

# About the HDSDR software operations for the IC-R8600

These instructions describe how to use the HDSDR software. Before reading this guide, please read “How to use the IC-R8600 as an SDR receiver” that can be downloaded from the Icom website, for details on how to install the software and connect a receiver to the PC.

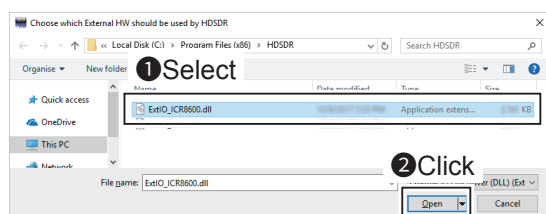
<http://www.icom.co.jp/world/support/>

① These instructions are based on using:

- Microsoft® Windows® 10
- IC-R8600 USB I/Q Package for HDSDR ver 1.00
- HDSDR version 2.76

## Start up HDSDR

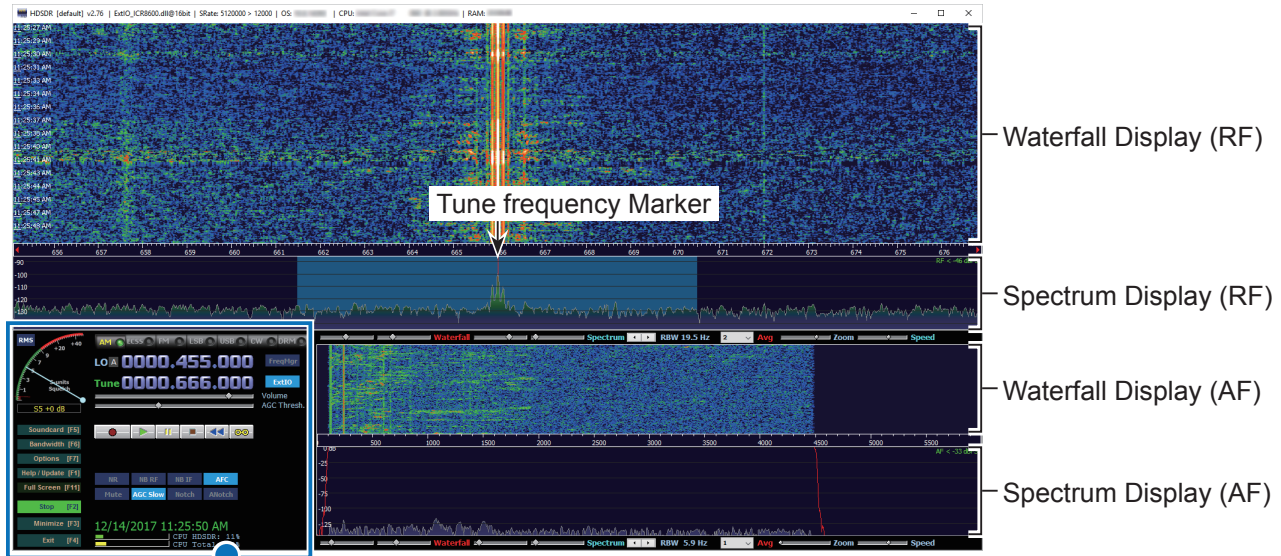
1. Turn ON the receiver.
2. Double-click HDSDR icon to start up HDSDR.
  - ① When you use some ExtIO-DLL files, select “ExtIO\_ICR8600.dll” in the displayed screen.



- ① If you use the RC-28 REMOTE ENCODER, see page 4.
- ① The receiver automatically enters to the remote control mode when the HDSDR software connects to the receiver. In the remote control mode, you cannot operate the receiver on its panel.

**TIP:** If the audio cannot be heard, push [F5] of the PC's keyboard to display the Sound Card selection screen, and then select the appropriate audio device.

# Main Screen



Click to set the Tune frequency.

Click to set the LO frequency.

Click to select the receiving mode.

Click to display the IC-R8600 I/Q Settings screen. (p. 3)

Adjust the audio level.

Click to display the Sound Card selection screen.

Click to select the sampling rate value.

① The needed output sampling rate depends on the receiving mode.

Click to start or stop receiving.

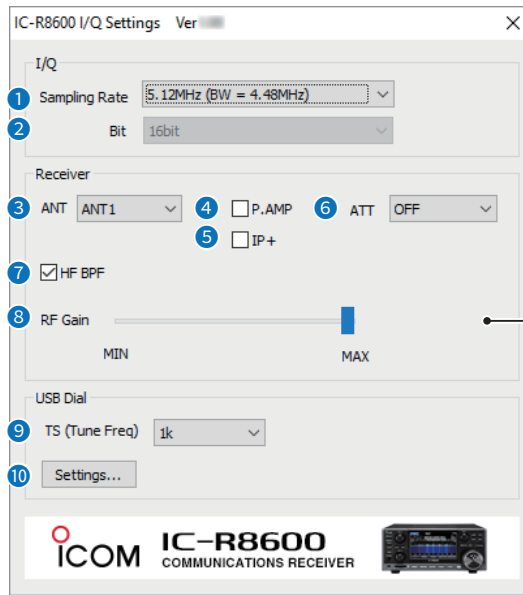
Click to quit the software.

① The receiver automatically returns to the normal (Local) mode after closing the software.

(This is only an example.)

# IC-R8600 I/Q Settings Screen

**NOTE:** The Receiver settings are automatically set to the receiver when the HDSDR software connects to the receiver.



“OVF” is displayed when the receiver receives an excessively strong signal.

## 1 Sampling Rate

(Default: 5.12MHz (BW = 4.48MHz))

Select the sampling rate value of the signal that is input to a PC.

- ① If the audio is interrupted, select a lower sampling rate value.
- ① If the sampling rate value is too low, a sharp spike (a DC) is displayed at the LO frequency position. See page 5 about how to remove a sharp spike.

## 2 Bit

(Default: 16bit)

Select bit depth of the signal that is input to a PC.

- ① If **Sampling Rate** (1) is set to “5.12MHz (BW = 4.48MHz),” bit depth is set to “16bit.”

## 3 ANT

(Default: ANT1)

Select antenna connector ANT1, ANT2, or ANT3.

- ① While operating between 30 and 3000 MHz frequency band, only the ANT1 connector can be used.

## 4 P.AMP

(Default: OFF)

Select whether or not to enable the Preamplifier function.

The preamp amplifies received signals in the receiver front end to improve the signal-to-noise ratio and sensitivity.

A preamp is used when receiving weak signals.

## 5 IP+

(Default: OFF)

Select whether or not to enable the IP Plus function.

The IP Plus function improves the Intermodulation Distortion (IMD) quality by optimizing the direct sampling system performance.

## 6 ATT

(Default: OFF)

Select the attenuator setting.

The attenuator prevents a desired signal from becoming distorted when a very strong signal is near the frequency, or when a very strong electric field, such as from a broadcasting station, is near your location.

## 7 HF BPF

(Default: ON)

Select whether or not to use the receiver’s BPF when operating the HF band.

- ① If an excessively strong signal is received, turn ON this function.

## 8 RF Gain

(Default: MAX)

Adjust the RF gain (sensitivity).

## 9 TS (Tune Freq)

(Default: 1k (except for FM mode)  
25k (FM mode))

Select the tuning steps when you set the Tune frequency using the RC-28.

- ① If the TS function is OFF, the tuning step is set to 10 Hz.
- ① When rotating [Main dial] to set the LO frequency, the tuning step depends on **Sampling Rate** (1).

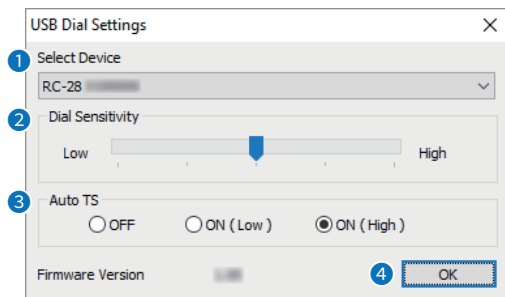
## 10 <Settings...>

Click to display the USB Dial Settings screen. (p. 4)

## Tuning steps when you set the LO frequency using the RC-28

Sampling Rate	TS is ON	TS is OFF
5.12MHz	1MHz	100kHz
3.84MHz		
1.92MHz		
960kHz	100kHz	10kHz
480kHz		
240kHz		
120kHz		
60kHz	10kHz	1kHz
30kHz		

## USB Dial Settings Screen



### 1 Select Device

Select the RC-28 to operate the receiver with, through the HSDR software.

### 2 Dial Sensitivity

(Default: 3)

Adjust the dial sensitivity to one of 5 levels.

When a low level is set, the dial speed is reduced for finer tuning control.

When a high level is set, the dial speed increases.

### 3 Auto TS

(Default: ON (High))

When you rotate the dial rapidly, the tuning speed may accelerate, depending on this setting.

**OFF:** Normal tuning steps, even during rapid rotation.

**ON (Low):** Approximately two times faster.

**ON (High):** When the tuning step is set to 1 kHz or smaller steps, the tuning speed is approximately five times faster. When the tuning step is set to larger than 1 kHz, the tuning speed is approximately two times faster.

### 4 <OK>

Click to save the settings and close the screen.

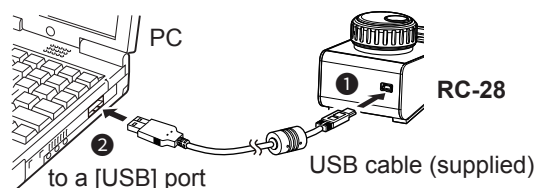
## Using the RC-28

If you connect an optional RC-28 REMOTE ENCODER to the PC, you can use HSDR and feel like you are operating the actual receiver's main dial.

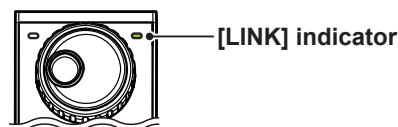
1. Connect the RC-28 to the PC that has HSDR installed.

**NOTE: DO NOT** connect the RC-28 to the PC with other than the supplied USB cable or through any USB hub. The RC-28 may not work properly.

- ① When you connect the RC-28 to the PC for the first time, wait until "Device driver software installed successfully." is displayed.



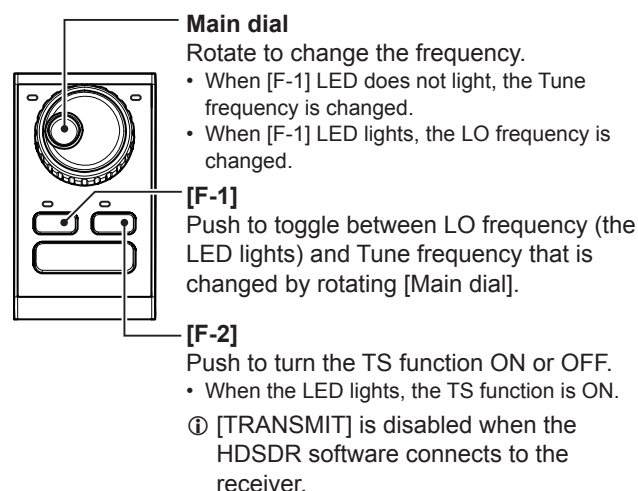
2. Start up HSDR.
  - The [LINK] indicator on the RC-28 lights green.



3. Now you can control the assigned functions of HSDR using the RC-28.

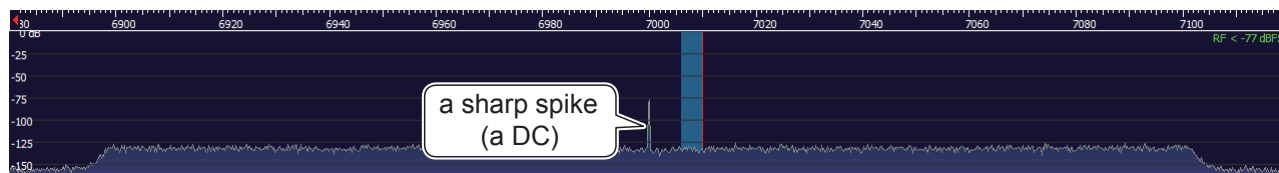
### NOTE:

If the [LINK] indicator does not light, check **Select Device** in the USB Dial Settings screen is set to the RC-28's serial number. (Example: RC-28 02XXXXX)



## To remove a sharp spike when setting a low sampling rate value

If the sampling rate value is too low, a sharp spike (a DC) is displayed at the LO frequency position. The DC is a constant offset in voltage, the Left and Right (I and Q) ADCs produce, due to error.



To remove the sharp spike:

- Set a higher sampling rate value.
- or
- Adjust the IQ balance. (Option [F7] → Calibration Settings → DC Removal Calibration for RX)

### To adjust the IQ balance

1. Set **RF Gain** to "MIN" on the IC-R8600 I/Q Settings screen. (p. 3)
  - Only the sharp spike is displayed.
2. Open "DC Removal Calibration for RX."
3. Click the displayed mode to set "IIR-Highpass (Auto)."
  - The software automatically adjusts the IQ balance.
4. Set **Mode** to "Constant (On)."
  - ① If this setting remains "IIR-Highpass (Auto)," the software removes signals near the LO frequency.
5. Adjust **RF Gain** on the IC-R8600 I/Q Settings screen.

**NOTE:** When you change the sampling rate value, adjust the IQ balance again.