

This document explains the setup procedures for remotely operating this product through a LAN or the Internet.

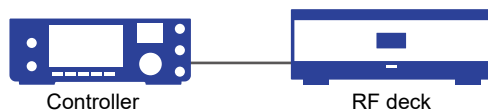
About the Connection route

There are 3 main connection routes between the IC-7760's controller and RF deck, as shown below. In addition, connection settings through a LAN or the Internet vary, depending on the network equipment you use and the type of connection.

① The firmware update version 1.10 or later is required for setting each connection route, or to use with an additional RC-7760 controller. (p. 73)

IMPORTANT! To remotely control the IC-7760, **BE SURE** you comply with any local regulations.

1. Connecting directly (Pairing)



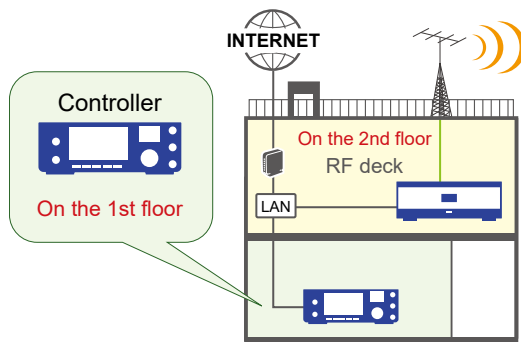
Connecting directly (Pairing) 2

TIP: What is "Pairing" ?

"Pairing" refers to the process of establishing a connection between the controller and the RF deck. To pair them, directly connect the controller and RF deck with an Ethernet cable, and then turn ON the transceiver.

① Even if you will connect them through a network, the pairing is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck.

2. Connecting through a LAN

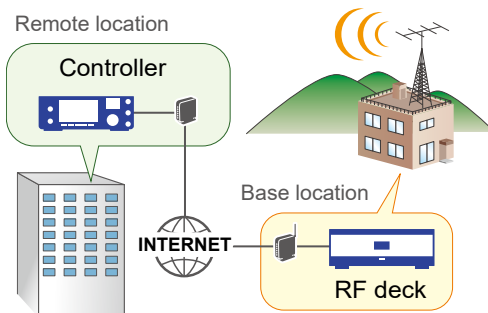


The following page explains the differences between connection routes and their settings.

About the connecting route..... 3

- ① In the same segment 4
- ② From a different segment..... 10
- ③ Port forwarding on the Controller side 16
- ④ Port forwarding on the RF deck side..... 23

3. Connecting through the Internet



For remote operation through the Internet, you can select from the following connection routes.

The following pages explain the settings for each connection route.

About the connecting route..... 30

- ① Port forwarding on both sides 31
- ② Port forwarding on the Controller side 41
- ③ L2 VPN in the same segment 49
- ④ L3 VPN from a different segment..... 55
- ⑤ With static IP addresses 62

TIP: Connection through a wireless LAN

The controller and RF deck do not have wireless LAN capabilities. You can connect to a Wi-Fi router by using a Wi-Fi converter* or a Wi-Fi Access Point (Client mode) for the LAN port. (p. 70)

* A Wi-Fi converter for a USB port cannot be used.



1. Connecting directly (Pairing)

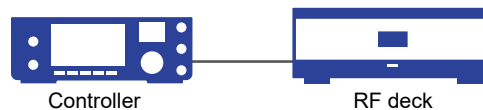
Connect the controller and RF deck directly before using the transceiver or an additional controller for the first time, or after performing an All reset on the RF deck.

① The controller and RF deck are automatically paired after the RF deck is turned ON, and then the controller is turned ON.

Step 1. Connecting the controller and the RF deck

Step 2. Turning ON the transceiver

Step 3. Confirming that pairing is complete

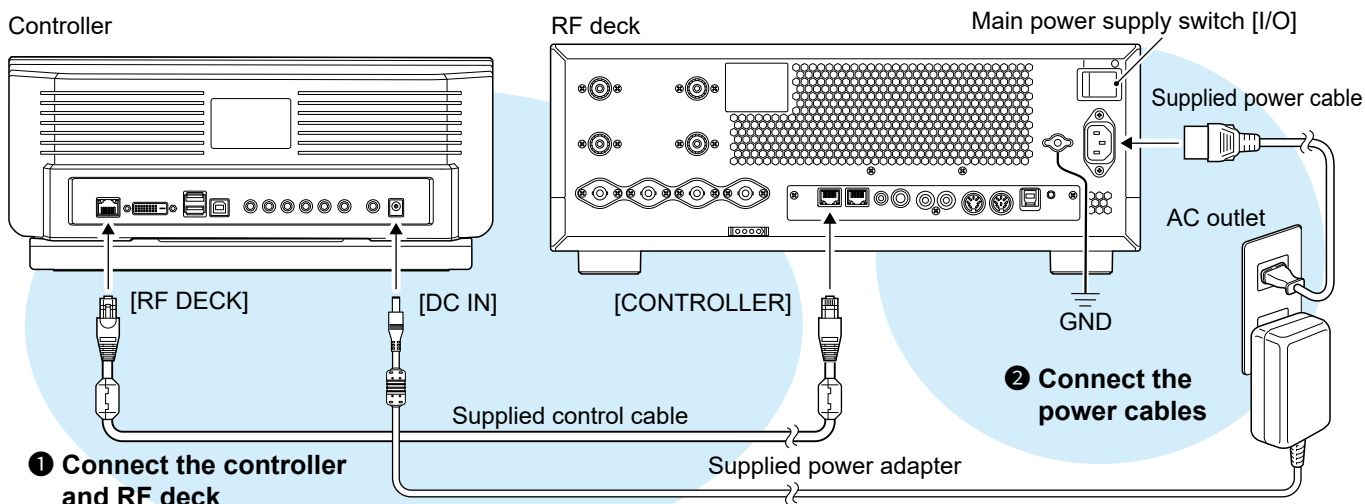


Step 1. Connecting the controller and the RF deck

① Before connecting the power cables, confirm that the main power supply switch [I/O] on the RF deck's rear panel is OFF (depressing the O side).

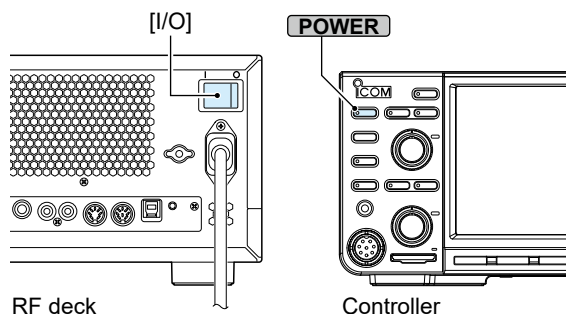
① See the IC-7760 Basic manual for details, including precautions.

Connect the controller and the RF deck (①), and then connect the power cables to each device (②).



Step 2. Turning ON the transceiver

- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The Opening screen is displayed.



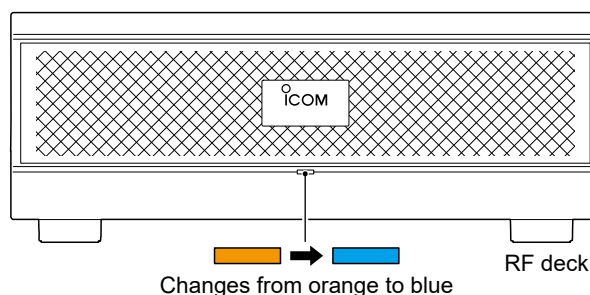
Step 3. Confirming that pairing is complete

After pairing is complete, **RFx** will disappear, and the [POWER] indicator on the RF deck's front panel will change from orange to blue.

① Pairing has not been completed if:

- RFx** blinks.
- "The RF deck is not detected." is displayed.
- The [POWER] indicator on the RF deck's front panel lights orange.

Check the connection (**Step 1**), and then turn them ON again.



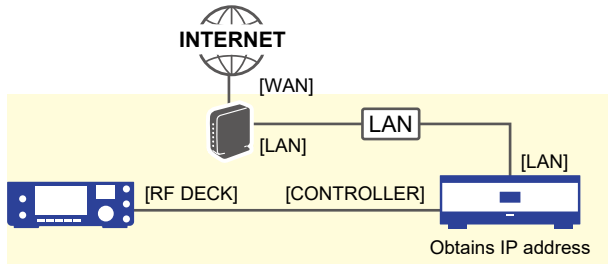
2. Connecting through a LAN — About the connecting route

Depending on the LAN configuration, you can choose one of the following 4 connection routes.

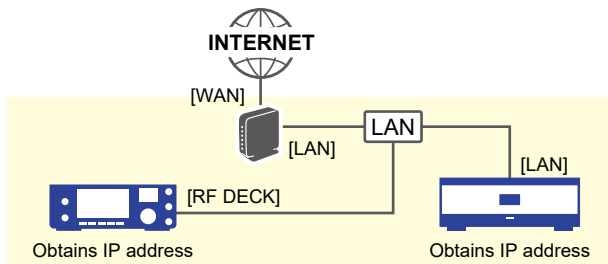
Same segment, Different segment

① In the same segment

- Connecting only the RF deck to a LAN (p. 4)

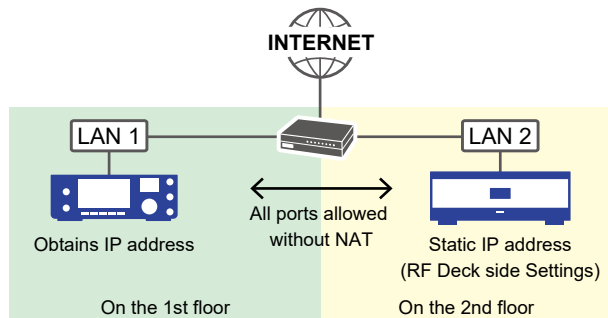


- Connecting the controller and RF deck to a LAN (p. 6)



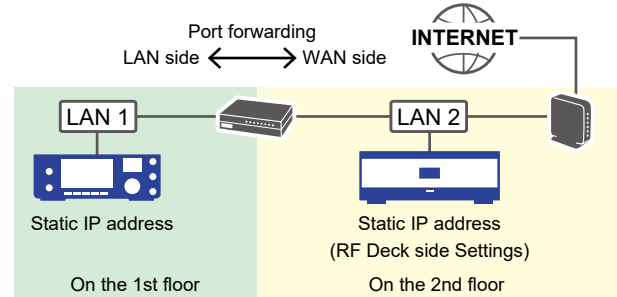
② From a different segment

Connecting the controller and the RF deck between different segment (Example: connecting the controller to LAN 1, and the RF deck to LAN 2) (p. 10)



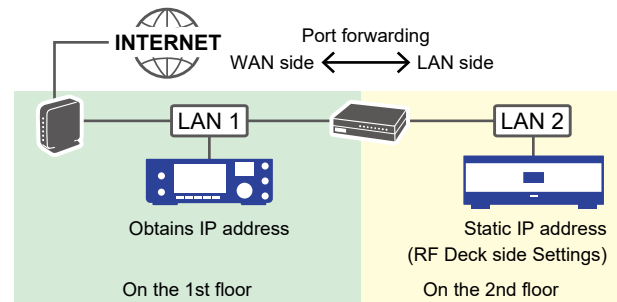
③ Port forwarding on the Controller side

Connecting the RF deck on the WAN side of the router with port forwarding and the controller on the LAN side (p. 16)



④ Port forwarding on the RF deck side

Connecting the controller on the WAN side of the router with port forwarding and the RF deck on the LAN side (p. 23)



NOTE:

- When connecting the controller and RF deck to a LAN, we recommend that you use networking devices compatible with Gigabit Ethernet or faster and Ethernet cables compatible with Category 5e or higher.
- Using a device that is compatible only with Fast Ethernet or earlier may cause abnormal noise, and operation cannot be guaranteed.

TIP: What is “Port Forwarding”?

This is a router setting required to allow communication from devices connected to the router's WAN side to devices connected to the LAN side.

- ① Port forwarding is an effective method when the connected device is not compatible with the router's UPnP function.

2. Connecting through a LAN — 1 In the same segment

◇ Connecting only the RF deck to a LAN

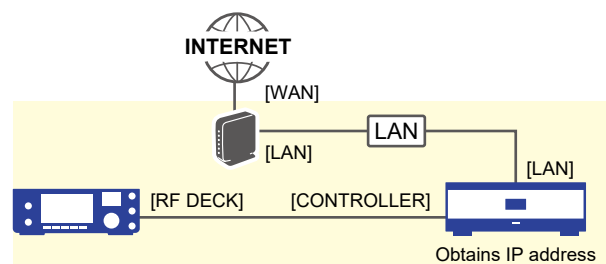
The RF deck, which is directly connected to the controller using the supplied control cable, is connected to a LAN.

Step 1. Pairing the controller with the RF deck

Step 2. Confirming the router settings

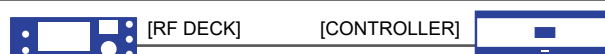
Step 3. Connecting the RF deck to a LAN

Step 4. Confirming the DHCP client function on the IC-7760



Step 1. Pairing the controller with the RF deck

See page 2 for details.



Step 2. Confirming the router settings

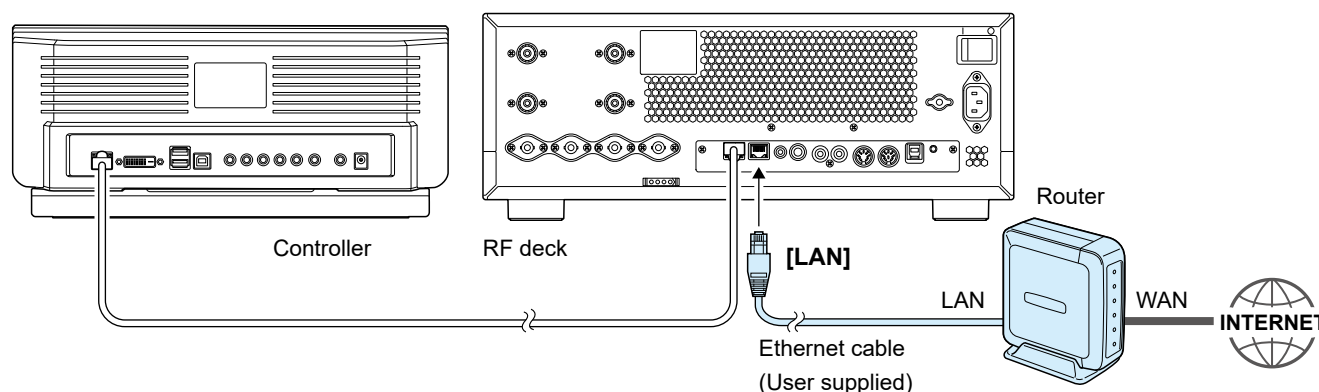
Confirm that the router's DHCP server function is ON.

① The IC-7760's DHCP client function is set to "ON" by default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.

① Refer to the router's manual for details about its functions and settings.

Step 3. Connecting the RF deck to a LAN

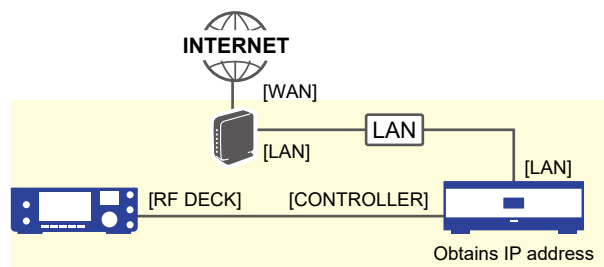
Connect the RF deck to the router's LAN side.



2. Connecting through a LAN — ① In the same segment

◇ Connecting only the RF deck to a LAN

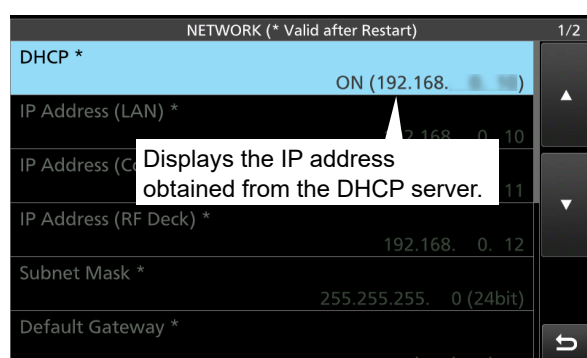
Step 1 2 3 4



Step 4. Confirming the DHCP client function on the IC-7760

Confirm that “DHCP” is set to “ON” (default).

MENU » **SET > Network > DHCP**



TIP: To manually set the IP address

Set “DHCP” to “OFF,” and then enter the IP address to “IP Address (LAN).”

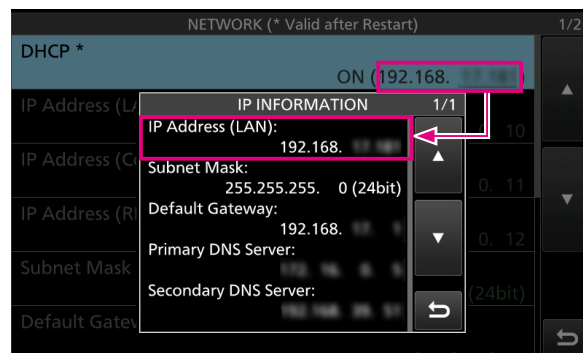
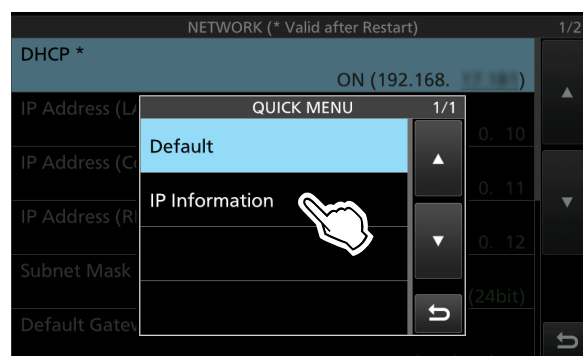
① Also set “Subnet Mask,” “Default Gateway,” “Primary DNS Server,” and “Secondary DNS Server” according to the network you are connecting to.

② When the controller is connected directly to the [CONTROLLER] port on the RF deck, the “IP Address (LAN)” setting is used, and the “IP Address (Controller)” and “IP Address (RF Deck)” settings are not used.

TIP: To confirm detailed network information

You can confirm the IP address and network information obtained from the DHCP server on the “IP Information” screen.

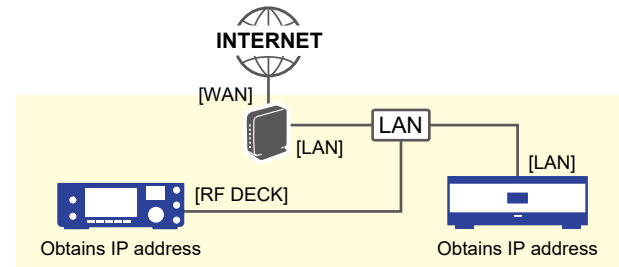
MENU » **SET > Network > DHCP** (Touch for 1 second)



◇ Connecting the Controller and RF Deck to the LAN

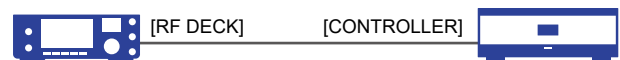
The controller and RF deck are connected to the LAN on the same network (same segment).

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the router settings
- Step 3.** Connecting the RF deck to a LAN
- Step 4.** Confirming the “Connection Route” setting
- Step 5.** Confirming the DHCP client function on the IC-7760 and turning OFF the controller
- Step 6.** Connecting the controller to the LAN
- Step 7.** Turning ON the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.



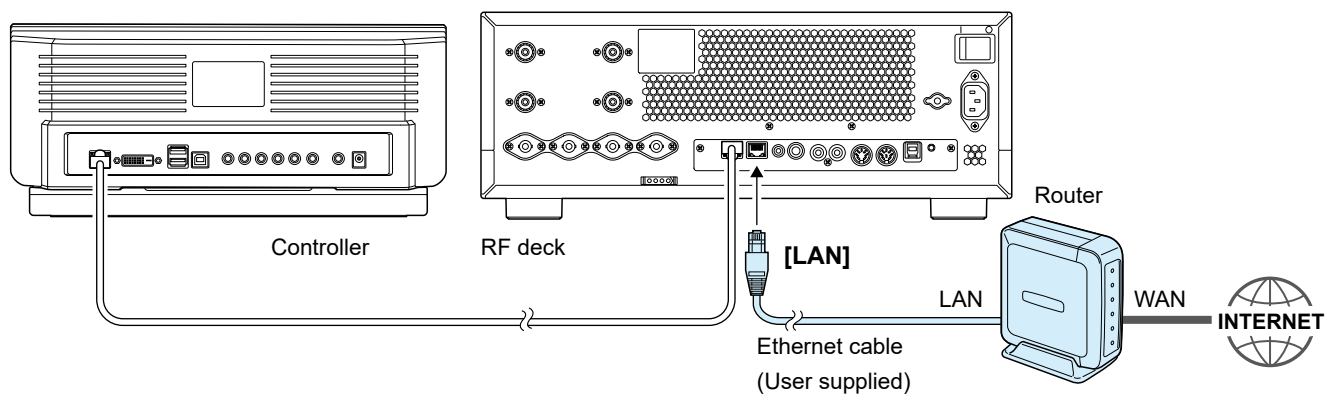
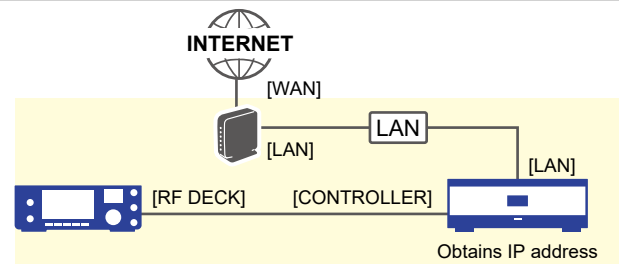
Step 2. Confirming the router settings

Confirm that the router's DHCP server function is ON.

- ① The IC-7760's DHCP client function is set to "ON" by default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.
- ① Refer to the router's manual for details about its functions and settings.

Step 3. Connecting the RF deck to a LAN

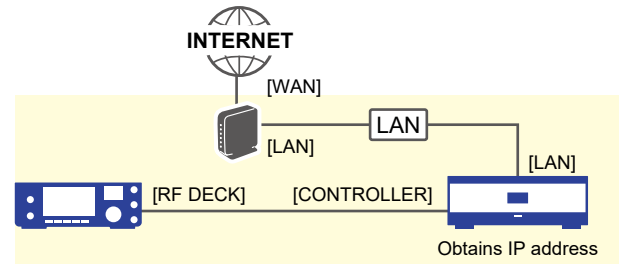
Connect the RF deck to the router's LAN side.



2. Connecting through a LAN — ① In the same segment

◇ Connecting the Controller and RF Deck to the LAN

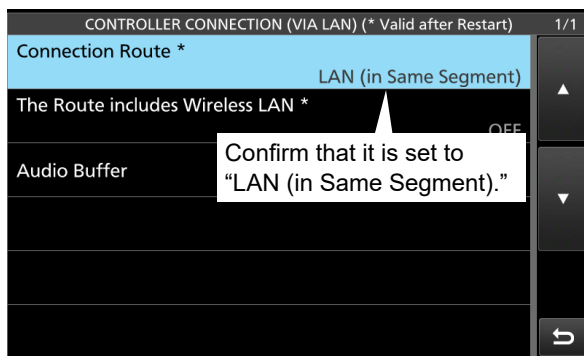
Step 1 2 3 4 5 6 7



Step 4. Confirming the “Connection Route” setting

Confirm that “Connection Route” is set to “LAN (in Same Segment)” (default).

MENU » SET > Network > Controller Connection (via LAN) > **Connection Route**

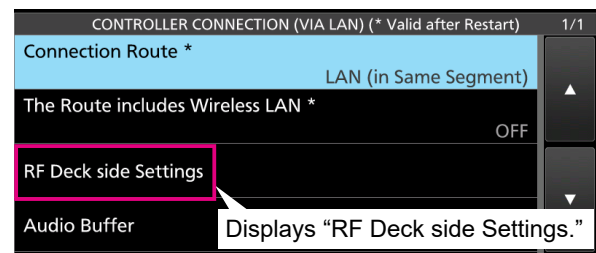


TIP: About “RF Deck side Settings”

After you move or add a controller, if “RF Deck side Settings” is displayed even when you do not use a connection route other than “LAN (in Same Segment),” clear the RF deck’s static IP address setting.

① See page 72 for details.

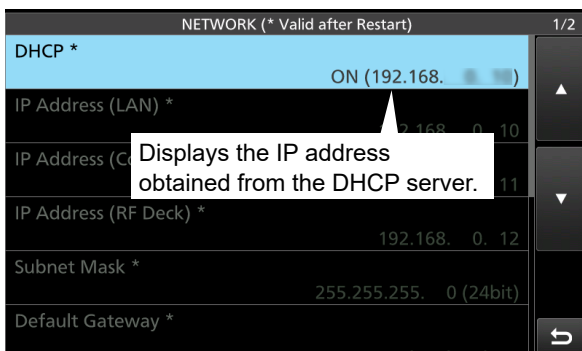
① **DO NOT** clear the setting if you have moved or added a controller and use a connection route other than “LAN (in Same Segment).”



Step 5. Confirming the DHCP client function on the IC-7760 and turning OFF the controller

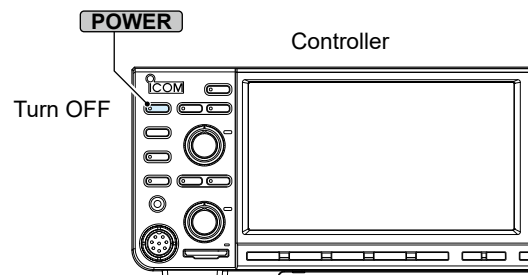
1. Confirm that “DHCP” is set to “ON” (default).

MENU » SET > Network > **DHCP**



2. Turn OFF the controller.

① Keep the main power supply switch on the RF deck’s back panel ON.



TIP: When using with “RF Deck side Settings”

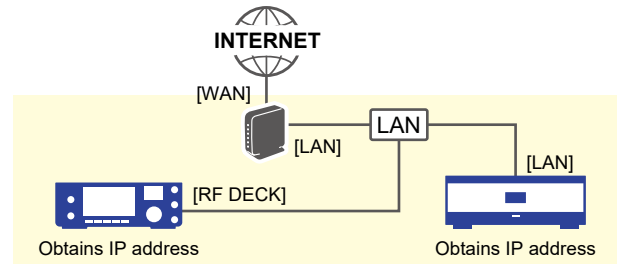
When accessing from a connection route other than “LAN (in Same Segment),” confirm that the IP address range that is automatically assigned to the controller by the router’s DHCP server is on the same subnet (network) as the “IP Address (RF Deck)” setting.

① If they are on different subnets, you may not be able to connect or change the settings. In this case, you need to reconfigure the router and the transceiver.

2. Connecting through a LAN — ① In the same segment

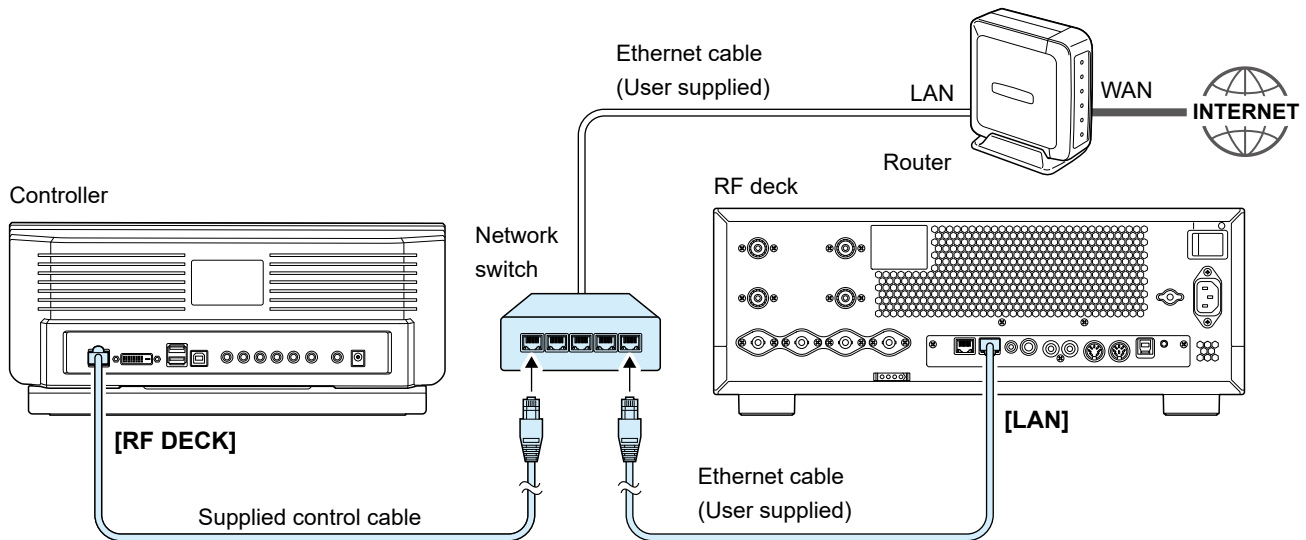
◇ Connecting the Controller and RF Deck to the LAN

Step 1 2 3 4 5 **6** 7



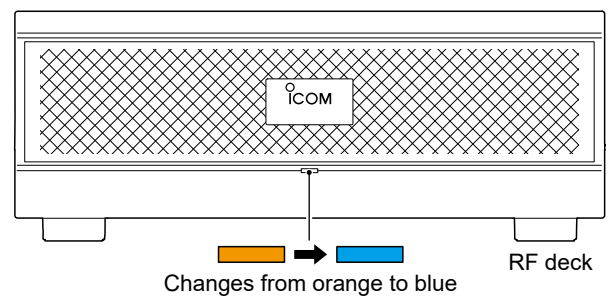
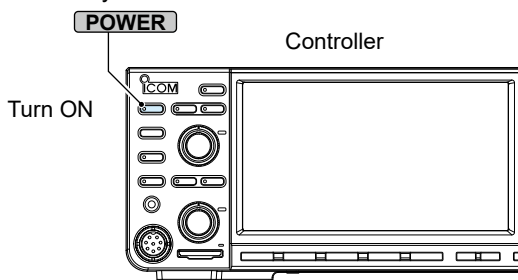
Step 6. Connecting the controller to the LAN

Connect the controller to the router's LAN side.



Step 7. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.
2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RFx** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 9)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

TIP: To manually set the IP addresses

Set "DHCP" to "OFF," and then enter the IP addresses to "IP Address (LAN)," "IP Address (Controller)," and IP Address (RF Deck)."

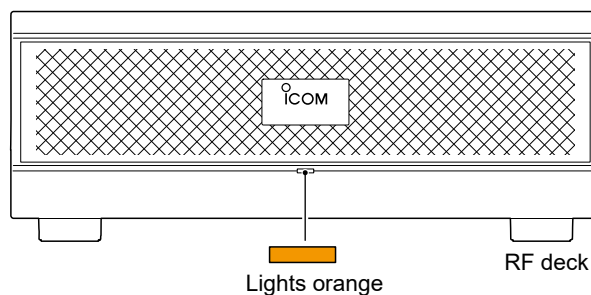
① Also set "Subnet Mask," "Default Gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network you are connecting to.

2. Connecting through a LAN — ① In the same segment

◇ Connecting the Controller and RF Deck to the LAN

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.

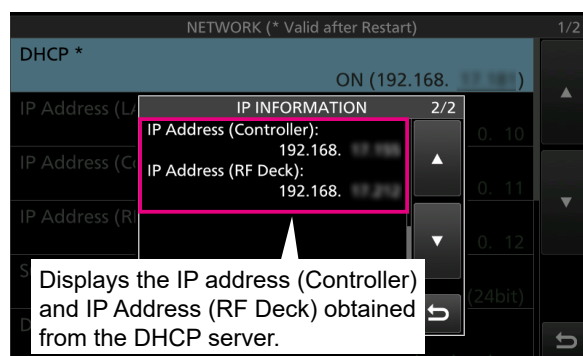
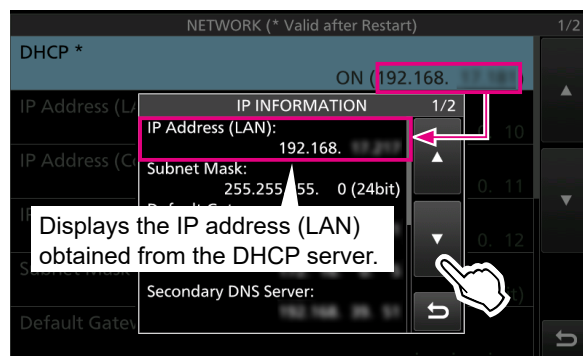


1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. In **Step 6**, is the RF deck connected to the network? (p. 8)
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
4. In **Step 6**, is the controller connected to the network? (p. 8)
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.
5. Is the network switch connected to the RF deck able to communicate with the network switch connected to the controller?
6. Did you confirm the information described in **Step 4** (TIP: About “RF Deck side Settings”)? (p. 7)

7. While the controller is connected to the network, are “IP Address (Controller)” and “IP Address (RF Deck)”* obtained from the DHCP server displayed on the “IP Information” screen?

MENU » **SET > Network > DHCP (Touch for 1 second) > IP Information**

*If using with “RF Deck Settings,” “IP Address (RF Deck)” may not be displayed.

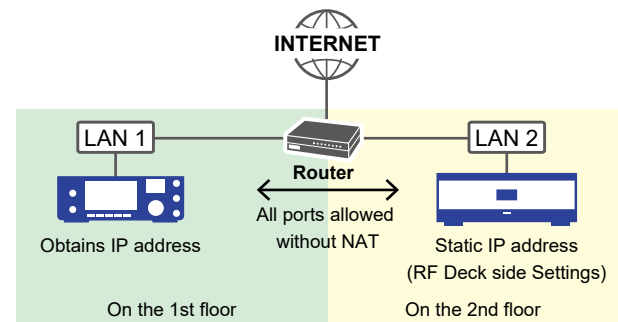


8. Turn ON the controller.
 - If the problems have been resolved, the [POWER] indicator on the RF deck’s front panel will change from orange to blue.

2. Connecting through a LAN — 2 From a different segment

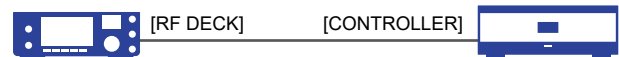
You move the controller to a different network from the RF deck and connect them.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the router settings
- Step 3.** Connecting the RF deck to the LAN
- Step 4.** Turning ON the transceiver
- Step 5.** Confirming the DHCP client function on the IC-7760
- Step 6.** Setting "Connection Route"
- Step 7.** Setting the RF deck to a static IP address
- Step 8.** Turning OFF the controller and moving it
- Step 9.** Connecting the controller to the LAN
- Step 10.** Turning ON the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.



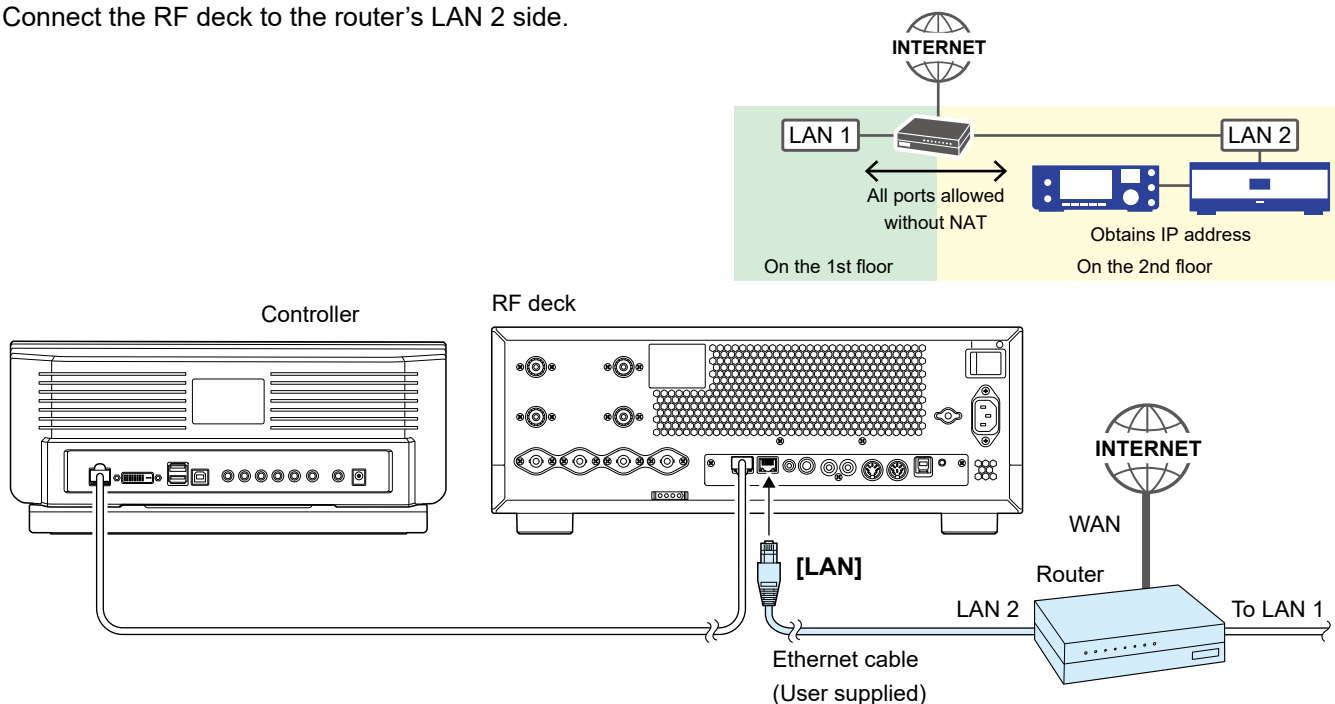
Step 2. Confirming the router settings

- Confirm that communication is enabled on all ports between segments (LAN1 and LAN2) without NAT (Network Address Translation).
 - Confirm that the router's DHCP server function is set to "ON."
 - ① The IC-7760's DHCP client function is set to "ON" as the default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.
 - You must assign a static IP address to the RF deck in **Step 7.** (p. 13)
 - ① To check in advance which a static IP address can be used for the RF deck, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, the router is on the 2nd floor).
(Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))
- You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices. (Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)
- However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.

① Refer to the router's manual for details about its functions and settings.

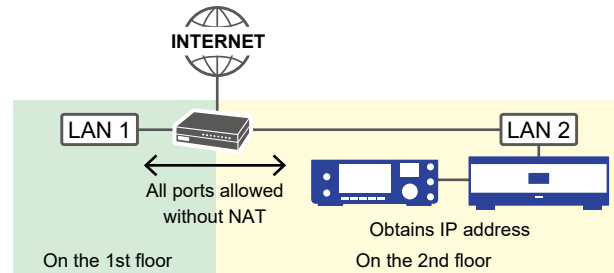
Step 3. Connecting the RF deck to the LAN

Connect the RF deck to the router's LAN 2 side.



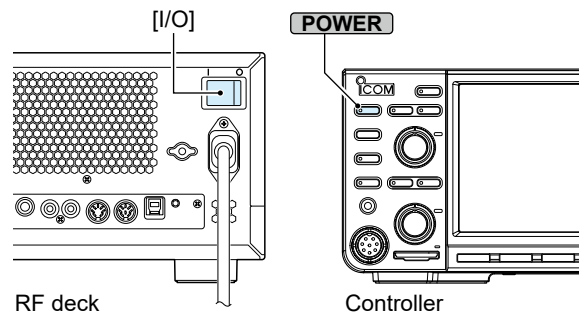
2. Connecting through a LAN — ② From a different segment

Step 1 2 3 **4** 5 6 7 8 9 10



Step 4. Turning ON the transceiver

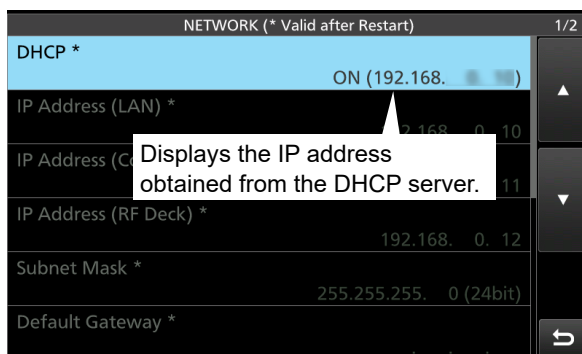
- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



Step 5. Confirming the DHCP client function on the IC-7760

Confirm that "DHCP" is set to "ON" (default).

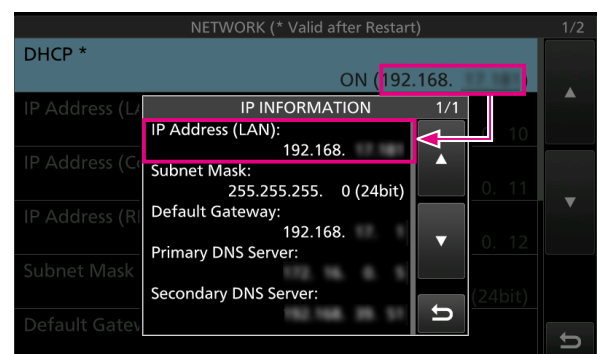
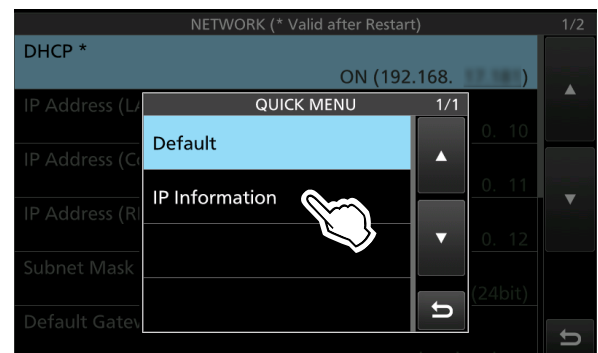
MENU » **SET > Network > DHCP**



TIP: To confirm detailed network information

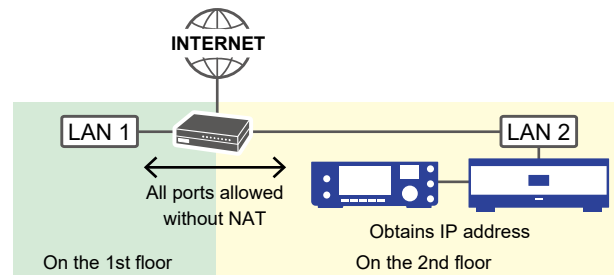
You can confirm the IP address and network information obtained from the DHCP server on the "IP Information" screen.

MENU » **SET > Network > DHCP** (Touch for 1 second)



2. Connecting through a LAN — ② From a different segment

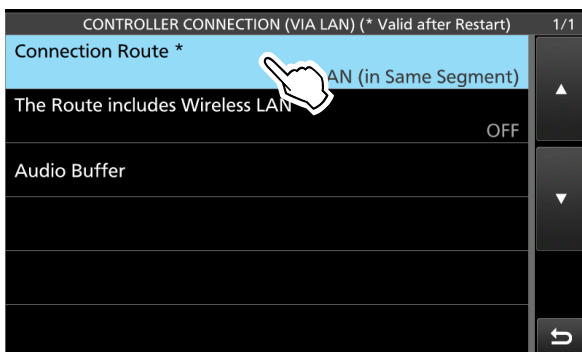
Step 1 2 3 4 5 **6** 7 8 9 10



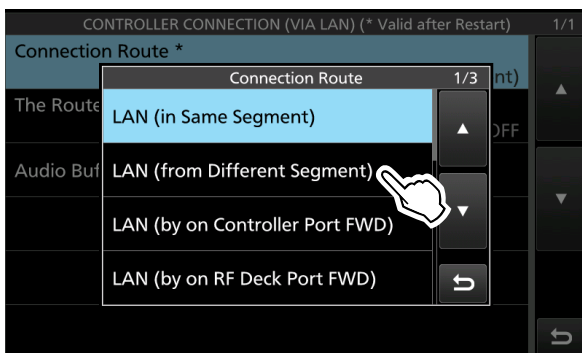
Step 6. Setting “Connection Route”

1. Touch “Connection Route.”

MENU » SET > Network >
Controller Connection (via LAN) >
Connection Route

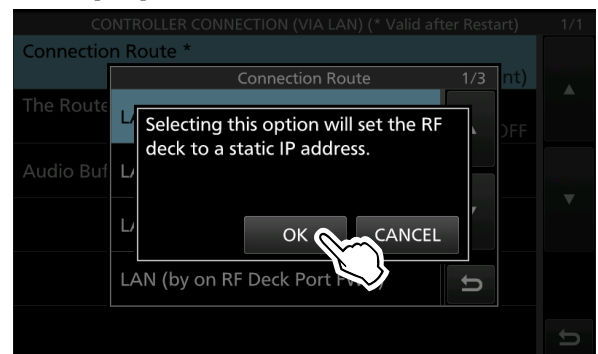


2. Touch “LAN (from Different Segment).”

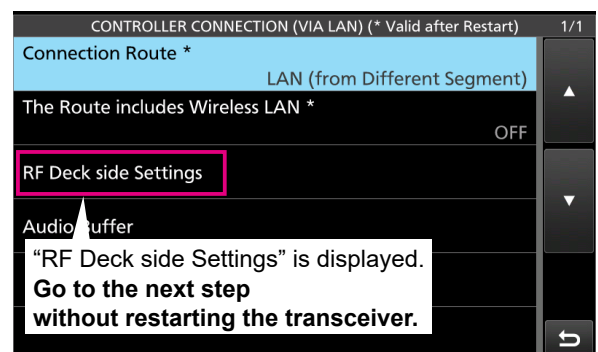


- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Touch [OK].

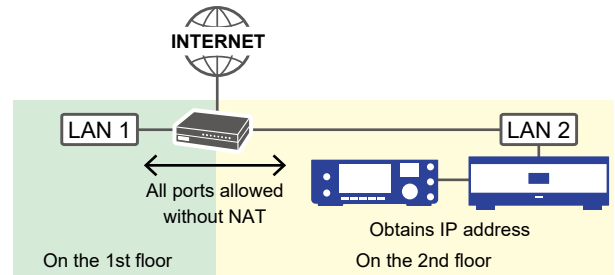


4. Confirm that “LAN (from Different Segment)” is selected and “RF Deck side Settings” is displayed.



2. Connecting through a LAN — ② From a different segment

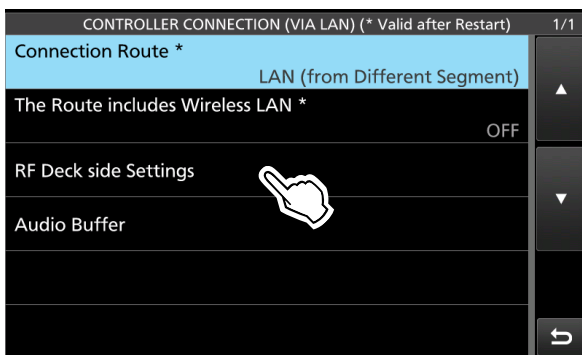
Step 1 2 3 4 5 6 **7** 8 9 10



Step 7. Setting the RF deck to a static IP address

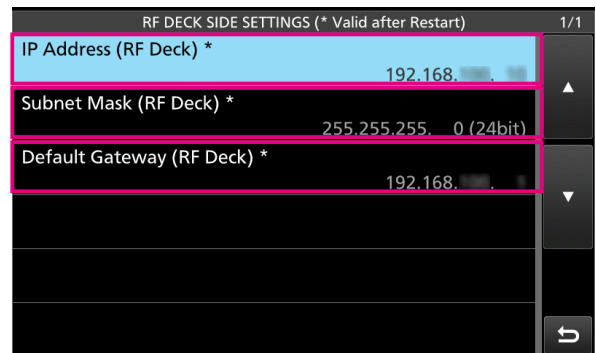
1. Touch "RF Deck side Settings."

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



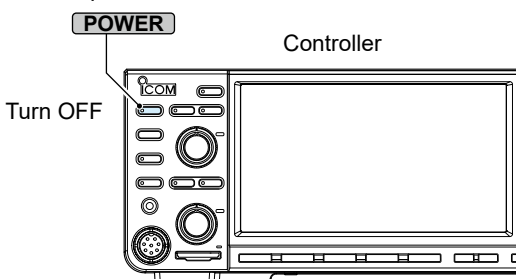
2. Set the RF deck's static IP address to "IP Address (RF Deck)."

① See page 10 for details about available IP addresses.
① Also set "Subnet Mask (RF Deck)" and "Default Gateway (RF Deck)" according to the network the RF deck is connected to.

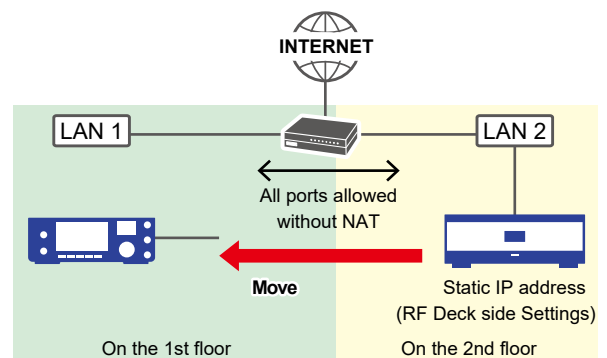


Step 8. Turning OFF the controller and moving it

1. Turn OFF the controller.
① Keep the main power supply switch on the RF deck's back panel ON.

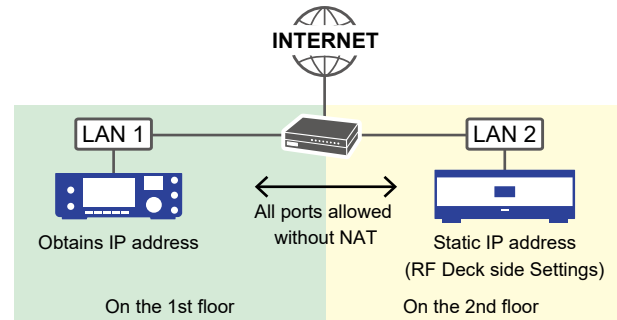


2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



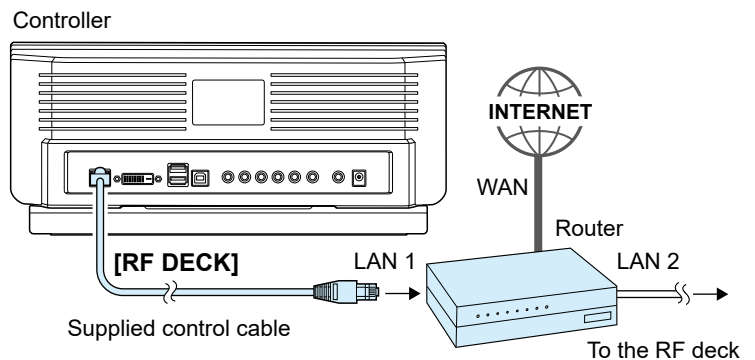
2. Connecting through a LAN — ② From a different segment

Step 1 2 3 4 5 6 7 8 **9** 10



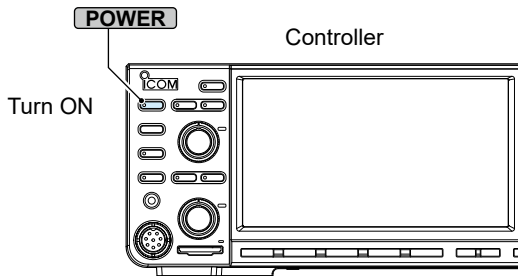
Step 9. Connecting the controller to the LAN

Connect the controller to the router's LAN 1 side.

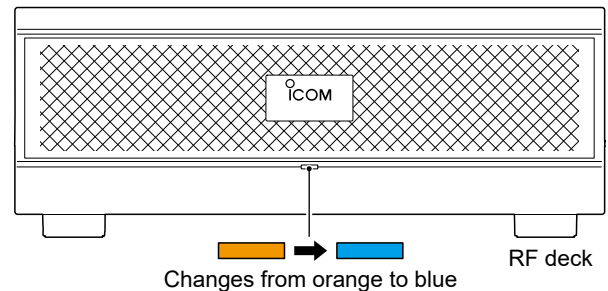


Step 10. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RFx** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 15)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

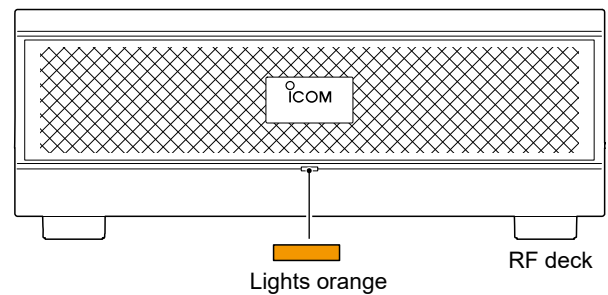
TIP: To manually set the IP addresses

Set "DHCP" to "OFF," and then enter the IP addresses to "IP Address (LAN)" and "IP Address (Controller)."

① Also set "Subnet Mask," "Default Gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network you are connecting to.

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.



1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. Are IP packets reaching the RF deck?

How to confirm:

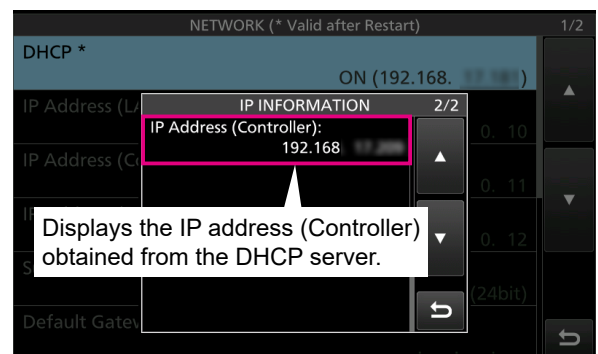
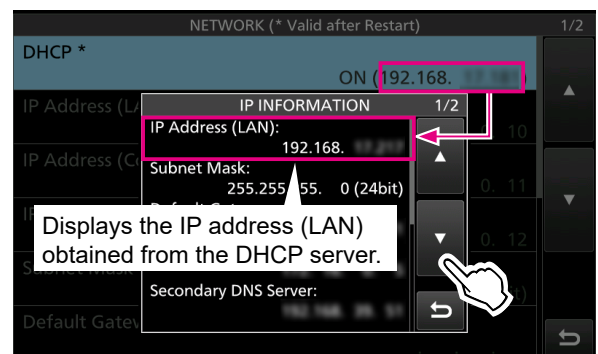
- 3-1. Connect your PC to the network the controller is connected to.
- 3-2. Open Command Prompt on your PC.
- 3-3. Enter the Ping command as shown below, and then push [Enter].


```
ping XXX.XXX.XXX.XXX
```

 - ① Enter a space between “ping” and XXX.XXX.XXX.XXX.
 - ① Enter “IP Address (RF Deck)” set in **Step 7** (p. 13) to “XXX.XXX.XXX.XXX.”
 - Your PC will send test packets to the RF deck.
- 3-4. **When there is a reply from the RF deck**
Go to Steps 4 and 5 to confirm the controller and router settings.
When there is no reply from the RF deck
Go to Steps 6 and 7 to confirm the RF deck settings.
4. **When there is a reply from the RF deck**
Is the controller connected to the network?
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.

5. While the controller is connected to LAN 1, are “IP Address (LAN)” and “IP Address (Controller)” obtained from the DHCP server displayed on the “IP Information” screen?

MENU » **SET > Network > DHCP (Touch for 1 second) > IP Information**

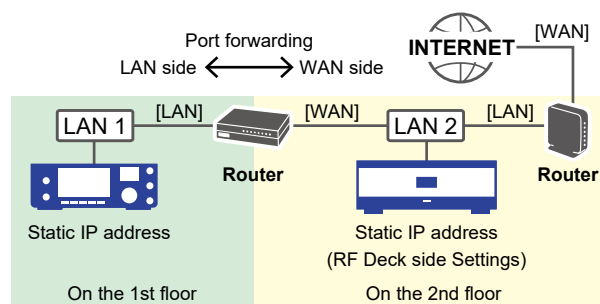


6. **When there is no reply from the RF deck**
Is the RF deck connected to the network? (p. 10)
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
7. Confirm the RF deck settings.
 - 7-1. Confirm the router settings in **Step 2**. (p. 10)
 - 7-2. Connect the controller and RF deck directly.
 - ① When you change the RF deck settings, connect the controller and RF deck directly. If you change the settings while the controller and the RF deck are not connected (**RF❌** blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
 - 7-3. Do the steps starting with **Step 6**. (p. 12)

2. Connecting through a LAN — 3 Port forwarding on the Controller side

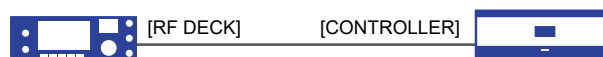
The RF deck is on the WAN side of the router with forward ports, and the controller is on the LAN side.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the router settings
- Step 3.** Connecting the RF deck to the LAN
- Step 4.** Turning ON the transceiver
- Step 5.** Setting "Connection Route"
- Step 6.** Setting the RF deck to a static IP address
- Step 7.** Turning OFF the controller and moving it
- Step 8.** Connecting the controller to the LAN
- Step 9.** Tuning ON the controller
- Step 10.** Setting the controller to static IP addresses
- Step 11.** Setting the router's Port Forwarding function
- Step 12.** Restarting the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.



Step 2. Confirming the router settings

You must assign a static IP address to the RF deck in **Step 6**, and to the controller in **Step 10**. (pp. 18, 20)

- ① To check in advance which static IP addresses can be used for the RF deck and controller, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, the router is on the 2nd floor).
(Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))

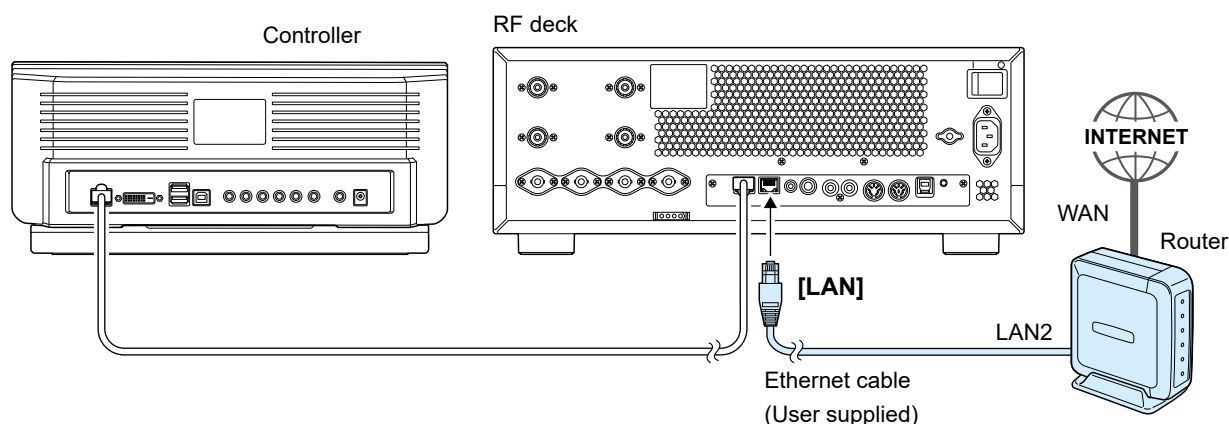
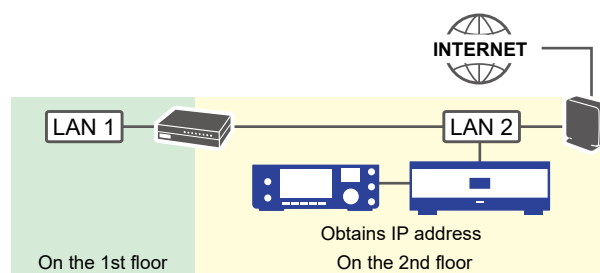
You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices.
(Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)

However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.

- ① Refer to the router's manual for details about its functions and settings.

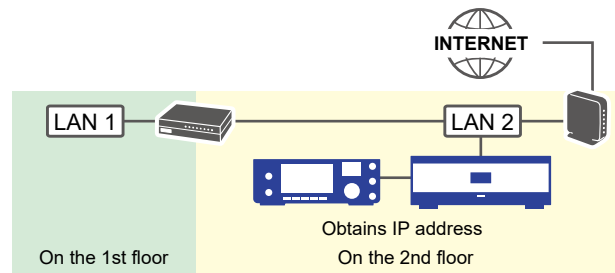
Step 3. Connecting the RF deck to the LAN

Connect the RF deck to the router (LAN 2 side).



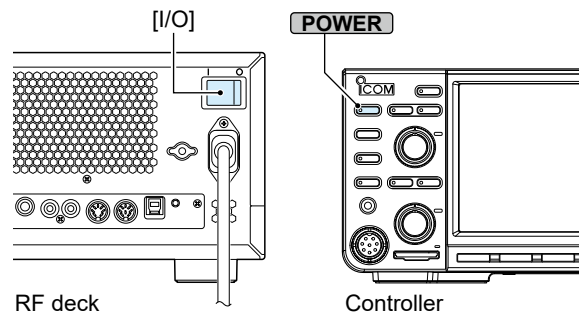
2. Connecting through a LAN — ③ Port forwarding on the Controller side

Step 1 2 3 **4** 5 6 7 8 9 10 11 12



Step 4. Turning ON the transceiver

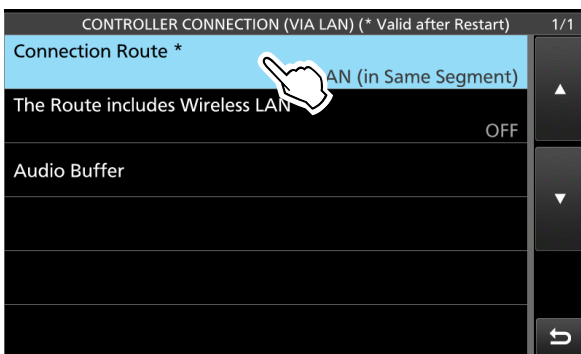
- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



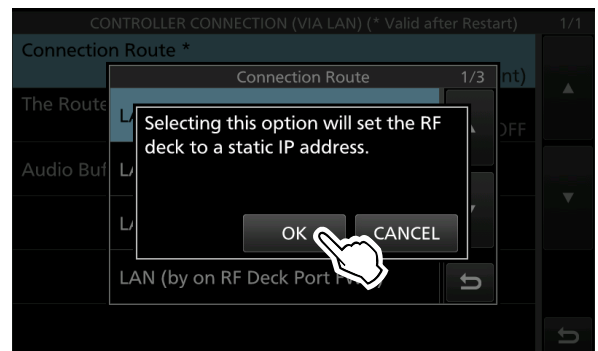
Step 5. Setting "Connection Route"

- Touch "Connection Route."

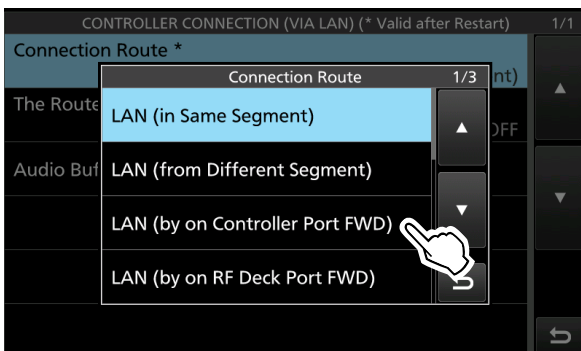
MENU » SET > Network > Controller Connection (via LAN) > **Connection Route**



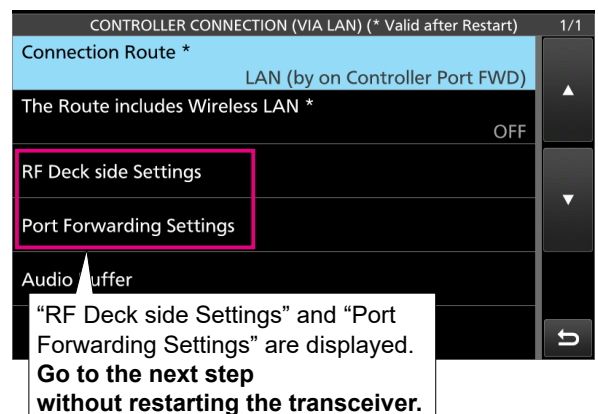
- Touch [OK].



- Touch "LAN (by on Controller Port FWD)."



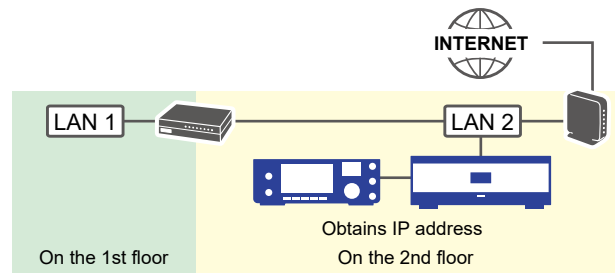
- Confirm that "LAN (by on Controller Port FWD)" is selected and "RF Deck side Settings" and "Port Forwarding Settings" are displayed.



- "Selecting this option will set the RF deck to a static IP address." will be displayed.

2. Connecting through a LAN — ③ Port forwarding on the Controller side

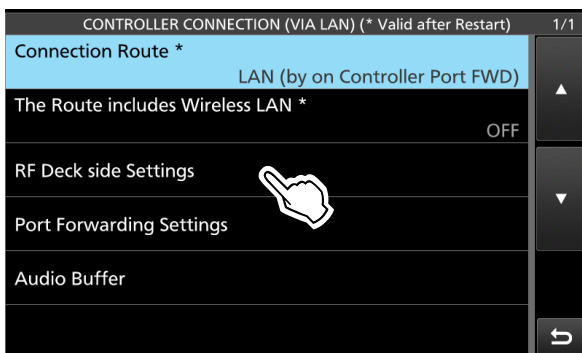
Step 1 2 3 4 5 **6** 7 8 9 10 11 12



Step 6. Setting the RF deck to a static IP address

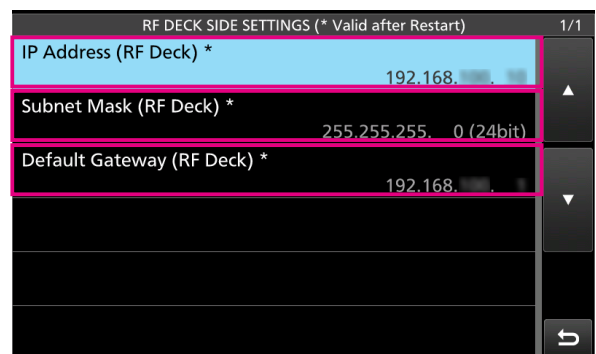
1. Touch "RF Deck side Settings."

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



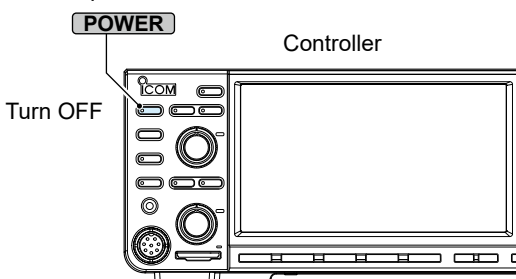
2. Set the RF deck's static IP address to "IP Address (RF Deck)."

① See page 16 for details about available IP addresses.
① Also set "Subnet Mask (RF Deck)" and "Default Gateway (RF Deck)" according to the network the RF deck is connected to.

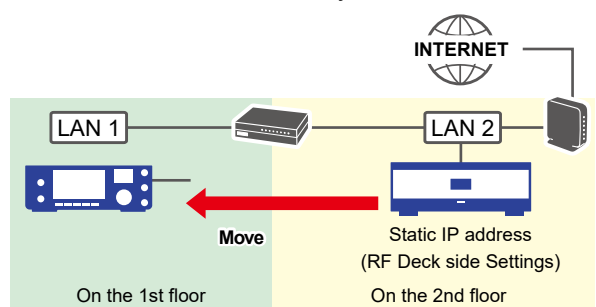


Step 7. Turning OFF the controller and moving it

1. Turn OFF the controller.
① Keep the main power supply switch on the RF deck's back panel ON.

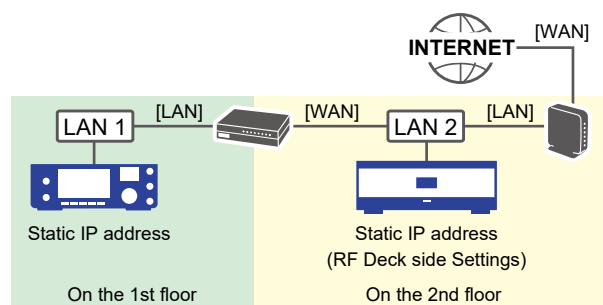


2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



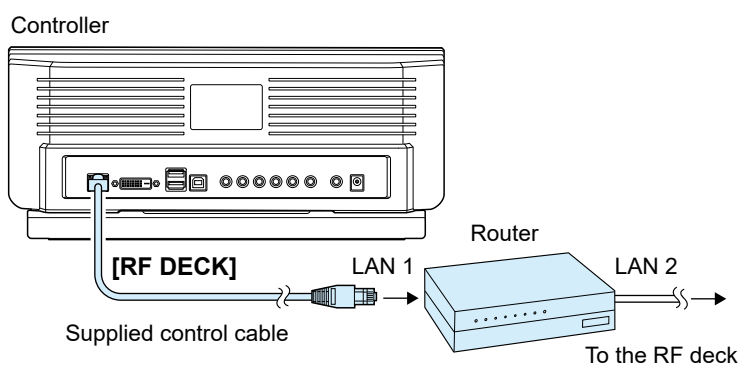
2. Connecting through a LAN — ③ Port forwarding on the Controller side

Step 1 2 3 4 5 6 7 **8 9** 10 11 12



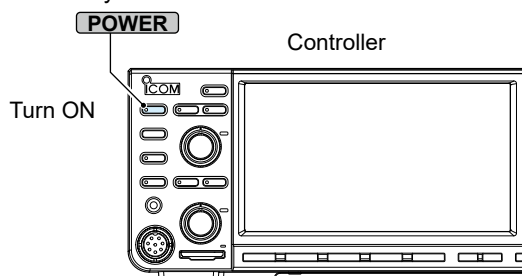
Step 8. Connecting the controller to the LAN

Connect the controller to the LAN side of the router that separates 2 networks (one that the RF deck is connected to, and the other that the controller is connected to).



Step 9. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



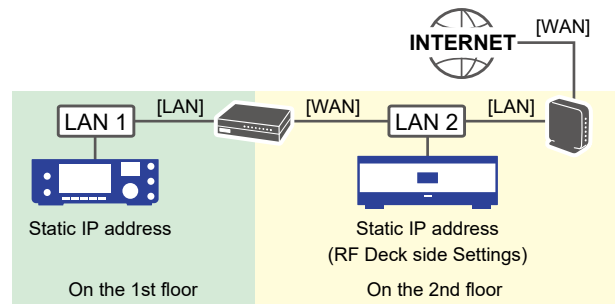
2. When an error dialog is displayed, touch [CLOSE].



- ① You do not need to restart the IC-7760. This dialog is displayed every time the controller is ON until the controller settings are completed.

2. Connecting through a LAN — ③ Port forwarding on the Controller side

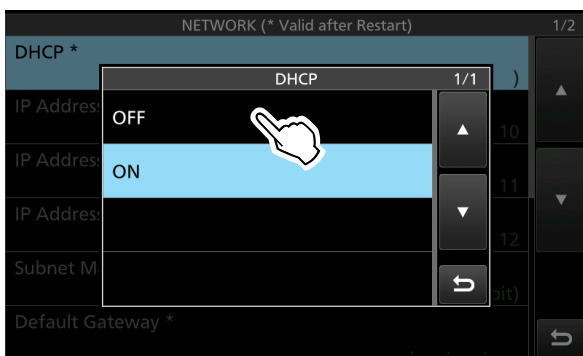
Step 1 2 3 4 5 6 7 8 9 **10** 11 12



Step 10. Setting the controller to static IP addresses

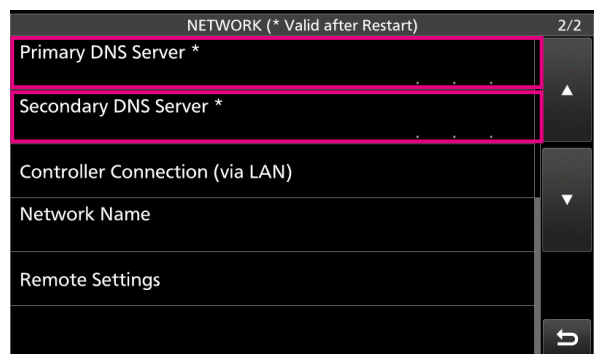
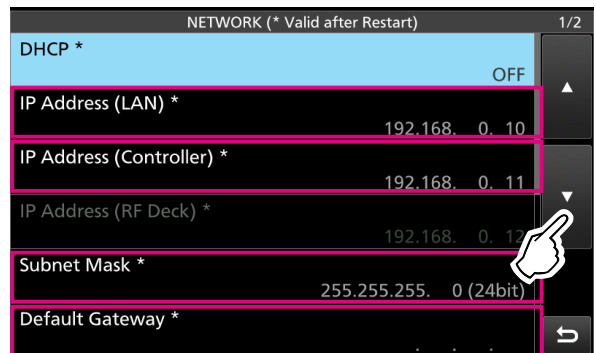
- Set "DHCP" to "OFF."

MENU » **SET > Network > DHCP**



- Set "IP Address (LAN)" and "IP Address (Controller)."

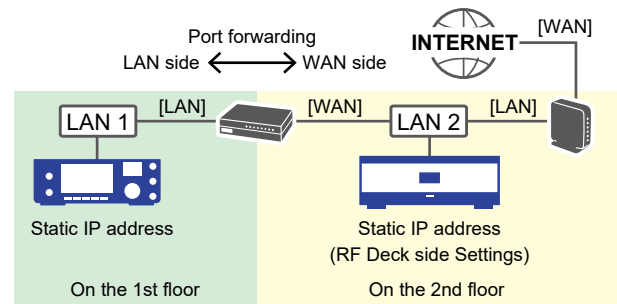
- ① BE SURE to set the IP addresses that are outside the range of IP addresses automatically assigned by the router's DHCP server.
- ② Also set "Subnet mask," "Default gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network the controller is connected to.



NOTE: DO NOT change the settings on "RF Deck side Settings" from what was set in **Step 6**.

2. Connecting through a LAN — 3 Port forwarding on the Controller side

Step 1 2 3 4 5 6 7 8 9 10 **11** 12



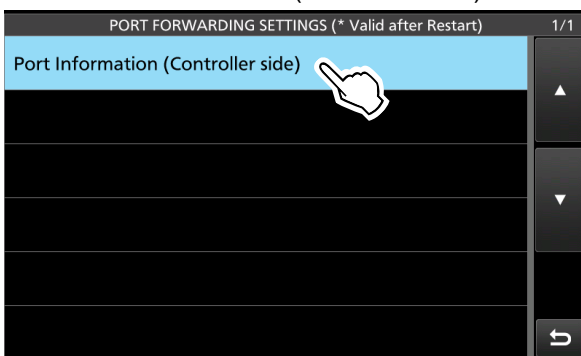
Step 11. Setting the router's Port Forwarding function

Set the router that the controller is connected to.

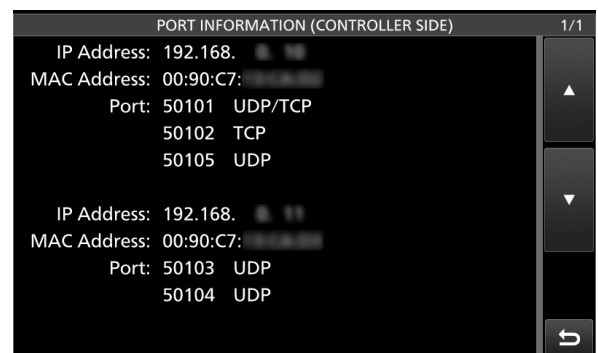
- To confirm the information for the router's port forwarding settings (Destination IP address/MAC address, port numbers, and protocol), open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network > Controller Connection (via LAN) > **Port Forwarding Settings**

- Touch "Port Information (Controller side)."



- Set the router to forward the ports displayed on the screen.

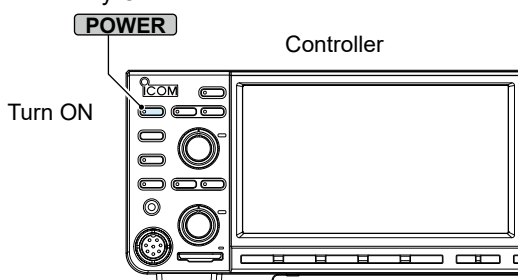


① You cannot change the port numbers. If there are any devices using the same port number as this product, change the port number on those devices.

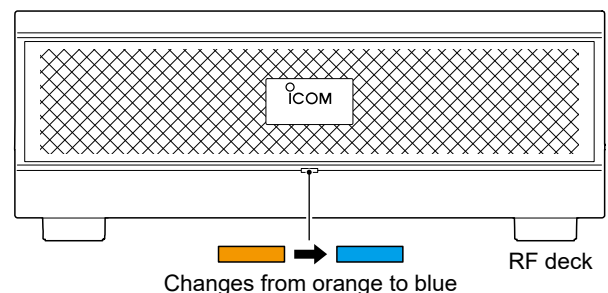
① Check the router's manual about how to forward the ports.

Step 12. Turning ON the controller

- Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



- Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



① If **RF** blinks and "The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 22)

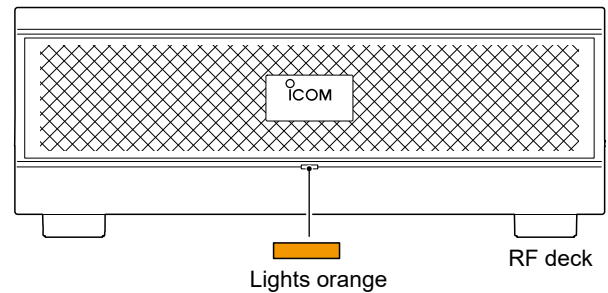
① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

TIP: To automatically set the IP addresses

When the router has the function that the DHCP server assigns a static IP address to a device's MAC address, you can set "DHCP" to "ON" to automatically obtain the IP addresses for "IP Address (LAN)" and "IP Address (Controller)."

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.

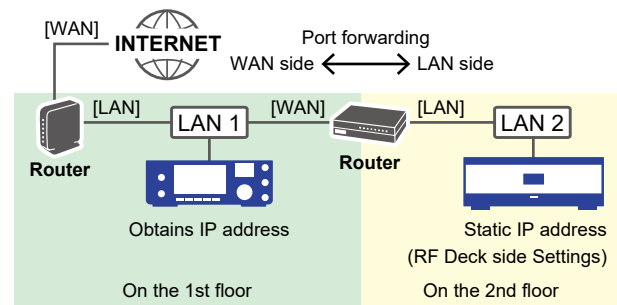


1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. Is the RF deck connected to the network?
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
4. Is the controller connected to the network?
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.
5. While connecting the controller to LAN 1, confirm that the controller settings set in **Step 10** and **Step 11** are correct. (pp. 20, 21)
 - ① If the controller cannot be connected to the RF deck, go to the next step.
6. Connect the controller and RF deck directly, and then confirm that the RF deck settings set in **Step 5** and **Step 6** are correct. (pp. 17, 18)
 - ① When you change the RF deck settings, connect the controller and RF deck directly.
If you change the settings while the controller and the RF deck are not connected (**RF❌** blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
7. Do **Step 7** to **Step 9**. (pp. 18, 19)

2. Connecting through a LAN — 4 Port forwarding on the RF deck side

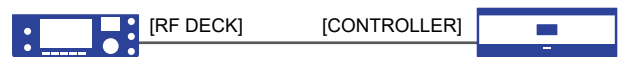
The controller is on the WAN side of the router with forward ports, and the RF deck is on the LAN side.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the router settings
- Step 3.** Connecting the RF deck to the LAN
- Step 4.** Turning ON the transceiver
- Step 5.** Confirming the DHCP client function on the IC-7760
- Step 6.** Setting "Connection Route"
- Step 7.** Setting the RF deck to a static IP address
- Step 8.** Setting "Destination Address"
- Step 9.** Setting the router's Port Forwarding function
- Step 10.** Turning OFF the controller and moving it
- Step 11.** Connecting the controller to the LAN
- Step 12.** Tuning ON the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.

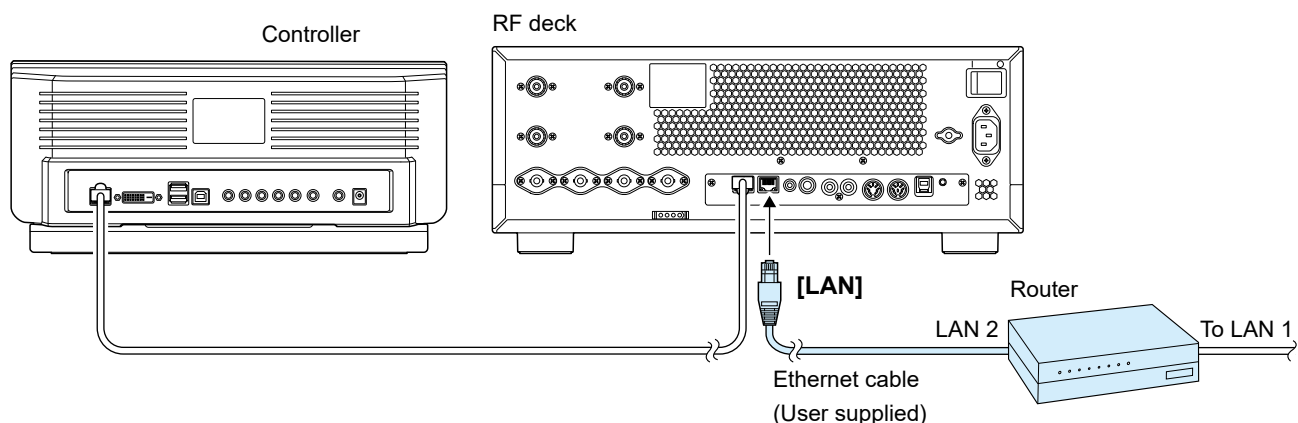
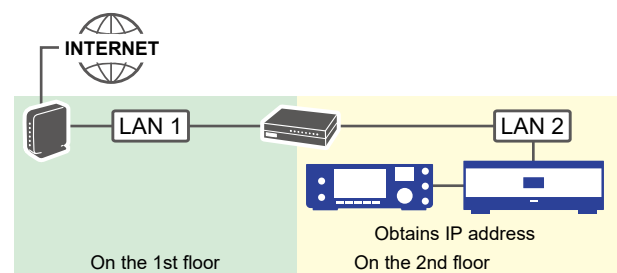


Step 2. Confirming the router settings

- Confirm that the router's DHCP server function is set to "ON."
 - ① The IC-7760's DHCP client function is set to "ON" as the default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.
- You must assign a static IP address to the RF deck in **Step 7.** (p. 26)
 - ① To check in advance which static IP addresses can be used for the RF deck, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, the router is on the 2nd floor).
(Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))
 - You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices.
(Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)
 - However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.
- ① Refer to the router's manual for details about its functions and settings.

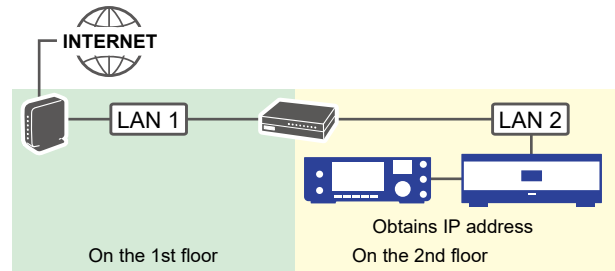
Step 3. Connecting the RF deck to the LAN

Connect the RF deck to the router (LAN 2 side).



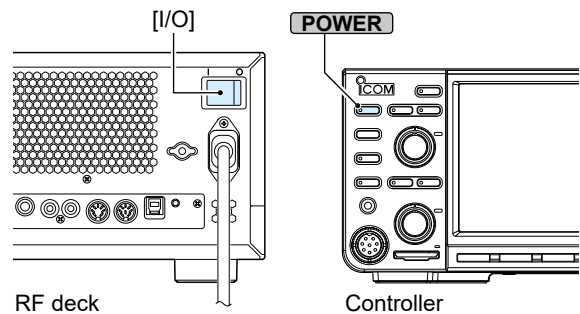
2. Connecting through a LAN — 4 Port forwarding on the RF deck side

Step 1 2 3 **4** 5 6 7 8 9 10 11 12



Step 4. Turning ON the transceiver

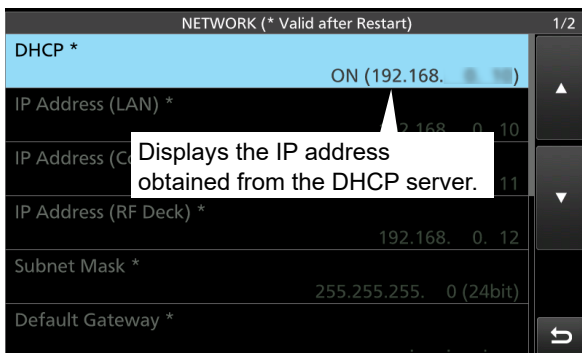
- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



Step 5. Confirming the DHCP client function on the IC-7760

Confirm that "DHCP" is set to "ON" (default).

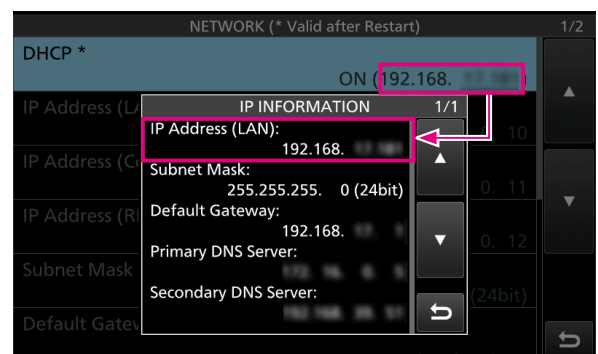
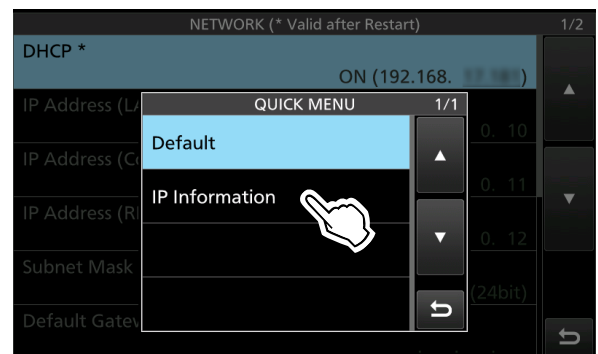
MENU » **SET > Network > DHCP**



TIP: To confirm detailed network information

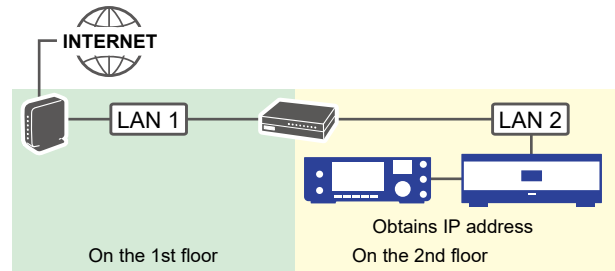
You can confirm the IP address and network information obtained from the DHCP server on the "IP Information" screen.

MENU » **SET > Network > DHCP** (Touch for 1 second)



2. Connecting through a LAN — 4 Port forwarding on the RF deck side

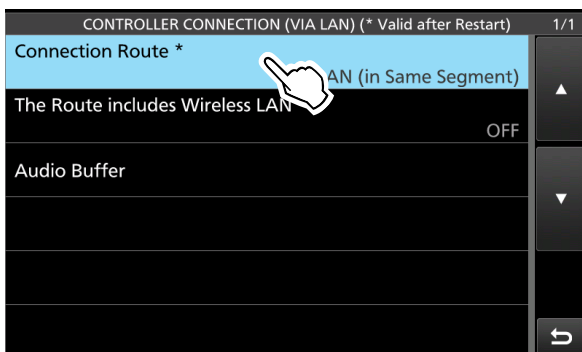
Step 1 2 3 4 5 **6** 7 8 9 10 11 12



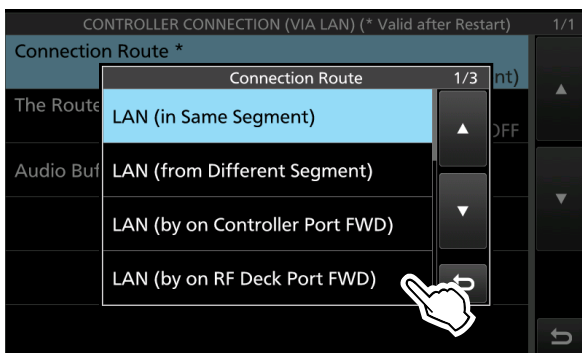
Step 6. Setting “Connection Route”

1. Touch “Connection Route.”

MENU » SET > Network >
Controller Connection (via LAN) >
Connection Route

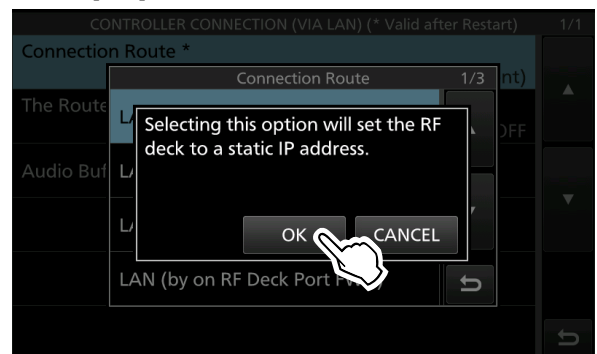


2. Touch “LAN (by on Controller Port FWD).”

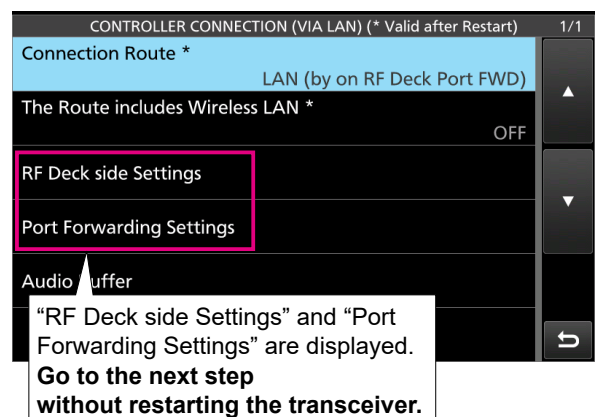


- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Touch [OK].

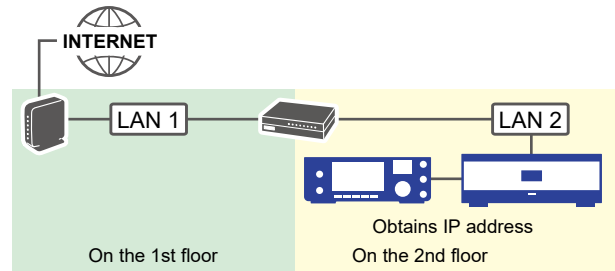


4. Confirm that “LAN (by on RF Deck Port FWD)” is selected and “RF Deck side Settings” and “Port Forwarding Settings” are displayed.



2. Connecting through a LAN — 4 Port forwarding on the RF deck side

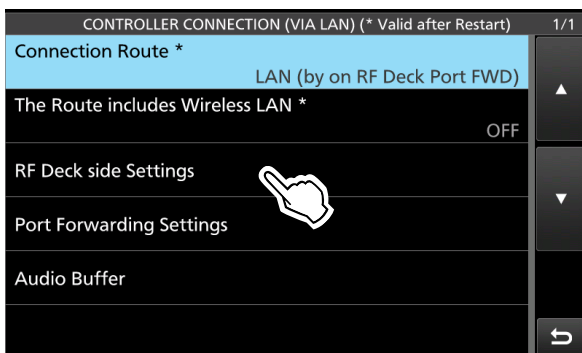
Step 1 2 3 4 5 6 **7** 8 9 10 11 12



Step 7. Setting the RF deck to a static IP address

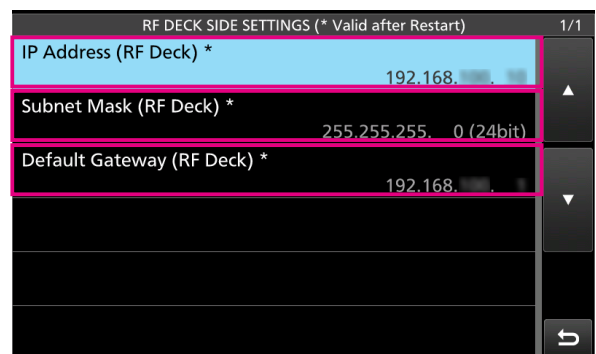
1. Touch “RF Deck side Settings.”

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



2. Set the RF deck’s static IP address to “IP Address (RF Deck).”

① See page 23 for details about available IP addresses.
① Also set “Subnet Mask (RF Deck)” and “Default Gateway (RF Deck)” according to the network the RF deck is connected to.

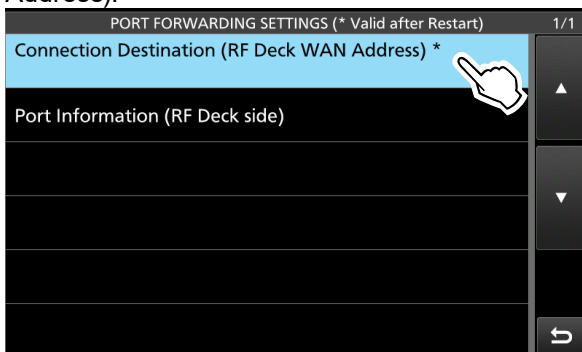


Step 8. Setting “Destination Address”

1. Open the PORT FORWARDING SETTINGS screen.

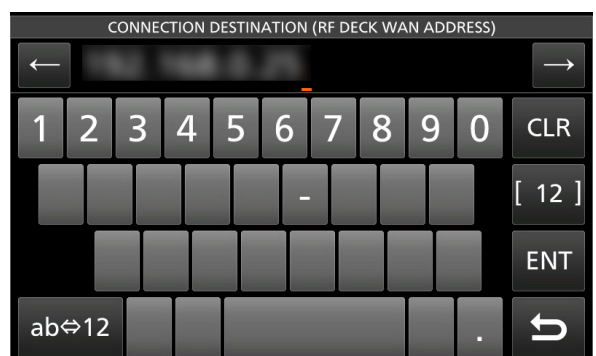
MENU » SET > Network >
Controller Connection (via LAN) >
Port Forwarding Settings

2. Touch “Connection Destination (RF Deck WAN Address).”



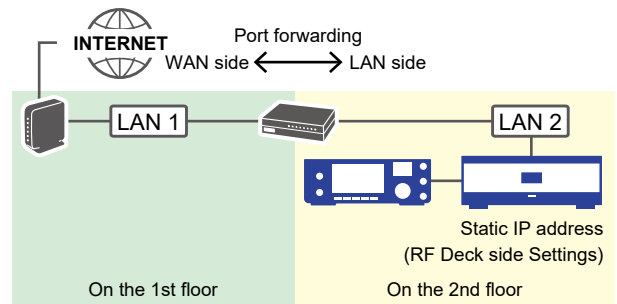
3. Enter the router’s global IP address.

① Touching [ab↔12] selects alphabet mode or numeric mode.



2. Connecting through a LAN — 4 Port forwarding on the RF deck side

Step 1 2 3 4 5 6 7 8 **9** 10 11 12



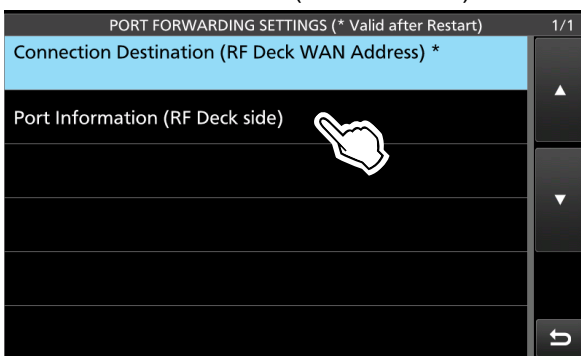
Step 9. Setting the router's Port Forwarding function

Set the router that the RF deck is connected to.

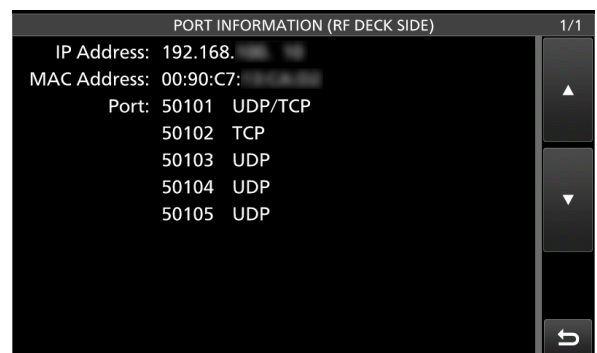
- To confirm the information for the router's port forwarding settings (Destination IP address/MAC address, port numbers, and protocol), open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network > Controller Connection (via LAN) > **Port Forwarding Settings**

- Touch "Port Information (RF Deck side)."



- Set the router to forward the ports displayed on the screen.

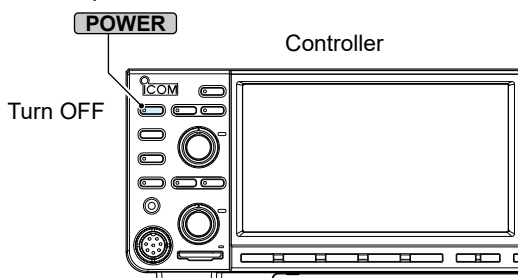


① You cannot change the port numbers. If there are any devices using the same port number as this product, change the port number on those devices.

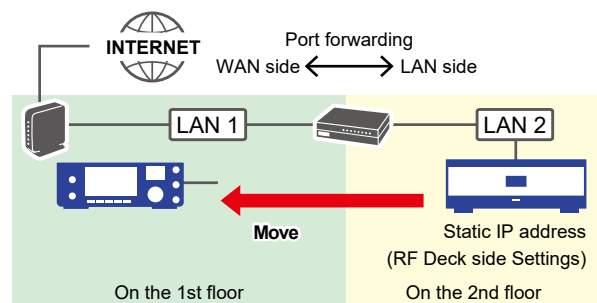
① Check the router's manual about how to forward the ports.

Step 10. Turning OFF the controller and moving it

- Turn OFF the controller.
 - Keep the main power supply switch on the RF deck's back panel ON.

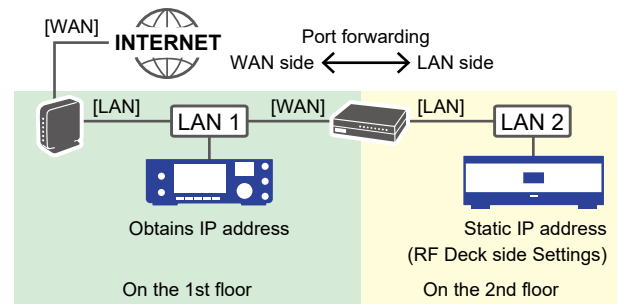


- Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



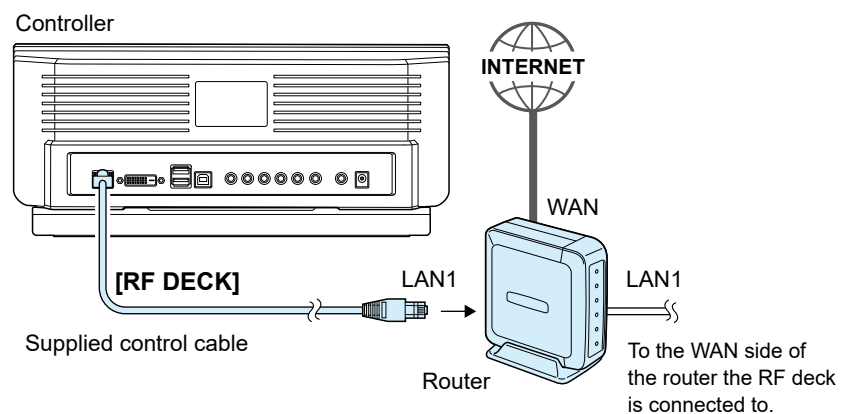
2. Connecting through a LAN — 4 Port forwarding on the RF deck side

Step 1 2 3 4 5 6 7 8 9 10 **11** 12



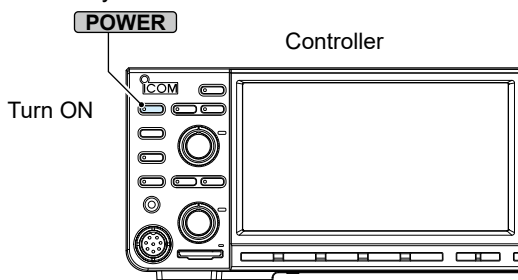
Step 11. Connecting the controller to the LAN

Connect the controller to the LAN side of the router.

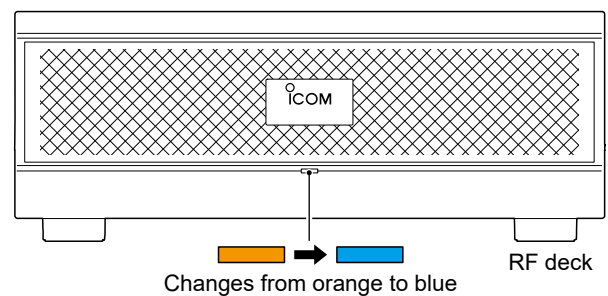


Step 12. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RF** blinks and "❌ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 29)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

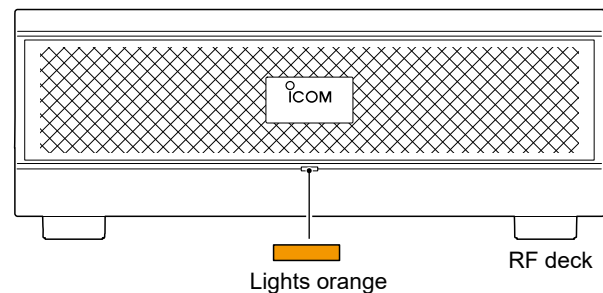
TIP: To manually set the IP addresses

Set "DHCP" to "OFF," and then enter the IP addresses to "IP Address (LAN)" and "IP Address (Controller)."

① Also set "Subnet Mask" according to the network. When accessing the Internet for Remotely controlling the IC-7760 using NTP function, and so on, set "Default Gateway," "Primary DNS Server," and "Secondary DNS Server."

If “ The RF deck is not detected.” is displayed:

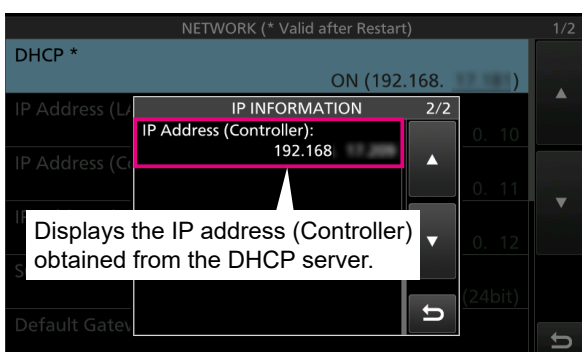
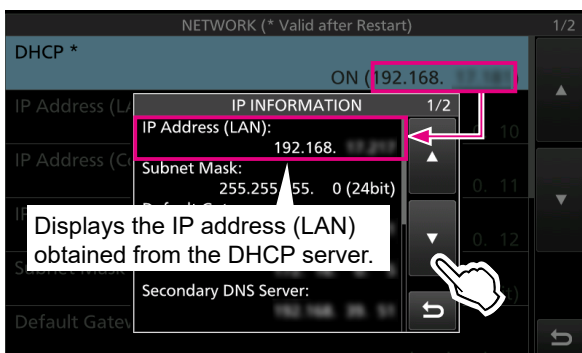
If  blinks and “ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.



- Have you connected the controller and RF deck directly to pair them? (p. 2)
 - It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
- Is the RF deck’s main power supply switch turned ON? (p. 2)
- Is the RF deck connected to the network?
 - If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
- Is the controller connected to the network?
 - If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.
- While the controller is connected to LAN 1, are “IP Address (LAN)” and “IP Address (Controller)” obtained from the DHCP server displayed on the “IP Information” screen?

- While connecting the controller to LAN 1, confirm that the controller settings set in **Step 8** and **Step 9** are correct. (pp. 26, 27)
 - If the controller cannot be connected to the RF deck, go to the next step.
- Connect the controller and RF deck directly, and then confirm that the RF deck settings set in **Step 6** and **Step 7** are correct. (pp. 25, 26)
 - When you change the RF deck settings, connect the controller and RF deck directly. If you change the settings while the controller and the RF deck are not connected ( blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
- Do **Step 10**. (p. 27)

MENU » SET > Network > DHCP (Touch for 1 second) > IP Information



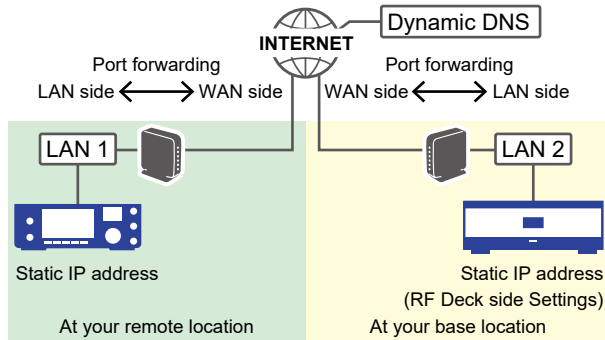
3. Connecting through the Internet — About the connecting route

For connecting the controller and RF deck through the Internet, you can choose one of the following 5 connection routes.

Same segment, Different segment

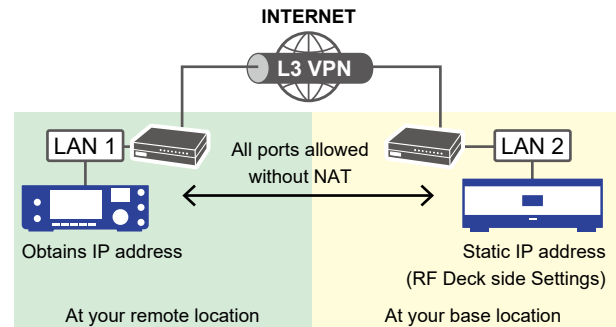
① Port forwarding on both sides

Connecting the controller and the RF deck through the Internet, and routers with port forwarding are on both the controller and RF deck side (p. 31)



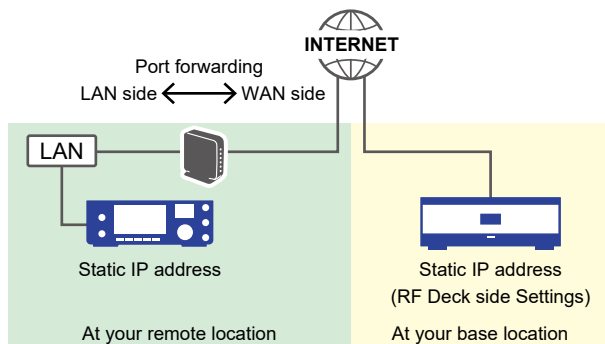
④ L3 VPN from a different segment

Connecting the controller and the RF deck through the Internet using the Layer 3 VPN (such as PPTP) (p. 55)



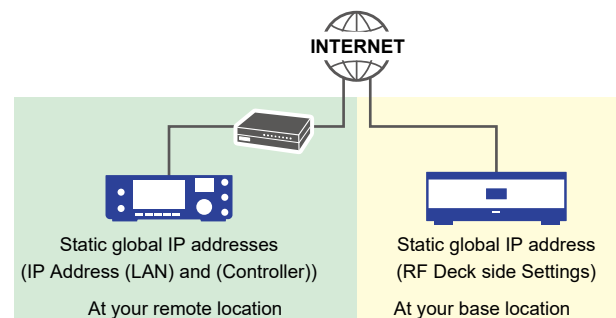
② Port forwarding on the Controller side

Connecting the controller and the RF deck with a global static IP address through the Internet (p. 41)



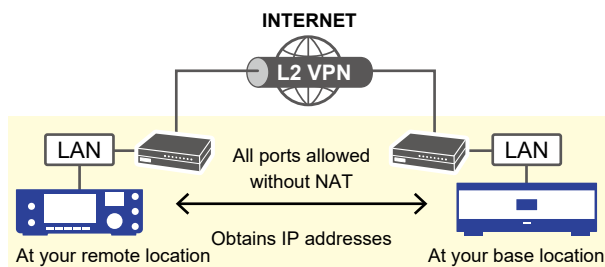
⑤ With static IP addresses

Connecting the controller and the RF deck through the Internet, with global static IP addresses (p. 62)



③ L2 VPN in the same segment

Connecting the controller and the RF deck through the Internet using the Layer 2 VPN (such as L2TP) (p. 49)



NOTE:

- Port forwarding on a router connected to the Internet has risks such as unauthorized access from external networks and virus infections. Forward only the necessary ports, and immediately disable any port forwarding for unused ports.
Icom is not responsible for any accidents caused by security degradation resulting from this port forwarding.
 - When connecting through the Internet, a network environment with the following stable network speed is required.
 - Controller → RF deck: 2 Mbps or faster
 - RF deck → Controller: 4 Mbps* or faster
- * When "Output Select" of "USB AF/IF Output," "LINE-OUT AF/IF Output," or "LAN AF/IF Output" in the "Connectors" menu is set to "IF," at least 7 Mbps is required. When all of them are set to "AF," at least 4 Mbps is required.

TIP: What is "Port Forwarding"?

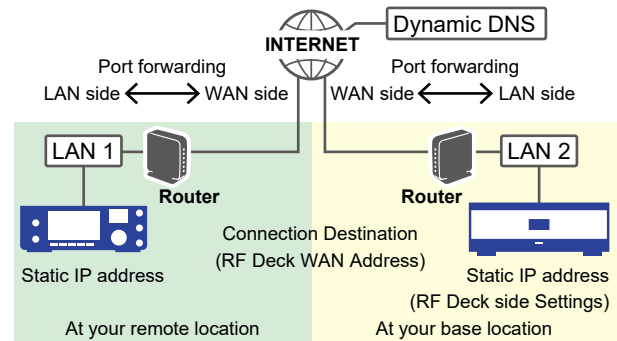
This is a router setting required to allow communication between devices on the external network and devices on the LAN through the Internet.

① Port forwarding is an effective method when the connected device is not compatible with the router's UPnP function.

3. Connecting through the Internet — 1 Port forwarding on both sides

The controller and RF deck are connected through the Internet, and routers with port forwarding are on both the controller and RF deck sides.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the router settings
- Step 3.** Connecting the RF deck to the LAN
- Step 4.** Turning ON the transceiver
- Step 5.** Setting “Connection Route”
- Step 6.** Setting the RF deck to a static IP address
- Step 7.** Setting the router’s Port Forwarding function
- Step 8.** Configuring the router to use the Dynamic DNS service
- Step 9.** Turning OFF the controller and moving it
- Step 10.** Connecting the controller to the LAN
- Step 11.** Tuning ON the controller
- Step 12.** Setting the controller to a static IP address
- Step 13.** Setting “Destination Address”
- Step 14.** Setting the router’s Port Forwarding function
- Step 15.** Restarting the controller



Before configuring the remote control system

- The routers at both locations require a global IPv4 address, and you must allow access from the Internet (external) side by forwarding ports.
- To forward ports, you must configure the routers with the port numbers and protocols described in **Step 7** and **Step 14** (pp. 34, 38).
- To access from the controller, you must specify the global static IPv4 address or domain name assigned to the router (WAN side) that the RF deck is connected to.
- If you are renting a router, ask your ISP about how to forward ports and verify your global IP address (static/dynamic).
 - ① If you are using a commercially available router, refer to the product manual for instructions on how to confirm these settings.
 - ① For services providing a static IPv4 global IP address, contact your ISP.

Using a Dynamic DNS Service

If a dynamic global IP address has been assigned to the router (WAN side) that the RF deck is connected to, we recommend subscribing to a static IP address service from your service provider, or signing up with a provider that offers Dynamic DNS services. This manual provides detailed instructions on how to connect to the RF deck using a contracted Dynamic DNS service.

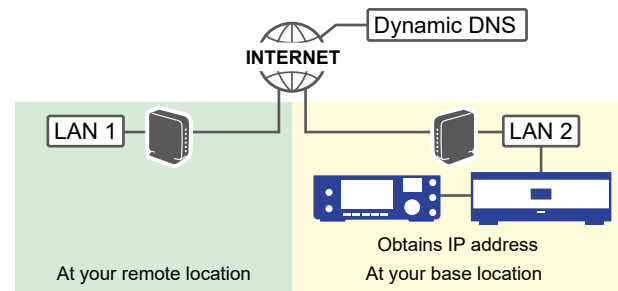
Normally, the router’s WAN address is assigned a global IP address that is dynamically changed by the provider. When operating remotely through the Internet, you specify the IP address directly to access the RF deck from the controller. However, if the global IP address on the WAN side of the router that the RF deck is connected to changes dynamically and it differs from “Connection Destination (RF Deck WAN Address)” set in **Step 13** (p. 38), you will be unable to connect.

By subscribing to a Dynamic DNS service, you can connect using the domain name set to “Connection Destination (RF Deck WAN Address)” even if the dynamic global IP address changes.

- ① To use a Dynamic DNS service, you must register as a user on the service provider’s website.
 - After registering on the Dynamic DNS website, configure the specified domain name, user ID, password, and other details on the router that the RF deck is connected to (The router must support Dynamic DNS services).
- ① Confirm that your router is compatible with the Dynamic DNS service you want to use.
- ① If your router recommends a specific Dynamic DNS service, use that one.
- ① If you do not use a Dynamic DNS service, you will need to change the IP address set to “Connection Destination (RF Deck WAN Address)” in **Step 13** whenever the assigned global IP address changes.

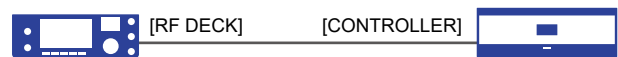
3. Connecting through the Internet — 1 Port forwarding on both sides

Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



Step 1. Pairing the controller with the RF deck

See page 2 for details.

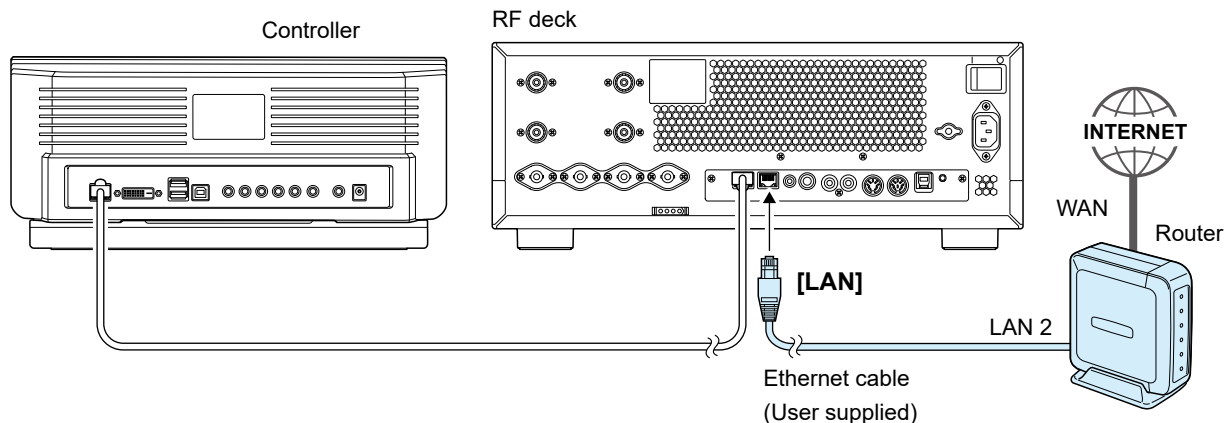


Step 2. Confirming the router settings

- Confirm that the router supports port forwarding.
- You must assign a static IP address to the RF deck in **Step 6**, and to the controller in **Step 12**. (pp. 34, 37)
 - ① To check in advance which static IP addresses can be used for the RF deck and controller, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, at your remote location and at your base location). (Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))
 - You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices. (Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)
 - However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.
- ① Refer to the router's manual for details about its functions and settings.

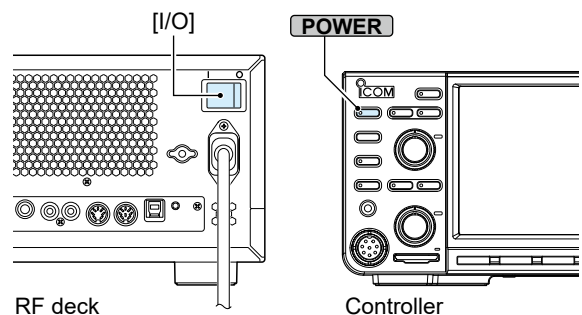
Step 3. Connecting the RF deck to the LAN

Connect the RF deck to the router (LAN 2 side).



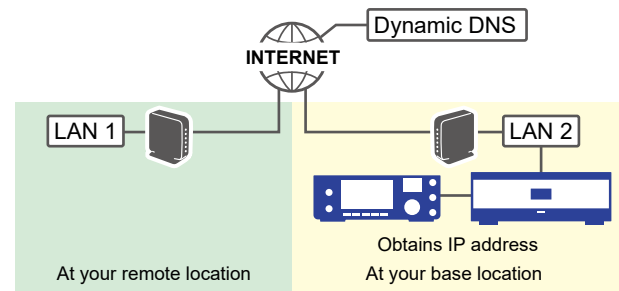
Step 4. Turning ON the transceiver

- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



3. Connecting through the Internet — ① Port forwarding on both sides

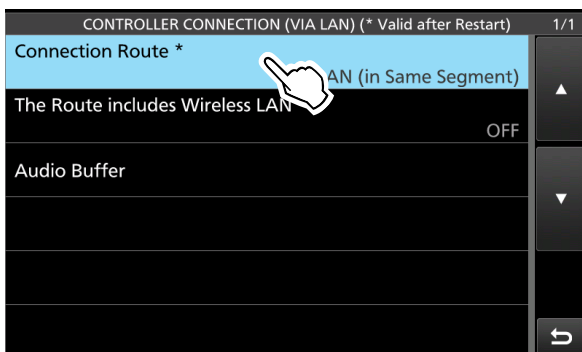
Step 1 2 3 4 **5** 6 7 8 9 10 11 12 13 14 15



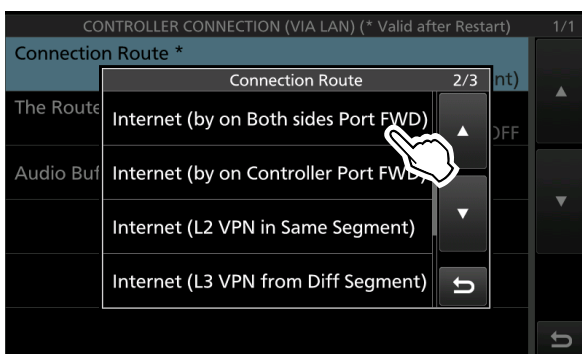
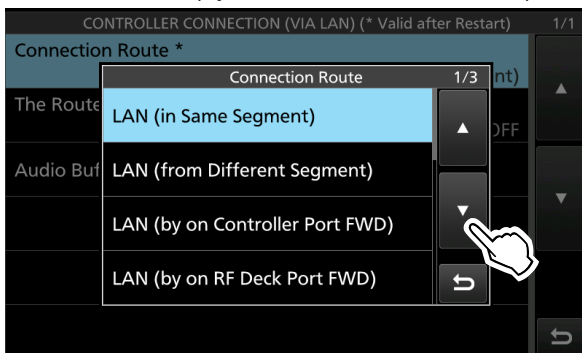
Step 5. Setting “Connection Route”

1. Touch “Connection Route.”

MENU » SET > Network > Controller Connection (via LAN) > **Connection Route**

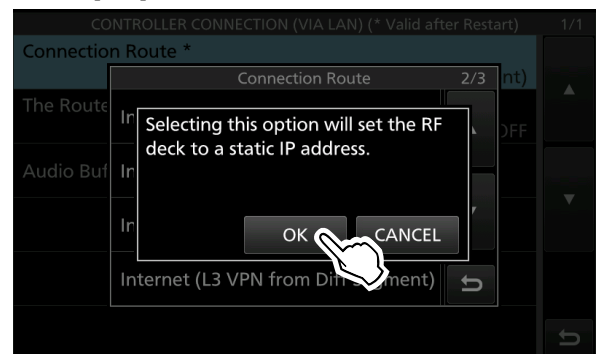


2. Touch “Internet (by on Both sides Port FWD).”

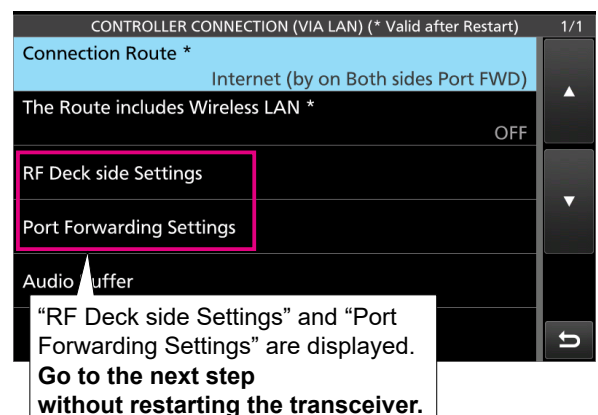


- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Touch [OK].

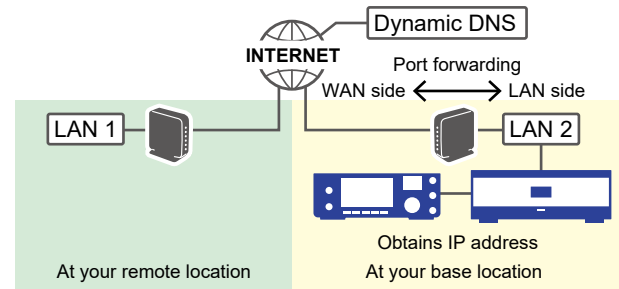


4. Confirm that “Internet (by on Both sides Port FWD)” is selected and “RF Deck side Settings” and “Port Forwarding Settings” are displayed.



3. Connecting through the Internet — ① Port forwarding on both sides

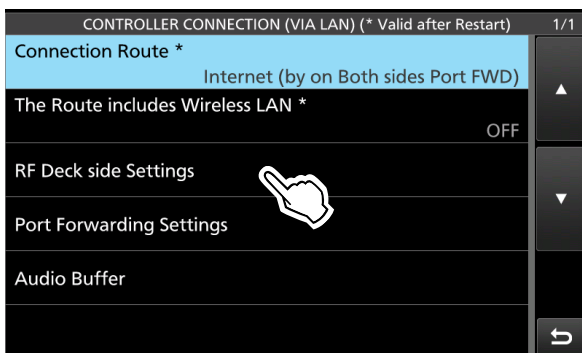
Step 1 2 3 4 5 **6** 7 8 9 10 11 12 13 14 15



Step 6. Setting the RF deck to a static IP address

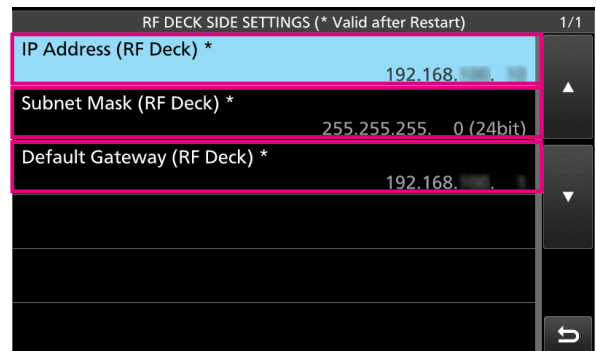
1. Touch “RF Deck side Settings.”

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



2. Set the RF deck’s static IP address to “IP Address (RF Deck).”

① See page 32 for details about available IP addresses.
① Also set “Subnet Mask (RF Deck)” and “Default Gateway (RF Deck)” according to the network the RF deck is connected to.



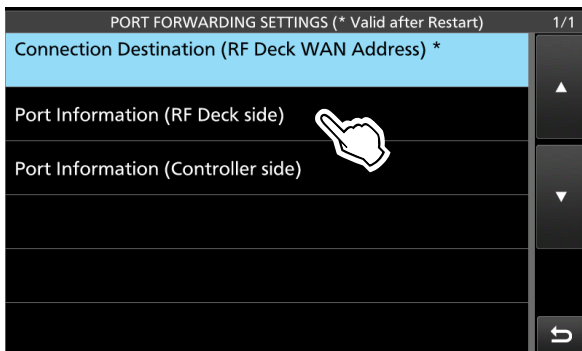
Step 7. Setting the router’s Port Forwarding function

Set the router that the RF deck is connected to.

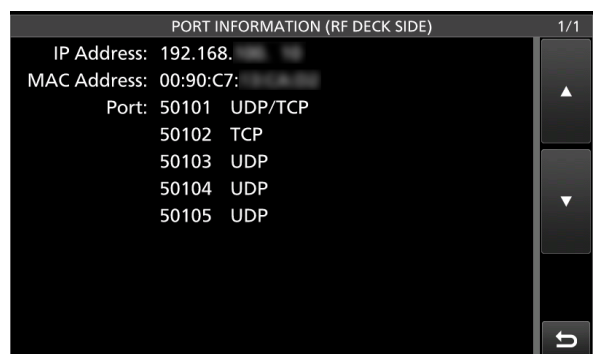
1. To confirm the information for the router's port forwarding settings (Destination IP address/MAC address, port numbers, and protocol), open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network >
Controller Connection (via LAN) >
Port Forwarding Settings

2. Touch “Port Information (RF Deck side).”



3. Set the router to forward the ports displayed on the screen.

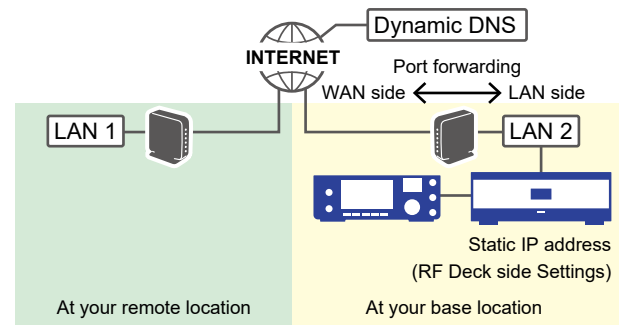


① You cannot change the port numbers. If there are any devices using the same port number as this product, change the port number on those devices.

① Check the router’s manual about how to forward the ports.

3. Connecting through the Internet — 1 Port forwarding on both sides

Step 1 2 3 4 5 6 7 **8 9** 10 11 12 13 14 15



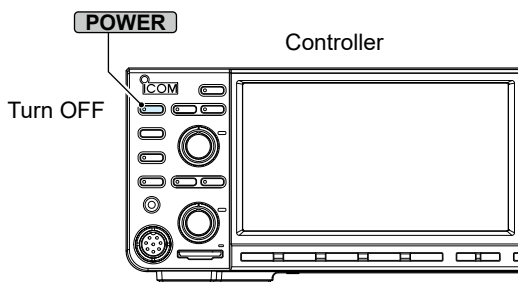
Step 8. Configuring the router to use the Dynamic DNS service

Set the domain name provided by the Dynamic DNS service on the router that you forward the ports in **Step 7**.

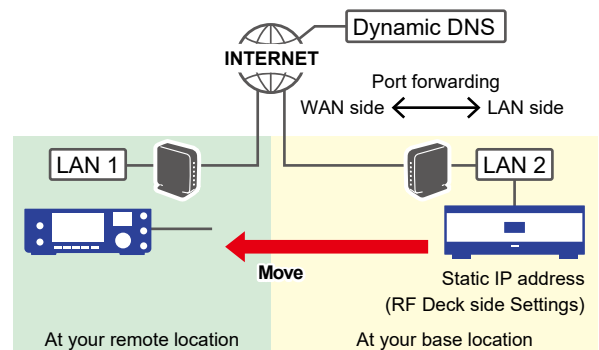
- ① When you do not use any Dynamic DNS services, or use global static IP addresses, go to the next step.
- ① By configuring the user ID, password, and other credentials for your Dynamic DNS service on a router that supports Dynamic DNS, the domain name is linked to the router's WAN IP address. Once linked, even if the router's WAN IP address changes, you can connect to the RF deck as long as the domain name is set as the destination on the controller.

Step 9. Turning OFF the controller and moving it

1. Turn OFF the controller.
 - ① Keep the main power supply switch on the RF deck's back panel ON.

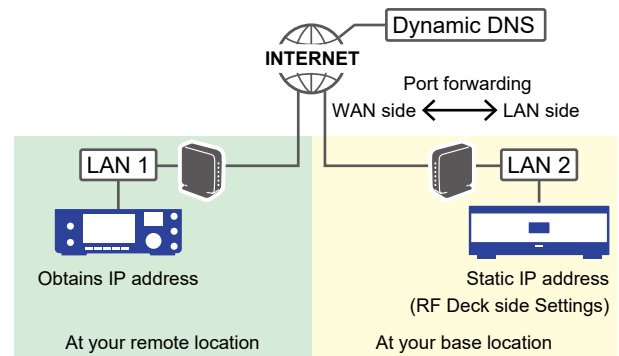


2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



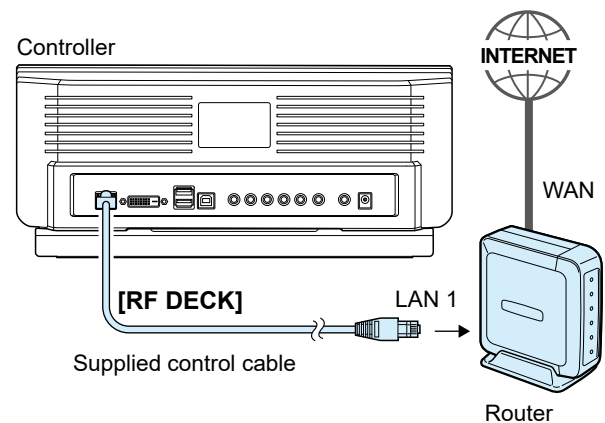
3. Connecting through the Internet — ① Port forwarding on both sides

Step 1 2 3 4 5 6 7 8 9 **10** 11 12 13 14 15



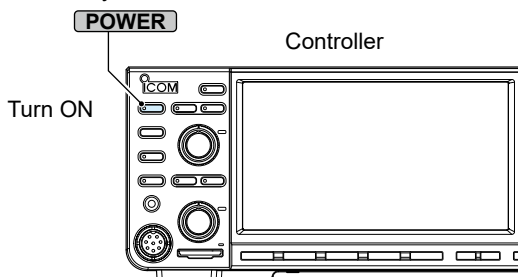
Step 10. Connecting the controller to the LAN

Connect the controller to the router's LAN 1 side at your remote location.



Step 11. Turning ON the controller

1. Turn ON the controller.
① The main power supply switch on the RF deck is already ON.



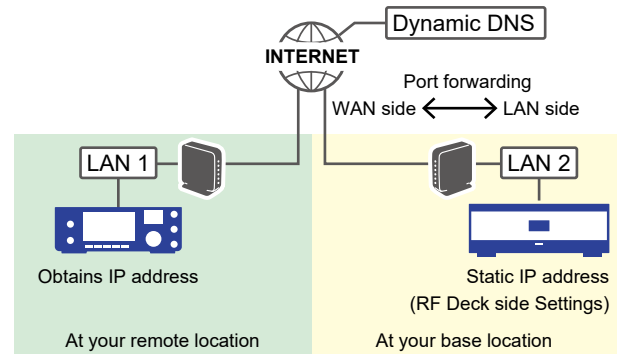
2. When an error dialog is displayed, touch [CLOSE].



- ① You do not need to restart the IC-7760. This dialog is displayed every time the controller is ON until the controller settings are completed.

3. Connecting through the Internet — 1 Port forwarding on both sides

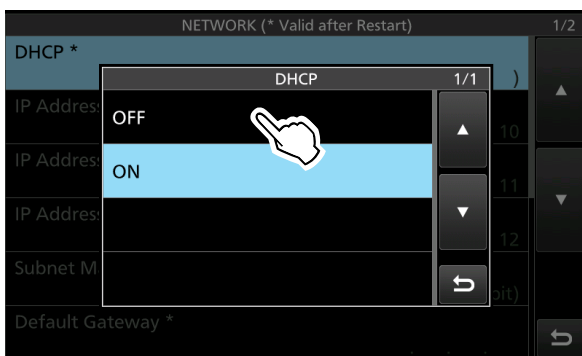
Step 1 2 3 4 5 6 7 8 9 10 11 **12** 13 14 15



Step 12. Setting the controller to static IP addresses

1. Set "DHCP" to "OFF."

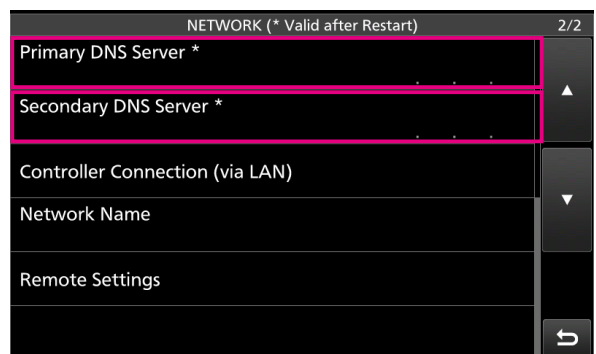
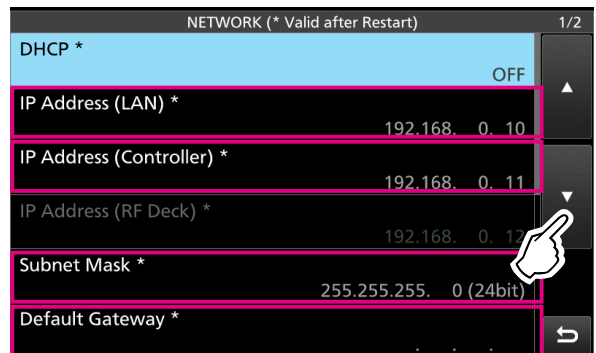
MENU » **SET > Network > DHCP**



2. Set "IP Address (LAN)" and "IP Address (Controller)."

① BE SURE to set the IP addresses that are outside the range of IP addresses automatically assigned by the router's DHCP server.

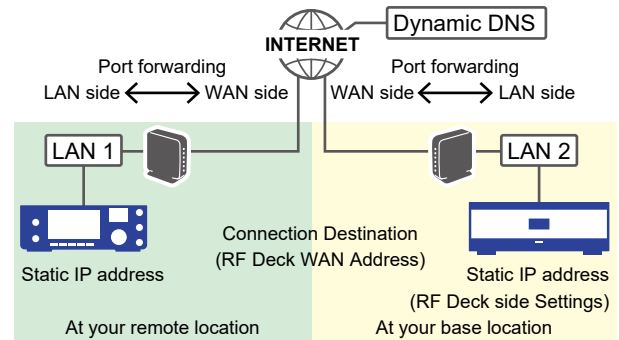
② Also set "Subnet mask," "Default gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network the controller is connected to.



NOTE: DO NOT change the settings in "RF Deck side Settings" from what was set in **Step 6**.

3. Connecting through the Internet — ① Port forwarding on both sides

Step 1 2 3 4 5 6 7 8 9 10 11 12 **13** 14 15

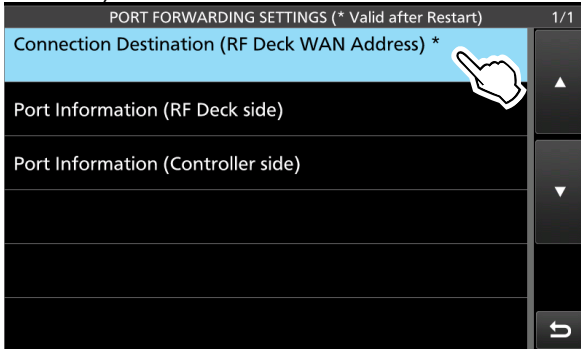


Step 13. Setting “Destination Address”

1. Open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network > Controller Connection (via LAN) > **Port Forwarding Settings**

2. Touch “Connection Destination (RF Deck WAN Address).”



3. **When using the Dynamic DNS**

Enter the domain name.

When using the global static IP address

Enter the IP address.

① Touching [ab↔12] selects alphabet mode or numeric mode.



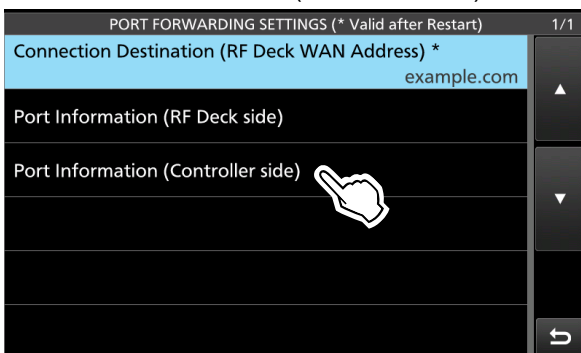
Step 14. Setting the router’s Port Forwarding function

Set the router that the controller is connected to.

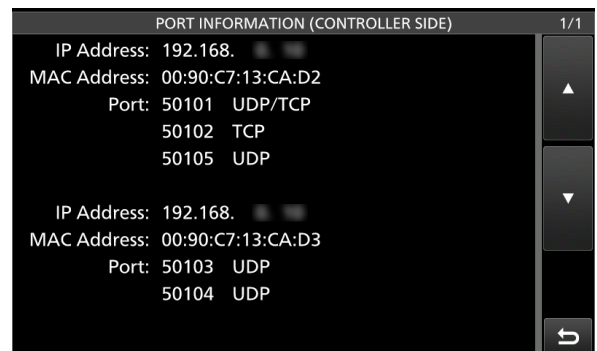
1. To confirm the information for the router’s port forwarding settings (Destination IP address/MAC address, port numbers, and protocol), open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network > Controller Connection (via LAN) > **Port Forwarding Settings**

2. Touch “Port Information (Controller side).”



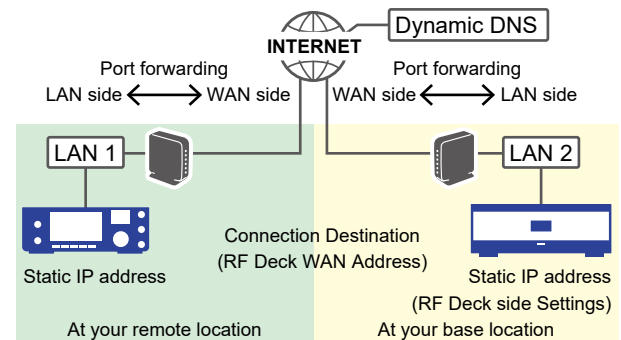
3. Set the router to forward the ports displayed on the screen.



① You cannot change the port numbers. If there are any devices using the same port number as this product, change the port number on those devices.

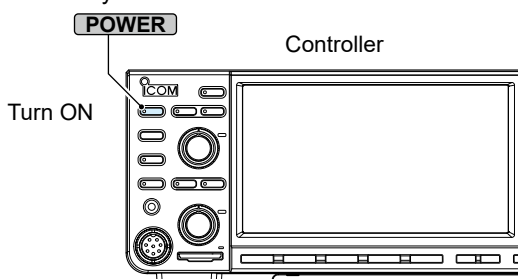
① Check the router’s manual about how to forward the ports.

Step 1 2 3 4 5 6 7 8 9 10 11 12 13 14 **15**

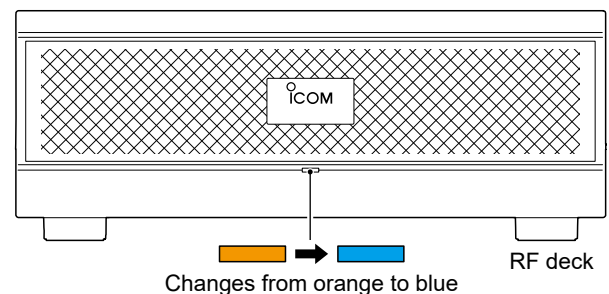


Step 15. Restarting the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



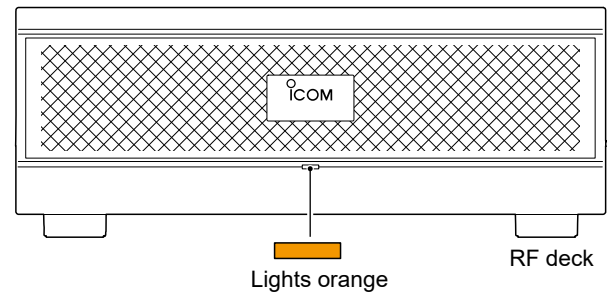
- ① If **RF** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 40)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

TIP: To automatically set the IP addresses

When the router has the function that the DHCP server assigns a static IP address to a device's MAC address, you can set "DHCP" to "ON" to automatically obtain the IP addresses for "IP Address (LAN)" and "IP Address (Controller)."

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.

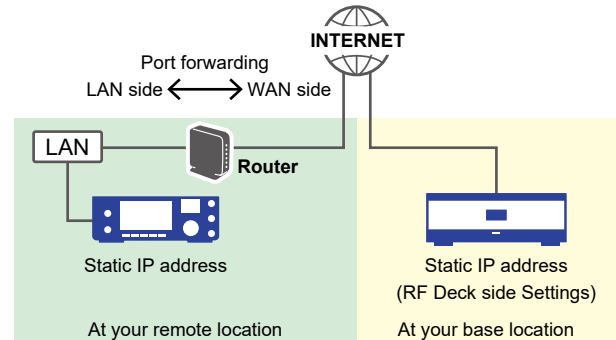


1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. Is the RF deck connected to the network?
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
4. Is the controller connected to the network?
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.
5. While connecting the controller to LAN 1, confirm that the controller settings set in **Step 7** and **Step 8** are correct. (pp. 34, 35)
 - ① If the controller cannot be connected to the RF deck, go to the next step.
6. Connect the controller and RF deck directly, and then confirm that the RF deck settings set in **Step 2**, **Step 5**, and **Step 6** are correct. (pp. 32 ~ 34)
 - ① When you change the RF deck settings, connect the controller and RF deck directly.
If you change the settings while the controller and the RF deck are not connected (**RF❌** blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
7. Do **Step 9**. (p. 35)

3. Connecting through the Internet — ② Port forwarding on the Controller side

The controller and RF deck are connected through the Internet, and the router with port forwarding is on the controller side. The RF deck has a global static IP address.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Connecting the RF deck to the Internet
- Step 3.** Turning ON the transceiver
- Step 4.** Setting “Connection Route”
- Step 5.** Setting the RF deck to a static IP address
- Step 6.** Turning OFF the controller and moving it
- Step 7.** Confirming the router settings
- Step 8.** Connecting the controller to the LAN
- Step 9.** Tuning ON the controller
- Step 10.** Setting the controller to a static IP address
- Step 11.** Setting the router’s Port Forwarding function
- Step 12.** Restarting the controller

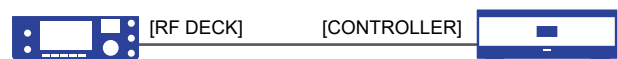


Before configuring the remote control system

- On the Controller side, a router requires a global IPv4 address, and you must allow access from the Internet (external) side by forwarding ports.
 - ① To forward ports, you must configure the router with the port numbers and protocols described in **Step 11** (p. 47).
- On the RF deck side, a global static IPv4 address is required, and you cannot use a router. You must directly connect the RF deck to the network (such as an Ethernet cable from an ONU) that allows direct use of the global IP address provided by your ISP.
 - ① If multiple global IP addresses are assigned, such as in multi-tenant facilities, we recommend you to use a router that supports IP unnumbered.
- If you are renting a router, ask your ISP about how to forward ports and verify your global IP address (static/dynamic).
 - ① If you are using a commercially available router, refer to the product manual for instructions on how to confirm these settings.
 - ① For services providing a static IPv4 global IP address, contact your ISP.

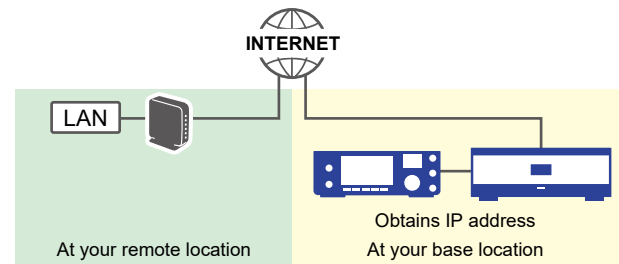
Step 1. Pairing the controller with the RF deck

See page 2 for details.



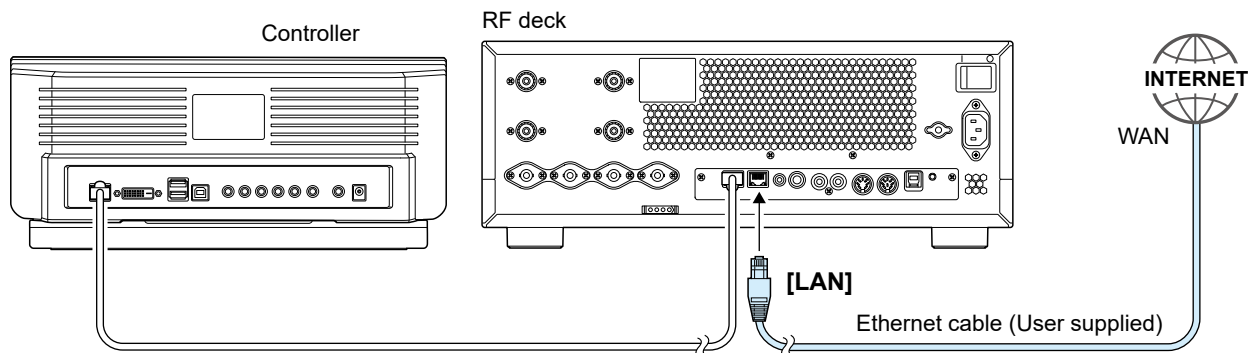
3. Connecting through the Internet — ② Port forwarding on the Controller side

Step 1 **2** 3 4 5 6 7 8 9 10 11 12



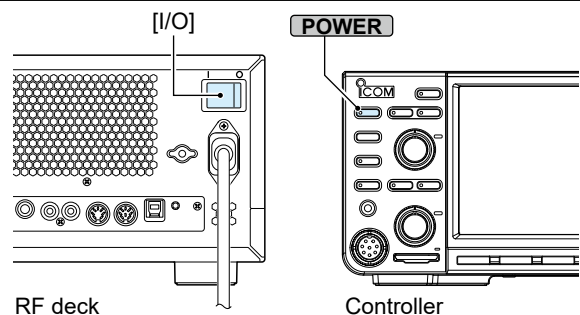
Step 2. Connecting the RF deck to the Internet

Connect the RF deck to the Internet.



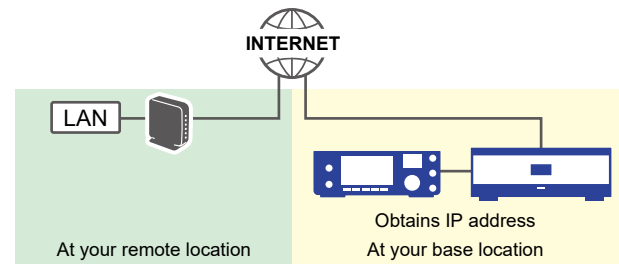
Step 3. Turning ON the transceiver

1. To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
2. To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



3. Connecting through the Internet — ② Port forwarding on the Controller side

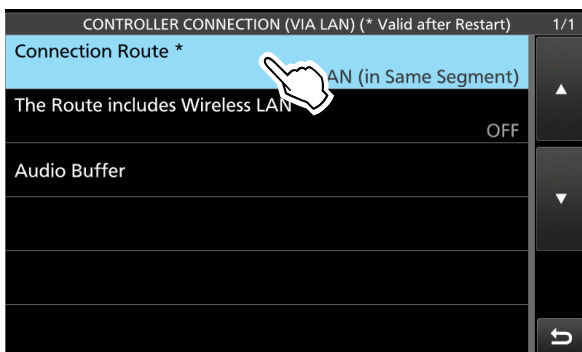
Step 1 2 3 **4** 5 6 7 8 9 10 11 12



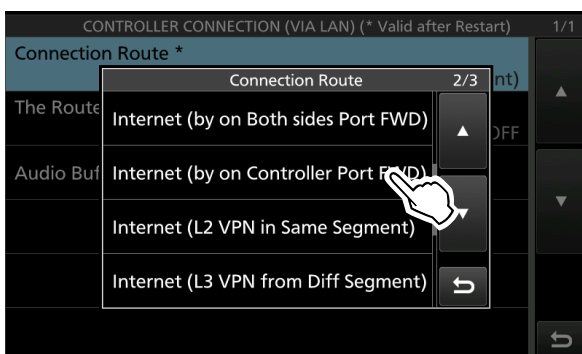
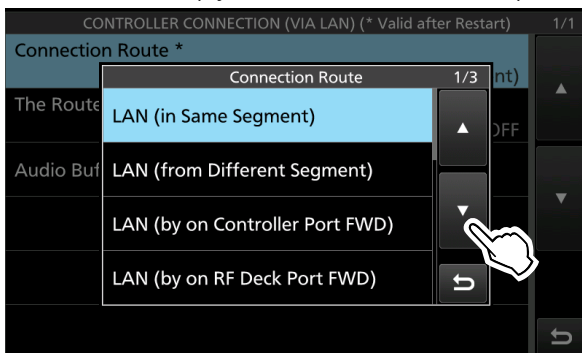
Step 4. Setting “Connection Route”

1. Touch “Connection Route.”

MENU » SET > Network >
Controller Connection (via LAN) >
Connection Route

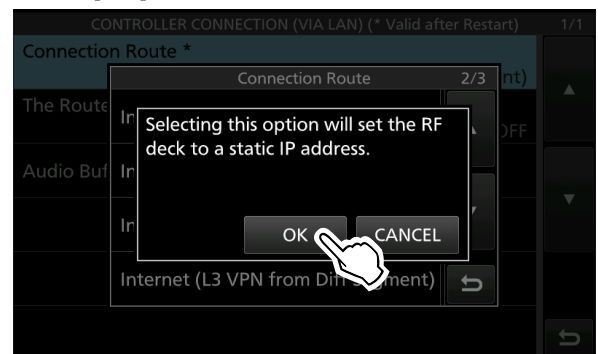


2. Touch “Internet (by on Controller Port FWD).”

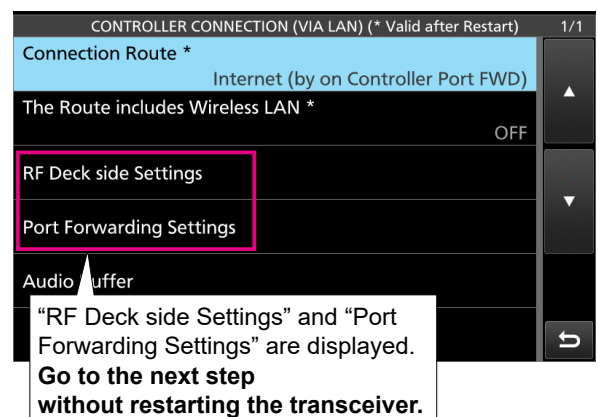


- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Touch [OK].

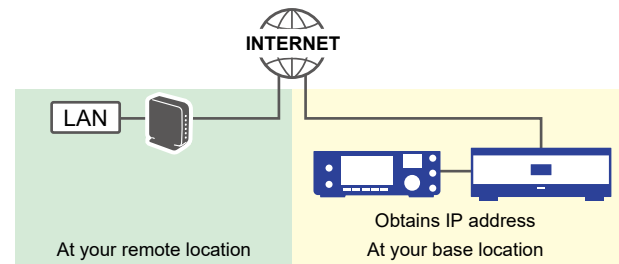


4. Confirm that “Internet (by on Controller Port FWD)” is selected and “RF Deck side Settings” and “Port Forwarding Settings” are displayed.



3. Connecting through the Internet — ② Port forwarding on the Controller side

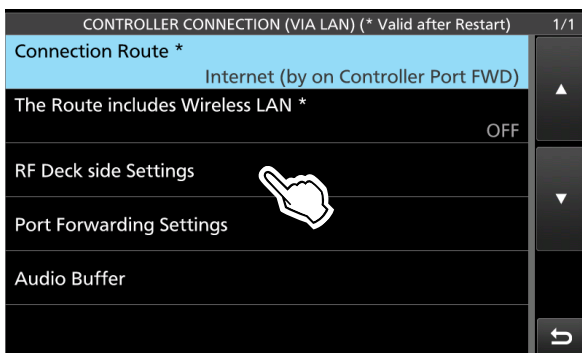
Step 1 2 3 4 **5** 6 7 8 9 10 11 12



Step 5. Setting the RF deck to a static IP address

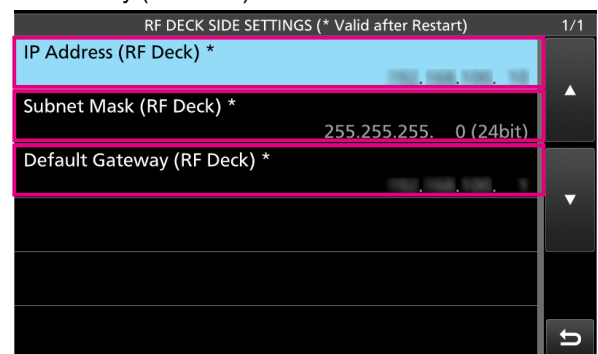
1. Touch "RF Deck side Settings."

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



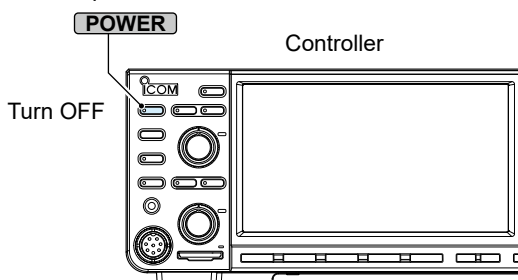
2. Set "IP Address (RF Deck)" to a global static IP address that assigned by the ISP.

① Also set "Subnet Mask (RF Deck)" and "Default Gateway (RF Deck)."

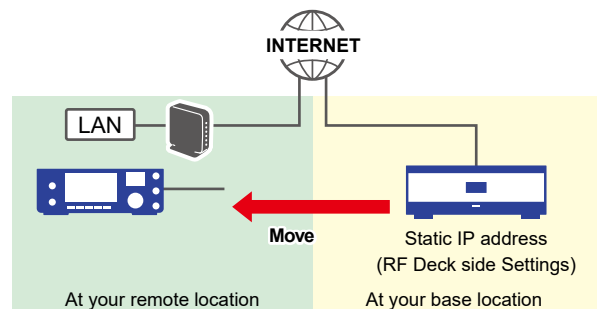


Step 6. Turning OFF the controller and moving it

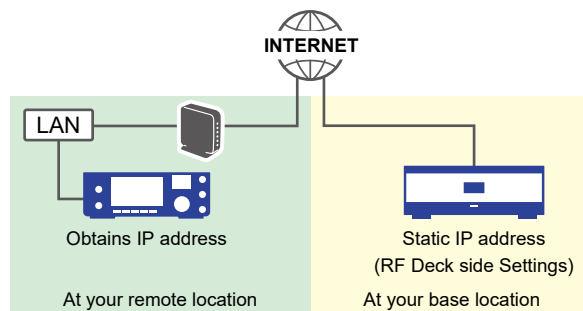
1. Turn OFF the controller.
① Keep the main power supply switch on the RF deck's back panel ON.



2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



Step 1 2 3 4 5 6 **7** 8 9 10 11 12

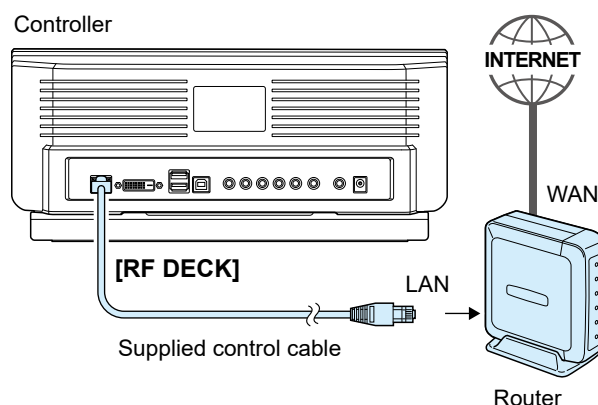


Step 7. Confirming the router settings

- Confirm that the router supports port forwarding.
 - You must assign a static IP address to the controller in **Step 10**. (p. 46)
 - ① To check in advance which static IP addresses can be used for the controller, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, at your remote location).
(Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))
- You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices. (Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)
- However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.
- ① Refer to the router's manual for details about its functions and settings.

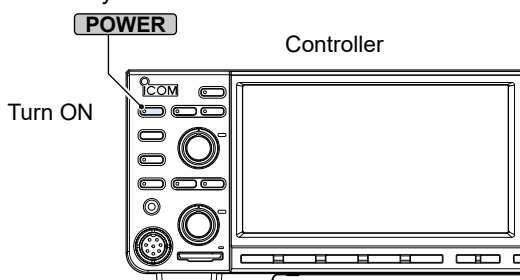
Step 8. Connecting the controller to the LAN

Connect the controller to the router's LAN side at your remote location.



Step 9. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



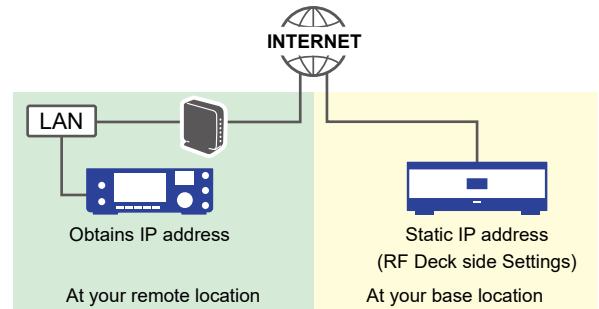
2. When an error dialog is displayed, touch [CLOSE].



- ① You do not need to restart the IC-7760. This dialog is displayed every time the controller is ON until the controller settings are completed.

3. Connecting through the Internet — ② Port forwarding on the Controller side

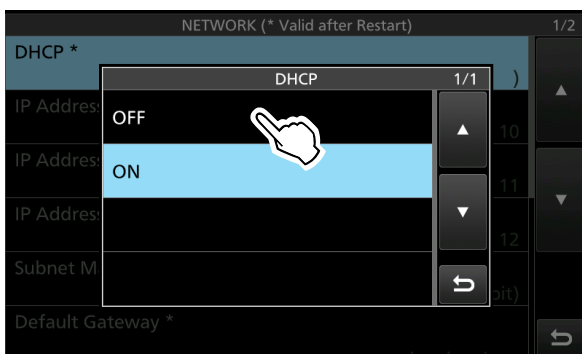
Step 1 2 3 4 5 6 7 8 9 **10** 11 12



Step 10. Setting the controller to static IP addresses

1. Set "DHCP" to "OFF."

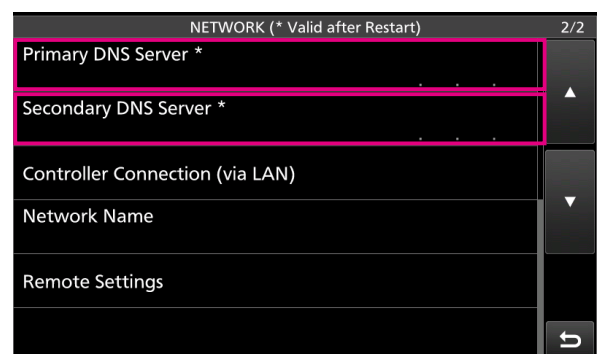
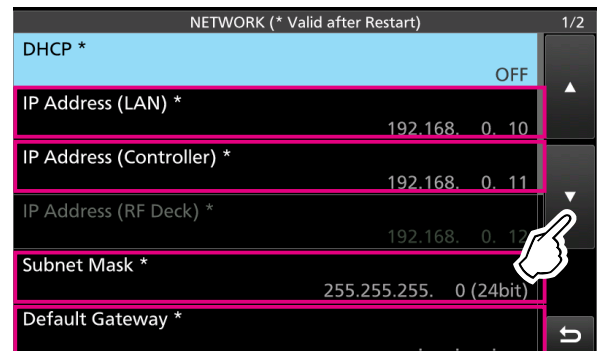
MENU » **SET > Network > DHCP**



2. Set "IP Address (LAN)" and "IP Address (Controller)."

① BE SURE to set the IP addresses that are outside the range of IP addresses automatically assigned by the router's DHCP server.

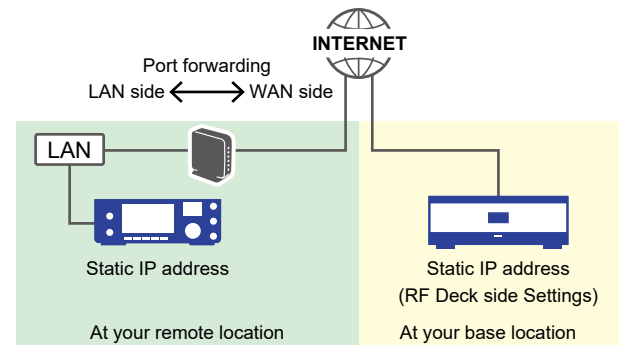
② Also set "Subnet mask," "Default gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network the controller is connected to.



NOTE: DO NOT change the settings in "RF Deck side Settings" from what was set in **Step 5**.

3. Connecting through the Internet — ② Port forwarding on the Controller side

Step 1 2 3 4 5 6 7 8 9 10 **11** 12



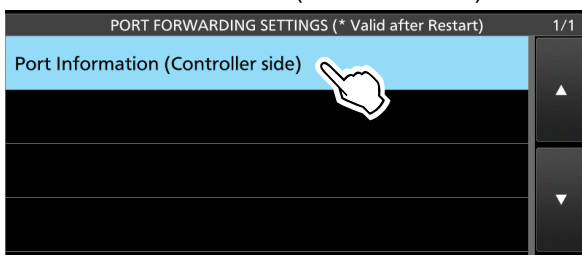
Step 11. Setting the router's Port Forwarding function

Set the router that the controller is connected to.

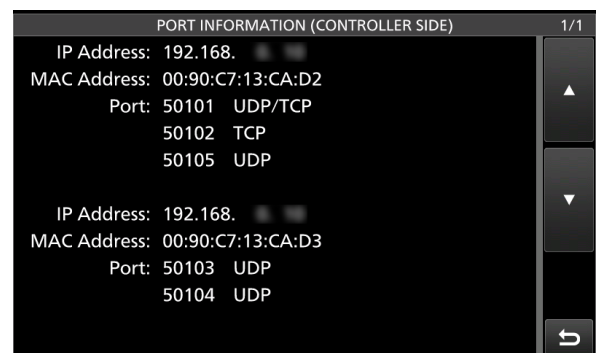
- To confirm the information for the router's port forwarding settings (Destination IP address/MAC address, port numbers, and protocol), open the PORT FORWARDING SETTINGS screen.

MENU » SET > Network > Controller Connection (via LAN) > **Port Forwarding Settings**

- Touch "Port Information (Controller side)."



- Set the router to forward the ports displayed on the screen.

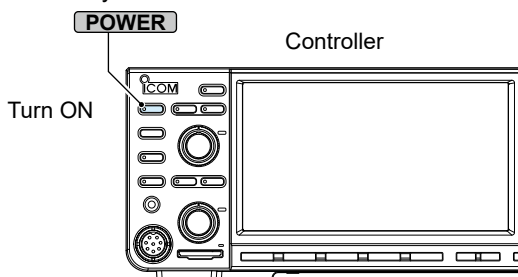


① You cannot change the port numbers. If there are any devices using the same port number as this product, change the port number on those devices.

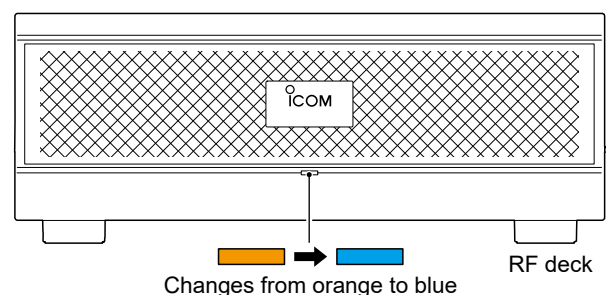
① Check the router's manual about how to forward the ports.

Step 12. Restarting the controller

- Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



- Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



① If **RF** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 48)

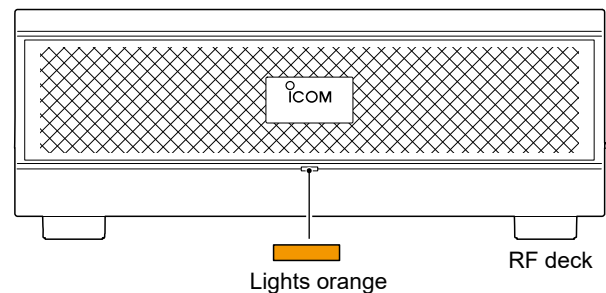
① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

TIP: To automatically set the IP addresses

When the router has the function that the DHCP server assigns a static IP address to a device's MAC address, you can set "DHCP" to "ON" to automatically obtain the IP addresses for "IP Address (LAN)" and "IP Address (Controller)."

If “ The RF deck is not detected.” is displayed:

If  blinks and “ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and the settings described below.



1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck's main power supply switch turned ON? (p. 2)
3. Are IP packets reaching the RF deck?

How to confirm:

- 3-1. Connect your PC to the network the controller is connected to.
- 3-2. Open Command Prompt on your PC.
- 3-3. Enter the Ping command as shown below, and then push [Enter].


```
ping XXX.XXX.XXX.XXX
```

 - ① Enter a space between “ping” and XXX.XXX.XXX.XXX.
 - ① Enter “IP Address (RF Deck)” set in **Step 5** (p. 44) to “XXX.XXX.XXX.XXX.”
 - Your PC will send test packets to the RF deck.

3-4. **When there is a reply from the RF deck**

Go to Steps 4 and 5 to confirm the controller and router settings.

When there is no reply from the RF deck

Go to Steps 6 and 7 to confirm the RF deck settings.

4. **When there is a reply from the RF deck**

Is the controller connected to the network?

 - ① If connected, the [RF DECK] port's indicator on the controller's rear panel will light.
5. While the controller is connected to the LAN, confirm that the controller settings set in **Step 7** and **Step 10** to **Step 12** are correct. (pp. 45 ~ 47)
6. **When there is no reply from the RF deck**

Is the RF deck connected to the network?

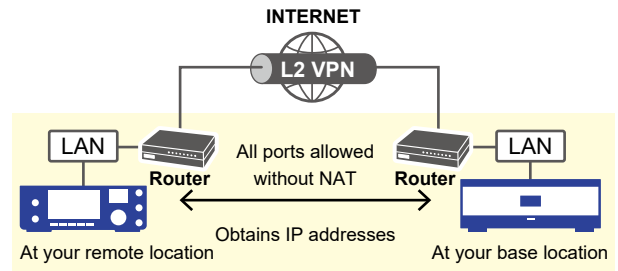
 - ① If connected, the [LAN] port's indicator on the RF deck's rear panel will light.
7. Connect the controller and RF deck directly, and then confirm that the RF deck settings set in **Step 4** and **Step 5** are correct. (pp. 43, 44)
 - ① When you change the RF deck settings, connect the controller and RF deck directly. If you change the settings while the controller and the RF deck are not connected ( blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
8. Do **Step 6**. (p. 44)

3. Connecting through the Internet — ③ L2 VPN in the same segment

The controller and RF deck are connected through the Internet using the Layer 2 VPN.

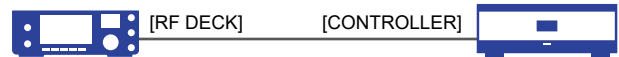
① In this document, a connection between the VPN routers has already been established.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the VPN router settings
- Step 3.** Connecting the RF deck to the VPN router
- Step 4.** Setting “Connection Route”
- Step 5.** Confirming the DHCP client function on the IC-7760
- Step 6.** Turning OFF the controller and moving it
- Step 7.** Connecting the controller to the VPN router
- Step 8.** Tuning ON the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.

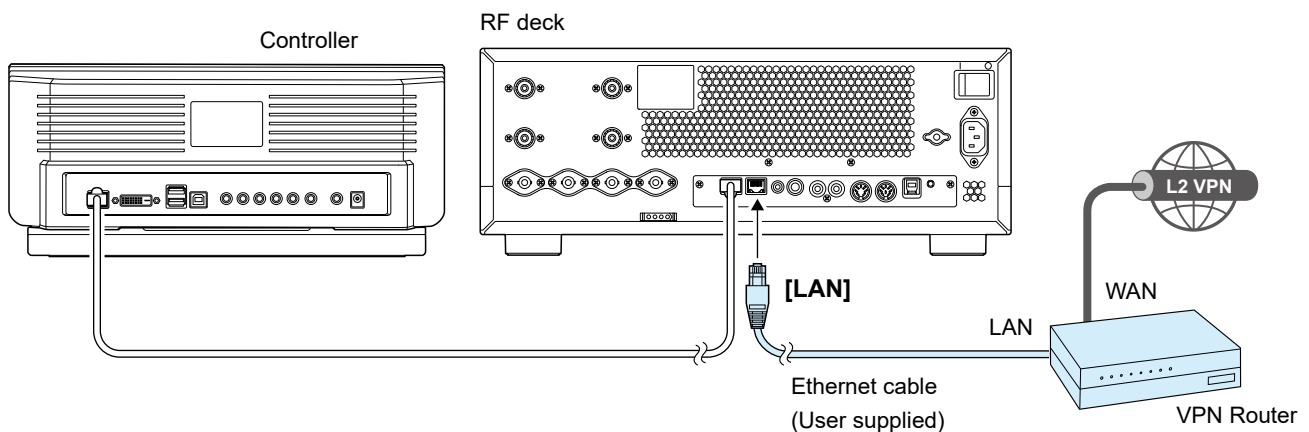
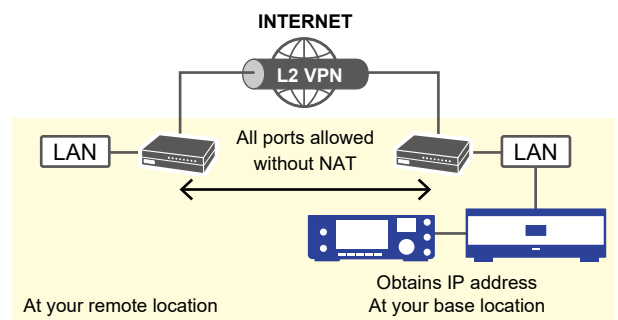


Step 2. Confirming the VPN router settings

- A Layer 2 VPN connection (IP addresses in the same segment are assigned by a VPN router) is required.
- Confirm that NAT is disabled and communication is possible on all ports.
- Confirm that the VPN router's DHCP server function is ON.
 - ① The IC-7760's DHCP client function is set to “ON” by default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.
- ① Refer to the router's manual for details about its functions and settings.

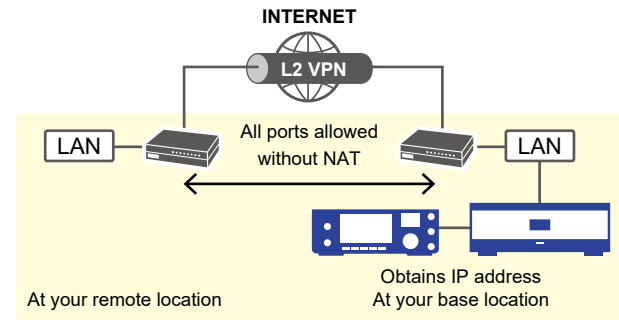
Step 3. Connecting the RF deck to the VPN router

Connect the RF deck to the VPN router's LAN side.



3. Connecting through the Internet — ③ L2 VPN in the same segment

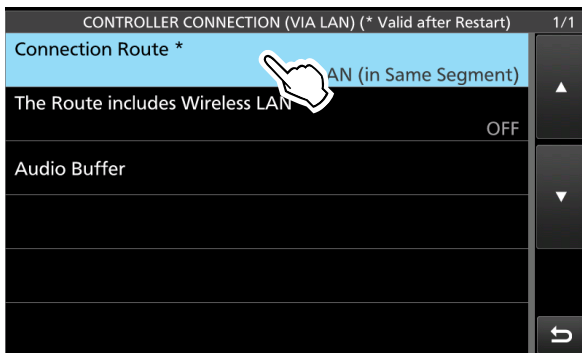
Step 1 2 3 4 5 6 7 8



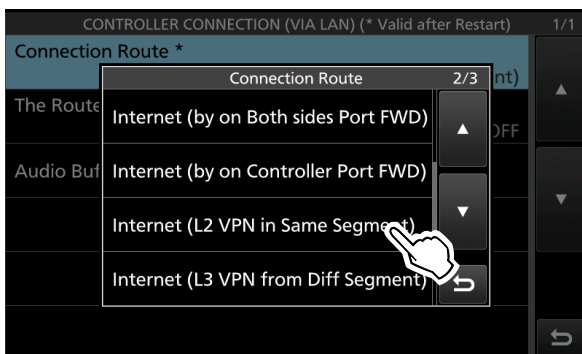
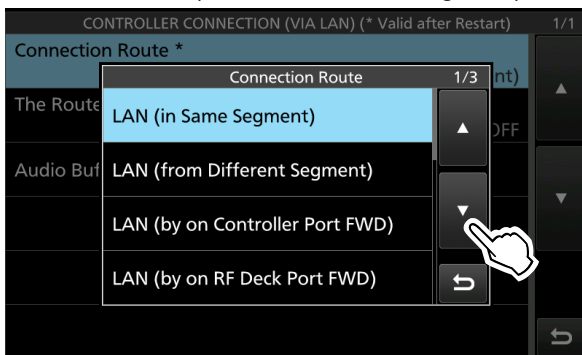
Step 4. Setting “Connection Route”

1. Touch “Connection Route.”

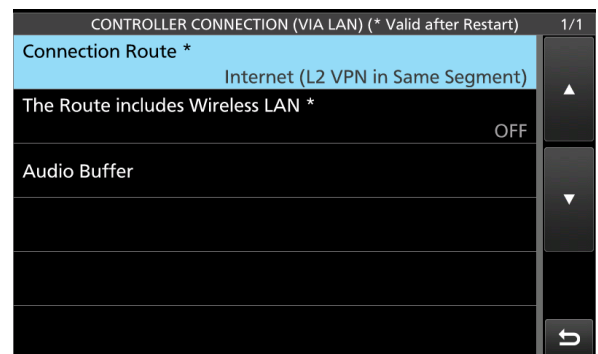
MENU » SET > Network > Controller Connection (via LAN) > **Connection Route**



2. Touch “Internet (L2 VPN in Same Segment).”



3. Confirm that “Internet (L2 VPN in Same Segment)” is selected.

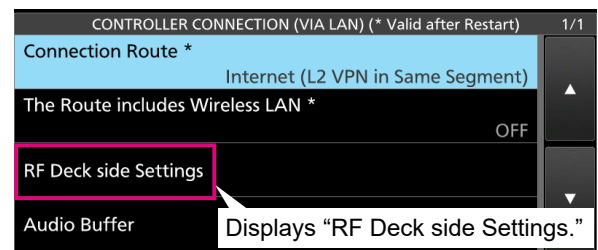


TIP: About “RF Deck side Settings”

After you move or add a controller, if “RF Deck side Settings” is displayed even when you do not use a connection route other than “Internet (L2 VPN in Same Segment),” clear the RF deck’s static IP address setting.

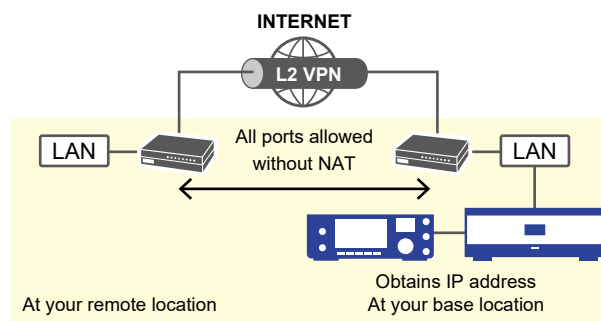
① See page 72 for details.

① **DO NOT** clear the setting if you have moved or added a controller and use a connection route other than “Internet (L2 VPN in Same Segment).”



3. Connecting through the Internet — ③ L2 VPN in the same segment

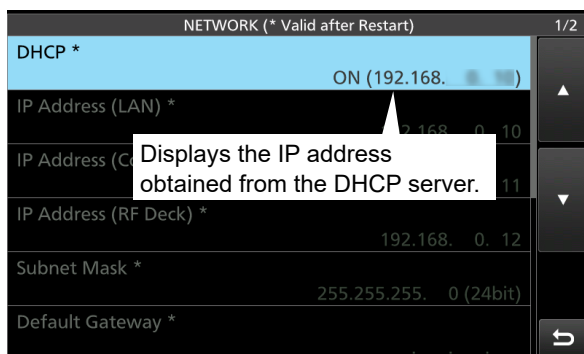
Step 1 2 3 4 **5** 6 7 8



Step 5. Confirming the DHCP client function on the IC-7760

Confirm that “DHCP” is set to “ON” (default).

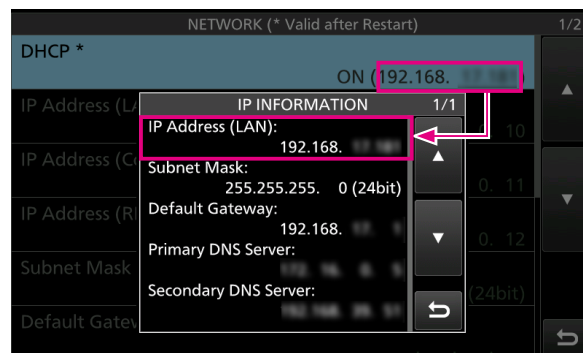
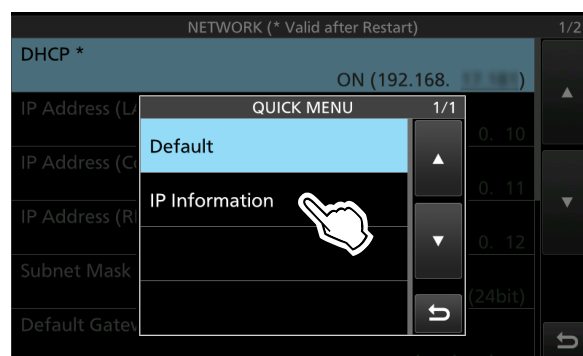
MENU » **SET > Network > DHCP**



TIP: To confirm detailed network information

You can confirm the IP address and network information obtained from the DHCP server on the “IP Information” screen.

MENU » **SET > Network > DHCP** (Touch for 1 second)



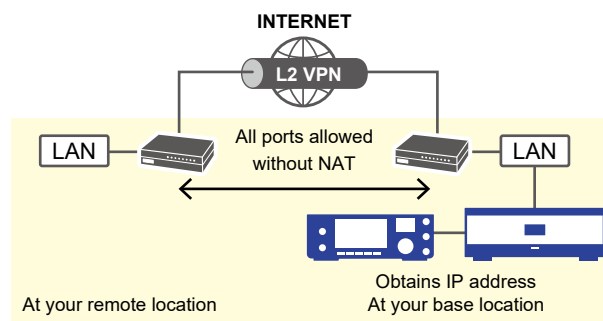
TIP: When using with “RF Deck side Settings”

When accessing from a connection route other than “Internet (L2 VPN in Same Segment),” confirm that the IP address range that is automatically assigned to the controller by the router’s DHCP server is on the same subnet (network) as the “IP Address (RF Deck)” setting.

① If they are on different subnets, you may not be able to connect or change the settings. In this case, you need to reconfigure the router and the transceiver.

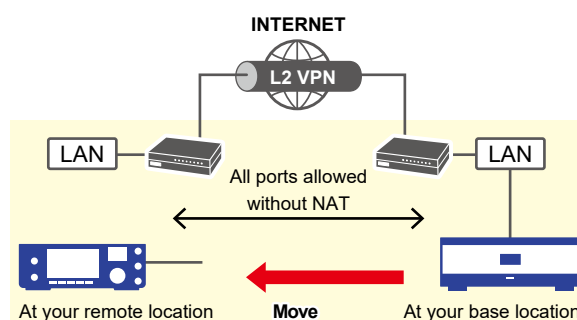
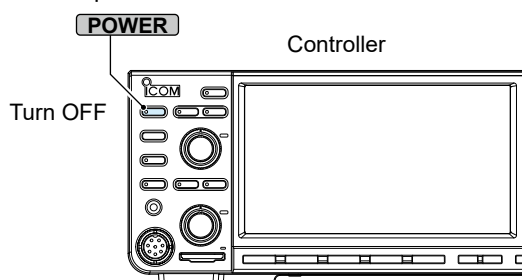
3. Connecting through the Internet — ③ L2 VPN in the same segment

Step 1 2 3 4 5 **6** 7 8



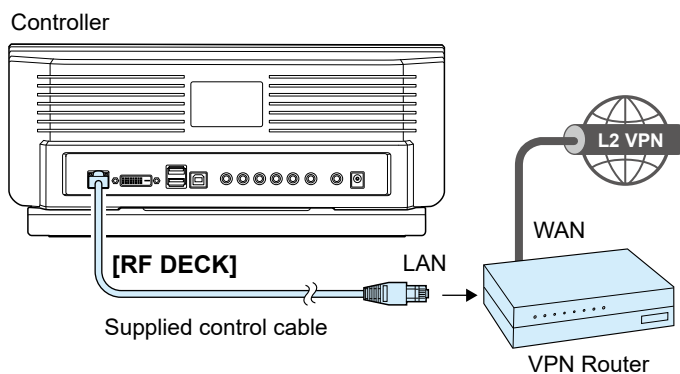
Step 6. Turning OFF the controller and moving it

1. Turn OFF the controller.
 - ① Keep the main power supply switch on the RF deck's back panel ON.
2. Disconnect the controller and the RF deck, and then move the controller and supplied control cable to the location where you want it to be.

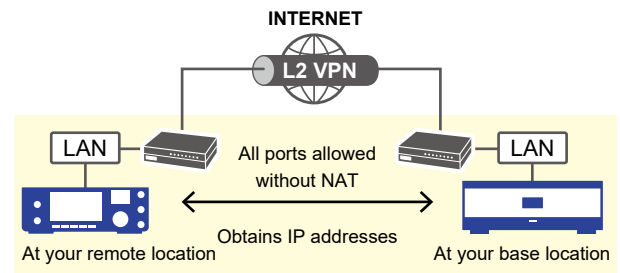


Step 7. Connecting the controller to the VPN router

Connect the controller to the VPN router's LAN side at your remote location.

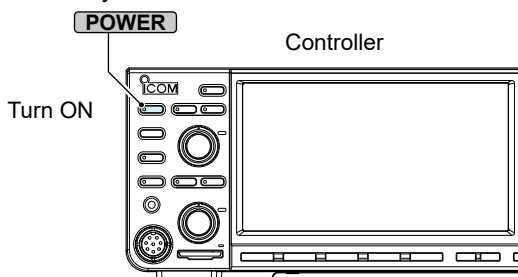


Step 1 2 3 4 5 6 7 8

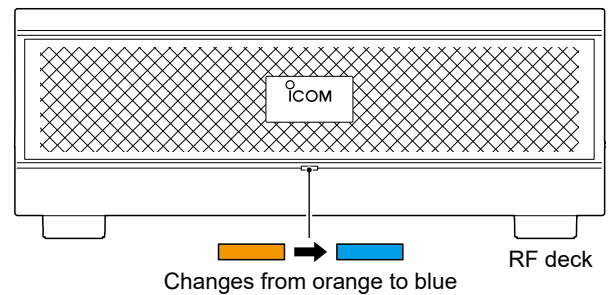


Step 8. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RF** blinks and "❌ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 54)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

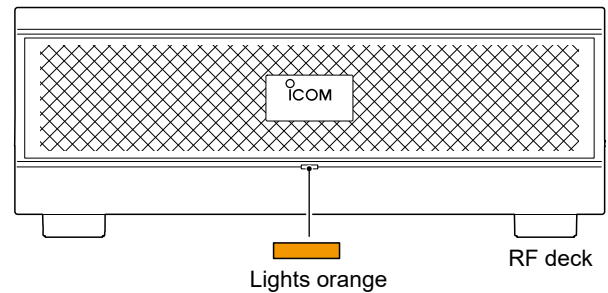
TIP: To manually set the IP addresses

Set "DHCP" to "OFF," and then enter the IP addresses to "IP Address (LAN)," "IP Address (Controller)," and IP Address (RF Deck)."

- ① Also set "Subnet Mask," "Default Gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network you are connecting to.

If “❌ The RF deck is not detected.” is displayed:

If **RF** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.

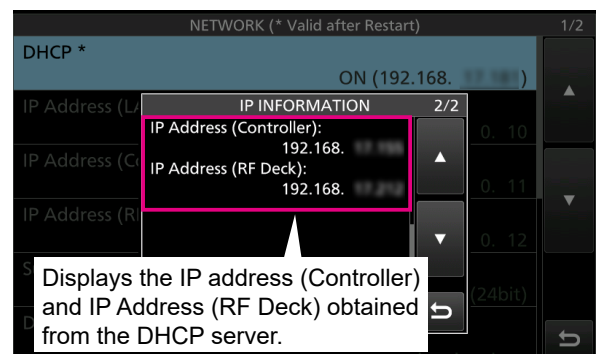
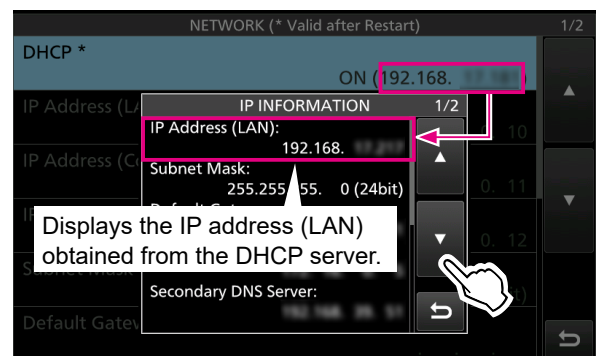


1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. Is the RF deck connected to the network?
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
4. Is the controller connected to the network?
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.
5. Is the network switch connected to the RF deck able to communicate with the network switch connected to the controller?
6. Did you confirm the information described in **Step 4** (TIP: About “RF Deck side Settings”)? (p. 50)

7. While the controller is connected to the network, are “IP Address (Controller)” and “IP Address (RF Deck)”* obtained from the DHCP server displayed on the “IP Information” screen?

MENU » **SET > Network > DHCP (Touch for 1 second) > IP Information**

*If using with “RF Deck Settings,” “IP Address (RF Deck)” may not be displayed.



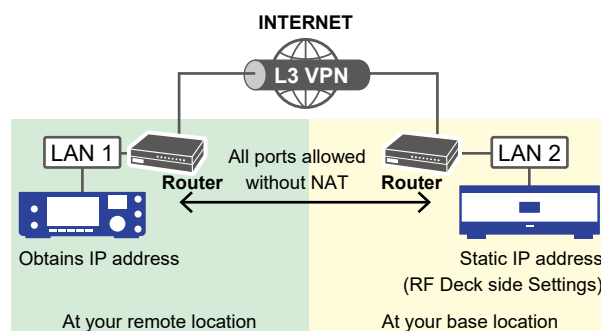
8. Turn ON the controller.
 - If the problems have been resolved, the [POWER] indicator on the RF deck’s front panel will change from orange to blue.

3. Connecting through the Internet — 4 L3 VPN from a different segment

The controller and RF deck are connected through the Internet using the Layer 3 VPN.

① In this document, a connection between the VPN routers has already been established.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Confirming the VPN router settings
- Step 3.** Connecting the RF deck to the VPN router
- Step 4.** Turning ON the transceiver
- Step 5.** Confirming the DHCP client function on the IC-7760
- Step 6.** Setting “Connection Route”
- Step 7.** Setting the RF deck to a static IP address
- Step 8.** Turning OFF the controller and moving it
- Step 9.** Connecting the controller to the VPN router
- Step 10.** Tuning ON the controller



Step 1. Pairing the controller with the RF deck

See page 2 for details.

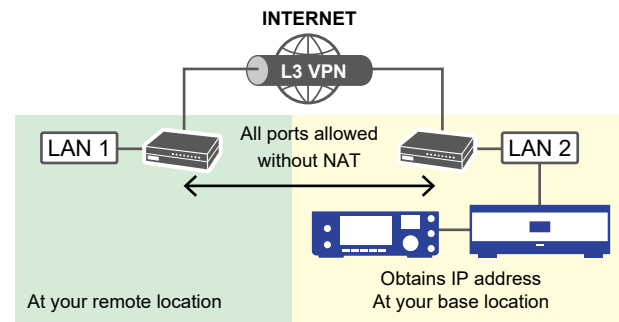


Step 2. Confirming the VPN router settings

- A Layer 3 VPN connection (IP addresses of different segments are assigned by a VPN router) is required.
 - Confirm that NAT is disabled and communication is possible on all ports.
 - Confirm that the VPN router's DHCP server function is ON.
 - ① The IC-7760's DHCP client function is set to “ON” by default. You do not need to change the IC-7760's settings when the router's DHCP server function is ON.
 - You must assign a static IP address to the RF deck in **Step 7.** (p. 59)
 - ① To check in advance which a static IP address can be used for the RF deck, first confirm the range of IP addresses automatically assigned by the router's DHCP server (In the illustration above, the router is at your base location).
(Example: 192.168.0.10 to 192.168.0.39 (Subnet mask: 255.255.255.0))
You can use any IP address within the same network that is outside this range and is not already in use by the router or other network devices. (Example: 192.168.0.2 to 192.168.0.9, 192.168.0.40 to 192.168.0.254)
However, be sure not to use the same IP address as the router's static IP address (Example: 192.168.0.1) or the broadcast address (192.168.0.255) on the same network.
- ① Refer to the router's manual for details about its functions and settings.

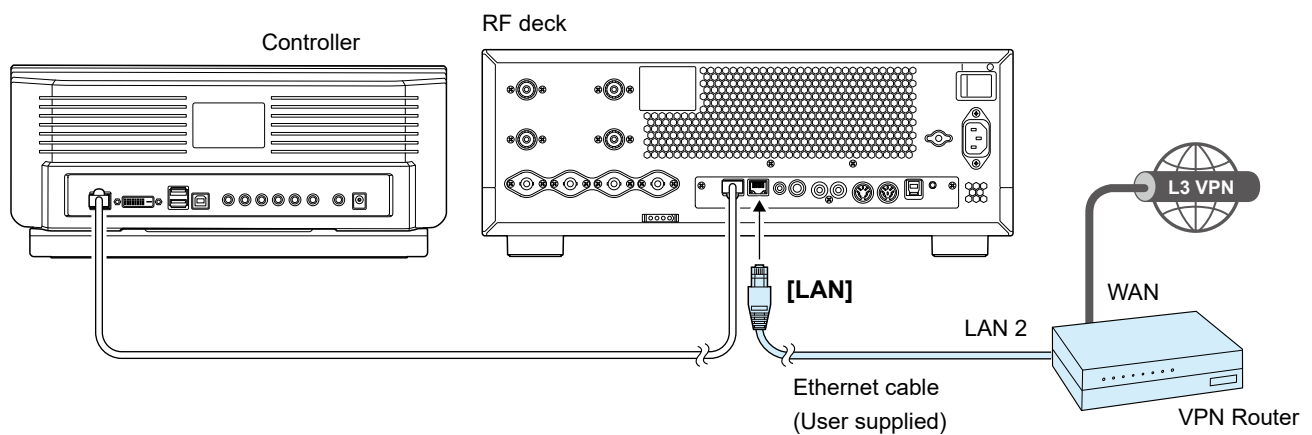
3. Connecting through the Internet — 4 L3 VPN from a different segment

Step 1 2 **3** 4 5 6 7 8 9 10



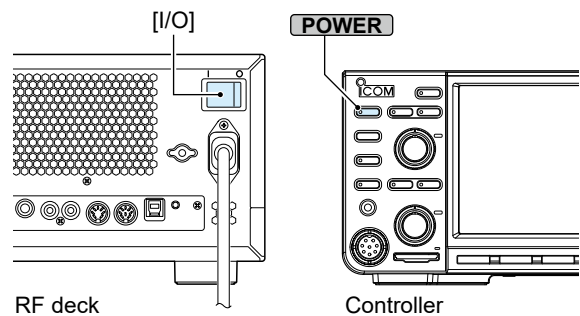
Step 3. Connecting the RF deck to the VPN router

Connect the RF deck to the VPN router's LAN side.



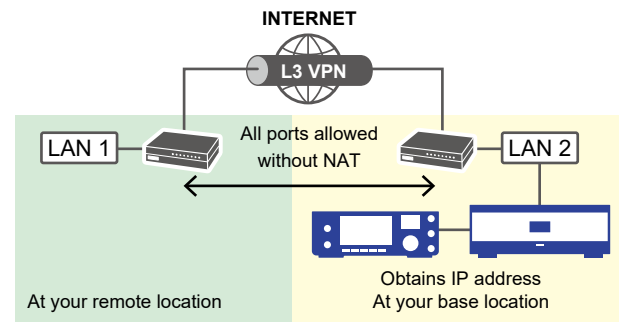
Step 4. Turning ON the transceiver

- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



3. Connecting through the Internet — 4 L3 VPN from a different segment

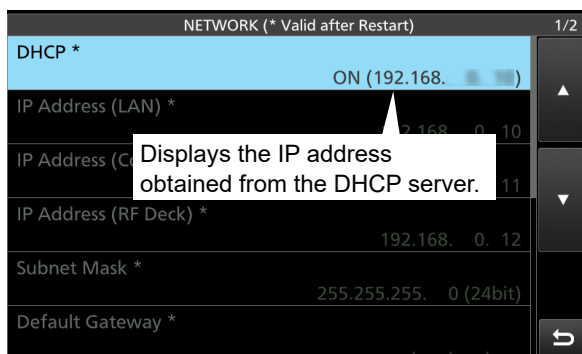
Step 1 2 3 4 **5** 6 7 8 9 10



Step 5. Confirming the DHCP client function on the IC-7760

Confirm that “DHCP” is set to “ON” (default).

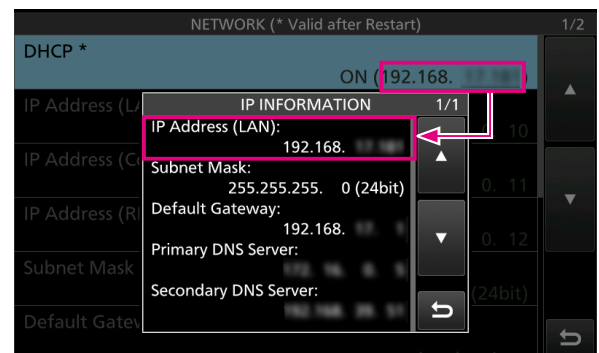
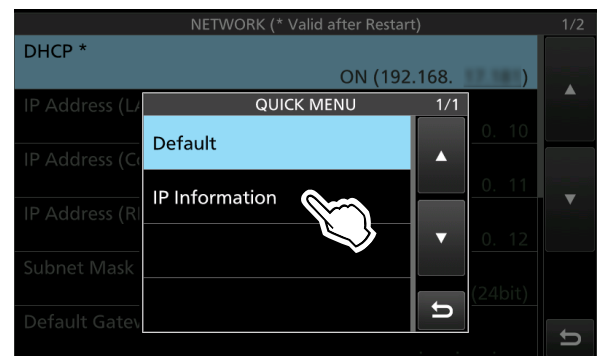
MENU » **SET > Network > DHCP**



TIP: To confirm detailed network information

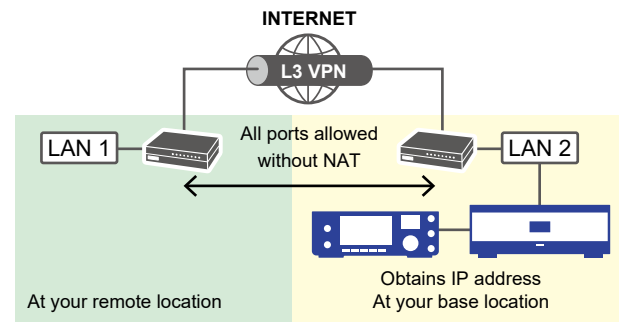
You can confirm the IP address and network information obtained from the DHCP server on the “IP Information” screen.

MENU » **SET > Network > DHCP** (Touch for 1 second)



3. Connecting through the Internet — 4 L3 VPN from a different segment

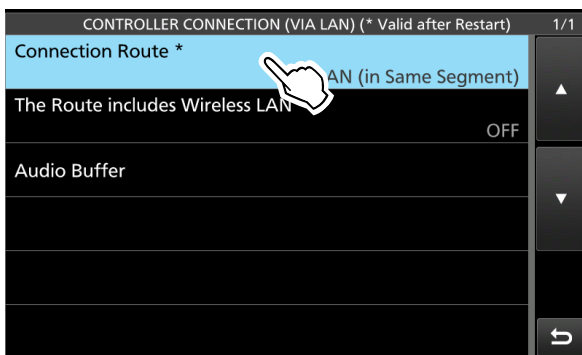
Step 1 2 3 4 5 **6** 7 8 9 10



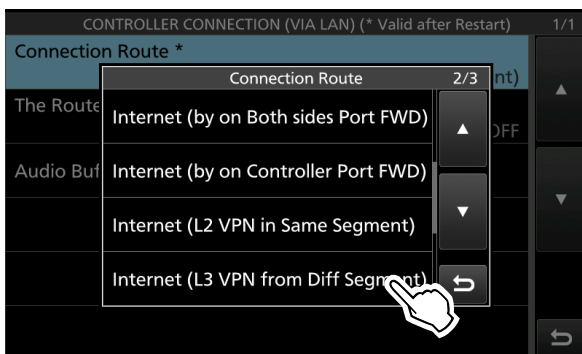
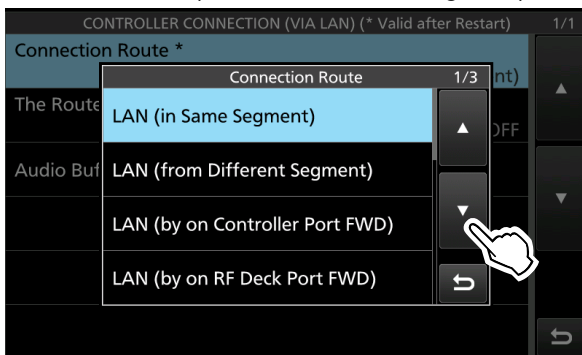
Step 6. Setting “Connection Route”

1. Touch “Connection Route.”

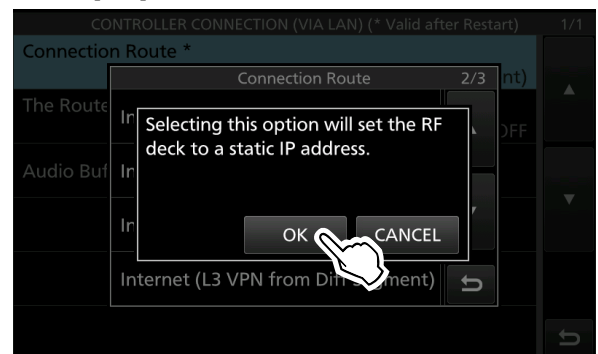
MENU » SET > Network > Controller Connection (via LAN) > **Connection Route**



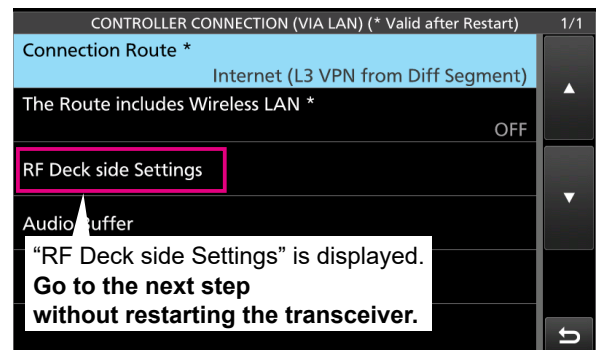
2. Touch “Internet (L3 VPN from Diff Segment).”



3. Touch [OK].



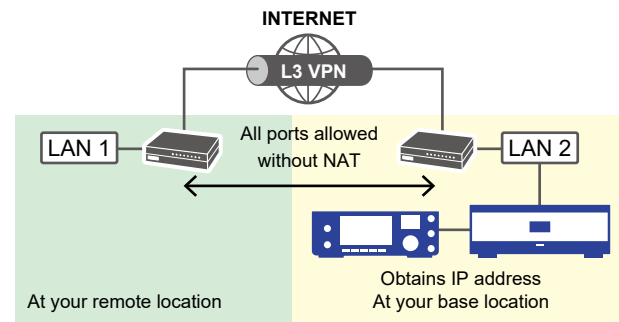
4. Confirm that “Internet (L3 VPN from Diff Segment)” is selected and “RF Deck side Settings” is displayed.



- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Connecting through the Internet — ④ L3 VPN from a different segment

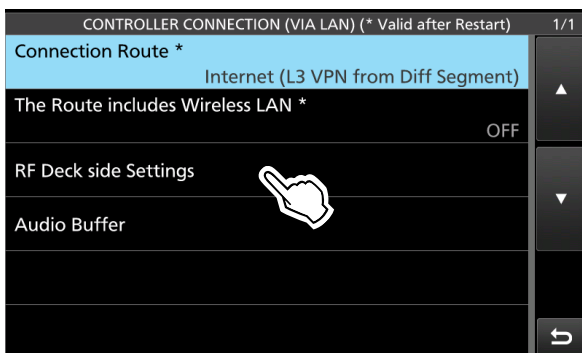
Step 1 2 3 4 5 6 **7** 8 9 10



Step 7. Setting the RF deck to a static IP address

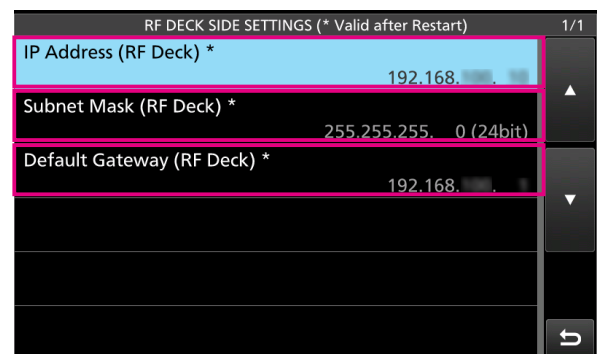
1. Touch “RF Deck side Settings.”

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings



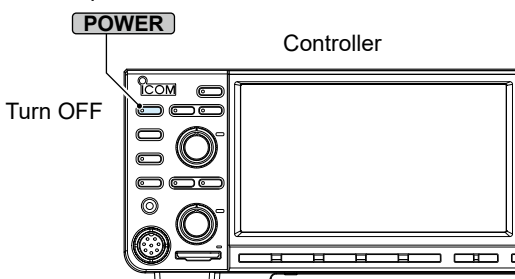
2. Set the RF deck’s static IP address to “IP Address (RF Deck).”

① See page 55 for details about available IP addresses.
① Also set “Subnet Mask (RF Deck)” and “Default Gateway (RF Deck)” according to the network the RF deck is connected to.

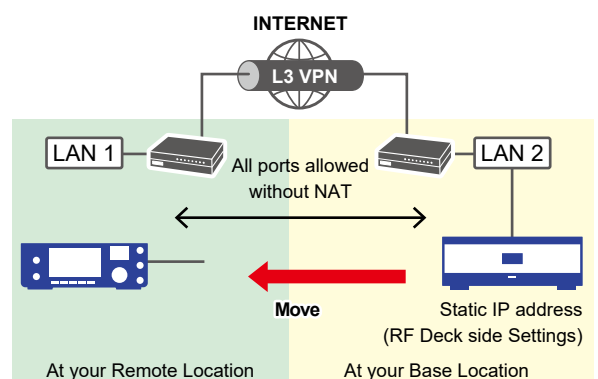


Step 8. Turning OFF the controller and moving it

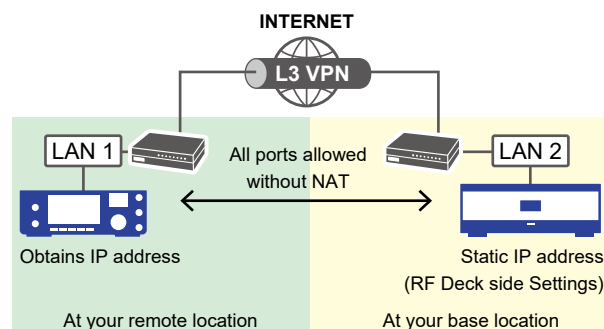
1. Turn OFF the controller.
① Keep the main power supply switch on the RF deck’s back panel ON.



2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.

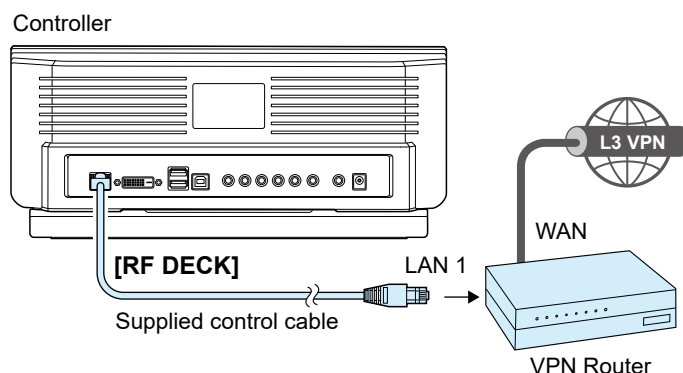


Step 1 2 3 4 5 6 7 8 **9** 10



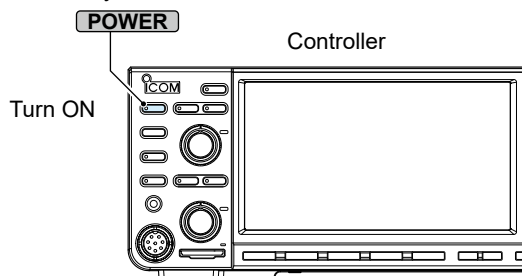
Step 9. Connecting the controller to the VPN router

Connect the controller to the VPN router (LAN 1 side).

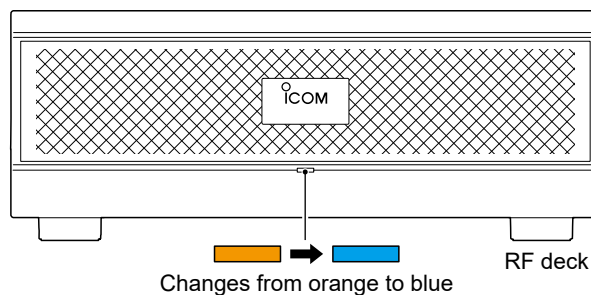


Step 10. Turning ON the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RF** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 61)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

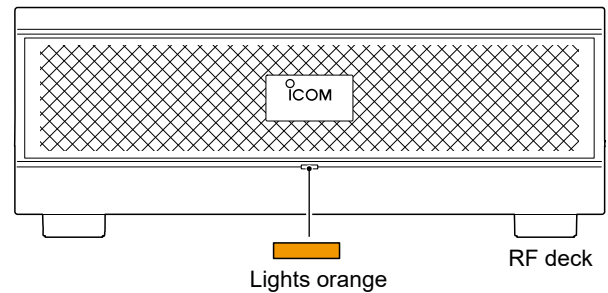
TIP: To manually set the IP addresses

Set "DHCP" to "OFF," and then enter the IP addresses to "IP Address (LAN)" and "IP Address (Controller)."

① Also set "Subnet Mask," "Default Gateway," "Primary DNS Server," and "Secondary DNS Server" according to the network you are connecting to.

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck’s front panel lights orange, check the connection and the settings described below.



1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck’s main power supply switch turned ON? (p. 2)
3. Are IP packets reaching the RF deck?

How to confirm:

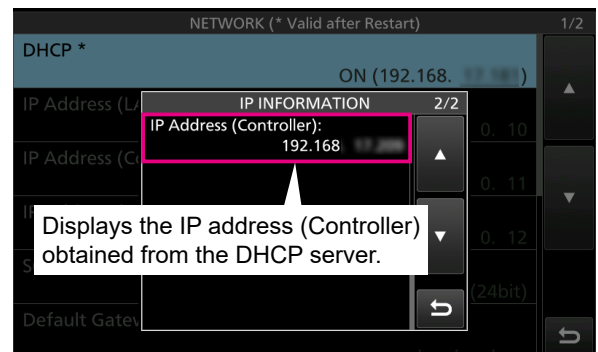
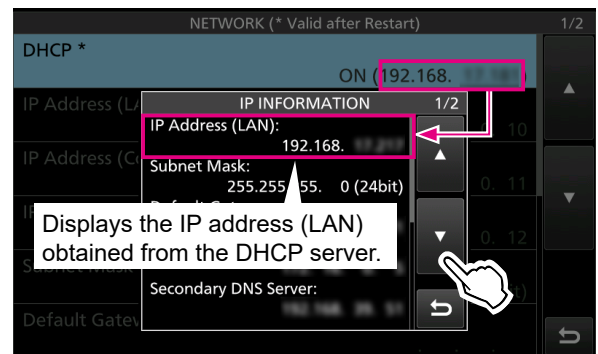
- 3-1. Connect your PC to the network the controller is connected to.
- 3-2. Open Command Prompt on your PC.
- 3-3. Enter the Ping command as shown below, and then push [Enter].


```
ping XXX.XXX.XXX.XXX
```

 - ① Enter a space between “ping” and XXX.XXX.XXX.XXX.
 - ① Enter “IP Address (RF Deck)” set in **Step 7** (p. 59) to “XXX.XXX.XXX.XXX.”
 - Your PC will send test packets to the RF deck.
- 3-4. **When there is a reply from the RF deck**
Go to Steps 4 and 5 to confirm the controller and router settings.
When there is no reply from the RF deck
Go to Steps 6 and 7 to confirm the RF deck settings.
4. **When there is a reply from the RF deck**
Is the controller connected to the network?
 - ① If connected, the [RF DECK] port’s indicator on the controller’s rear panel will light.

5. While the controller is connected to LAN 1, are “IP Address (LAN)” and “IP Address (Controller)” obtained from the DHCP server displayed on the “IP Information” screen?

MENU » **SET > Network > DHCP (Touch for 1 second) > IP Information**

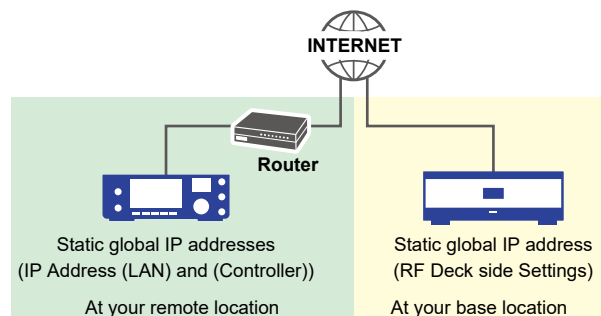


6. **When there is no reply from the RF deck**
Is the RF deck connected to the network?
 - ① If connected, the [LAN] port’s indicator on the RF deck’s rear panel will light.
7. Confirm the RF deck settings.
 - 7-1. Confirm the router settings in **Step 2** (p. 55)
 - 7-2. Connect the controller and RF deck directly.
 - ① When you change the RF deck settings, connect the controller and RF deck directly. If you change the settings while the controller and the RF deck are not connected (**RF❌** blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.
 - 7-3. Do the steps starting with **Step 6** (p. 58)

3. Connecting through the Internet — 5 With static IP addresses

The controller and RF deck are connected through the Internet. Both of them have static global IP addresses, and the router supports IP unnumbered.

- Step 1.** Pairing the controller with the RF deck
- Step 2.** Connecting the RF deck to the Internet
- Step 3.** Turning ON the transceiver
- Step 4.** Setting “Connection Route”
- Step 5.** Setting the RF deck to a static IP address
- Step 6.** Turning OFF the controller and moving it
- Step 7.** Configuring the router
- Step 8.** Connecting the controller to the router
- Step 9.** Tuning ON the controller
- Step 10.** Setting the controller to a static IP address
- Step 11.** Restarting the controller

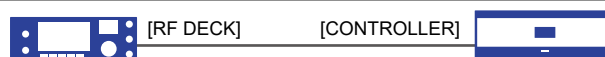


Before configuring the remote control system

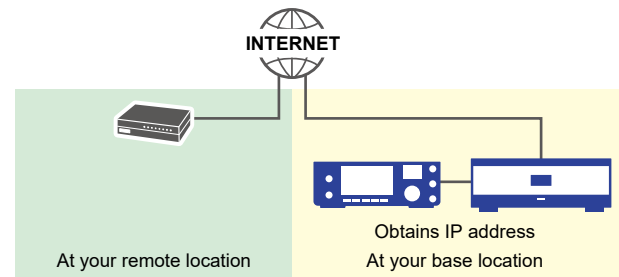
- On the controller side, 2 global static IPv4 addresses and a router that supports IP unnumbered is required.
- On the RF deck side, a global static IPv4 address is required, and you cannot use a router.
You must directly connect the RF deck to the network (such as an Ethernet cable from an ONU) that allows direct use of the global IP address provided by your ISP.
 - ① If multiple global IP addresses are assigned, such as in multi-tenant facilities, we recommend you to use a router that supports IP unnumbered.
- If you are renting a router, ask your ISP about how to forward ports and verify your global IP address (static/dynamic).
 - ① If you are using a commercially available router, refer to the product manual for instructions on how to confirm these settings.
 - ① For services providing a static IPv4 global IP address, contact your ISP.

Step 1. Pairing the controller with the RF deck

See page 2 for details.

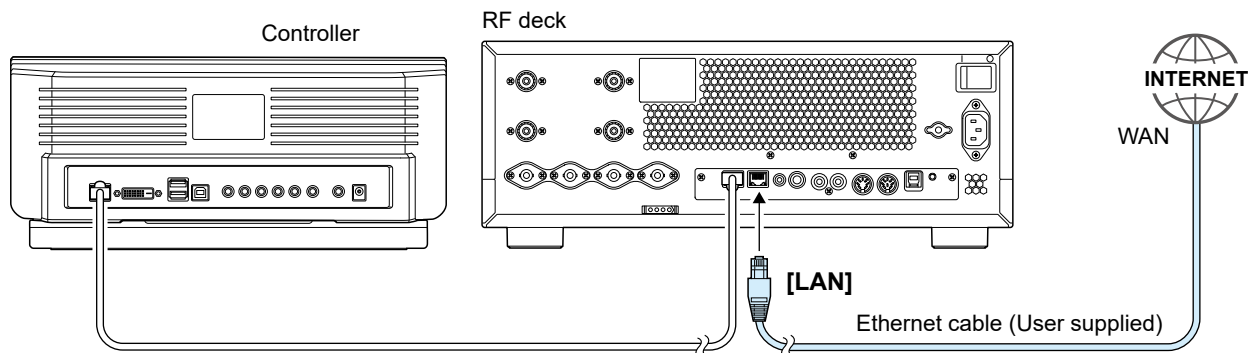


Step 1 **2** 3 4 5 6 7 8 9 10 11



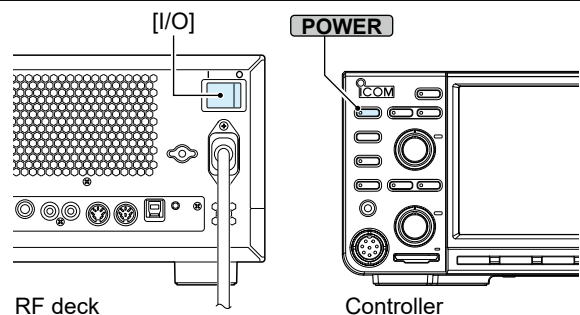
Step 2. Connecting the RF deck to the Internet

Connect the RF deck to the Internet.



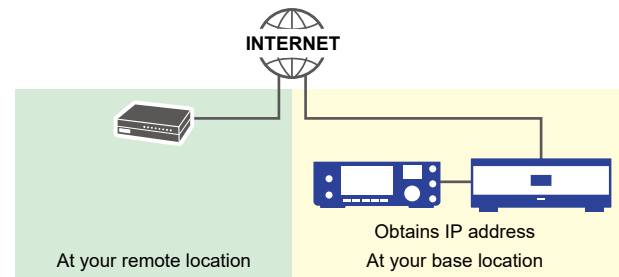
Step 3. Turning ON the transceiver

- To turn ON the RF deck, push [I/O] on the rear panel (depressing the I side).
 - The [POWER] indicator on the front panel lights orange.
- To turn ON the controller, push **POWER**.
 - The [POWER] indicator on the RF deck's front panel changes from orange to blue.



3. Connecting through the Internet — 5 With static IP addresses

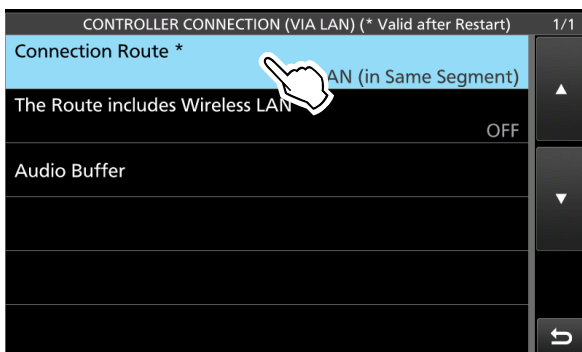
Step 1 2 3 **4** 5 6 7 8 9 10 11



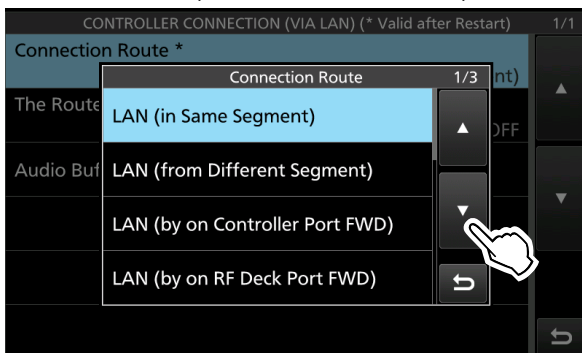
Step 4. Setting “Connection Route”

1. Touch “Connection Route.”

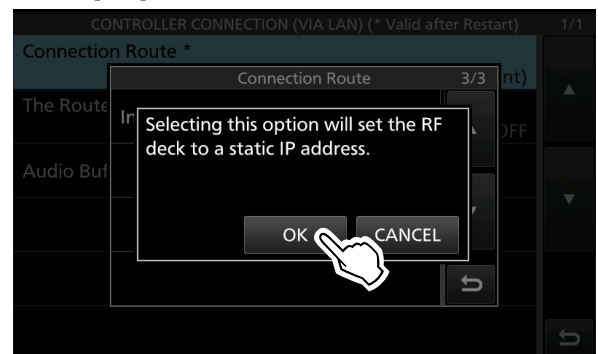
MENU » SET > Network >
Controller Connection (via LAN) >
Connection Route



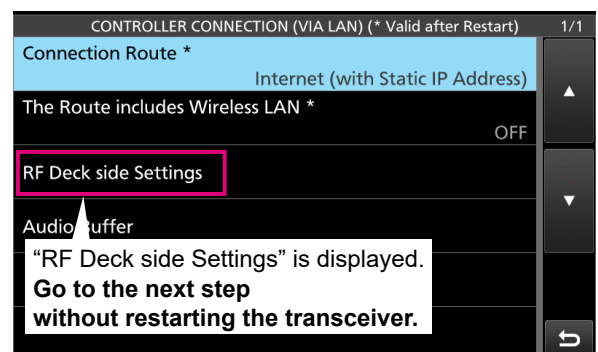
2. Touch “Internet (with Static IP Address).”



3. Touch [OK].



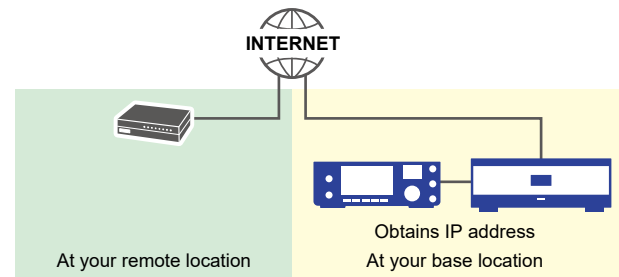
4. Confirm that “Internet (with Static IP Address)” is selected and “RF Deck side Settings” is displayed.



- “Selecting this option will set the RF deck to a static IP address.” will be displayed.

3. Connecting through the Internet — 5 With static IP addresses

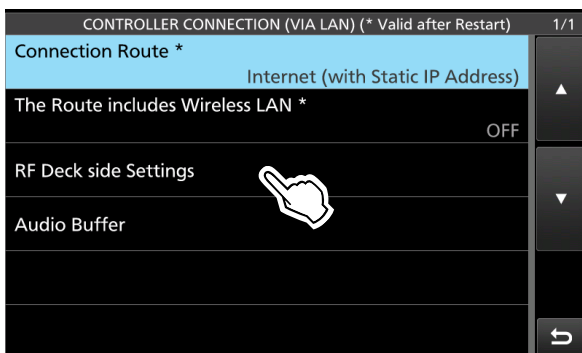
Step 1 2 3 4 **5** 6 7 8 9 10 11



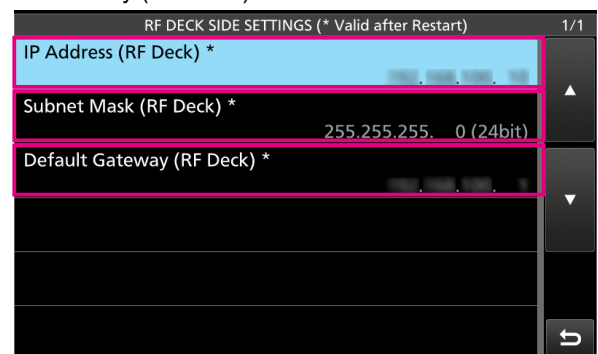
Step 5. Setting the RF deck to a static IP address

1. Touch "RF Deck side Settings."

MENU » SET > Network >
Controller Connection (via LAN) >
RF Deck side Settings

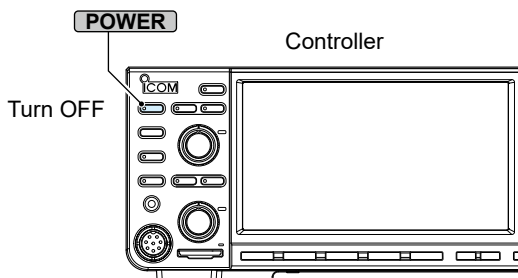


2. Set the RF deck's global static IP address that assigned by the ISP to "IP Address (RF Deck)."
① Also set "Subnet Mask (RF Deck)" and "Default Gateway (RF Deck)."

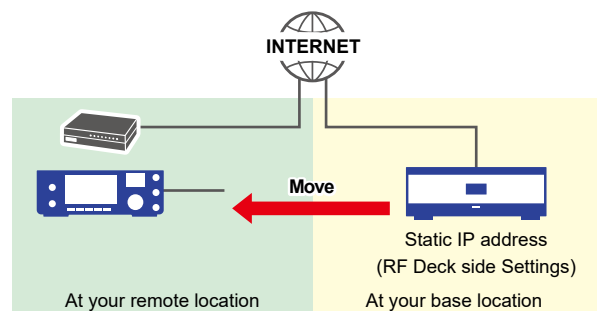


Step 6. Turning OFF the controller and moving it

1. Turn OFF the controller.
① Keep the main power supply switch on the RF deck's back panel ON.

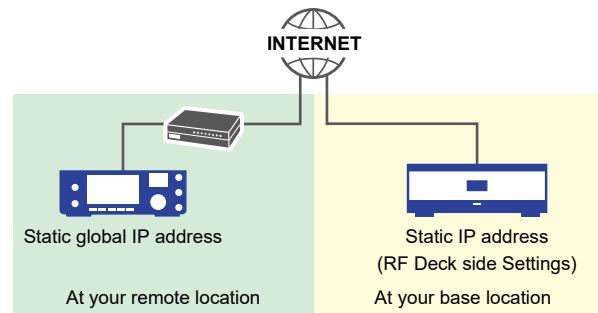


2. Disconnect the controller and the RF deck, and then move the controller and the supplied control cable to the location where you want them to be.



3. Connecting through the Internet — 5 With static IP addresses

Step 1 2 3 4 5 6 7 8 9 10 11



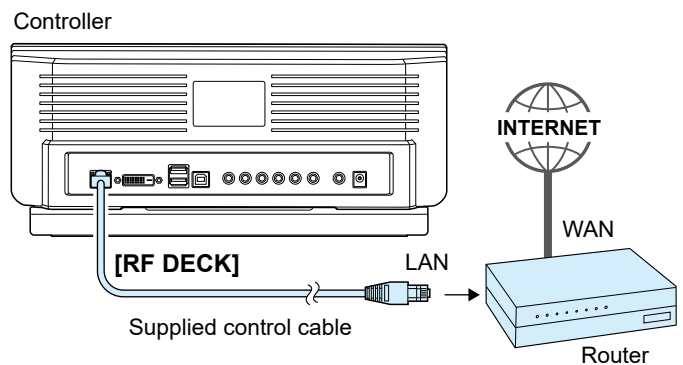
Step 7. Configuring the router

Configure the router's IP Unnumbered feature to use the global static IP address set on the controller for the Internet connection without using the router's WAN IP address.

① Refer to the router's manual for details about its functions and settings.

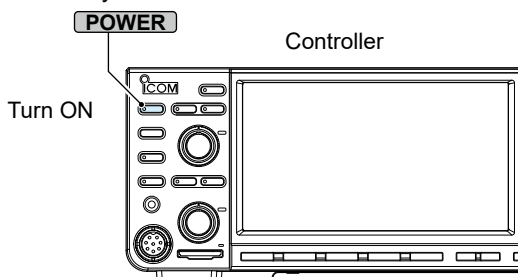
Step 8. Connecting the controller to the router

Connect the controller to the router's LAN side.

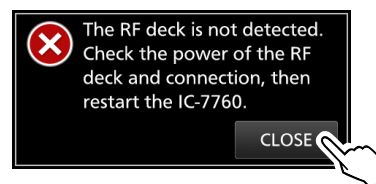


Step 9. Turning ON the controller

1. Turn ON the controller.
① The main power supply switch on the RF deck is already ON.

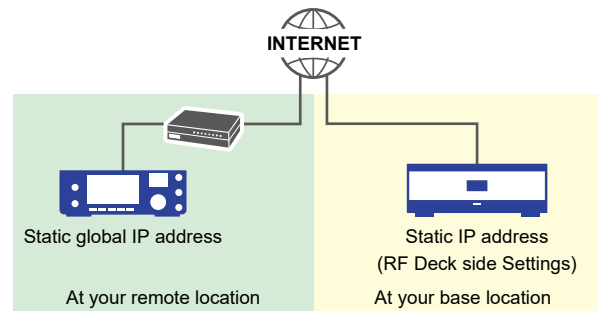


2. When an error dialog is displayed, touch [CLOSE].



- ① You do not need to restart the IC-7760. This dialog is displayed every time the controller is ON until the controller settings are completed.

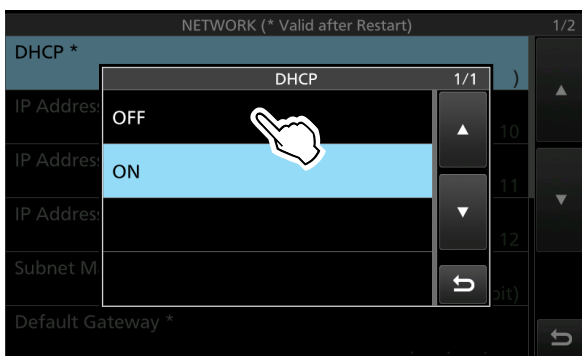
Step 1 2 3 4 5 6 7 8 9 **10** 11



Step 10. Setting the controller to static IP addresses

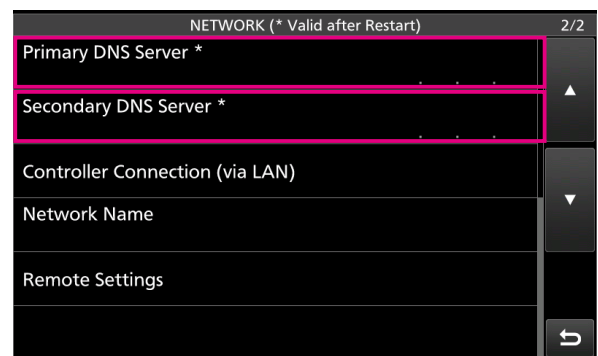
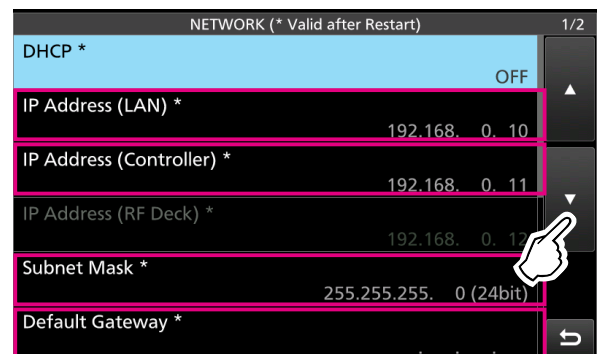
1. Set "DHCP" to "OFF."

MENU » **SET > Network > DHCP**



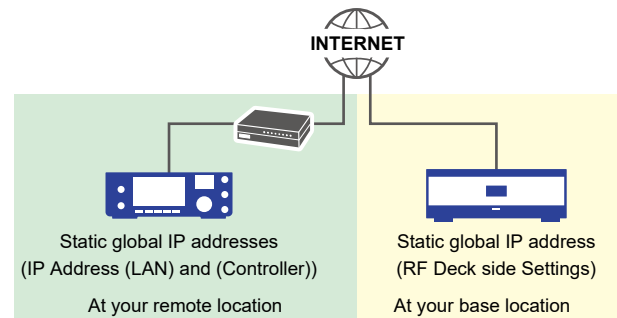
2. Set "IP Address (LAN)" and "IP Address (Controller)" to global static IP addresses that assigned by the ISP.

① Also set "Subnet mask," "Default gateway," "Primary DNS Server," and "Secondary DNS Server."



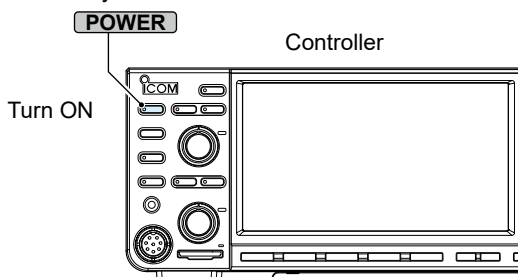
NOTE: DO NOT change the settings on "RF Deck side Settings" from what was set in **Step 5**.

Step 1 2 3 4 5 6 7 8 9 10 **11**

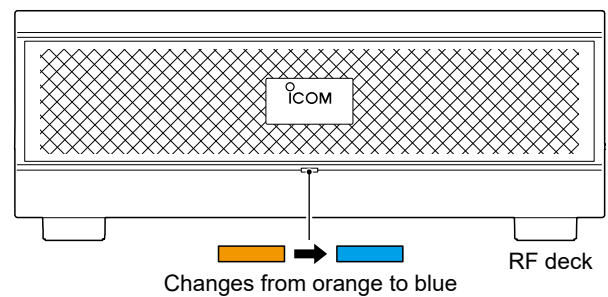


Step 11. Restarting the controller

1. Turn ON the controller.
 - ① The main power supply switch on the RF deck is already ON.



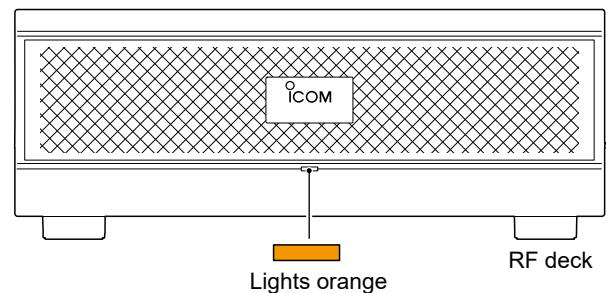
2. Confirm the connection.
 - When the connection has succeeded, the [POWER] indicator on the RF deck's front panel will change from orange to blue.



- ① If **RF** blinks and "⊗ The RF deck is not detected." is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and settings. (p. 69)
- ① If the audio is intermittent, adjust the Audio Buffer size. (p. 71)

If “❌ The RF deck is not detected.” is displayed:

If **RF❌** blinks and “❌ The RF deck is not detected.” is displayed on the controller, and the [POWER] indicator on the RF deck's front panel lights orange, check the connection and the settings described below.



1. Have you connected the controller and RF deck directly to pair them? (p. 2)
 - ① It is required before using the transceiver or an additional controller for the first time, including one acquired through transfer, after performing an All reset for the RF deck. (p. 1)
2. Is the RF deck's main power supply switch turned ON? (p. 2)
3. Are IP packets reaching the RF deck?

How to confirm:

- 3-1. Connect your PC to the network the controller is connected to.
- 3-2. Open Command Prompt on your PC.
- 3-3. Enter the Ping command as shown below, and then push [Enter].


```
ping XXX.XXX.XXX.XXX
```

 - ① Enter a space between “ping” and XXX.XXX.XXX.XXX.
 - ① Enter “IP Address (RF Deck)” set in **Step 5** (p. 65) to “XXX.XXX.XXX.XXX.”
 - Your PC will send test packets to the RF deck.

3-4. When there is a reply from the RF deck

Go to Steps 4 and 5 to confirm the controller and router settings.

When there is no reply from the RF deck

Go to Steps 6 and 7 to confirm the RF deck settings.

4. When there is a reply from the RF deck

Is the controller connected to the network?

- ① If connected, the [RF DECK] port's indicator on the controller's rear panel will light.

5. While the controller is connected to the router, confirm the controller settings in **Step 7**, **Step 10**, and **Step 11**. (pp. 66 ~ 68)

6. When there is no reply from the RF deck

Is the RF deck connected to the network?

- ① If connected, the [LAN] port's indicator on the RF deck's rear panel will light.

7. Confirm the RF deck settings.

7-1. Connect the controller and RF deck directly.

- ① When you change the RF deck settings, connect the controller and RF deck directly. If you change the settings while the controller and the RF deck are not connected (**RF❌** blinks), a discrepancy will occur between the controller and the RF deck, and the changed settings will not be applied.

7-2. Confirm the controller settings in **Step 4 and **Step 5**. (pp. 64, 65)****7-3. Do the steps starting with **Step 6**. (p. 65)**

Connecting through a wireless LAN

You can connect the controller and RF deck through a wireless LAN.

- ① When there is a wireless network device between the controller and RF deck, set "The Route includes Wireless LAN" to ON.

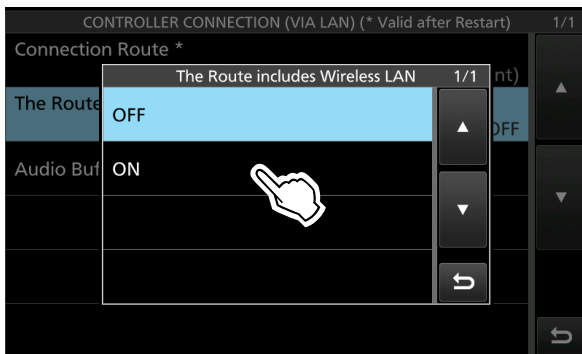


NOTE: The controller and RF deck do not have wireless LAN capabilities. To connect to a wireless LAN, you need a wireless LAN converter or a wireless LAN Access Point (User supplied) for the LAN port.

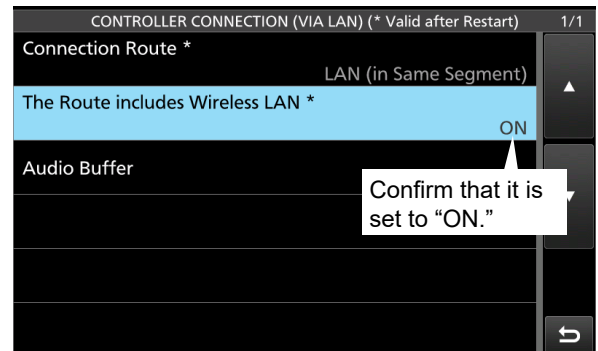
- ① A wireless LAN adapter for a USB port cannot be used.

1. Set "The Route includes Wireless LAN" to "ON."

MENU » SET > Network >
Controller Connection (via LAN) >
The Route includes Wireless LAN



2. Confirm that "The Route includes Wireless LAN" is set to "ON."



3. Connect a wireless LAN converter to the controller's [RF DECK] port, or the RF deck's [LAN] port.
① **DO NOT** connect a wireless LAN converter to the RF deck's [CONTROLLER] port.

Adjusting the Audio Buffer size

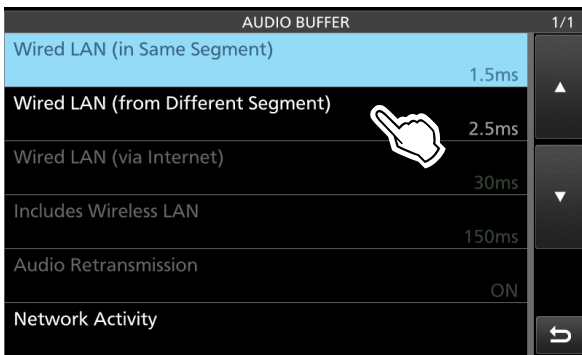
To prevent audio interruptions caused by communication delays between the controller and the RF deck, you can adjust the Audio Buffer length.

1. In the FUNCTION screen, touch [MONI] to turn ON the Monitor function.



2. Open the AUDIO BUFFER screen, and then touch the item according to your environment.

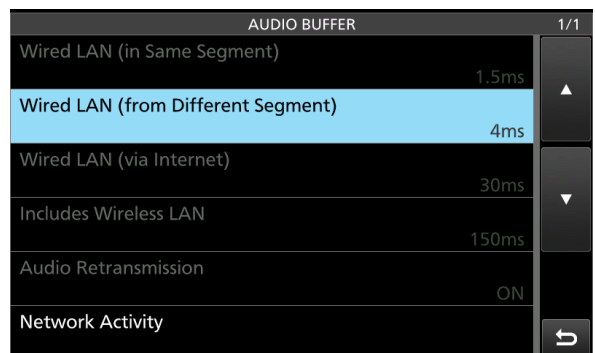
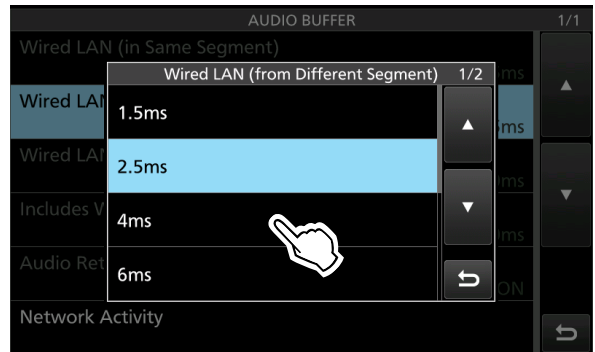
MENU » SET > Network > Controller Connection (via LAN) > Audio Buffer



- ① The valid items may differ, depending on the settings of "Connection Route" and "The Route includes Wireless LAN."

3. While monitoring your transmitted audio by using the Monitor function, adjust the Audio Buffer length.

① If audio is intermittent, select a longer value.



TIP: About "Network Activity"

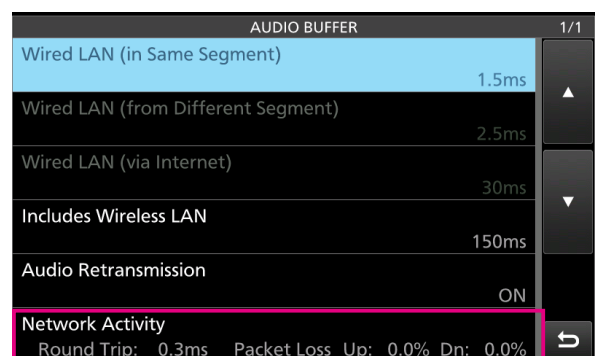
When connecting the controller and the RF deck through a network, the packet round trip time and the packet loss rate are displayed. Use these as a guideline for setting "Audio Buffer" and "Audio Retransmission."

- ① If the round trip time is long, set "Audio Buffer" to a longer value.
Adjust the volume so that the transmission monitor audio is intermittent.

- ① You should use "Audio Retransmission" set to "ON" (Default).

"Audio Retransmission is valid only when:

- "Connection Route" is set to "Internet (by on Both sides Port FWD)," "Internet (by on Controller Port FWD)," "Internet (L2 VPN in Same Segment)," "Internet (L3 VPN from Diff Segment)," or "Internet (with Static IP Address)."
- "The Route includes Wireless LAN" is set to "ON."



- ① "Network Activity" displays the current round trip time and the packet loss rate.
Past temporary delays and packet loss are not measured.

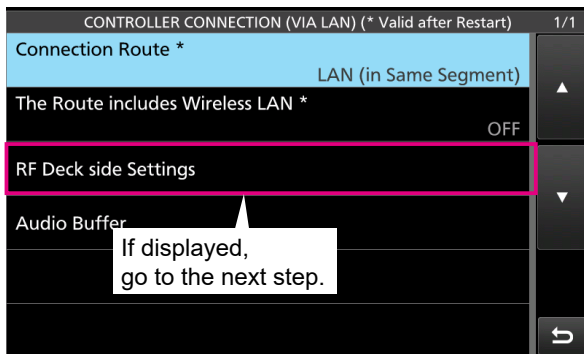
TIP: If the connection in the same segment fails

If the connection in the same segment fails, and “RF Deck side Settings” is displayed, change the setting as described below.

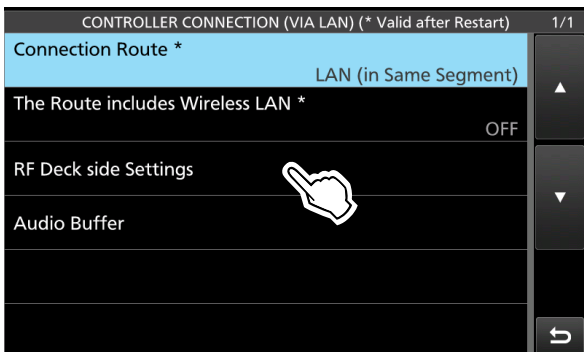
① When “RF Deck side Settings” is displayed, a static IP address is set to the RF deck. In this case, the connection in the same segment fails because the settings do not match your network environment.

1. Connect the controller and RF deck directly.
2. When “Connection Route” is set to “LAN (in Same Segment)” or “Internet (L2 VPN in Same Segment),” confirm that “RF Deck side Settings” is displayed.

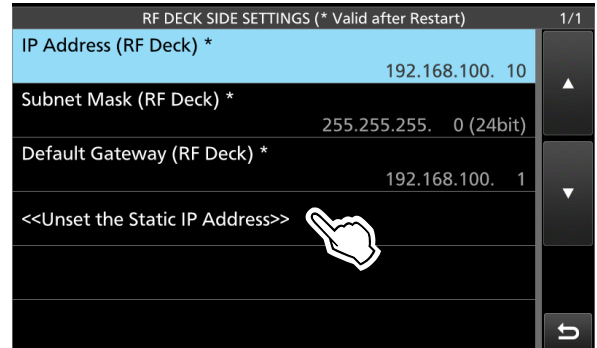
MENU » **SET > Network > Controller Connection (via LAN)**



3. If “RF Deck side Settings” is displayed, touch it.

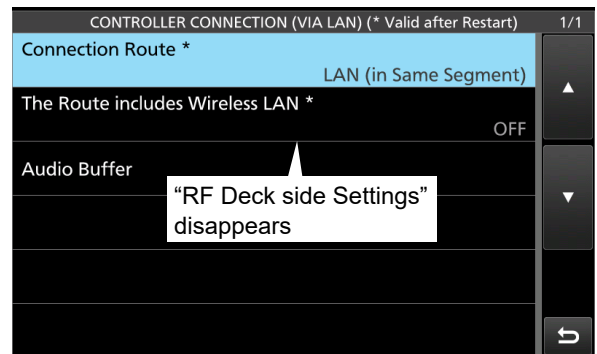


4. Touch “<<Unset the Static IP Address>>”



- A confirmation dialog is displayed.

5. Touch [YES].
6. Confirm that “RF Deck side Settings” disappears.



7. Restart the transceiver with the controller and RF deck connected directly.
 - The RF deck’s static IP address setting will be disabled.

TIP: Using additional controllers

To set an additional controller, refer to the description of the connection route you are using.

NOTE: BE SURE that the firmware versions of all controllers and the RF deck are the same.

① The RF deck's firmware can be updated only when the controller and RF deck are connected. After one controller and the RF deck firmware are updated, you can update the other controller's firmware without connecting it to the RF deck.

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