

***YAESU***  
*The radio*

# **HRI-200**

## **Reference Manual**

### **for DR-2X/XE**

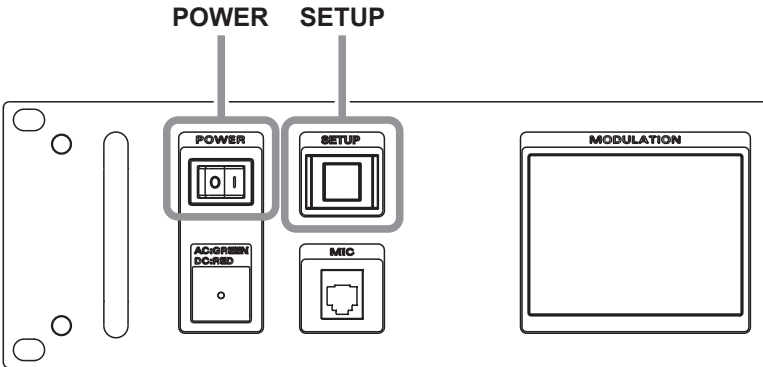
This Reference Manual is for the DR-2X/XE.

**YAESU MUSEN CO., LTD.**

# Activate HRI mode

## Change the repeater mode to the HRI mode

1. Turn the DR-2X/XE power OFF.
2. While pressing and holding the [SETUP] button, press the [POWER] switch.

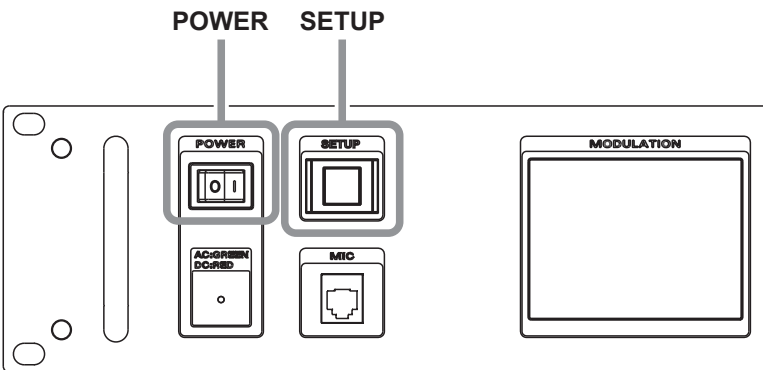


3. While the “YAESU” logo is being displayed, release the [SETUP] button.  
“HRI+REPEATER MODE” will appear on the display.
4. Touch [OK?]  
HRI mode will activate.

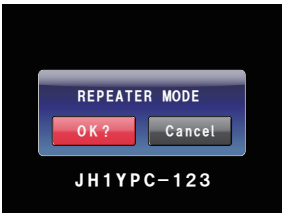


## Return to REPEATER mode from HRI mode

1. Turn the DR-2X/XE power OFF.
2. While pressing and holding the [SETUP] button, press the [POWER] switch.

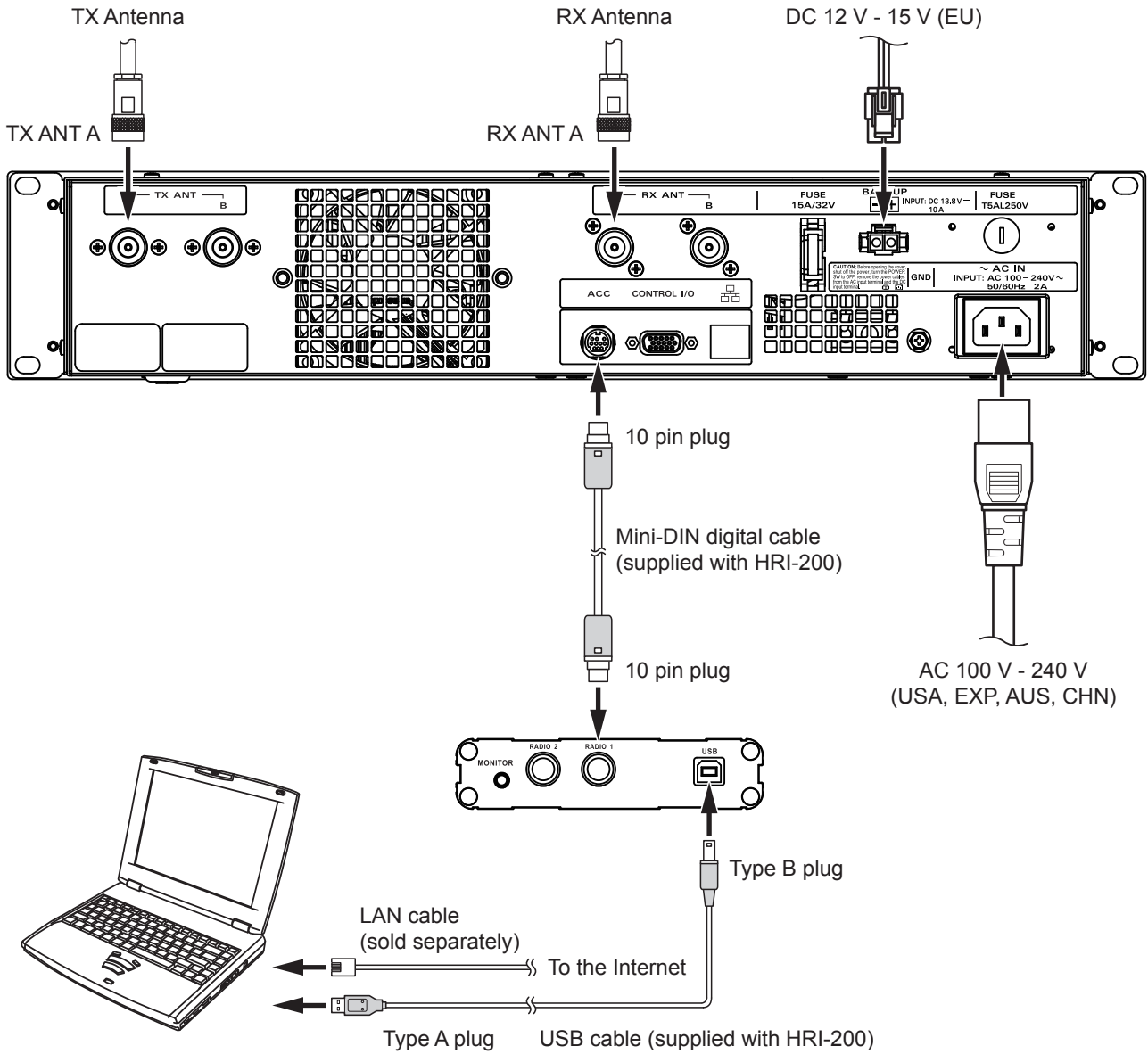


3. While the “YAESU” logo is being displayed, release the [SETUP] button.  
“REPEATER MODE” will appear on the display.
4. Touch [OK?]  
The operation mode screen will appear on the display.



# Connecting Devices

## Connecting HRI-200 to a DR-2X/XE



## Repeater setting

If an HRI-200 control mode repeater is connected, the following repeater setting screen for exclusive use of Repeater is displayed.

- When an HRI-200 control mode repeater is detected, the setting information is read from the Repeater and is displayed on the screen.
- If connecting an HRI-200 control mode repeater, switch on the DR-2X/XE unit while simultaneously pressing the mechanical [SETUP] button on the front panel. When the “YAESU” logo is displayed on the LCD touch screen, release the [SETUP] button, the LCD will change to “HRI-REPEATER MODE”. Then press the [OK] button.
- If operating in Analog FM mode while connected to an HRI-200 control mode repeater, noise squelch can be adjusted by pressing the [SQL] button (setup screen) and touching the [▲] / [▼] button.

## Voice CH

Voice CH uses WIRES-X to communicate via the Internet.

Operation will be executed by controlling the repeater connected to the HRI-200 Radio 1 terminal.

The following parameters need to be set/display for operation.

The screenshot displays the 'Transceiver' settings window. The 'Voice CH' section is highlighted with an orange border. It includes settings for RX and TX channels, such as Modulation (Digital), Frequency (440.500 MHz RX, 445.500 MHz TX), and Power (Low). The 'Repeater' section shows ID SET, TIMER (TOT: 3 Min, SQL HYSTERESIS: NORMAL, SQL TAIL LENGTH: 0 mSec), ID ANNOUNCE (Mode: CW, Level: Mid, CW ID SPEED: 20 WPM, INTERVAL: 10 Min), and TX INHIBIT (Mode: REMOTE, STOP CODE: 27, RESUME CODE: 28, DISP TIMER: 1 Min). The 'Preset Search CH' section shows Operation mode (OFF), Modulation (OFF), Frequency (144.000 MHz), and Power (Low). At the bottom are buttons for OK, Cancel, Apply, and Help.

## WIRES Operation

Select a WIRES operation mode from the following options:

- Digital : C4FM digital mode.
- Analog : FM Analog mode.

### Note:

- The WIRES Operation is automatically set according to TX CH parameters (Transceiver) setting of the Repeater. However, if the transmit CH is AMS, the WIRES Operation setting must be selected.
- When the Repeater is connected, you cannot operate the Digital Dual Receive mode.
- You cannot selected GM mode or connect to a closed room while in Analog (FM) operation.

## **Transceiver**

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Select the Repeater operation mode from the following:

- RX:FM - TX:FM: FM Analog repeater (WIRES Operation=Analog (fixed))
- RX:DIGITAL - TX:DIGITAL: C4FM Digital repeater (WIRES Operation=Digital (fixed))
- RX:AMS - TX:FM: AMS to FM repeater (WIRES Operation=Analog (fixed))
- RX:AMS - TX:DIGITAL: AMS to C4FM repeater (WIRES Operation=Analog (fixed))
- RX:AMS - TX:AMS: AMS to AMS repeater (WIRES Operation=selectable)

### **Notes:**

- When operating in RX:AMS mode, the WIRES-X system only relays the signal that is selected by the WIRES Operation setting.
- When "HRI-REPEATER MODE" is started in either the "RX:DIGITAL-TX:FM" or "RX:FM-TX:DIGITAL" state, the WIRES-X Node cannot operate.

## **Transceiver / DST / F/W version**

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Displays the data information of the digital transceiver in connection with the HRI-200.

### **Modulation**

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Displays the Voice CH wave format selected for repeater operation.(RX CH and TX CH)

- Digital: Displayed if using digital (C4FM) mode.
- Analog: Displayed if using analog (FM) mode.
- AMS: Displayed if using AMS(Automatic Mode Select) mode.

### **Frequency**

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Enter the WIRES-X operating frequency (RX CH and TX CH) in MHz.

The entered data will be displayed on the ID list.

### **Narrow deviation**

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Select if using Narrow deviation operation.

#### **Note:**

This parameter cannot be set different for the RX and TX channels.

### **C4FM detect**

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Select the C4FM detection method for WIRES-X Digital operation.

- Signal: The node becomes busy state when receiving any signal.
- DG-ID: The node becomes busy state only when receiving a signal with a matching DG-ID number.

### **Digital SQL/Analog SQL**

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Enter the squelch function of the WIRES-X operating frequency (Voice CH frequency).

The entered data will be displayed on the ID list.

The following squelch codes are available:

**Digital Operation** (The default setting is DG-ID 00.)

- Select a DG-ID number 00-99 (functions only in the digital mode).

#### **Note:**

When the DG-ID number is set to "00", the station becomes an open node station, and can be connected from any transceiver with the WIRES-X DG-ID to "AUTO". When using the node station for a restricted group, set the DG-ID to a number other than "00", and set all the group transceivers to the same DG-ID number.

**Analog Operation** (The default setting is NoTone.)

- NoTone: Not using CTCSS tone or DCS code squelch.
- ToneSQL: Using CTCSS tone squelch.
- DCS: Using DCS code squelch.
- T-CALL: Using Tone Call squelch.
- Tone+TCL:Using Tone Call and CTCSS tone squelch.
- DCS+TCL:Using Tone Call and DCS code squelch.

If using ToneSQL, select the desired tone frequency (67.0 - 254.1 Hz).

If using DCS, select the desired DCS code (023 - 754).

#### **Notes:**

- The analog SQL type can be set individually for the RX and TX channels.
- When making REMOTE settings in the TX INHIBIT function, there are some combinations that cannot be set. (See the description of the TX INHIBIT function for details)

## **Power**

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Set the transmission power of the repeater connected to the Radio 1 terminal.

## **Reverse**

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Enables the transmit frequency offset.

- Reverse (when checked): The uplink (RX CH) input frequency information equals the downlink (TX CH) output frequency minus the offset frequency. (Default - Offset)
- Normal (not checked): The uplink (RX CH) input frequency information equals the downlink (TX CH) output frequency plus the offset frequency. (+ Offset)

When using a repeater, the portable terminal transceiver and transmission/reception are reversed. It is therefore necessary to use the reverse setting (transmission frequency offset reception setting). (Default setting)

### **Example 1**

Uplink (RX CH) frequency = 434.700 MHz

Downlink (TX CH) frequency = 439.700 MHz

Reverse setting (Default setting) (- Offset)

Uplink (RX) = 434.700 MHz / Downlink (TX) = 439.700 MHz / Offset = -5.000 MHz

List output/search response info = 439.700 MHz - 5.000 MHz

### **Example 2**

Uplink (RX CH) frequency = 439.700 MHz

Downlink (TX CH) frequency = 434.700 MHz

Normal setting (+ Offset)

Uplink (RX) = 439.700 MHz / Downlink (TX) = 434.700 MHz / Offset = +5.000 MHz

List output/search response info = 434.700 MHz + 5.000 MHz

## **Hide frequency settings**

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Hide transmission frequency data. If remove the check mark, operating data, such as frequency will be displayed in the ID list.

### **Note:**

It is checked in the default setting.

## Repeater

When connecting the HRI-200 and the DR-2X/XE Repeater, the Repeater settings may be entered with a PC and the WIRES-X software.

The screenshot shows the 'Transceiver' software window. The 'Repeater' settings panel is highlighted with an orange border. The 'ID SET' field is empty. The 'TIMER' section includes: TOT (3 Min), SQL HYSTERESIS (NORMAL), and SQL TAIL LENGTH (0 mSec). The 'ID ANNOUNCE' section includes: Mode (CW), Level (Mid), CW ID SPEED (20 WPM), and INTERVAL (10 Min). The 'TX INHIBIT' section includes: Mode (REMOTE), STOP CODE (27 and 31), RESUME CODE (28 and 31), and DISP TIMER (1 Min). Other settings visible include: Voice CH (RX: DIGITAL - TX: DIGITAL), WIRES Operation (Digital Operation), Transceiver (DR-2X), Modulation (Digital), Frequency (440.500 MHz RX, 445.500 MHz TX), C4FM detect (DG-ID), DG-ID (01), Analog SQL (Tone SQL), Tone SQL (100.0 Hz), DCS (023), Power (Low), and Reverse checked. The 'Preset Search CH' section shows Operation mode (OFF), Transceiver, DST, and F/W version fields. The 'Modulation' is OFF, Frequency is 144.000 MHz, and C4FM detect is set to a dropdown. The 'DG-ID' is 00 and Power is Low. At the bottom, there are buttons for OK, Cancel, Apply, and Help.

### ID SET

Set the ID (Repeater Callsign) information (max 10byte).

#### Note:

Please enter the same callsign as the WiRES-X registration.

### TIMER

Set the timer function

TOT (Timeout Timer): Set the Time-Out Timer to prevent continuous extended transmission.

SQL HYSTERESIS: Set the Hysteresis setting of the noise squelch circuit.

SQL TAIL LENGTH: Set the transmit "squelch tail" duration.

#### Note:

When the Termination signal is received, the transmit "squelch tail" is eliminated. (Digital operation).

### ID ANNOUNCE

Set the ID announcement.

Mode: Set the contents of the ID announcement.

- CW: CW ID
- CW wo TONE: CW ID (TX without tone code)
- VOICE: Voice ID (Voice guide unit (FVS-2) is required)
- VC wo TONE: Voice ID (TX without tone code)(Voice guide unit (FVS-2) is required)

Level: Set the volume of the ID sound.

CW ID SPEED: Set the mark reproduction speed (wd/min) of the CW ID.

INTERVAL: Set the Transmission time interval between the ID announcements.

#### Caution1 (CW ID SPEED)

When operating in the USA the CW ID SPEED setting time must not exceed 20wd/min when keyed by an automatic device, to comply with the FCC rule Part 97: Sec.97.119(b)(1)Station identification.

**Caution2 (INTERVAL)**

When operating in the USA the ID setting time should be ten minutes or less to comply with the FCC rule Part 97: Sec.97.119(a) Station identification.

**[TX INHIBIT]**

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Set transmit inhibit.

Mode : Set the TX INHIBIT function.

- REMOTE: Remote transmit control by ECS (Enhanced Code Squelch) code.

STOP/RESUME CODE : Set the ECS (Enhanced Code Squelch) code for remote TX control.

**[DISP TIMER]**

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Set the repeater touch panel automatic light timer.



## Preset Search CH

WIRES-X compatible digital (C4FM) transceivers are able to transmit search signals to locate WIRES-X Node stations. There are 2 ways of transmitting this search signal.

### Manual Search Function

Directly transmitting search signals via the WIRES Node station Voice CH

### Preset Search Function

Establishing a unique search frequency at which the portable terminal transmits search signals

When WIRES Node stations detect search signals, it returns response signals on the CH at which it detected the original signal.

Response signals contain Voice CH operating data (frequency, SQL function, offset data, etc.). Portable terminals use this information to adjust its setup to access the WIRES Node, entering WIRES-X access operation mode.

Preset Search CH settings are for establishing this unique search frequency.

The following parameters need to be set for operation.

The screenshot shows the 'Transceiver' configuration window. The 'Preset Search CH' section is highlighted with an orange border. It includes the following settings:

- Operation mode: OFF
- Transceiver: (empty)
- DST: (empty)
- F/W version: (empty)
- Modulation: OFF
- Frequency: 144.000 MHz
- Narrow deviation
- C4FM detect: (empty)
- DG-ID: 00
- Power: Low

Other sections in the window include:

- Voice CH:** Transceiver (RX: DIGITAL - TX: DIGITAL), WIREs Operation (Digital Operation), Transceiver (DR-2X), RX CH (440.500 MHz, Digital), TX CH (445.500 MHz, Digital), Modulation (Digital), Frequency (440.500 MHz), C4FM detect (DG-ID), DG-ID (01), Analog SQL (Tone SQL), Tone SQL (100.0 Hz), DCS (023), Power (Low), Reverse (checked).
- Repeater:** ID SET, TIMER (TOT: 3 Min, SQL HYSTERESIS: NORMAL, SQL TAIL LENGTH: 0 mSec), ID ANNOUNCE (Mode: CW, Level: Mid, CW ID SPEED: 20 WPM, INTERVAL: 10 Min), TX INHIBIT (Mode: REMOTE, STOP CODE: 27, RESUME CODE: 28, DISP TIMER: 1 Min).

Buttons at the bottom: OK, Cancel, Apply, Help.

### Operation mode

Displays the Preset Search CH operating mode.

- OFF: Displayed if not using Preset Search CH mode.
- ON: Displayed if using Preset Search CH mode.

### Note:

The search channel operation requires an HRI-200/ C4FM Digital control mode capable transceiver (FTM-510DR/DE, FTM-500DR/DE, FTM-400XDR/XDE/DR/DE, FTM-300DR/DE, FTM-200DR/DE, FTM-100DR/DE etc) connected to Radio 2 terminal of the HRI-200.

### Transceiver / DST / F/W version

The firmware information of the digital transceiver connecting to HRI-200 for Preset CH operation is displayed.

**Modulation**

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Displays the Preset search CH signal format.

**Frequency (Preset Search CH)**

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Enter a unique WIRES-X Preset Search operating frequency in MHz.

**Note:**

In practice, consult with other WIRES-X stations to select a suitable frequency that will effectively avoid interference.

**Narrow deviation**

---

Select if using Narrow deviation operation for Preset CH transceiver.

**DG-ID**

---

Enter the DG-ID number setting for the WIRES-X Preset Search CH operating frequency.

**Note:**

When the DG-ID number is set to "00", the station becomes an open node station, and can be connected from any transceiver with the the WIRES-X DG-ID set to "AUTO". When using the node station for a restricted group, set the DG-ID to a number other than "00", and set all the group transceivers to the same DG-ID number.

**Power (Preset Search CH)**

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Set the transmission power of the WIRES-X Preset Search CH operating frequency.



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