

YAESU

The radio

HF/VHF/UHF ALL MODE TRANSCEIVER

C4FM FDMA/FM

FT-991

INSTRUCTION MANUAL

(WIRES-X Edition)

Thank you for purchasing this Yaeau product.

This instruction manual explains operations and settings associated with the "WIRES-X Function".

For information on basic operation of the transceiver, please refer to the FT-991 Operating Manual.

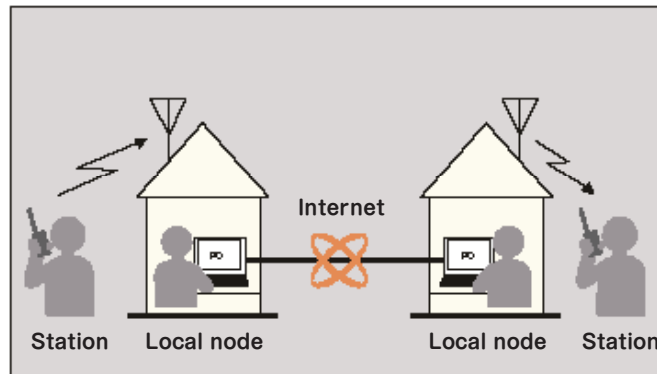
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WHAT IS WIRES-X?

WIRES (Wide-coverage Internet Repeater Enhancement System) is an Internet communication system which expands the range of amateur radio communication. By relaying radio signals via the Internet, stations can be connected far beyond the range of local VHF/UHF radio communications.

WIRES uses local nodes (stations connected to the Internet via PCs) as access points which repeat communications of conventional amateur radio stations. When the local nodes are connected to each other via the Internet, amateur stations all over the world can communicate with each other just by connecting conventional stations to the local nodes.



In addition to the WIRES linking features, WIRES-X also supports digital communications. Using WIRES-X, you can transmit and receive digitalized data such as text, image data and audio.

Using WIRES-X in conjunction with amateur radio transceiver allows analog/digital communications with stations outside the local communications range. In digital communication mode, you can search stations by call signs or keywords, and exchange data such as location information.

WIRES-X together with the GM (Group Monitoring) function on a compatible Yaesu transceiver, may be used to create a group including local nodes. Also networks covering a wide range may be established.

NOTE:

A currently in service WIRES-II node cannot connect to a WIRES-X node, or vice versa.

WHAT IS WIRES-X?

TERMINOLOGY

- Node
 - Radio repeater connected to the Internet via a PC, which repeats communications of conventional amateur radio stations as an access point
- Local node
 - Node within the radio communication range of a conventional amateur radio station
- Analog node
 - Node which is a transceiver or repeater using the conventional FM format and can only repeat DTMF (Dual Tone Multi Frequency) codes and analog audio transmissions/receptions
- Digital node
 - Node which is a transceiver or repeater compatible with digital communications in C4FM (Continuous 4 level FM) format. With this type of node, you can transmit/receive audio as well as text and image data.

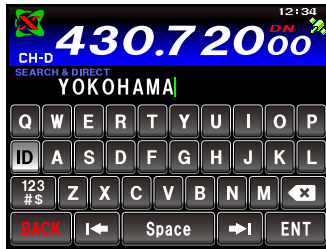
- WIRES-X user ID
 - YAESU provides identification names with the WIRES-X nodes. For each node, a DTMF ID (five-digit number), and a user ID (alphanumeric characters consisting of up to ten digits) are provided.
 - If you know the ID of the node you want to connect with, you can transmit the DTMF code from your transceiver. For digital nodes, you can directly specify the node to search for and connect to by using the alphanumeric ID characters.
- ID list
 - Currently operating WIRES-X Nodes and rooms are listed and published on the WIRES-X website. Information such as IDs, call signs and operating frequencies is provided. (Some information may not be published due to the wishes of node owners).
- Room (Round QSO Room)
 - WIRES system internet community space to which multiple nodes can connect simultaneously. As well as voice communications, you can also chat with text messages on the PC used for the local node.
- Open room
 - A room which allows all nodes to connect
- Closed room
 - A room which allows only registered nodes to connect
- Owner
 - A Node which opens and organizes a room
- Activity
 - Nodes currently connected to a specific room

- Preset search function
 - When a preferred channel for connecting to local nodes is programmed (preset) in the transceiver, the channel can be scanned automatically when you start up WIRES-X.
 - Utilize this function as follows:
 - Quickly connect to the usually accessed local node by presetting its frequency in advance.
 - By presetting to a frequency channel shared with other associated nodes, the transceiver can quickly connect to a local node, even while you are traveling in other areas.

You can use two transceivers as nodes, one for the preset search channel (receive only channel) and the other for the voice channel (operation channel)

The following screen is displayed when inputting text, such as group names, on the FT-991 transceiver.

Alphabet Input Screen



[123#\$] Touch to switch the screen to the number and symbol input screen.

[←][→] Touch to move the cursor in the input field left /right.

[ENT] Touch to confirm entered characters and return to the previous screen.

[BACK] Touch to return to the previously viewed screen.

[✕] Touch to delete the character to the left of the cursor.

Number and Symbol Input Screen



[ABC] Touch to switch the screen to the alphabet input screen.

CAUTIONS:

- Any symbol may be input as the first digit.
- The only allowable symbols that may be input for the remaining digits are “-” and “/”.

COMMUNICATING USING WIRES-X

FINDING A LOCAL NODE

To communicate using WIRES-X, a WIRES-X node station (local node) must be established within radio contact range of the user transceiver.

WIRES-X node stations are voluntarily operated and registered with Yaesu by users. Their locations, frequencies and operation information are listed on our website:

<https://www.yaesu.com/jp/en/wires-x/index.php>

First use the website list to search for a nearby local WIRES-X node, also identify active nodes on the Internet that you may want to communicate with; write down the node names (call signs) and frequencies.

Since the connection procedure differs between digital stations and analog stations, confirm whether the node is an analog station or a digital station.

- When the local node is a digital station:
Connect from your transceiver in digital mode.
- When the local node in an analog station:
Connect from your transceiver in analog mode.

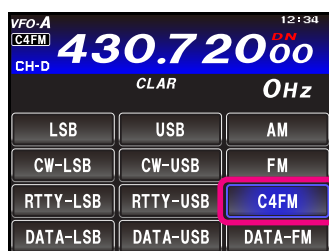
CONNECTING TO A LOCAL NODE IN DIGITAL MODE

NOTE:

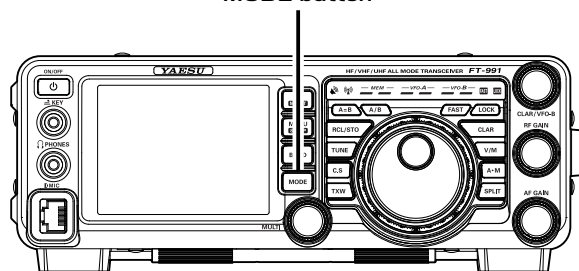
Before using WIRES-X, set the communication mode (modulation mode) to C4FM.

1. Set the communication mode to C4FM.

After pressing the **MODE** button, touch “**C4FM**”, then press the **MODE** button again.



MODE button



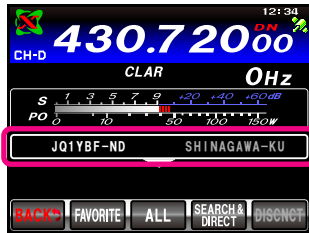
2. Tune to the frequency of the local node you want to connect to.
3. Press the **F(M-LIST)** button.
4. Touch [**X**].

The transceiver automatically switches to transmit mode and “**X**” of the “**X**” icon flashes.



CONNECTING TO A LOCAL NODE IN DIGITAL MODE

When a local node is found, “X” is lit solid, and the node name (call sign) and city name appear.



TIPS:

- While “X” is flashing, briefly press [**X**] to re-establish connection to the local node.
- While “X” is flashing, press and hold [**X**] for over one second to cancel the connection operation.
- When a local node cannot be found, “~~X~~” will disappear in 20 seconds.
- When the local node found is a repeater station, “~~X~~” appears on the right side of “[**R**]”.

Tip:

Depending on the connection status, the screen will show one of four display patterns.

1. Connected to the local node, but unable to connect to Internet nodes or rooms (no previously established connection to Internet nodes or rooms)
2. Connected to the local node, but unable to connect to Internet nodes or rooms (previously succeeded in establishing connection to Internet nodes or rooms)
3. Connected to the local node, successfully connected to an Internet node or room (the Internet node or room is the same as the one previously used)
4. Connected to the local node, successfully connected to an Internet node or room (the Internet node or room is different from the one previously used)



CONNECTING TO A NODE OR ROOM ON THE INTERNET IN DIGITAL MODE

You can connect to the desired node or room in one of the following ways:

- Selecting an accessible node or room from the list
- Specifying the node name (call sign) or room name
- Selecting the most recently connected node or room
- Specifying the DTMF ID of the node or room you want to connect with

Searching from the Node or Room List

1. When the transceiver is connected to a local node, touch **[ALL]**.
After “Waiting” flashes, displays the list of accessible nodes and rooms.

TIPS:

- Connection destinations are displayed from the room list and then node list.
 - On the connection destination room columns, the number of activities (the number of nodes connected to each room) appears on the right side.
2. Rotate the **MULTI** knob or touch the screen to select the node or room you want to connect with.

TIP:

Touching **[TOP]** jumps to the top of the list.

3. Touch **[SELECT]**.

Connection to the selected node or room from the local node is started. Once connection is successfully established, displays “Connected” is displayed, followed by the information of the node or room you are connected to.



Searching by Node or Room Name

1. When the transceiver is connected to a local node, touch **[SEARCH & DIRECT]**.

The alphabet input screen is displayed.

TIP:

If the number and symbol input screen appears, touch **[DIRECT]** to switch the screen to the alphabet input screen.

2. Enter all or part of the room name or user ID.
3. Touch **[ENT]**.

Start searching. If connection destinations with the first part of a name partially matching the name you entered are found, they will be listed.

TIPS:

- If there is no connection destination matching the entered name, “No Data” appears and then the screen returns to the **[SEARCH & DIRECT]** screen. Input the letters you want to search by again.
 - If the name you entered is found, the transceiver establishes connection immediately.
 - The screen displays the room list search results followed by the node list search results.
 - On the room columns in the search results, the number of activities (the number of nodes connected to each room) appears on the right side.
4. Rotate the **MULTI** knob or touch the screen to select the node or room you want to connect to.

TIP:

Touching **[TOP]** jumps to the top of the list.



CONNECTING TO A NODE OR ROOM ON THE INTERNET IN DIGITAL MODE

1. Touch **[SELECT]**.

Starts connection to the selected node or room from the local node. Once connection is successfully established, displays “Connected” is displayed followed by the information of the connected node or room.

Reconnecting to the Most Recently Connected Node or Room

If a node or room was previously connected on the Internet, it appears and flashes at the bottom of the screen when you again connect to the local node.

Touch the displayed node or room to restart a connection, once the connection is established, the ID and information of the connected node (room) will appear.



Specifying the DTMF ID of the Node or Room to Connect to

1. When the transceiver is connected to a local node, touch **[SEARCH & DIRECT]**.

The number and symbol input screen is displayed.

Tip:

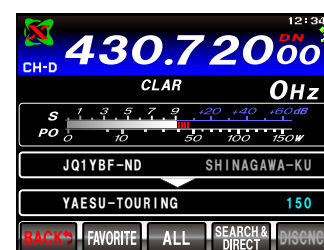
If the alphabet input screen appears, touch **[ID]** to switch to the number and symbol input screen.

2. Enter the five-digit DTMF ID.
3. Touch **[ENT]**.

The local node starts the connection to the node in accordance with the ID you have input. Once connection is successfully established, “Connected” is displayed followed by the ID and information of the node or room you are connected to.

Tip:

If connection is not successful, an error message appears and then the display returns to the DTMF ID input screen. Enter the DTMF ID again.



DISCONNECTING FROM A NODE OR ROOM IN DIGITAL MODE

1. Touch **[DISCNCT]**.

If disconnection is successful, “Not Connected” appears and then the screen returns to the local node connection screen.



COMMUNICATING USING WIRES-X

CONNECTING TO A NODE OR ROOM ON THE INTERNET IN ANALOG MODE

When connecting to a local node which is an analog station, use the optional DTMF microphone “MH-36E8J”.

1. Connect the optional DTMF microphone “MH-36E8J” to the transceiver.
2. Set the communication mode to FM.
After pressing the **MODE** button, touch “FM” on the screen, then press the **MODE** button again.
3. Tune to the frequency of the local node you want to connect to.
4. While pressing **[PTT]** on the microphone, press the buttons (**[#]**, **[0]** to **[9]**) on the microphone to transmit the access code.

EXAMPLE:

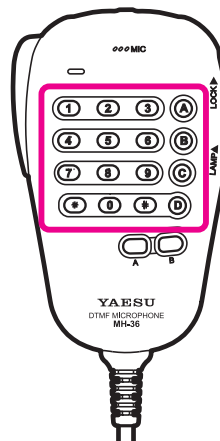
[#] → **[2]** → **[0]** → **[5]** → **[1]** → **[1]**

5. Release **[PTT]**, and keep the transceiver in reception mode for about ten seconds.

When the connection is successfully established, you will be able to hear audio.

TIP:

The ID information of the connection destination does not appear.

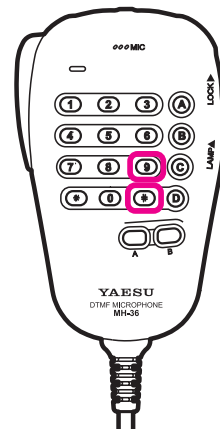


DISCONNECTING FROM THE NODE OR ROOM YOU ARE CONNECTED TO IN ANALOG MODE

1. While pressing **[PTT]** on the microphone, press the buttons on the microphone to transmit #99999 (disconnection command).
Disconnects the node or room.

TIP:

You can disconnect from some specific nodes just by transmitting **[*]**.



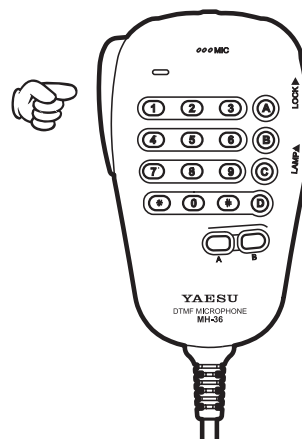
COMMUNICATING WITH OTHERS

1. Press **[PTT]** on the microphone.
The transceiver switches to transmit mode.
2. Speak into the microphone.
Speak into the microphone in your normal speaking voice while keeping it about 5 cm away from your mouth. Do not continuously transmit over an extended period of time to reduce the risk of overheating, malfunction, or injury.

CAUTION:

Maximum continuous TX: three minutes

3. Release **[PTT]**.
The transceiver switches to receive mode.



USEFUL FUNCTIONS IN DIGITAL MODE

USING PRESET CHANNELS

Programming (presetting) a channel frequency allows easy connection to a local node.

By sharing the same channel frequency with other nodes, you can connect the transceiver to a local node even while you are traveling. This is useful for group stations operation.

Connecting to a Preset Channel

1. To use the preset channels function, follow the below “Presetting a channel” and “Activating the preset channel function” procedures in advance.
2. Press the **F(M-LIST)** button.
3. Touch **[X]**.

On the top left of the screen, the “**X**” and “**P**” icons light up alternately.

When a local node is found, “**X**” is lit solid, and the node name (call sign) and city name appear.

TIPS:

- While “**X**” is flashing, briefly press **[X]** to re-establish connection to the local node.
- When no local node can be found, the “**X**” and “**P**” icons will disappear in 20 seconds.
- When the local node found is a repeater station, “**[R]**” appears on the right side of “**X**”.

Presetting a channel

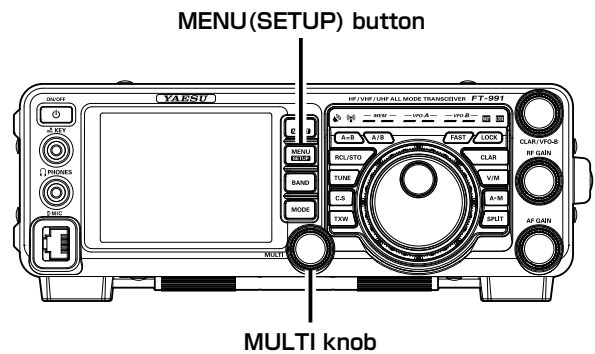
1. Press the **MENU(SETUP)** button.
2. Rotate the **MULTI** knob to select “153 PRESET FREQUENCY”.
3. Touch **[SELECT]** on the screen.
4. Use the numeric keys to input the frequency you want to preset.

Default setting: 145.375.00 MHz

146.550.00 MHz (USA version)

When about 10 seconds have passed without any frequency inputting operations, the operation will be canceled.

5. Touch **[ENT]** on the screen.
Sets the frequency you have input.
6. Touch **[BACK]**.
To return to the original screen.

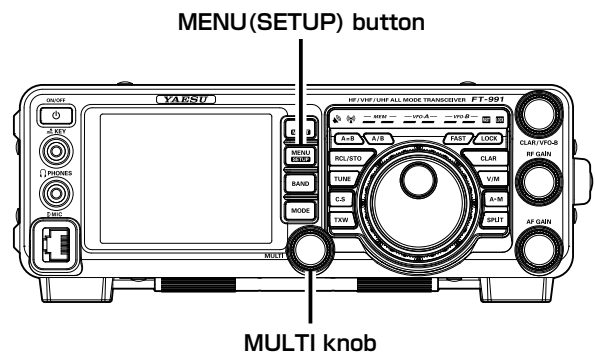


Activating the preset channel function

1. Press the **MENU(SETUP)** button.
2. Rotate the **MULTI** knob to select “152 PRT/ WIRES FREQ”.
3. Touch **[SELECT]** on the screen.
4. Rotate the **MULTI** knob to select “PRESET”.

Default setting: MANUAL

5. Touch **[ENT]** on the screen.
6. Touch **[BACK]**.
Returns to the original screen.

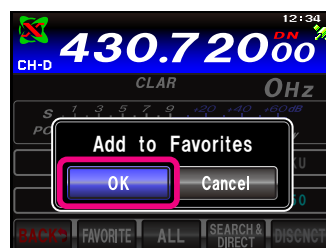
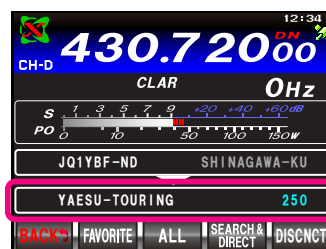


USEFUL FUNCTIONS IN DIGITAL MODE

PRESETTING YOUR FAVORITE NODES OR ROOMS

Favorite nodes or rooms may be preset.

1. Connect to the node or room you want to preset.
2. Touch the node or room display.
The “Add to Favorites” confirmation screen will be displayed.
3. Touch **[OK]**.
The node or room preset is registered and the display returns to the original operating screen.
To exit the preset operation without registering the frequency, touch **[Cancel]**.



Connecting to the Node or Room Preset as FAVORITE

1. When the transceiver is connected to a local node, touch **[FAVORITE]**.
“Waiting” flashes, and then the list of the preset Nodes and Rooms will be displayed.

TIPS:

- The items may be listed in order, according to the number of nodes connected to a room, or according to the “Access History” of room and node connections by setting “154 SEARCH SETUP” to “Activity” or “Access History” from the set-up menu.
 - On the connection destination room columns, the number of activities (the number of nodes connected to each room) appears on the right side.
2. Rotate the **MULTI** knob or touch the screen to select the node or room to be connected.

TIP:

Touching **[TOP]** jumps to the top of the list.

3. Touch **[SELECT]**.
Connection to the selected node or room is attempted.
When the connection is successfully established, “Connected” is displayed, followed by the connected node or room information.



Deleting the Nodes or Rooms from FAVORITE

1. When the transceiver is connected to a local node, touch and hold **[FAVORITE]** for over one second.
The list of the preset nodes and rooms is displayed.
2. Rotate the **MULTI** knob or touch the screen to select the node or room to be deleted.

TIP:

Touching **[TOP]** jumps to the top of the list.

3. Touch **[SELECT]**.
The “DELETE” confirmation screen is displayed.
4. Touch **[OK]**.
The node or room is deleted and the display returns to the original operating screen.
To exit the operation without deleting the node or room, touch **[Cancel]**.



SET-UP MENU FOR THE WIRES-X FUNCTION

SET-UP MENU LIST FOR THE WIRES-X FUNCTION

No.	Menu Function	Available Settings	Default Value
152	PRT/WIRES FREQ	Select the operating frequency setting method when connecting to a local node	MANUAL
153	PRESET FREQUENCY	Presets frequencies	145.375.00 146.550.00 (USA version)
154	SEARCH SETUP	Sets the criteria to sort the FAVORITE list	HISTORY

USING THE MENU FOR THE WIRES-X FUNCTION

Choose the Operating Frequency Setting Method (for Connecting to a Local Node)

Select manual frequency entry or a preset (registered in advance) frequency channel, when connecting to a local node.

1. Press the **MENU(SETUP)** button
2. Rotate the **MULTI** knob to select “152 PRT/WIRES FREQ”.
3. Touch **[SELECT]** on the screen.
4. Rotate the **MULTI** knob to select “MANUAL” or “PRESET”.

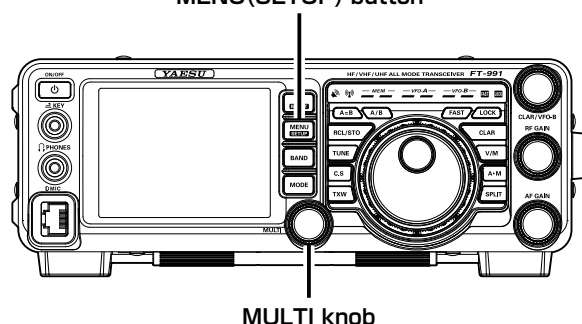
MANUAL: Manually set the frequency to access the local node.

PRESET: Access the local node by selecting a preset frequency channel.

Default setting: MANUAL

5. Touch **[ENTER]** on the screen.
6. Touch **[BACK]**.
Returns to the original operating screen.

MENU(SETUP) button



MULTI knob

Presetting Frequencies

Presetting (registering frequency channels in advance) permits convenient connection to local nodes.

1. Press the **MENU(SETUP)** button.
2. Rotate the **MULTI** knob to select “153 PRESET FREQUENCY”.
3. Touch **[SELECT]** on the screen.
4. Use the numeric keys to input the desired preset frequency.

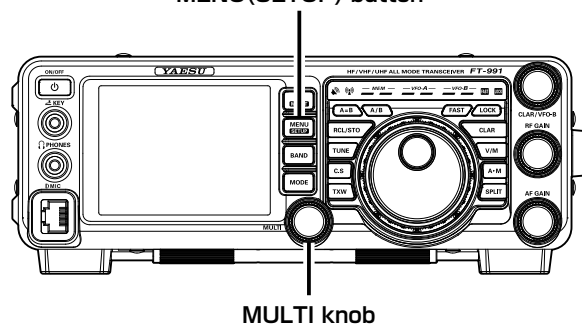
Default setting: 145.780.00 MHz

146.550.00 MHz (USA version)

If no inputting operation is made within 10 seconds, the operation will be canceled.

5. Touch **[ENT]** on the screen.
Registers the input Preset Channel Frequency.
6. Touch **[BACK]**.
Returns to the original operating screen.

MENU(SETUP) button



MULTI knob

SET-UP MENU FOR THE WIRES-X FUNCTION

USING THE MENU FOR THE WIRES-X FUNCTION

Setting the Criteria to Sort the FAVORITE List

To select the FAVORITE list sort criteria:

1. Press the **MENU(SETUP)** button.
2. Rotate the **MULTI** knob to select “154 SEARCH SETUP”.
3. Touch **[SELECT]** on the screen.
4. Rotate the **MULTI** knob to select “HISTORY” or “ACTIVITY”.

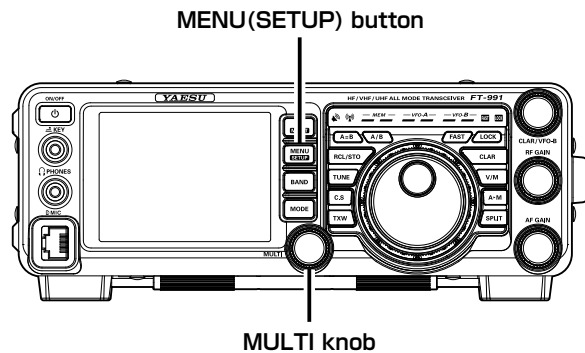
HISTORY: Displays the list sorted in order, beginning with the most recently connected destination station.

ACTIVITY: Displays the list sorted in descending order, beginning with the room with the most connected nodes.
Nodes are listed after rooms.

Default setting: HISTORY

5. Touch **[ENTER]** on the screen.
6. Touch **[BACK]**.

Returns to the original screen.



YAESU
The radio

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