ICOM

Icom Inc.

INSTRUCTION MANUAL

VHF REPEATER
ID-RP2010V
UHF REPEATER
ID-RP4010V
1.2 GHz REPEATER
ID-RP1200VD

Icom Inc.

Thank you for choosing this Icom product. This product is designed and built with Icom's state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

This product combines traditional analog technologies with the new digital technology, Digital Smart Technologies for Amateur Radio (D-STAR), for a balanced package.

■ Important

READ ALL INSTRUCTIONS carefully and completely before using the repeater.
SAVE THIS INSTRUCTION MANUAL— This instruction manual contains important safety and operating instructions for the repeater.

The Utility for ID-RP3 is required for programming the repeater. Ask your dealer for details of the utility.

■ Features

● **RF Direct Sampling System (ID-RP2010V/ID-RP4010V)**
The repeater employs an RF direct sampling system. RF signals are directly converted to digital data in the ADC, and then processed in the FPGA. This system is a leading technology, marking an epoch in amateur radio.

● **DD Mode Operation (ID-RP1200VD)**
The ID-RP1200VD works in either DV or DD mode (switchable). DD mode provides data communication and Internet access at 128 kbps.

● **SD card slot**
An SD card is usable for storing or writing setting data, updating firmware, and backing up or restoring the settings.

● **Connecting to the ID-RP2C**
Supports a connection to the ID-RP2C.

● **Analog FM mode operation**
Usable as an analog FM repeater.

■ Explicit definitions

WORD	DEFINITION
⚠ **DANGER!**	Personal death, serious injury or an explosion may occur.
⚠ **WARNING!**	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	Recommended for optimum use. No risk of personal injury, fire or electric shock.

■ Voice cording technology

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding Technology is licensed solely for use within this Communications Equipment.
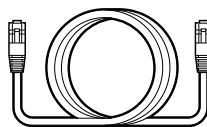The user of this Technology is explicitly prohibited from attempting to extract, remove, decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form.
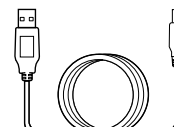U.S. Patent Nos.
#8,595,002, #8,359,197, #8,315,860, #8,200,497, #7,970,606, #6,912,495 B2.
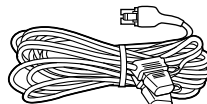
■ Supplied accessories

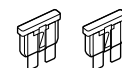Ethernet cable
(0.6 m, 2 feet)

USB cable
(1 m, 3.2 feet)

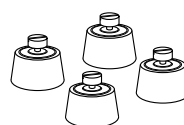DC power cable
(3 m, 9.8 feet)

Spare fuse*

Spare fuse
(5 A)

Rubber feet

Allen wrench

*ID-RP2010V: 25 A fuses are supplied.
ID-RP4010V/ID-RP1200VD: 10 A fuses are supplied.
ⓘ Some accessories are not supplied, or the shape is different, depending on the repeater version.

■ Precautions

⚠ **DANGER HIGH RF VOLTAGE! NEVER** touch an antenna or antenna connector while transmitting. This could cause an electrical shock or burn.

⚠ **DANGER HIGH RF VOLTAGE! NEVER** install the antenna at any place that person easily touch the antenna while transmitting. This could cause an electrical shock or burn.

⚠ **WARNING! NEVER** apply AC power to the [DC13.8V] socket on the repeater rear panel. This could cause a fire or damage the repeater.

⚠ **WARNING! NEVER** apply more than 16 V DC to the [DC13.8V] socket on the repeater rear panel. This could cause a fire or damage the repeater.

⚠ **WARNING! NEVER** remove the fuse holder on the DC power cable. Excessive current caused by a short could cause a fire or damage the repeater.

⚠ **WARNING! NEVER** reverse the DC power cable polarity. This could cause a fire or damage the repeater.

⚠ **WARNING! NEVER** let metal, wire or other objects contact the inside of the repeater, or make incorrect contact with connectors on the rear panel. This could cause an electric shock or damage the repeater.

⚠ **WARNING! NEVER** operate or touch the repeater with wet hands. This could cause an electric shock or damage to the repeater.

⚠ **WARNING! NEVER** operate the repeater if you notice an abnormal odor, sound or smoke. Immediately turn OFF the power and/or remove the DC power cable. Contact your Icom dealer or distributor for advice.

⚠ **WARNING! NEVER** put the repeater on an unstable place where the repeater may suddenly move or fall. This could cause an injury or damage the repeater.

CAUTION: DO NOT expose the repeater to rain, snow or any liquids. They could damage the repeater.

CAUTION: DO NOT use or leave the repeater in areas with temperatures below –10°C (+14°F) or above +50°C (+122°F) Be aware that temperatures can exceed 80°C (+176°F), resulting in permanent damage to the repeater if left there for extended periods.

CAUTION: DO NOT place or leave the repeater in excessively dusty environments. This could damage the repeater.

CAUTION: DO NOT use harsh solvents such as benzine or alcohol when cleaning. This could damage the repeater surfaces. If the surface becomes dusty or dirty, wipe it clean with a soft, dry cloth.

CAUTION: DO NOT put anything on top of the repeater. This will obstruct heat dissipation.

BE CAREFUL! The repeater rear panel will become hot when continuously transmitting for long periods of time.

NEVER leave the repeater in an insecure place to avoid use by unauthorized persons.

Icom is not responsible for the destruction, damage to, or performance of any Icom or non-Icom equipment, if the malfunction is because of:
• Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightning, or other natural disasters, disturbances, riots, war, or radioactive contamination.
• The use of Icom repeaters with any equipment that is not manufactured or approved by Icom.

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■ Précautions (pour le Canada)

⚠ **AVERTISSEMENT TENSION À HAUTES RF! NE JAMAIS** toucher l'antenne ou le connecteur de l'antenne pendant une transmission. Cela pourrait causer un choc électrique ou des brulures.

⚠ **AVERTISSEMENT TENSION À HAUTES RF! NE JAMAIS** installer l'antenne à n'importe quel endroit où cette personne touche facilement l'antenne tout en transmettant. Cela pourrait causer un choc électrique ou des brulures.

⚠ **AVERTISSEMENT! NE JAMAIS** raccorder de courant alternatif à la prise [DC13.8V] sur le panneau arrière de le répéteur. Cela pourrait causer un incendie ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** raccorder plus de 16 V CC à la prise [DC13.8V] sur le panneau arrière de le répéteur. Cela pourrait causer un incendie ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** retirer le porte-fusible du câble d'alimentation CC. Un courant excessif provoqué par un court-circuit pourrait causer un incendie ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** inverser la polarité du câble d'alimentation CC. Cela pourrait causer un incendie ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** laisser du métal, du fil ou d'autres objets entrer en contact avec l'intérieur du répéteur ou raccorder incorrectement les connecteurs sur le panneau arrière. Cela pourrait provoquer une électrocution ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** utiliser ou toucher le répéteur avec des mains mouillées. Cela pourrait causer un choc électrique ou endommager le répéteur.

⚠ **AVERTISSEMENT! NE JAMAIS** faire fonctionner le répéteur si vous détectez une odeur, un bruit ou une fumée anormaux. Mettre immédiatement l'appareil hors tension et/ou débrancher le câble d'alimentation CC. Contactez votre revendeur ou distributeur Icom pour obtenir des conseils.

⚠ **AVERTISSEMENT! NE JAMAIS** placer le répéteur sur un support instable où il risque de se déplacer brusquement ou de tomber. Cela pourrait causer des blessures ou endommager le répéteur.

MISE EN GARDE: NE JAMAIS exposer le répéteur à la pluie, à la neige ou à tout liquide. Cela pourrait endommager le répéteur.

MISE EN GARDE: NE PAS utiliser ou laisser le répéteur dans des zones avec des températures inférieures à –10°C (+14°F) ou supérieures à +50°C (+122°F). Sachez que les températures peuvent dépasser +80°C (+176°F), ce qui peut endommager définitivement le répéteur s'il est laissé là pendant de longues périodes.

MISE EN GARDE: NE PAS placer ou laisser le répéteur dans des environnements excessivement poussiéreux. Cela pourrait endommager le répéteur.

MISE EN GARDE: NE PAS utiliser de solvants agressifs tels que du Benzène ou de l'alcool lors du nettoyage. Cela risque d'endommager les surfaces de le répéteur. Si la surface devient poussiéreuse ou sale, la nettoyer avec un tissu doux et sec.

MISE EN GARDE: NE PAS mettre quoi que ce soit sur le dessus du répéteur. Cela obstruera la dissipation de la chaleur.

MISE EN GARDE: NE PAS utiliser de microphones autres que Icom. Les microphones des autres fabricants risquent de disposer d'affectation de broches différentes, et pourrait endommager le connecteur et/ou le répéteur.

**MISE EN GARDE:** Le panneau arrière de répéteur chauffe en cas d'utilisation continue pendant une longue duré.

NE JAMAIS laisser le répéteur dans un endroit peu sûr pour éviter que des personnes non autorisées ne l'utilisent.

■ Table of contents

1 **SYSTEM OUTLINE**

■ **System outline**

This repeater is used to build a network that connects distant repeaters through an LTE network[*1] or the Internet. Repeaters that do not have a gateway server can communicate with other repeaters by adding assist repeaters and controllers.
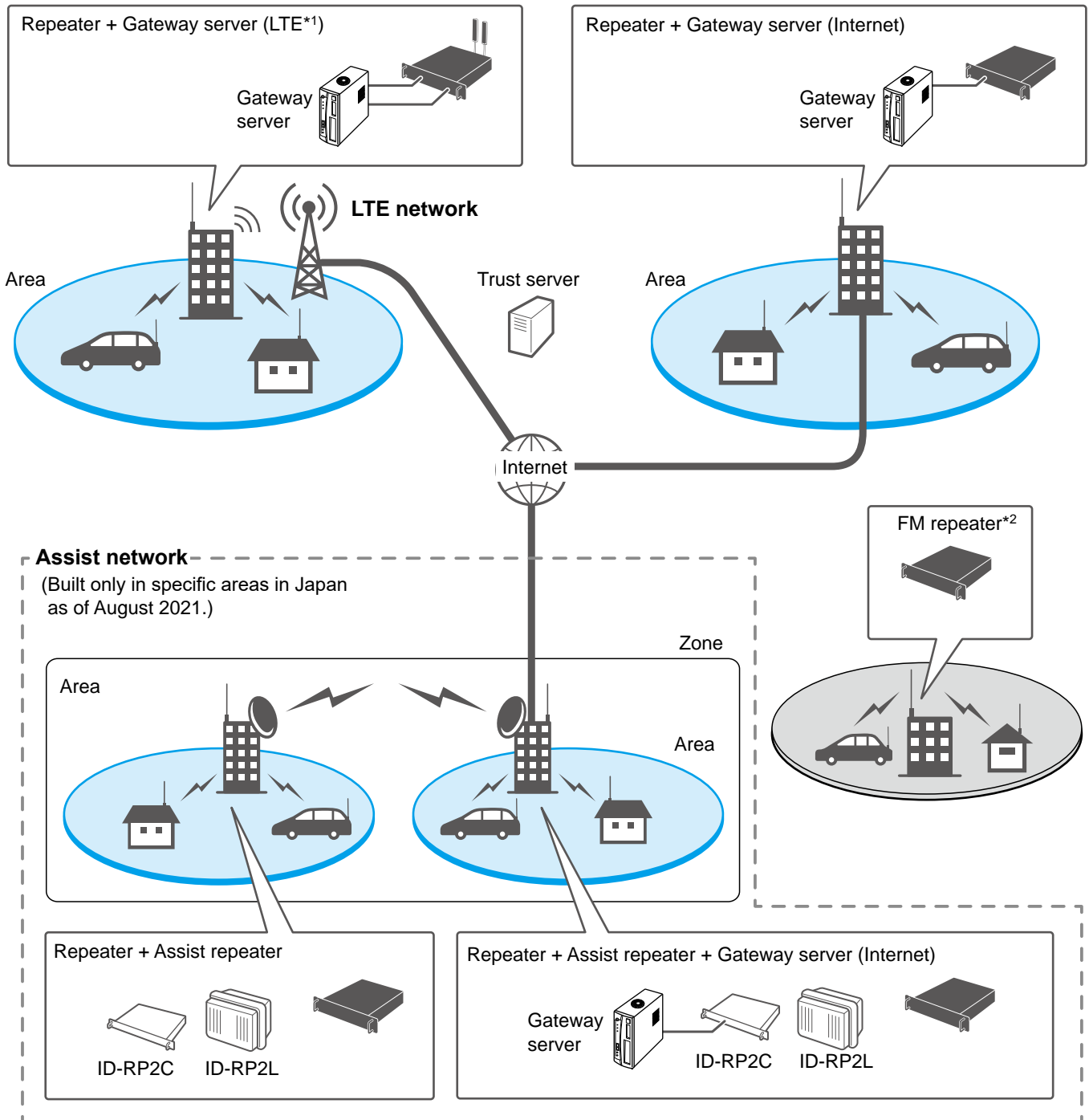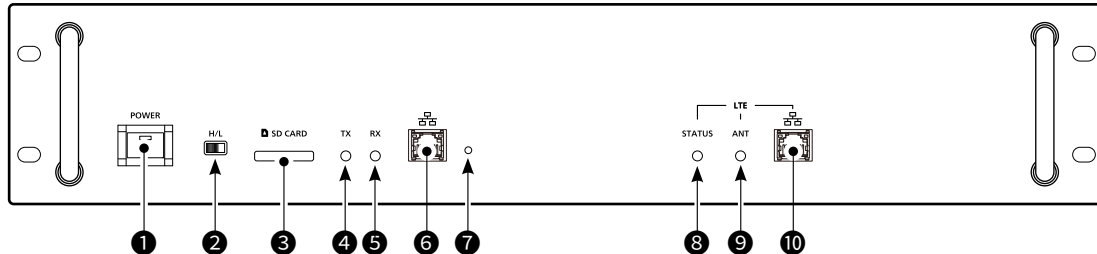

[*1] Operating the repeater on the LTE network requires following:
  • An optional UX-262 LTE unit
  • Connecting to a Gateway Server
[*2] The FM repeater function is not usable in combination with other repeater functions.

■ Front panel

❶ POWER SWITCH [POWER]
- Push to turn the repeater ON.
  ⓘ Lights green when the repeater is ON.
- Hold down to turn the repeater OFF.

❷ HIGH/LOW POWER SELECT SWITCH [H/L]
- Sets the output power to High (25 W) or Low (2.5 W). (ID-RP2010V/ID-RP4010V)
- Sets the output power to High (10 W) or Low (1.0 W). (ID-RP1200VD)

❸ SD CARD SLOT [SD CARD] (p. 10)
Accepts an SD card. Used for firmware updates, importing and exporting setting data and voice data.

❹ TRANSMIT INDICATOR [TX]
Lights red while transmitting.
ⓘ Blinks when an error has occurred.

❺ RECEIVE INDICATOR [RX]
Lights green while receiving.
ⓘ Blinks when the firmware is successfully updated.

NOTE: Both [TX] and [RX] blinks at the same time when the repeater is reset to the default value.

❻ ETHERNET CONNECTOR [LAN 1]
Connects to a Gateway server PC.
ⓘ If multiple repeaters are connected, and the ID-RP1200VD operating in DD mode is included, connect the gateway server to the ID-RP1200VD. The system does not work if it is connected to other repeaters.

❼ RESET SWITCH
The switch used for special operation such as resetting the repeater, and so on.
ⓘ Push using the tip of the pen.
ⓘ The switch is also used when updating the firmware.

❽ LTE STATUS [STATUS]*
Indicates the LTE status.

ⓘ About the LED indication
- Lights while communicating.
- Blinks while registering to an LTE network.
- Slowly blinks when a communication failure occurs.
- Does not light when SIM cards are not inserted, or the LTE connection setting is not applied.

❾ LTE ANTENNA INDICATOR [ANT]*
Indicates the relative receive signal strength level.

ⓘ About the LED indication
- Lights when the signal strength is good.
- Blinks when the signal strength is poor.
- Does not light when out of service ,or the repeater cannot connect to an LTE network.
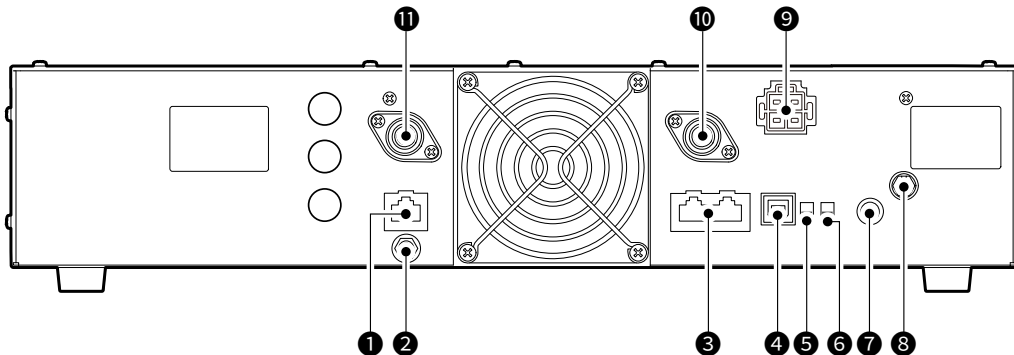
❿ ETHERNET CONNECTOR [LAN 2]*
Connects to a Gateway server PC when operating in the LTE mode.
ⓘ If multiple repeaters are connected, and the ID-RP1200VD operating in DD mode is included, connect the gateway server to the ID-RP1200VD. The system does not work if it is connected to other repeaters.

*❽, ❾, and ❿ are used only when an optional LTE unit is installed.

■ Rear panel

ID-RP2010V/ID-RP4010V:

❶ CONT I/O PORT [CONT I/O] (p. 15)
Connects to the ID-RP2C with the supplied control cable for serial data communications.

❷ REFERENCE SIGNAL INPUT CONNECTOR [REF IN 10 MHz] (p. 16)
Inputs a 10 MHz reference signal for adjusting the reference signal.

❸ RPT1/RPT2 PORT [RPT1]/[RPT2] (p. 16)
Connects to other repeaters with the supplied control cable for data communications, when additional repeater modules are installed in the local repeater.

❹ USB PORT [USB] (p. 16)
Connects to a PC through a USB cable (A - B type) to program the repeater.

❺ CONT I/O RPT SWITCH [CONT I/O RPT] (p. 8)
Select to use the [RPT1]/[RPT2] or [CONT I/O]. When using the ID-RP2C as gateway or assist controller, set to [CONT I/O].
ⓘ Turn the repeater OFF and then restart it to apply the change.

❻ DV/DD SELECT SWITCH [DV/DD]
This switch on the ID-RP2010V/ID-RP4010V does not work.

❼ SERVICE JACK [SERVICE] (p. 16)
Outputs the receive audio and DTMF tones.

❽ GROUND TERMINAL [GND]
Connects to a ground to prevent electrical shocks, TVI, BCI and other problems.

❾ POWER CONNECTOR [DC13.8V] (p. 15)
Connects to a 13.8 V DC through the supplied DC power cable.

Antenna connectors:
The placement of the antenna connector differs depending on the repeater.

ID-RP2010V:

❿ RX ANTENNA CONNECTOR [RX ANT] (p. 16)
Connects to a 50 Ω receive antenna.

⓫ TX ANTENNA CONNECTOR [TX ANT] (p. 16)
Connects to a 50 Ω transmit antenna.

ID-RP4010V:

❿ TX ANTENNA CONNECTOR [TX ANT] (p. 16)
Connects to a 50 Ω transmit antenna.

⓫ RX ANTENNA CONNECTOR [RX ANT] (p. 16)
Connects to a 50 Ω receive antenna.

ID-RP1200VD:
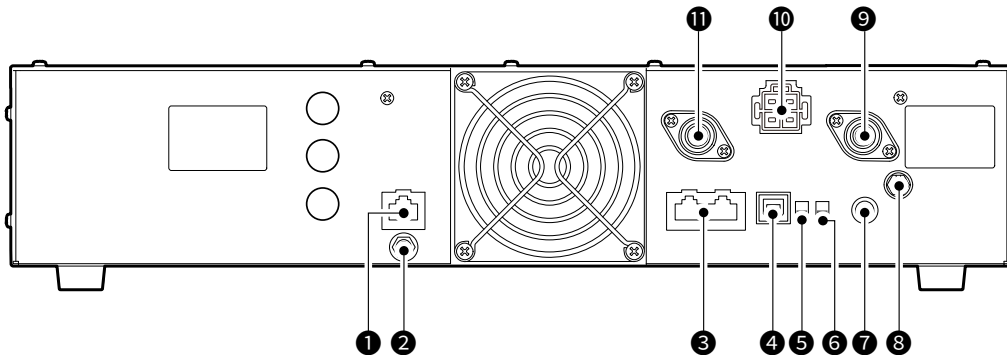
❶**CONT I/O PORT [CONT I/O]** (p. 15)
Connects to the ID-RP2C with the supplied control cable for serial data communications.
ⓘ Not usable in DD mode.

❷**REFERENCE SIGNAL INPUT CONNECTOR [REF IN 10 MHz]** (p. 16)
Inputs a 10 MHz reference signal for adjusting the reference signal.

❸**RPT1/RPT2 PORT [RPT1]/[RPT2]** (p. 16)
Connects to other repeaters with the supplied control cable for data communications, when additional repeater modules are installed in the local repeater.

❹**USB PORT [USB]** (p. 16)
Connects to a PC through a USB cable (A - B type) to program the repeater.

❺**CONT I/O RPT SWITCH [CONT I/O RPT]** (p. 8)
Select to use the [RPT1]/[RPT2] or [CONT I/O]. When using the ID-RP2C as gateway or assist controller, set to [CONT I/O].
ⓘ Turn the repeater OFF and then restart it to apply the change.

❻**DV/DD SELECT SWITCH [DV/DD]** (p. 7)
Select an operating mode from DD mode or DV mode.

❼**SERVICE JACK [SERVICE]** (p. 16)
Outputs the receive audio and DTMF tones.

❽**GROUND TERMINAL [GND]**
Connects to a ground to prevent electrical shocks, TVI, BCI and other problems.

❾**TX ANTENNA CONNECTOR [TX ANT]** (p. 16)
Connects to a 50 Ω transmit antenna.
ⓘ In DD mode, the connector is used as a both TX and RX antenna connector.

❿**POWER CONNECTOR [DC13.8V]** (p. 15)
Connects to a 13.8 V DC through the supplied DC power cable.

⓫**RX ANTENNA CONNECTOR [RX ANT]** (p. 16)
Connects to a 50 Ω receive antenna.
ⓘ In DD mode, the connector is not used.

3 INSTALLATION AND CONNECTION

■ Select a location

Select a location for the repeater that enables adequate air circulation, free from extreme heat, cold or vibration, and other electromagnetic sources.
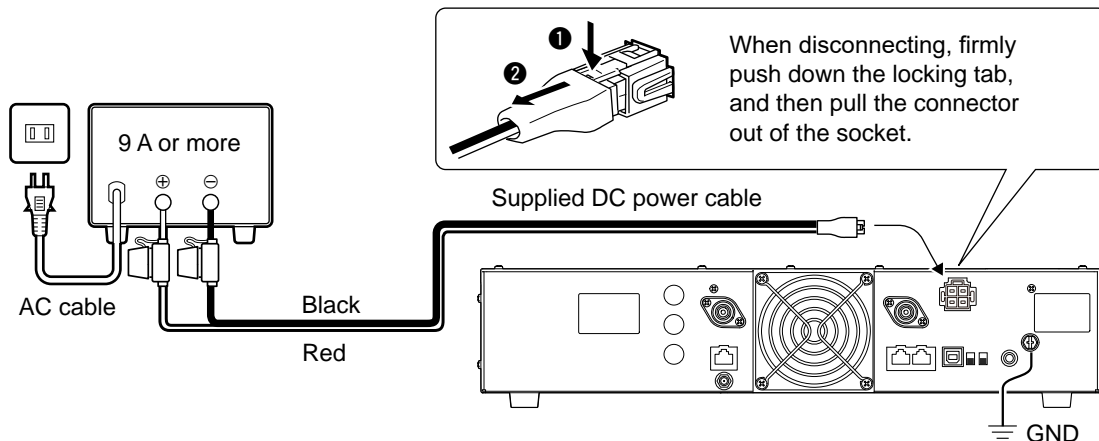
Never place the repeater in areas such as:
• Temperatures below –10°C (+14°F) or above +50°C (+122°F).
• An unstable place that slopes or vibrates.
• In direct sunlight.
• High humidity and temperature environments.
• Dusty environments.
• Noisy environments.

■ Connecting a power source

Connect a third-party DC 13.8 V external power source. The power source that meets the following conditions is preferable.
 • DC 13.8 V (Capacity: At least 9 Amps)
 • A power source with an over current protective line, and low voltage fluctuation or ripple.
ⓘ Confirm that the repeater is turned OFF before connecting the DC power cable.

9 A or more

When disconnecting, firmly push down the locking tab, and then pull the connector out of the socket.

Supplied DC power cable

AC cable

Black

Red

GND

■ Grounding

Ground the repeater through the [GND] terminal on the rear panel to prevent electrical shock, television interference (TVI), broadcast interference (BCI), and other problems.
For best results, connect a heavy gauge wire or strap to a long earth-sunk copper rod.
Make the distance between the [GND] terminal and ground as short as possible.
ⓘ We recommend attaching an coaxial arrester (User supplied) to the antenna to prevent lightning surges.
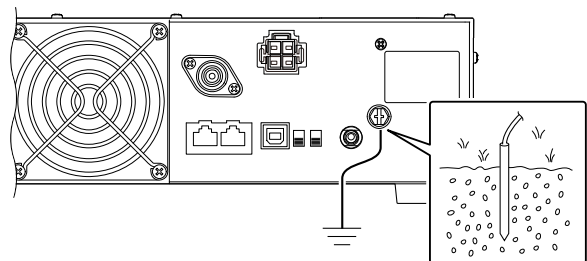
⚠ **WARNING! NEVER** connect the [GND] terminal to a gas or electric pipe, since the connection could cause an explosion or electric shock.

■ Installing in a system rack

This repeater is designed to be installed in a standard EIA 19-inch rack.

NOTE:
• Be sure to secure the repeater's front panel to the system rack.
• Use the rack that can hold the weight of approximately 6 kg (13.2 lbs). When installing multiple repeaters, make sure the rack can withstand the total weight, including the connected cables.
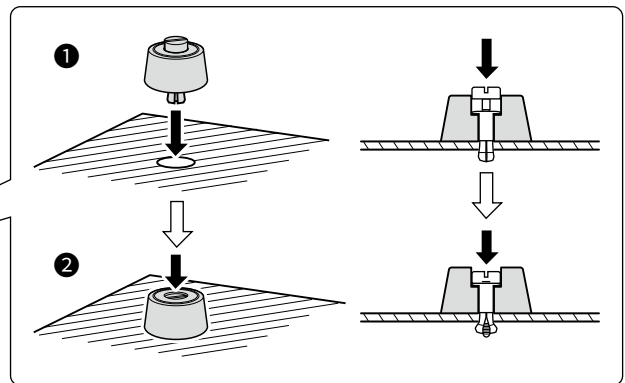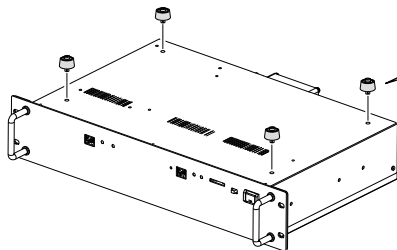
3

19-inch rack
(User supplied)
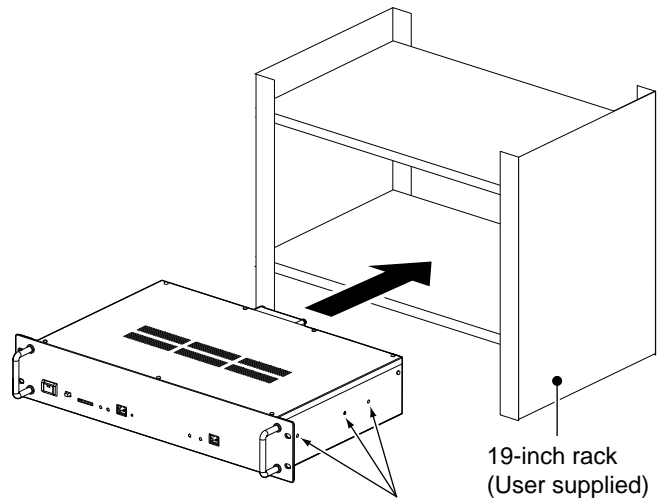
ⓘ You can also attach to the slide rail using M4 screw holes.

■ Attaching the rubber feet

For desktop installations, attach the supplied rubber feet onto the bottom of the repeater, as shown below.

⚠ **WARNING! DO NOT** stack multiple repeaters on the desk. This could increase the repeater temperature and damage repeaters or cause fire or burns.

❶

❷

■ Connecting the Utility software

Sets the transmit and receive frequency, repeater call sign and other function settings using the Utility for ID-RP3.
Ask your dealer for details of the utility.
Connect the repeater and the Windows PC that the Utility for ID-RP3 is installed in, as shown below.
To use the USB cable between the repeater and a PC, you must first install a USB driver.
Download the latest USB driver and installation guide on the Icom website.
https://www.icomjapan.com/support/

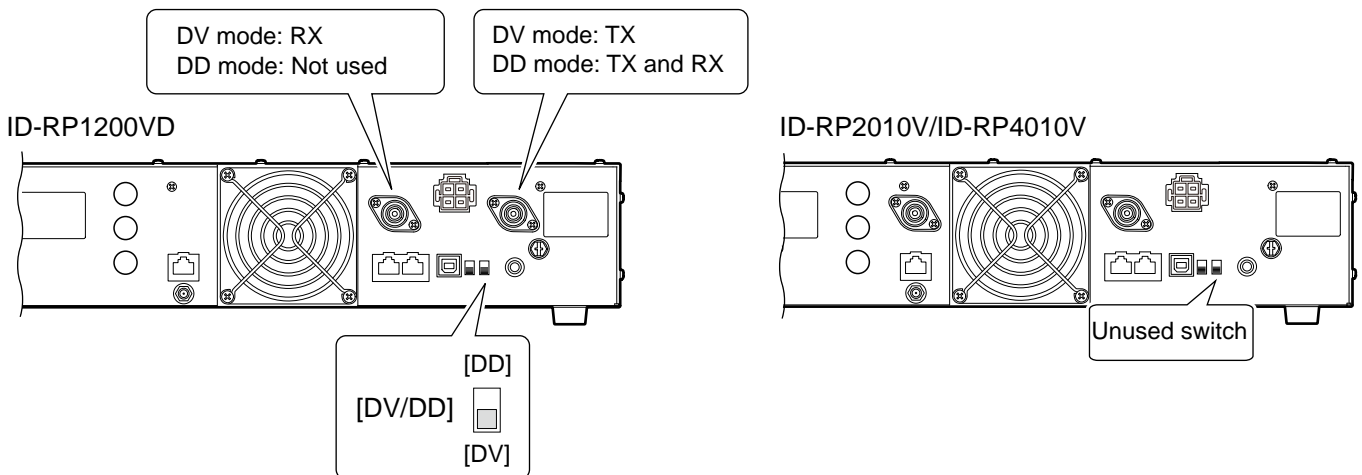
PC

Type-B

USB cable (Supplied with the repeater)
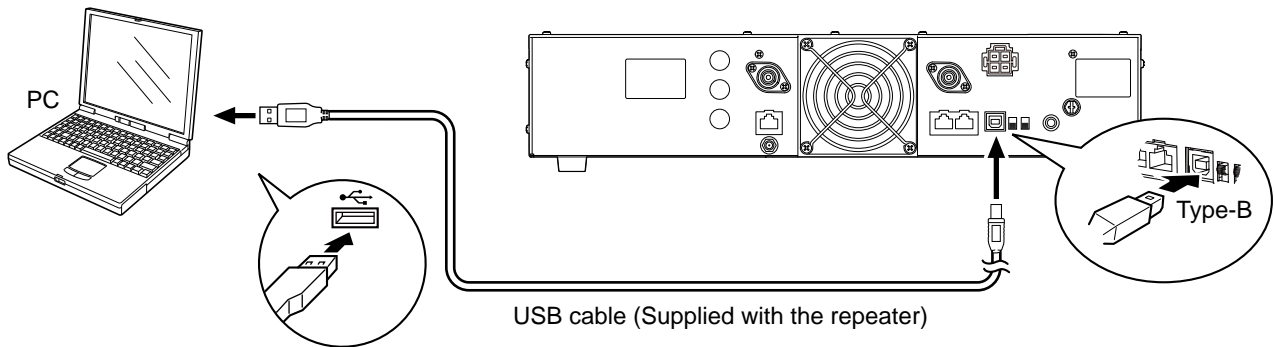
■ Using the [DV/DD] switch (For only the ID-RP1200VD)

The usage of the ID-RP1200VD's antenna connector differs depending on the operation mode, as shown below.
ⓘ The mode selsction item of the Utility for ID-RP3 is disabled while operating in DD mode.

DV mode: RX
DD mode: Not used

DV mode: TX
DD mode: TX and RX

ID-RP1200VD

ID-RP2010V/ID-RP4010V

[DD]
[DV/DD]
[DV]

Unused switch

■ Connecting multiple repeaters

Connect multiple repeaters using the supplied LAN cable. This allows sharing one gateway server by multiple repeaters for different bands.
① Up to 4 repeaters are connectable.
① Only one DD mode ID-RP1200VD can be connected.
① Confirm that the ID of each connected repeater is not duplicated. The repeater ID is changeable using the Utility for ID-RP3 (Tool > **Rewrite ID**).
① If you use a LAN cable other than the one supplied, use one with a length of 3 meter or less.
① You cannot use with the ID-RP2C when the [CONT I/O RPT] is set to [RPT].

Connection example:
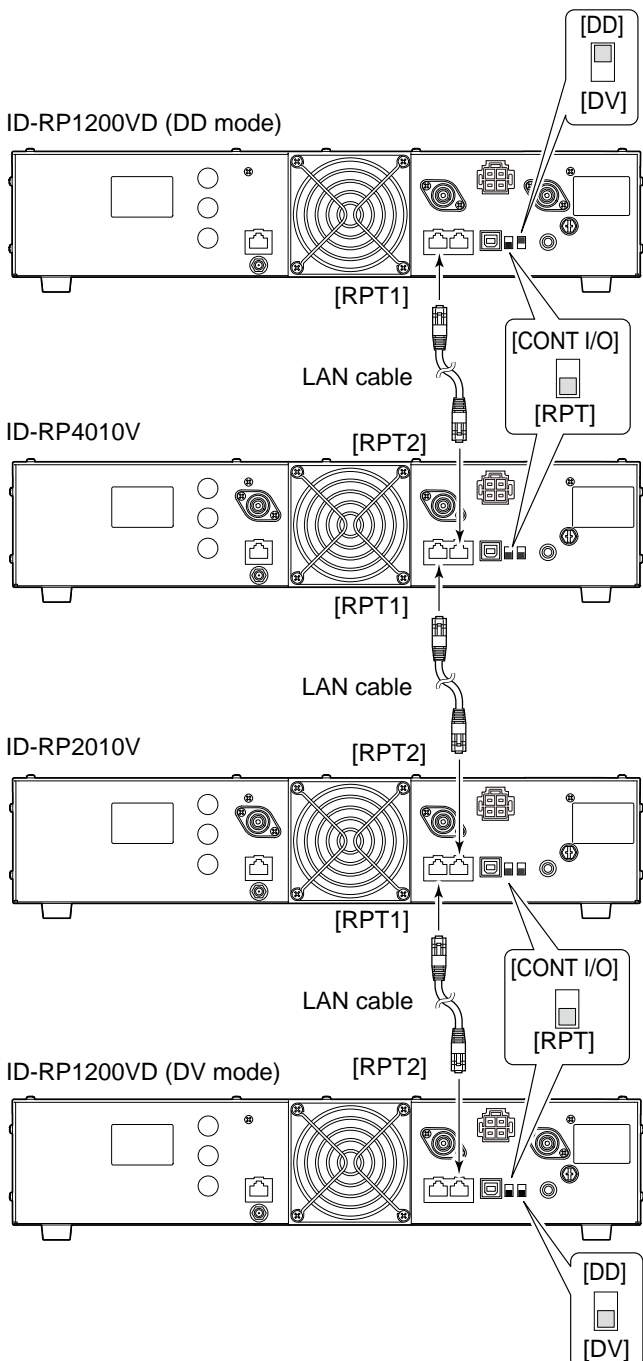
NOTE: The repeater's default ID is as follows: ID-RP2010V: 1, ID-RP4010V: 2, ID-RP1200VD: 3 If two ID-RP1200VD repeaters, one for DV mode and the other for DD mode are connected, they must not have the same ID. Change the DD repeater's ID to 4.

■ Connecting to the ID-RP2C

Connect the ID-RP2C Repeater controller and assist repeater as a gateway for the repeater.
① If you use a LAN cable other than the one supplied, use one with a length of 3 meter or less.
① A Gateway server is usable with connecting the ID-RP2C.
① You cannot connect multiple repeaters when the [CONT I/O RPT] is set to [CONT I/O].
① The ID-RP1200VD in DD mode is not usable.

Connection example:
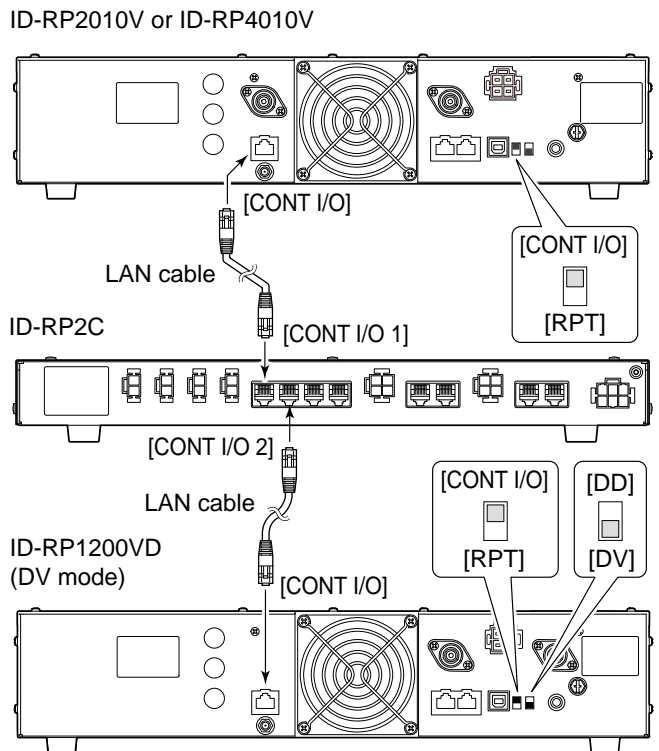
■ Operating as a Gateway

◇ Using a Gateway server

Connect the repeater, Gateway server, and router as shown below. Ask your dealer for details of settings required for the Gateway server and router.

ⓘ Only one repeater can be used as a Gateway if multiple repeaters are connected.

ⓘ If multiple repeaters are connected, and the ID-RP1200VD operating in DD mode is included, connect the gateway server to the ID-RP1200VD. The system does not work if it is connected to other repeaters.

ⓘ When using a Gateway server that is connected to the existing ID-RP2C, you can also simply connect the repeater to the ID-RP2C instead of connecting as shown below.
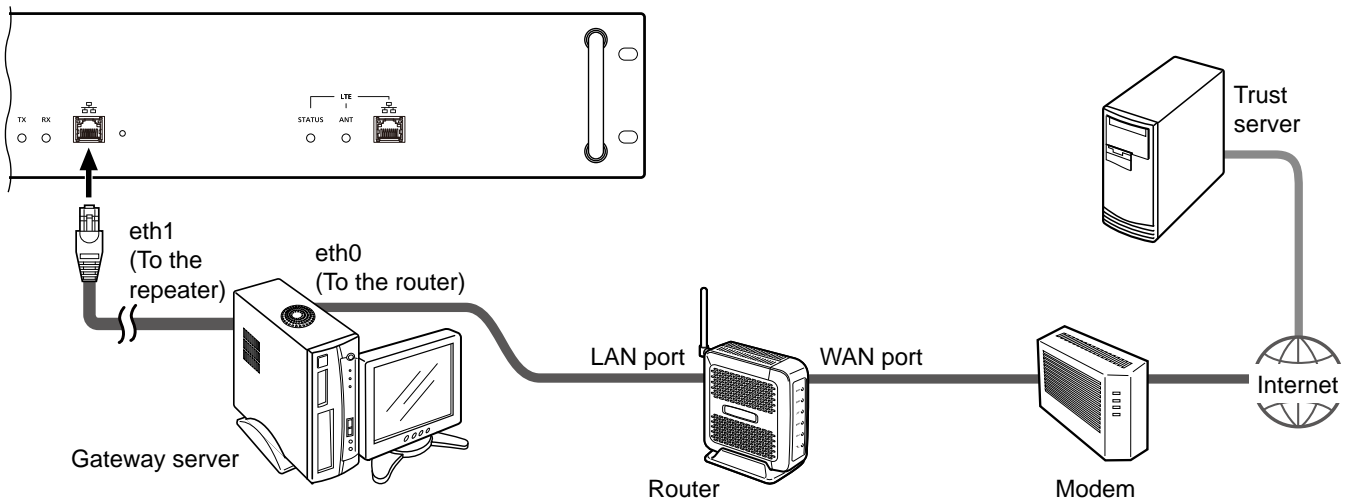
◇ System requirements

PC:
• Ethernet ports

Network:
• 750 kbps or faster network speed

Router:
• A router that has port forwarding and can set a class A subnet mask to a LAN port.

■ **Using an SD card**

You can use an SD card of up to 2 GB, or an SDHC of up to 32 GB. Icom has checked the compatibility with the following SD and SDHC cards.

Manufacturer	Type	Storage
SanDisk®	SD	2 GB
	SDHC	4/8/16/32 GB

ⓘThe above list does not guarantee the card's performance.
ⓘThroughout the rest of this document, the SD cards and SDHC cards are simply called the SD card or the card.

The repeater uses the data saved in following formats:
• The repeater's setting data (icf).
• The voice data used for reading out callsign (wav).
• Firmware data for update (dat).

An SD card is required when:
• Updating the repeater's firmware.
• Importing or exporting the repeater's setting data*.
• Importing the voice data used for reading out callsign*.
 *The Utility for ID-RP3 is required. Ask your dealer for details of the utility.

NOTE:
• Before using the SD card, thoroughly read the instructions that comes with the card.
• If any of the following occur, the SD card's data may be corrupted or deleted.
  -Drop, impact, or vibrate the SD card.
  -Removing from the repeater while it is turned ON.
  -Removing from the repeater while it is still accessing the SD card.
• Do not touch the contacts of the SD card.
• The repeater may take a longer time to recognize the SD card with larger storage.
• The SD card has a certain lifetime. Data reading or writing may not be possible after using it for a long years.
• Icom will not be responsible for any damage caused by data corruption on an SD card.

◇ **Inserting**

Insert the SD card as shown below.
ⓘInsert the SD card into the slot until it locks in place, and makes a 'click' sound.
ⓘBe sure to check the card orientation before inserting.
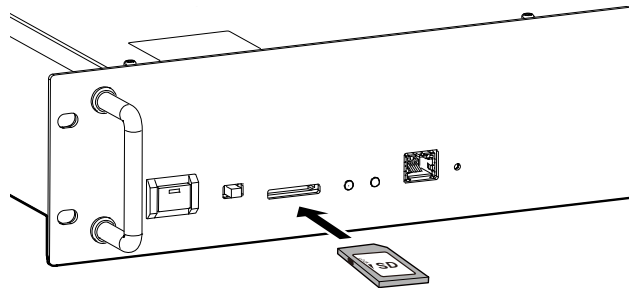
NOTE:
• Format the SD card on your PC before inserting.
• Before formatting, backup its data onto your PC. Formatting a card erases all its data.
• When inserting, folders will be created on the SD card.

IMPORTANT: Even if you have formatted an SD card, some data may remain in the card. When you dispose the card, be sure to physically destroy it to avoid unauthorized access to any data that remains.
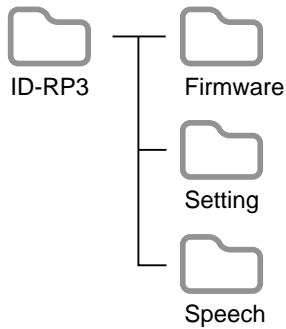
◇ **Removing**

Push in the SD card until a 'click' sounds to unlock (❶), and then remove it from the slot (❷).
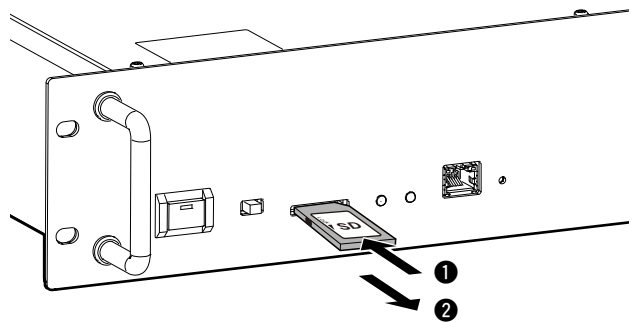
■ About the SD card's folder contents

When inserting an SD card, folders will be created as shown below. You can browse or edit the contents on your PC.

Firmware folder:
Saves the "dat" format firmware data when updating the repeater's firmware.
① Only one firmware data file must be saved in the folder.

Setting folder:
Saves the repeater's setting data in the "icf" format.
① The repeater's setting data will be saved as "SetYYYYMMDD_XX.icf."
① When writing the programmed data to the repeater, save it with the file name "Setting.icf".

Speech folder:
Saves the voice data used for reading out callsign in the "wav" format.
① The data's filename must be "Speech.wav."
① The voice data cannot be backed up from the repeater to an SD card.

■ Cleaning

DO NOT use harsh solvents such as benzine or alcohol when cleaning, because they will damage the repeater surfaces.

If the repeater becomes dusty or dirty, wipe it clean with a dry, soft cloth.

■ Replacing fuses

If a fuse blows, or the repeater stops functioning, find and repair the cause of the problem. Then replace the damaged fuse with a new, adequately rated fuse.
ⓘ Spare fuses are supplied with the repeater.

The fuses are installed in the DC power cable and in the inside circuitry, to protect the repeater.

• DC power cable fuses: ATC 25 A (ID-RP2010V)
                              ATC 10 A (ID-RP4010V/
                              ID-RP1200VD)
• Circuitry fuse: APS 5 A

⚠WARNING!
• **NEVER** use fuses that are not specified. It may damage the repeater or cause fire.
• Disconnect the DC power cable from the repeater before replacing the fuse. Otherwise, it may damage the repeater or cause an electrical shock.

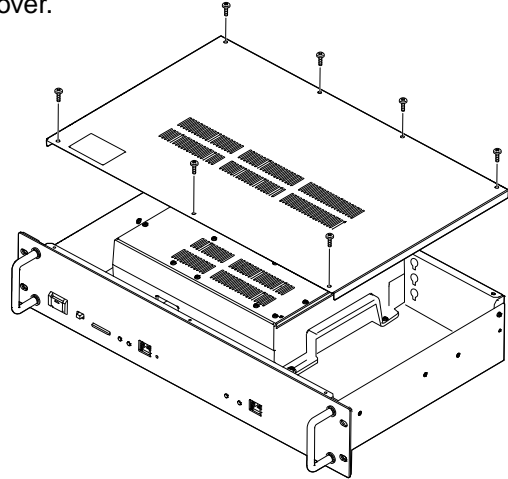## ◇ Replacing DC power cable fuses

Replace fuses as shown below.
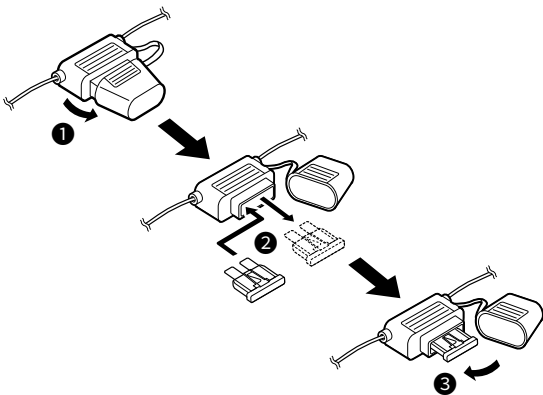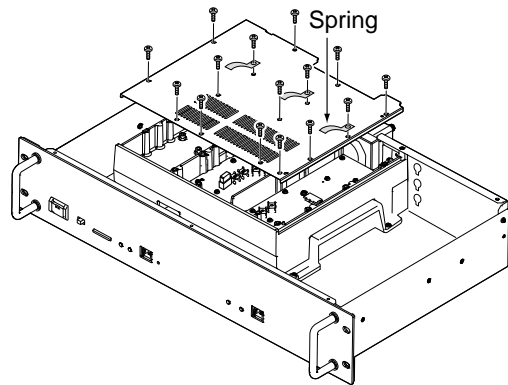

◇ Replacing the circuity fuse

Open the repeater main unit, and then replace the fuse as shown below.

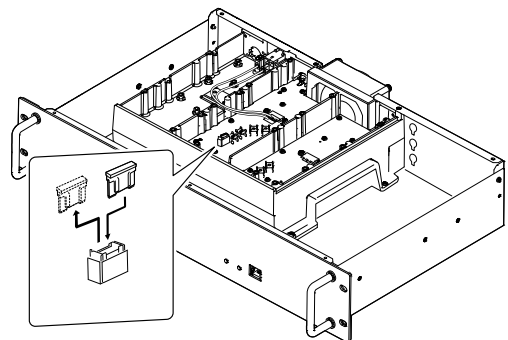1. Remove the screws, and then remove the top cover.

2. Remove the shield screws and springs*, and then remove the shield cover.
   *Some repeater may include springs. Confirm they are in the same position when reattaching.

Spring

3. Replace the circuitry fuse as shown below.

CAUTION: Remove the fuse using needle-nose pliers to protect your fingers and the fuse holders.

4. Reattach the removed parts.

■ About the firmware

The repeater's firmware may be updated to add or improve functions. Ask you dealer for details of updating the firmware.
ⓘ Update the firmware using a formatted SD card. Extract the downloaded firmware and copy it to the "Firmware" folder on the SD card (p. 11).

■ Detaching the rack handle

You can detach the rack handle, depending on the repeater's installation environment. Use the supplied Allen wrench to detach, as shown below.

Allen wrench

Rack handle
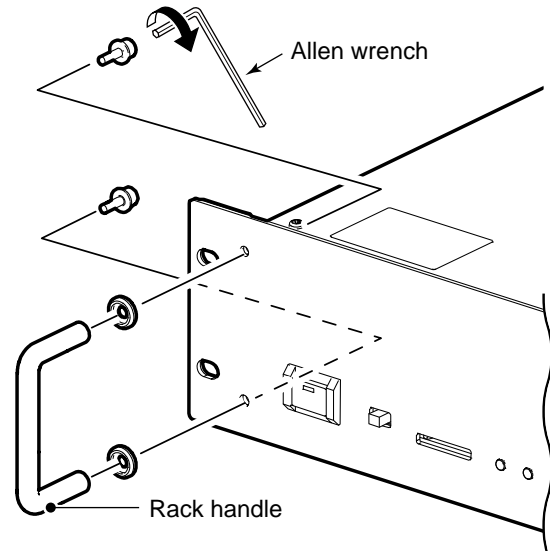
■ Troubleshooting

If the repeater seems to be not correctly operating, check the following points before sending it to an authorized Icom service center.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REFERENCE
The repeater does not turn ON.	• The connector or DC power cable has a poor contact. • The external power unit is turned OFF. • Blown fuse.	• Check the connector pins and then reconnect the DC power cable. • Confirm the external power unit is turned ON. • Fix the problem, then replace the fuse.	p. 5 - p. 12
Cannot turn OFF the repeater.	• You are not holding down [POWER].	• Hold down [POWER] until its green indicator is turned OFF.	p. 2
Both [TX] and [RX] indicator blink at same time.	• The repeater settings are reset to default.	• Set operation frequency and tone.	Ask dealer for details.
The repeater does not transmit output power, or transmits low output power.	• Antenna or coaxial cable has problems.	• Check, and if necessary, replace the coaxial cable or the antenna connector.	-
Sensitivity is low and only strong signals are heard.	• Antenna or coaxial cable has problems.	• Check, and if necessary, replace the coaxial cable or the antenna connector.	-
There was a problem with the operation.	• Caused by external factors such as static electricity.	• Turn OFF the repeater, remove and reattach the external power unit, and then turn ON the repeater.	-
The repeater does not repeat the received signal.	• Incorrect settings.	• Check the mode setting (FM or DV). • Check the operation frequency setting and tone setting. • Check the callsign setting and IP address setting.	Ask dealer for details.
Cannot connect to other repeater sites.	• Cannot connect to the Gateway server from the WAN port.	• Confirm accessing from a WAN port is enabled on your router.	-
The repeater does not operate as a Gateway	• The ID-RP2C is connected.	• Connect a Gateway server to the ID-RP2C.	p. 1

■ Specifications

ⓘ Measurements made without an antenna.
ⓘ All stated specifications are subject to change without notice or obligation.

◇ General

• Operating frequency range:

ID-RP2010V (USA)	144 ~ 148 MHz
ID-RP2010V (EUR)	144 ~ 146 MHz
ID-RP4010V (USA)	440 ~ 450 MHz
ID-RP4010V (EUR)	430 ~ 440 MHz
ID-RP1200VD	1240 ~ 1300 MHz

• Type of emission:

ID-RP2010V/ID-RP4010V	F2A (ID), F3E (FM), F7W (DV)
ID-RP12000VD	F1D (DD), F2A (ID), F3E (FM), F7W (DV)

• Antenna impedance: 50 Ω nominal
• Antenna connector type: N-Type
• Operating temperature range: –10˚C ~ +50˚C, 14˚F ~ +122˚F
• Frequency stability: ±0.5 ppm
• Frequency resolution: 1 Hz
• Transfer rate: 4.8 kbps (DV mode)
                                     128 kbps (DD mode (ID-RP1200VD))

• Current drain:

ID-RP2010V	9.0 A or less (TX High), 4.0 A or less (TX Low), 1.8 A or less (Standby)
ID-RP4010V	7.0 A or less (TX High), 3.0 A or less (TX Low), 1.8 A or less (Standby)
ID-RP1200VD	6.0 A or less (TX High), 4.0 A or less (TX Low), 1.8 A or less (Standby)

• Power supply voltage: 13.8 V DC ± 15% (negative ground)
• Dimensions: 482 (W) × 88 (H) × 275 (D) mm,
                                     19 (W) × 3.5 (H) × 10.8 (D) inches
                                     (Projections not included)
• Weight (Approximate):   6 kg, 13.2 lbs

◇ Transmitter

• Output power:

ID-RP2010V/ID-RP4010V	25 W (High), 2.5 W (Low)
ID-RP1200VD	10 W (High), 1 W (Low)

• Modulation system:

FM	Digital reactance modulation
DV	Digital GMSK modulation
DD (ID-RP1200VD)	Digital Quadrature modulation

• Maximum frequency deviation: ± 2.5 kHz (FM narrow), ± 5.0 kHz (FM wide)
• Occupied bandwidth: 6 kHz or less (DV), 150 kHz or less (DD)

• Spurious emissions:

|	
Harmonics	–63 dB or less (ID-RP2010V)
	–61.8 dB or less (ID-RP4010V)
	–53 dB or less (ID-RP1200VD)
Out-of-band emission	–60 dB or less (ID-RP2010V/ID-RP4010V)
	–50 dB or less (ID-RP1200VD)

■ Specifications (Continued)

◇ **Receiver**

• Receive system:

ID-RP2010V/ID-RP4010V	RF direct sampling
ID-RP1200VD	Superheterodyne

• Sensitivity:

FM	–15 dBμV (0.18 μV) or less (At 12 dB SINAD)
DV	–13 dBμV (0.22 μV) or less (At 1% BER (PN9))
DD (ID-RP1200VD)	4 dBμV (1.58 μV) or less (At 1% BER (PN9))

• Selectivity:

FM (BW: 15 kHz)	More than 12.0 kHz/–6 dB, 20 kHz or less/–60 dB
DV	–50 dB or less (Channel spacing=12.5 kHz)

• Selectivity (ID-RP1200VD):

FM (BW: 15 kHz)	20 kHz or less/–50 dB
FM (BW: 7 kHz)	10 kHz or less/–50 dB
DV	–40 dB or less (Channel spacing=12.5 kHz)
DD	–40 dB or less (Channel spacing=300 kHz)

• Intermodulation:

ID-RP2010V/ID-RP4010V	–60 dB or less
ID-RP1200VD	–50 dB or less

• Receive spurious: 2 nW (–57 dBm) or less

• Spurious & image rejection:

ID-RP2010V/ID-RP4010V	More than 55 dB
ID-RP1200VD	More than 50 dB

• Audio output power: More than 2.0 W (1 kHz, 10% distortion into an 8 Ω load)

• AF output impedance: 8 Ω

■ Connectors

◇ [DC 13.8 V]

Accepts the regulated DC power of 13.8 V DC ±15% through the supplied DC power cable.

⚠**WARNING! NEVER** reverse the DC power cable polarity.
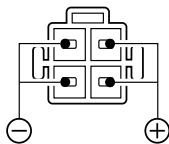
◇ [LAN 1]

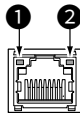Connects to a Gateway server when operating in the Gateway repeater mode.

About the LED indication:

❶**LINK/ACT**
• Lights when a cable is connected.
• Does not light when a cable is not connected.
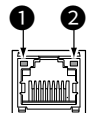• Blinks while communicating.

❷**SPEED**
• Lights while communicating in 100BASE-TX.
• Does not light while communicating.
• Blinks while communicating in 10BASE-T, or not connected.

◇ [LAN 2]

Connects to a Gateway server when operating in the LTE mode.
ⓘ An optional LTE unit is required.

About the LED indication:

❶**LINK/ACT**
• Lights when a cable is connected.
• Does not light when a cable is not connected.
• Blinks while communicating

❷**SPEED**
• Lights while communicating in 100BASE-TX.
• Does not light while communicating.
• Blinks while communicating in 10BASE-T, or not connected.
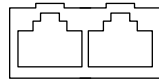
◇ [CONT I/O]

Connects to the LAN port of the ID-RP2C using a supplied control cable, when the repeater system is operating as a gateway or assist repeater with the ID-RP2C.

ⓘSet [CONT I/O RPT] on the rear panel to "CONT I/O," when using this port.

◇ [RPT1]/[RPT2]

Connects to other repeaters using the supplied control cable for data communications, when multiple repeaters are installed in the repeater system.

ⓘ Set [CONT I/O RPT] on the rear panel to "RPT," when using this port.

NOTE:
• The RPT1 port of the repeater to connect the other band repeater must be connected to the RPT2 port of the other repeater unit.
• The ports enable the repeaters to be "daisy chained" together, and form a network that allows other data to pass among them.

◇ [REF IN 10MHz]

Inputs a 10 MHz signal as a reference frequency signal.

SMA connecter

• Input frequency: 10 MHz
• Impedance: 50 Ω (unbalanced)
• Input level: −10 dBm
                              (approximately)
ⓘ Adjust the internal reference frequency using the utility software.
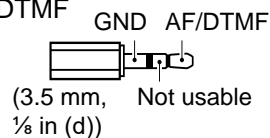
◇ [USB]

Connects to the PC with a supplied USB cable to set the details of the repeater, such as the callsign, frequencies, IP address, and any other functions using the utility software.

• Connector type: USB type B (1.1/2.0)

◇ [EXT-SP (SERVICE)]

Connects to a 3.5 mm external speaker. Outputs the audio and DTMF tone data.

GND AF/DTMF

(3.5 mm,   Not usable
⅛ in (d))

• Output impedance: 4 ~ 8 Ω
• Output level: More than 2 W at
                                 10% distortion into
                                 an 8 Ω load.

◇ [TX ANT]

Connect a TX antenna (Type N).
• Input impedance: 50 Ω (unbalanced)
ⓘ In DD mode of the ID-RP1200VD, the connector is used as a both TX and RX antenna connector.

◇ [RX ANT]

Connect a RX antenna (Type N).
• Output impedance: 50 Ω (unbalanced)
ⓘ In DD mode of the ID-RP1200VD, the connector is not used.

■ About CE and DOC

Hereby, Icom Inc. declares that the versions of ID-RP2010V/ID-RP4010V/ID-RP1200VD which have the "CE" symbol on the product, comply with the essential requirements of the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address:
https://www.icomjapan.com/support/

■ Disposal

The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that in the European Union, all electrical and electronic products, batteries, and accumulators (rechargeable batteries) must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste.
Dispose of them according to the laws in your area.

■ Options

• **UX-262** LTE UNIT
  The unit required for operations on an LTE network.

■ FCC Information

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 to this device, not expressly approved by Icom Inc., could void your authority to operate this device under FCC regulations.

■ Information FCC

Cet équipement a été testé et reconnu conforme aux limites fixées pour un appareil numérique de classe B, conformément au point 15 de la réglementation FCC. Ces limites ont été fixées afin d'assurer une protection raisonnable contre les interférences nocives dans une installation résidentielle. Cet équipement génère, utilise et peut émettre un rayonnement de fréquence radio. S'il n'a pas été installé conformément aux instructions, il peut par ailleurs créer des interférences perturbant les communications radio. Toutefois, il n'y a aucune garantie que les interférences ne se produiront pas dans une installation particulière. Si cet équipement crée des interférences perturbant la réception de la radio ou de la télévision, comme cela peut être déterminé en éteignant et en allumant l'équipement, l'utilisateur est invité à essayer de corriger l'interférence en prenant une ou plusieurs des mesures ci-après:

• Réorienter ou changer de place l'antenne de réception.
• Éloigner l'équipement et le récepteur.
• Connecter l'équipement sur une prise sur un autre circuit que celui sur lequel le récepteur est connecté.
• Faire appel au revendeur ou à un technicien radio/TV expérimenté.

MISE EN GARDE: Tout changement ou modification, non expressément approuvé par Icom Inc, peut annuler l'autorisation de l'utilisateur à utiliser cet appareil conformément à la réglementation FCC.

■ About the licences

How the world communicates