected to an ETHERNET port.</li> <li>• <i>Flashing green.</i> Inbound activity from devices is associated with the ETHERNET port. The flickering of the light is synchronized to the actual data traffic.</li> </ul>        |

| Indicators        | Description   |
|-------------------|---|
| WIRELESS          | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> A device is associated with a specific access point.</li> <li>• <i>Flashing green.</i> There is inbound activity. The flickering of the light is synchronized to the actual data traffic.</li> </ul>   |
| LINE 1 and LINE 2 | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The associated voice line has been registered with a SIP proxy server.</li> <li>• <i>Flashing green.</i> A telephone is off-hook on the associated voice line.</li> </ul>  |
| NID               | <i>Solid green.</i> The link between the i38HG and i3822V is healthy.   |
| BROADBAND         | <p>This indicator shows the i3822V VDSL status.</p> <ul style="list-style-type: none"> <li>• <i>Solid green.</i> There is a successful broadband connection.</li> <li>• <i>Flashing green.</i> The i3822 is attempting to establish a broadband connection.</li> <li>• <i>Flashing green and red.</i> The broadband connection has failed to establish for three consecutive minutes.</li> <li>• <i>Red.</i> There is no DSL signal.</li> </ul> |
| SERVICE           | <ul style="list-style-type: none"> <li>• <i>Solid green.</i> The i3822V has a WAN IP address from DHCP and the broadband connection is up.</li> <li>• <i>Flashing green.</i> The i3822V is attempting to be authenticated.</li> <li>• <i>Red.</i> The i38HG has failed to receive an IP address assignment from the network.</li> </ul>   |

## Replacing and removing the i38HG

The i38HG (inside unit) is a home networking hub that provides an 802.11b/g Wi-Fi access point and Ethernet switch functions for connecting personal computers and other in-home networked devices to the service provider's network. The i3822V (outside unit) is the gateway that acts as the network interface device. All wireless configuration data is stored on the i3822V.

When you replace your i38HG, you do not need to reconfigure any settings on the new device. All your configuration information is automatically configured to the new i38HG when the device is initially installed and begins communicating with the i3822V. This includes the network name and wireless key, meaning that you do not need to reconfigure your devices during an i38HG replacement.

After replacing the i38HG, the information on the label of the i38HG will not be valid. You can change your network name and wireless key by going to the user interface.

To change the network name and wireless key:

1. Open a browser and enter <http://gateway.2wire.net> or <http://172.17.0.1> as the URL.
2. On the **Settings** tab, click **LAN**, and then click **Wireless**.
3. Browse to the **Network Name (SSID)** text box to change the network name.
4. Browse to the **Wireless Key** setting and select the **Use custom Wireless Network Key** option.

This setting supports a 64-bit or 128-bit encryption key.

This chapter provides information about common gateway installation issues. If an issue has more than one potential cause, the most common cause is listed first.

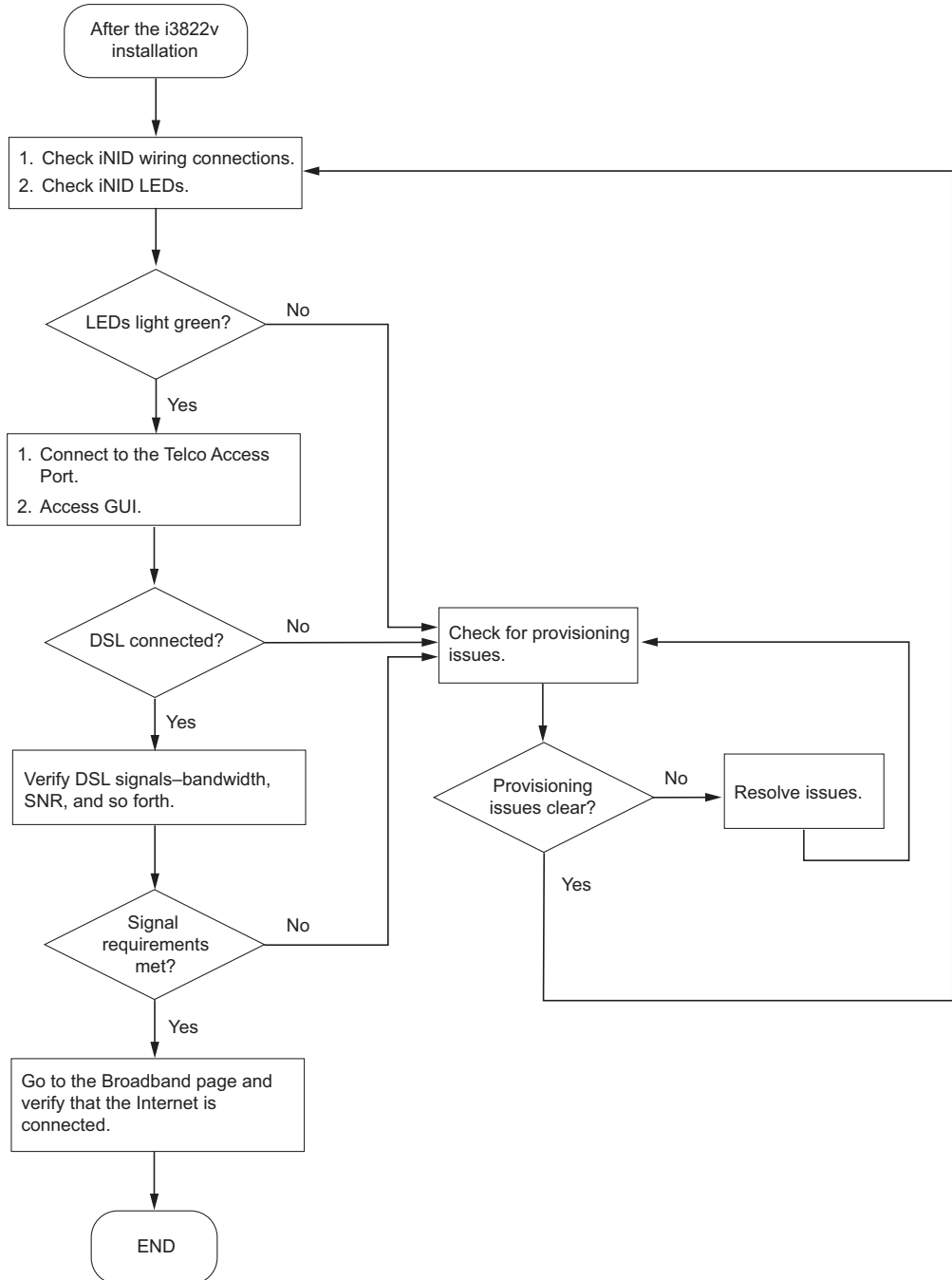
This section provides information and instructions to do the following:

- “Checking DSL links” on page 49
- “Checking the i3822V wiring” on page 50
- “Checking i3822V ports” on page 51
- “Checking i3822V LED status” on page 52
- “Performing an HPNA test” on page 54
- “Isolating HPNA issues” on page 54
- “Verifying voice services” on page 55
- “Verifying the iPSU connection” on page 55
- “Verifying the backup battery operation” on page 55
- “Bypassing i3822V electronics” on page 56



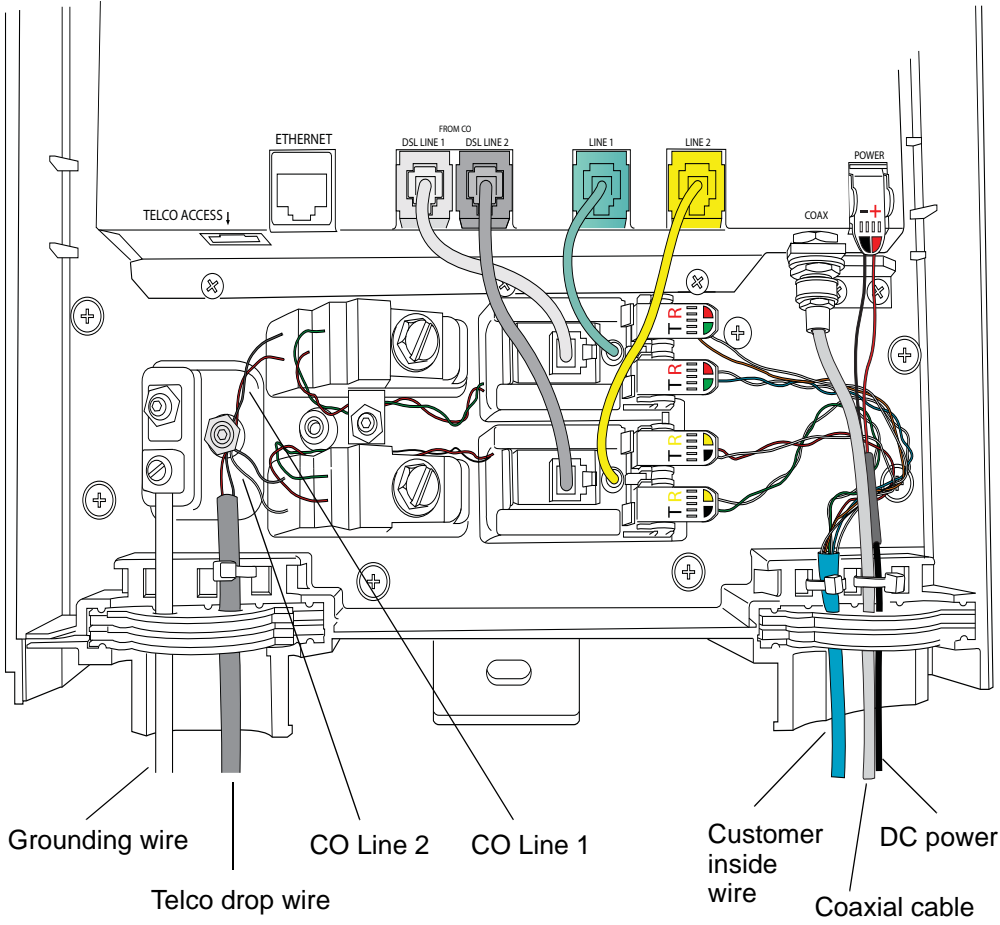
# Checking DSL links

After installing the i3822V and iPSU, verify that the DSL links are functioning and that Internet is accessible. The following figure shows a workflow diagram for testing and troubleshooting purposes.



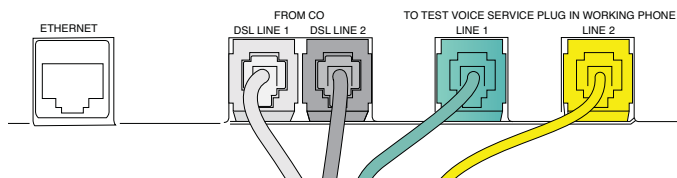
# Checking the i3822V wiring

Verify that the wiring is the same as the wiring shown in the following figure.



## Checking i3822V ports

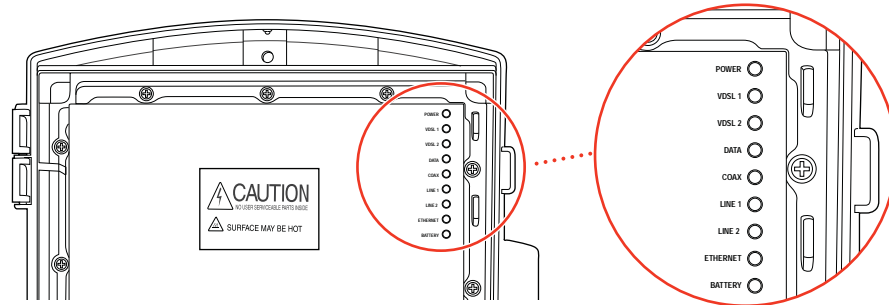
The following connectors are connected to their respective ports when shipped. Gently tug at the connections and ensure that the connectors are securely seated. See the following figure for port locations and refer to the table for their description.



| Ports        | Description  |
|--------------|--|
| TELCO ACCESS | <p>The RJ-45 craft port is accessed by service technicians for testing purposes. Access to inside units from equipment attached to the TELCO ACCESS port (for example, a laptop) is not permitted for security reasons. This includes network diagnostic functions, such as ping and traceroute, along with upgrades to an i38HG unit from a device attached to the tech access port.</p> <p><b>Note:</b> If required for configuration, connect your laptop to this port after the i3822V has powered up.</p> |
| ETHERNET     | <p>The standard IEEE 802.3 10/100 BASE-T ETHERNET port is disabled by default. When enabled, it supports other Ethernet devices, such as switches or hubs. This port is used only if the subscriber has Cat 5 wiring throughout the home that is terminated on the side of the home.</p>   |
| DSL LINE 1   | <p>The gray CO line feed 1 carries PSTN and VDSL2. It is pre-connected to a gray cable that is attached to a customer bridge module.</p>   |
| DSL LINE 2   | <p>The black CO line feed 2 is required to enable a second PSTN line and VDSL2 pair bonding (when available). It is pre-connected to a black cable that is attached to a customer bridge module.</p>   |
| LINE 1       | <p>The green phone jack is used for PSTN or voice service. It is pre-connected to a green cable that is attached to a customer bridge module.</p>  |
| LINE 2       | <p>The yellow phone jack is used for either PSTN or voice service. It is pre-connected to a yellow cable that is attached to a customer bridge module.</p>   |

## Checking i3822V LED status

When all connections are made and the power supply is turned on, the LEDs on the i3822V go through a series of checks and synchronization. The figure shows the LED locations. For LED status information, see “Interpreting the i3822V indicators” on page 30.



## Verifying broadband operation and statistics

When a computer is connected to the TELCO ACCESS port, you can check and verify operational and statistical information. DHCP is provided for this connection; therefore, neither a password nor manual configuration is required to be able to access the user interface.

To access the user interface **Home** page:

1. Connect a computer to the TELCO ACCESS port and open a browser.
2. Enter `http://172.17.0.1` on the browser address line.

The user interface **Home** page opens, displaying the aggregate upstream and downstream bandwidths.

**Note:** The IP address `http://172.17.0.1` is used when connected to the TELCO ACCESS port only. The IP address used from inside the home is `http://192.168.1.254` or `http://gateway.2Wire.net`.

## Viewing the DSL link status

1. On the **Home** page, click the **Broadband** icon.
2. On the **Broadband Status** page, observe the DSL link status.
  - *Connected.* Indicates that the DSL link is working and Internet is accessible, no further action is required.
  - *Not Connected.* Indicates that the DSL link is being trained or a problem with the physical line. Continue with the next step.

3. Check both VDSL 1 and VDSL 2 LEDs on the i3822V.
  - *Flashing green*. Indicates that the links are still being trained; wait until the lights turn solid green.
  - *Red*. Indicates there is a problem with the physical line.

## Viewing individual DSL and aggregate bandwidth

1. On the **Home** page, click the **Broadband** icon.
2. On the **Broadband Status** page, scroll down the page to view the DSL line 1 and DSL line 2 detailed information.
3. View the following information and compare it to your operational requirement.
  - Rate for both downstream and upstream directions
  - Max Rate for the downstream direction
  - Noise Margin
  - Attenuation
  - Output Power

**Note:** See “Testing cables” on page 53 if any of these readings are outside the specification.

## Testing cables

This section provides information to test the twisted pair and coaxial cables.

### Testing VDSL

Using a test toolkit, verify that the line is synchronized with the far-end equipment. The following measurements will be displayed. Compare them to your operational requirements.

- Downstream rate
- Upstream rate
- SNR margin for both downstream and upstream directions
- Maximum attainable rate for the downstream direction
- Attenuation for the downstream direction
- Power for the downstream direction

## Testing the bonded pair

There are no specific field installation test procedures for the bonded pair. The bonded pair works properly when the appropriate i3822V LEDs light. For more information, see “Interpreting the i3822V indicators” on page 30 and “Viewing individual DSL and aggregate bandwidth” on page 53 to view the aggregate bandwidth.

## Testing the coaxial cable

Test cable continuity on coaxial interfaces. Make sure that there is not a splitter or bridge tap running off of the COAX home run.

## Performing an HPNA test

HPNA requires one host adapter on the network at all times; however, there can be multiple client adapters on the same network. Each receiver location is configured as a client. The HPNA host is built into the i3822V. Using a test toolkit, you can terminate an HPNA line into the test set and synchronize with the far-end device (for example, the set-top box).

Perform an HPNA test to verify following:

- The HPNA signal and MAC address are detected on each receiver on the network.
- The minimum readings between each set-top box and i3822V. These measurements include:
  - Rate
  - Signal-to-Noise ratio
  - Packet loss

## Isolating HPNA issues

A failure in HPNA stations indicates that at least two devices operating over a section of coaxial cable have substantial signal loss between two or more HPNA devices. Use these tips to isolate the issue:

- Verify that all connectors are compression type and properly tighten it with a torque wrench at a minimum 15 in-lb, but do not exceed 20 in-lb.
- Verify that all splitters have been replaced with the approved splitters.
- Verify that the i3822V coaxial cable is connected on the IN port of the splitter.
- Use your COAX fault locator to check for the presence of a splitter, and make sure that there is not a splitter or bridge tap running off of the COAX home run.
- Test all cables again for excessive loss (greater than 0.5 dB per COAX run). If all connectors have been replaced and loss is still excessive, replace the COAX run.

## Verifying voice services

Both lines 1 and 2 can be used for voice and PSTN services.

To test the PSTN service on LINE 1:

1. Disconnect the connector from the LINE 1 port.
2. Connect a working phone in the LINE 1 port.
3. Listen for the dial tone.

To test the PSTN service on LINE 2:

1. Disconnect the connector from the LINE 2 port.
2. Connect a working phone in the LINE 2 port.
3. Listen for the dial tone.

## Verifying the iPSU connection

When connected and powered up, some of the iPSU LED indicators light up. For more information about iPSU status and what the LED indicators mean, see “Interpreting the iPSU indicators” on page 32.

## Verifying the backup battery operation

To verify the operational status of the backup battery:

1. Disconnect the power adapter of the iPSU from the AC power outlet.  
  
An audible alarm or a chirp should sound.
2. Press the SILENCE ALARM button on the iPSU to silence the audible alarm.
3. Observe the POWER indicator on the iPSU and the Battery indicator on the i3822V.

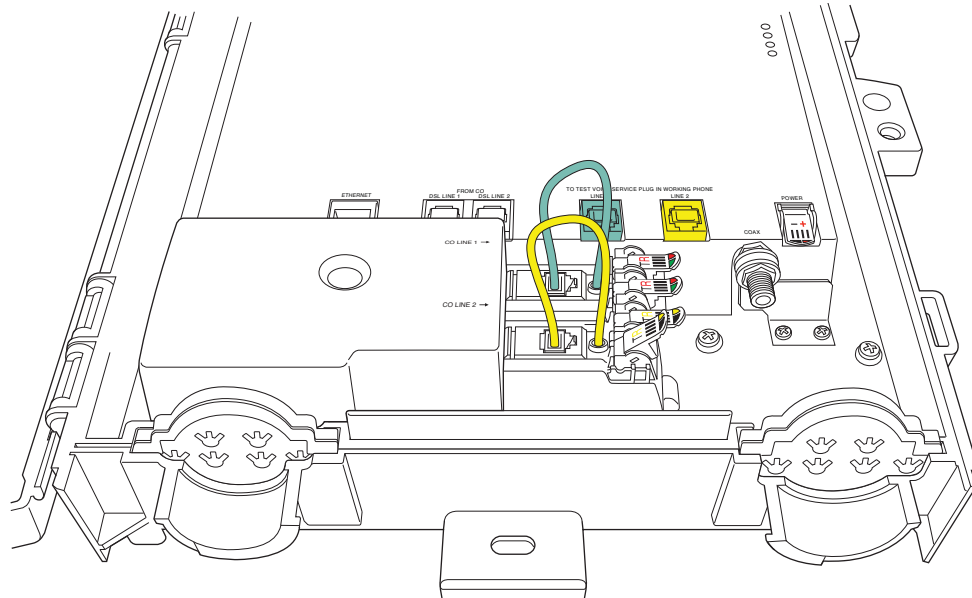
Both indicators should flash red.

4. Plug the power adapter back into the AC power outlet.

Both POWER and BATTERY indicators on the iPSU and the BATTERY indicator on the i3822V should turn solid green.

## Bypassing i3822V electronics

To isolate issues that are unrelated to the i3822V, you can rewire to remove the i3822V from service, completely bypassing all electronics on the board, while troubleshooting other problems in the home wiring.



To remove the i3822V from service:

1. Remove the connector from both DSL line 1 (grey) and DSL Line 2 (black) ports.
2. Remove the connector from both phone ports (grey and black) on the IDC.
3. Remove the connector from the Line 1 (green) port, and insert it into the grey phone port on the IDC.
4. Remove the connector from the Line 2 (yellow) port, and insert it into the black phone port on the IDC.



# Regulatory Information

# A

## Electrical

### AC adapter

The i38HG and 4181N models are intended to be powered by a listed 2Wire or Pace Direct Plug-In AC/DC Power adapter marked Class 2 or LPS and rated 5.1VDC, 2A.

The AC/DC Power adapter supplied with this product is designed to ensure your personal safety and to be compatible with this equipment. Please follow these guidelines:

- Do not use the adapter in a high moisture environment. Never touch the adapter when your hands or feet are wet.
- Allow adequate ventilation around the adapter. Avoid locations with restricted airflow.
- Connect the adapter to a proper power source. The voltage and grounding requirements are found on the product case and/or packaging.
- Do not use the adapter if the cord becomes damaged.
- Do not attempt to service the adapter. There are no serviceable parts inside. Replace the unit if it is damaged or exposed to excess moisture.

### Telecommunication cord

**CAUTION:** To reduce the risk of fire, use only No. 26 AWG or larger UL Listed or CSA Certified Telecommunication Line Cord.

### Internal telephone ports (VoIP)

Telecommunication equipment connected to this port (for example, via "Voice 1 & 2" port) should be UL Listed and the connections shall be made in accordance with Article 800 of the NEC.

### Location – electrical considerations

**CAUTION:** To reduce the risk of electrical shock or damage, do not use this product near water, including a bathtub, wash bowl, kitchen sink or laundry tub, in a wet basement, or near a swimming pool. Also, avoid using this product during electrical storms. Avoid locations near electrical appliances or other devices that cause

excessive voltage fluctuations or emit electrical noise (for example, air conditioners, neon signs, high-frequency or magnetic security devices, or electric motors).

## Equipment

### Repairs

Do not, under any circumstances, attempt any service, adjustments, or repairs on this equipment. Instead, contact your local Pace distributor or service provider for assistance. Failure to comply may void the product warranty.

### Location – environmental considerations

Do not plug the AC/DC power adapter into an outdoor outlet or operate the residential gateway outdoors. It is not waterproof or dustproof, and is for indoor use only. Any damage to the unit from exposure to rain or dust may void your warranty.

Do not use the residential gateway where there is high heat, dust, humidity, moisture, or caustic chemicals or oils. Keep the gateway away from direct sunlight and anything that radiates heat, such as a stove or a motor.

Do not place the gateway in enclosed areas having restricted airflow, such as, electrical cabinet, closet, or entertainment center. Allow adequate ventilation around the gateway for maximum air flow and cooling.

## Declaration of conformity

**Trade Name.** Pace Americas

**Responsible Party.** 2Wire, Inc. DBA Pace America

**Address.** 1704 Automation Parkway, San Jose, CA 95131

**Phone.** (408) 428-9500

### FCC / Industry Canada compliance

This device has been tested and certified as compliant with the regulations and guidelines set forth in the Federal Communication commission - FCC part 15, FCC part 68 and Industry Canada - ICES003 and RSS-210 Radio and telecommunication regulatory requirements.

Le présent matériel est conforme aux spécifications techniques applicables d'Industrie Canada. Cet appareil numérique de la classe [\*] est conforme à la norme NMB-003 du Canada.

**Manufacturer:** 2Wire, Inc. DBA Pace Americas

**Models:** i3822V, iPSU, iPSU2, i38HG, 4181N

## Part 15 of FCC rules / IC RSS-210

This device complies with part 15 of the FCC Rules and Industry Canada license-exempt RSS standard(s). 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 of the device.

Le présent appareil est conforme aux normes CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

**CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate this equipment.

## TIA 968 (Part 68 of FCC rules) / IC CS-03

This equipment complies with the Telecommunication Industry Association TIA-968 (FCC part 68) and Industry Canada CS-03 Telecommunication requirements. On the product is a label that contains, among other information, the IC and FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information may be provided to the telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0).

L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum RENs for the calling area.

This product cannot be used on telephone-company-provided coin service. Connection to Party Line Service is subject to state tariffs.

An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service. If trouble is experienced with this equipment, please contact Pace Americas, or your local Pace Americas distributor or service center in the U.S.A. for repair and/or warrant information. If the trouble is causing harm to the telephone network, the telephone company may request you to remove this equipment from the network until the problem is resolved. No repairs can be done by a customer on this equipment. It is recommended that the customer install an AC surge arrestor in the AC outlet to which this device is connected. This is to avoid damage to the equipment caused by local lightning strikes and other electrical surges.

## MPE/SAR/RF exposure information

This device was verified for RF exposure and found to comply with Council Recommendation 1999/519/EC and FCC OET-65 RF exposure requirements. This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.



**WARNING:** While this device is in operation, a separation distance of at least 20 cm (8 inches) must be maintained between the radiating antenna inside the EUT and the bodies of all persons exposed to the transmitter in order to meet the FCC RF exposure guidelines. Making changes to the antenna or the device is not permitted. Doing so may result in the installed system exceeding RF exposure requirements. This device must not be co-located or operated in conjunction with any other antenna or radio transmitter.

# Technical Specifications

# B

The i3822V outside unit operates under extreme weather conditions: driving rain, snow, and sleet. The following table lists the specifications for the outside as well as the power supply and inside units. Refer to the battery manufacturer's documentation for its specifications.

## Physical specifications

### i3822V (outside unit)

- 13.0 in. x 12.0 in. x 5.0 in. (33.0 cm x 30.5 cm x 12.7 cm)
- 6.4 lb. (2.9 kg)

### iPSU (power supply unit)

- 6.75 in. x 7.5 in. x 4.5 in. (17.1 cm x 19.1 cm x 11.4 cm)
- 2 lb. without battery; 11 lb. with battery (0.9 kg without battery; 5.0 kg with battery)

### i38HG (inside unit)

- 8.25 in. x 7.4 in. x 1.3 in. (21 cm x 18.8 cm x 3.4 cm)
- 1.1 lb. (.49 kg)

## Operating environment

### i3822V (outside unit)

- Temperature:  $-40^{\circ}$  to  $115^{\circ}$  F ( $-40^{\circ}$  to  $46^{\circ}$  C) + Solar Loading
- Humidity: 5% to 95% non-condensing
- Altitude: 0 to 13,000 feet (0 to 3,962 meters) mean sea level

## iPSU (power supply unit)

- Temperature: 41° to 122° F (5° C to 50° C)
- Humidity: 5% to 95% non-condensing
- Altitude: 0 to 13,000 feet (0 to 3,962 meters) mean sea level

## i38HG (inside unit)

- Temperature: 32° to 104° F (0° C to 40° C)
- Humidity: 5% to 95% non-condensing
- Altitude: 0 to 13,000 feet (0 to 3,962 meters) mean sea level

## Safety requirements



**WARNING:** This equipment contains integrated primary protection. This equipment is not suitable for installation in CO and network locations that contain other primary protection for OSP cable, such as EEEs (e.g., CEVs, and huts). The equipment may be located in EECs where appropriate installation practices are used. (For example, installation should not employ a separate primary protector for the equipment, appropriate cabling should be run to the equipment, etc.)



**WARNING:** For the purposes of determining placement and location of fuse links or fuse cable, the equipment shall be treated as a fuseless protector, regardless of any capability to provide fusing.



**WARNING:** The intra-building ports of the equipment or subassembly is suitable for connection to intrabuilding or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly **MUST NOT** be metallically connected to interfaces which connect to the OSP or its wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4) and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection in order to connect these interfaces metallically to OSP wiring.

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