Panasonic®

Operating Instructions

Wireless Repeater

Model No. WX-CR470

English **1**

Français **2**

Including Installation Instructions

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.
No model number suffix is shown in this Operating Instructions.

ENGLISH VERSION

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power Wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure of low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposures have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research. WH-CR470 has been tested and found to comply with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65 and RSS-102 of the IC radio frequency (RF) Exposure rules.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of this device.

WARNING:

- To prevent fire or electric shock hazard, do not expose this apparatus to rain or moisture.
- The apparatus should not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, should be placed on the apparatus.
- To prevent injury, this apparatus must be securely attached to the floor/wall/ceiling in accordance with the installation instructions.
- This product has no power switch.
  When turning off the power, disconnect the power supply from the 12 V DC power supply.
- The connections should comply with local electrical code.
- All work related to the installation of this product should be made by qualified service personnel or system installers.
- This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.
- MEDICAL:
  Consult the manufacturer of any personal medical devices, such as pacemakers, to determine if they are adequately shielded from external RF (radio frequency) energy. (The unit operates in the frequency range of 1920 MHz to 1930 MHz, and the power output level is 0.12 watts.)
  Do not use the unit in health care facilities if any regulations posted in the area instruct you not to do so. Hospitals or health care facilities may be using equipment that could be sensitive to external RF (radio frequency) energy.

For U.S.A.

CAUTION:

The FCC ID number for this radio equipment is listed below.

FCC ID: ACJ9TAWX-CR470

For U.S.A.

The model number and serial number of this product may be found on the surface of the unit.
You should note the model number and serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No.:

Serial No.:

CAUTION:
- These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.
- Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For Canada

ICES-003

CAN ICES-3(A)/NMB-3(A)

For Canada

RSS-Gen

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Limitation of Liability

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THE THIRD PARTY'S RIGHT.

Disclaimer of Warranty

IN NO EVENT SHALL Panasonic Corporation BE LIABLE TO ANY PARTY OR ANY PERSON, EXCEPT FOR REPLACEMENT OR REASONABLE MAINTENANCE OF THE PRODUCT, FOR THE CASES, INCLUDING BUT NOT LIMITED TO BELOW:

1. ANY DAMAGE AND LOSS, INCLUDING WITHOUT LIMITATION, DIRECT OR INDIRECT, SPECIAL, CONSEQUENTIAL OR EXEMPLARY, ARISING OUT OF OR RELATING TO THE PRODUCT;
2. PERSONAL INJURY OR ANY DAMAGE CAUSED BY INAPPROPRIATE USE OR NEGLIGENT OPERATION OF THE USER;
3. UNAUTHORIZED DISASSEMBLE, REPAIR OR MODIFICATION OF THE PRODUCT BY THE USER;
4. ANY PROBLEM, CONSEQUENTIAL INCONVENIENCE, OR LOSS OR DAMAGE, ARISING OUT OF THE SYSTEM COMBINED BY THE DEVICES OF THIRD PARTY;
5. PERSONAL INJURY, ANY LOSS OR DAMAGE, ARISING OUT OF THE DROP CAUSED BY THE INCOMPLETE INSTALLATION.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
9. Only use attachments/accessories specified by the manufacturer.
10. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

11. Unplug this apparatus during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Network Security

As you will use this product connected to a network, your attention is called to the following security risks.
1. Leakage or theft of information through this product
2. Use of this product for illegal operations by persons with malicious intent
3. Interference with or stoppage of this product by persons with malicious intent

It is your responsibility to take precautions such as those described below to protect yourself against the above network security risks.
- Use this product in a network secured by a firewall, etc.
- If this product is connected to a network that includes PCs, make sure that the system is not infected by computer viruses or other malicious entities (using a regularly updated anti-virus program, anti-spyware program, etc.).
- Protect your network against unauthorized access by restricting users to those who log in with an authorized user name and password.
- Apply measures such as user authentication for the servers and the connected devices to protect your network against leakage or theft of information, including image data, authentication information (user names and passwords), alarm mail information, FTP server information, etc.

Precautions

<u>**WARNING**</u>
- Only use the wall-mounting equipment (screws, washers) included with the unit.
- When this unit is no longer in use, make sure to detach it from the wall.
- Do not connect or disconnect the AC plug with wet hands.
- Disconnect the unit from the AC outlet and contact the dealer if:
  – The AC adaptor cord or AC plug becomes damaged or frayed.
  – The unit is exposed to rain, water, or any other liquid.
  – The unit is dropped or damaged.
  – Internal components are exposed due to damage.
  – The unit does not operate properly.
  – Performance deteriorates.
- Disconnect the unit from the AC outlet if the unit emits smoke, an abnormal smell, or makes unusual noise. These conditions can cause fire or electric shock. Confirm that smoke has stopped and contact an authorized service center.
- Clean the AC plug periodically with a soft, dry cloth to remove dust and other debris.
- Do not touch the unit or AC adaptor during a lightning storm.
- Use only the included AC adaptor (PQLV219).
- Do not allow anything to rest on the AC adaptor cord. Do not locate this unit where the AC adaptor cord may be stepped on or tripped on.

<u>**CAUTION**</u>
- The unit should be kept free of dust, moisture, high temperature (more than 40 °C [104 °F]), low temperature (less than 0 °C [32 °F]), and vibration, and should not be exposed to direct sunlight.

- The unit should not be placed outdoors (use indoors).
- The unit should not be placed near high-voltage equipment.
- The unit should not be placed on a metal object.
- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or metal plates in the wall.
- To prevent malfunction, deformity, overheating, rust, and discoloration, do not install or place equipment in the following types of locations:
  - Locations where air ventilation is poor.
  - Locations that may be exposed to sulphurous gas, such as near hot springs.
  - Near devices that emit heat, such as heaters.
  - Near devices that emit electromagnetic noise, such as radios or televisions.
  - Near devices that emit high-frequency noise, such as sewing machines or welders.
- Do not stretch or bend the cable. Also, do not allow anything to rest on the cable.
- The unit and the cable should never be placed near or over a radiator or other heat source.
- Do not bundle the cable that is connected to the unit with the AC power cords of machines located nearby.
- Make sure the cable is securely fastened to the wall.
- The AC adaptor is used as the main disconnect device. Ensure that the AC adaptor is located near the unit and is easily accessible.
- Disconnect the AC adaptor cord from the unit before cleaning. Clean the unit with a soft, dry cloth. Do not use liquid, aerosol cleaners, abrasive powders, or chemical agents to clean the unit.
- When left unused for a long period of time, disconnect the unit from the AC outlet.

Table of Contents

1

1 Overview

System Overview

A repeater is used when you need to extend the range of an All-In-One Headset and Belt Pack to include areas where reception was previously not available.
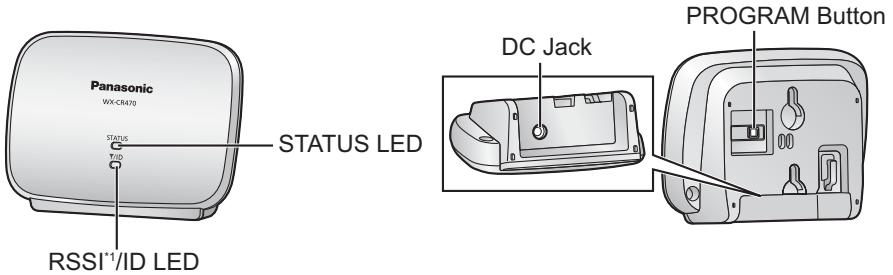One repeater can be registered to one lane of a Center Module (CM).
In the case of a Single Lane CM (WX-CC411), one repeater can be registered to the CM.
In the case of a Dual Lane CM (WX-CC412), two repeaters can be registered to the CM, one for Lane A, the other for Lane B.

System Connection Example
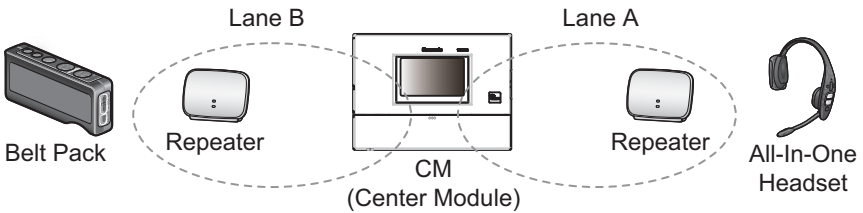
Names and Locations

*1 RSSI: Received Signal Strength Indication

Unpacking

Unpack the box and check the items below:

Repeater (WX-CR470)	1
AC Adaptor (PQLV219)	1
Screws	2

Washers	2

LED Indications

The LED patterns and the corresponding status of the repeater are as follows. For details, refer to "2 Procedure Overview (Page 13)".

LED		Status
STATUS	⬭ Amber On (Lane A) ⬭ Green On (Lane B)	CM registration is complete and relaying is possible.
	⬭ Amber Flashing (Lane A)	The signal is being relayed.
	⬭ Green Flashing (Lane B)	
RSSI/ID	⬭ Green Flashing	The repeater is registering to a CM.
	⬭ Off	The repeater is not registered to a CM.
	⬭ Green On	**STRONG** Shows the signal strength. Check this when performing installation (refer to "Installing the Repeater (Page 14)").
	⬭ Amber On	
	⬭ Red on	**WEAK**
	⬭ Red flashing	**The signal does not reach (out of range) and the repeater cannot operate.**

⬭ : On

⬭: Flashing

⬭ : Off

Compatible Devices

Compatible Device	Model No.
CM	• WX-CC411 • WX-CC412
All-In-One Headset Belt Pack	• WX-CH450 • WX-CT420

Specifications

Basic Specifications

Maximum Number of Simultaneous Calls	4[*1]
Maximum Number of Repeaters Registered to a CM	WX-CC411: 1
	WX-CC412: 2

[*1] The maximum number of simultaneous calls may decrease depending on the wireless environment or system configuration.

General Specifications

Dimensions	111 mm (W) × 82 mm (H) × 39 mm (D) (4-3/8 inches × 3-1/4 inches × 1-1/2 inches)
Weight	88 g (3.1 oz)
Power Supply	AC Adaptor (PQLV219) Input: AC 120 V, 60 Hz Output: DC 6.5 V, 500 mA
Operating Temperature	0 °C to 40 °C (32 °F to 104 °F)

RF Specifications

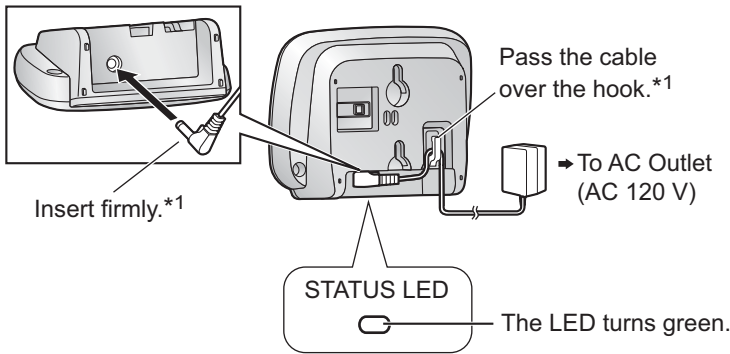| Wireless Interface	DECT 6.0
Radio Access Method	MultiCarrier TDMA-TDD
Frequency Band	1920 MHz to 1930 MHz
Number of Carriers	5
Carrier Spacing	1728 kHz
Bit Rate	1152 kbps
Modulation Scheme	GFSK

2   Procedure Overview

When registering and installing the repeater, follow the procedure below to ensure smooth operation.

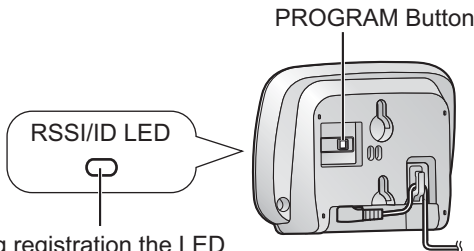## Registering the Repeater

IMPORTANT

Register the repeater to 1 CM only. You cannot register to multiple CMs.

1. Plug in the repeater's AC adaptor into an outlet near the CM.
- After plugging in, the STATUS LED will turn green.

Pass the cable over the hook.*1

Insert firmly.*1

→ To AC Outlet (AC 120 V)

STATUS LED

The LED turns green.

*1   The cable is already connected when purchased.

2. Set up the CM for registration.
- Refer to the Operating Instructions for the CM.

3. Within 2 minutes of setting up the CM for registration, press and hold down the repeater's PROGRAM button for approximately 3 seconds.

PROGRAM Button

RSSI/ID LED

During registration the LED flashes green and when registration is complete, the repeater restarts. After restarting, the LED turns green.

> **Note**
>> The LED may turn amber or red, or flash red, depending on the strength of the signal.

4. Unplug the repeater's AC adaptor and move the repeater to the installation location.
   - Unplugging the AC adaptor will not cancel the registration.

Deregistering the Repeater

1. Deregister from the CM side.
   - Refer to the Operating Instructions for the CM.
   - You do not need to deregister from the repeater side.

> **Notice**
> - Even after deregistration, the information of the CM that the repeater was registered to remains on the repeater.
>   To prevent misuse, unplug the AC adaptor of the repeater.
> - To return the repeater to its factory default state, refer to "4 Returning the Repeater to Factory Default (Page 19)".

Installing the Repeater

Follow the procedure below to install a repeater in a suitable location. The repeater must be registered to a CM beforehand (refer to "Registering the Repeater (Page 13)").

> **Note**
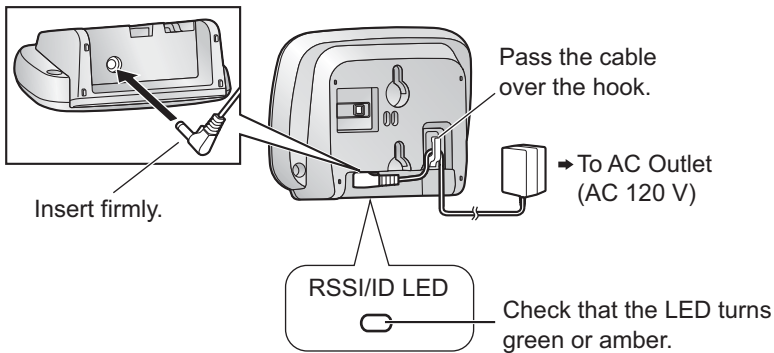>> An AC outlet is required at the installation location.

Coverage Area

As a guideline, the recommended distance for the following connections is 100 m (without obstacles).
- CM and repeater
- Repeater and All-In-One Headset or Belt Pack

Install the repeater where the signal is steady (the RSSI/ID LED should be green or amber) as far as possible from the CM. If the repeater is installed too near the CM, the All-In-One Headset or Belt Pack will receive the signal directly from the CM. In this case, the repeater will be ineffective.

1. Temporarily install the repeater within the CM coverage area.

Pass the cable over the hook.

→ To AC Outlet (AC 120 V)

Insert firmly.

RSSI/ID LED

Check that the LED turns green or amber.

1

2. Move the All-In-One Headset or Belt Pack to the area where they will be used and check that communication is smooth and there are no disconnections.
   • If communication is not smooth, re-install the repeater in a different location.
3. If the temporary installation location is suitable, install the repeater completely.
   • For details about wall mounting, refer to "3 Wall Mounting (Page 17)".

Installation Examples
   • If walls or obstacles exist between communicating devices, the signal may become weak or disconnected.
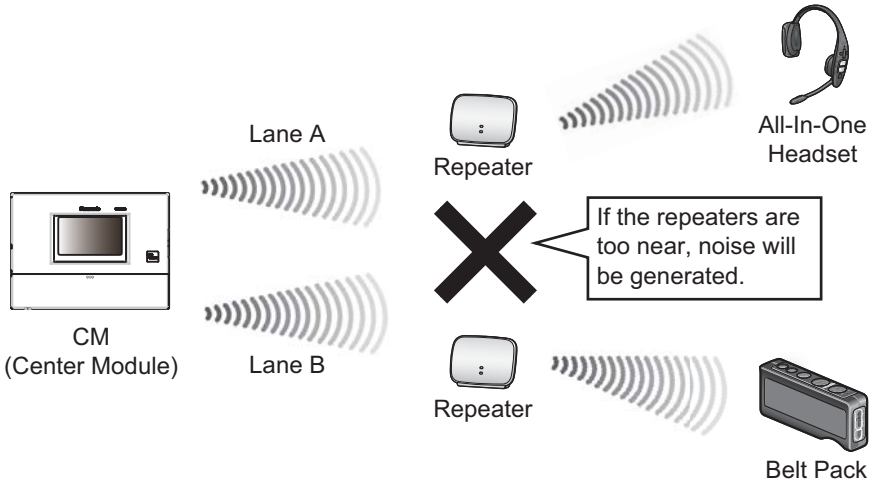

CM
(Center Module)

Lane B   Lane A

Belt Pack

Repeater   Repeater

All-In-One Headset
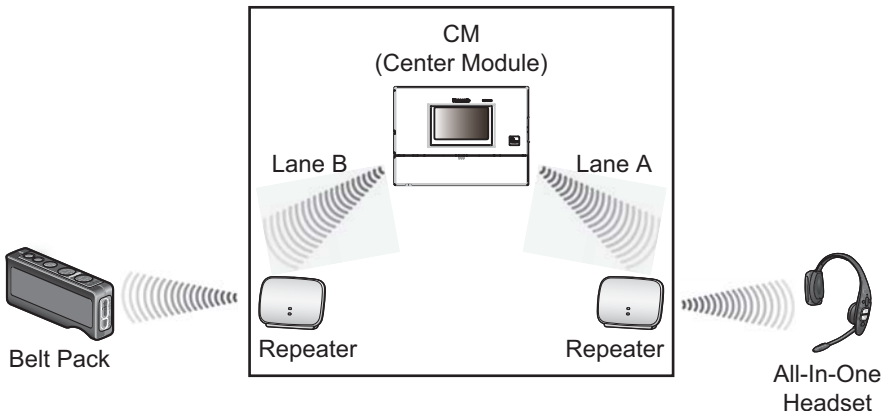
- **Do not install repeaters as follows:**
  If 2 repeaters are registered to the same CM, do not place them near each other.
  Doing so may cause signal interference or noise.

  <u>**Notice**</u>

  Ensure that repeaters are installed at least 50 cm apart. However, this distance
  may vary depending on the environment.
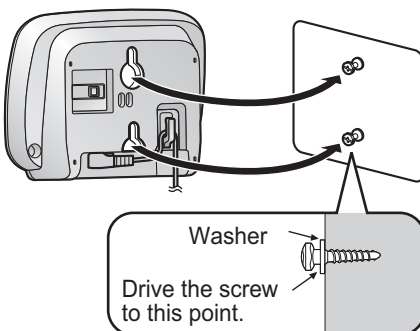
3 Wall Mounting

Mounting

WARNING

- **Make sure that the wall that the unit will be attached to is strong enough to support the unit (approx. 88 g [3.1 oz]). If not, it is necessary for the wall to be reinforced.**
- **Only use the wall-mounting equipment (screws, washers) included with the unit.**
- **When this unit is no longer in use, make sure to detach it from the wall.**

CAUTION

- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or metal plates in the wall.
- Do not stretch or bend the cable. Also, do not allow anything to rest on the cable.
- The unit and the cable should never be placed near or over a radiator or other heat source.
- Do not bundle the cable that is connected to the unit with the AC power cords of machines located nearby.
- Make sure the cable is securely fastened to the wall.

1. Place the reference for wall mounting on the wall to mark the 2 screw positions.
2. Install the 2 screws and washers (included) into the wall.
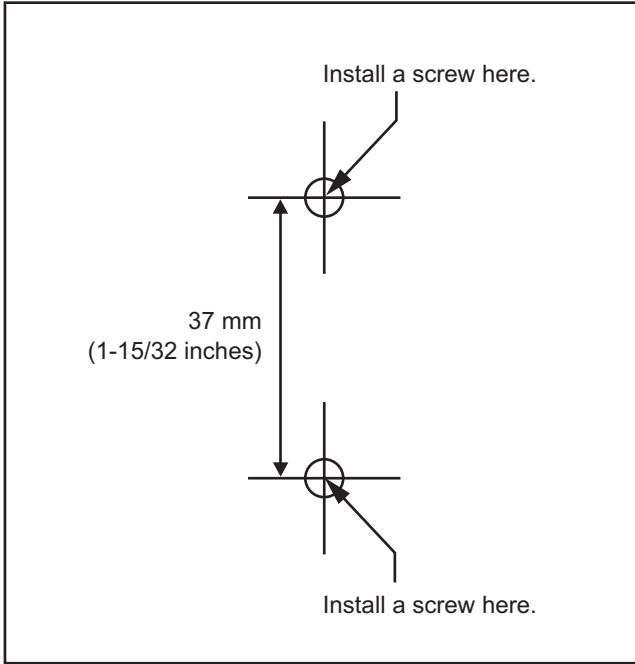
Note

- Make sure that the screw heads are at the same distance from the wall.
- Install the screws perpendicular to the wall.

3. Hook the repeater on the screw heads.

Washer

Drive the screw to this point.

Reference for Wall Mounting

Print this page and use as a reference for wall mounting.

Install a screw here.

37 mm
(1-15/32 inches)

Install a screw here.

<u>**Note**</u>

Make sure to set the print size to correspond with the size of this page. If the dimension of the paper output still deviates slightly from the measurement indicated here, use the measurement indicated here.

4   Returning the Repeater to Factory Default

After using the repeater, you can return it to its factory default state by pressing the button on the back of the repeater.

1. While pressing the PROGRAM button, plug in the repeater's AC adaptor, and hold the PROGRAM button for more than 10 seconds.

   • The STATUS LED turns amber, and then flashes amber.

PROGRAM Button

→ To AC Outlet
   (AC 120 V)
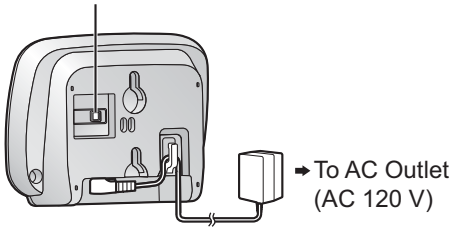
1

Notice

The CM registration information will also be deleted. To use the same CM again, reperform registration (refer to "Registering the Repeater (Page 13)").

5 Troubleshooting

PROBLEM/QUESTION	PROBABLE CAUSE/ANSWER	PAGE
• The RSSI/ID LED does not turn on.	• The repeater is not registered. → Register the repeater.	13
• The RSSI/ID LED flashes red.	• The CM is not turned on. → Turn on the CM.	–
	• The signal is too weak and the repeater is out of range. → Install the repeater where the signal is steady and the RSSI/ID LED is green or amber.	14
• Can I register to more than 1 CM at the same time?	• You cannot register 1 repeater to more than 1 CM.	–
• Can I install the repeater where the RSSI/ID LED is not green?	• You can install the repeater where the RSSI/ID LED is red, but communication may be unstable. It is recommended to install the repeater where the signal is steady and the RSSI/ID LED is green or amber.	14
• Can I install the repeater outside?	• Do not install the repeater outside.	–
• Communication quality does not improve after installing the repeater.	• Is the RSSI/ID LED red or flashing red? → Re-install the repeater in an area where the RSSI/ID LED is green or amber.	14
	• Is the repeater installed near the CM? → Installing the repeater near to the CM may cause the All-In-One Headset or Belt Pack to receive the signal directly from the CM, making the repeater ineffective. Re-install the repeater nearer to where the All-In-One Headset or Belt Pack is used.	14

1