How to use the IC-R8600 as an SDR receiver

The IC-R8600 (version 1.30 or later) can output the In-phase/Quadrature data which is processed by the FPGA. Connect [I/Q OUT] to a PC's USB port, and you can control the IC-R8600 from a PC using the HDSDR software.
ⓘ These instructions are based on using Microsoft® Windows® 10.

Procedure outline

To use HDSDR, first follow the steps described below.
ⓘ See "About the HDSDR software operations" that can be downloaded from the Icom website for detail about how to use the software.

Step 1 Confirming the IC-R8600 firmware version

(See the IC-R8600 Instruction manual Section 13.)

Confirm the IC-R8600 firmware version is 1.30 or later.
ⓘ If the IC-R8600 firmware version is 1.20 or earlier, download the latest version from the Icom website, and update your IC-R8600.
http://www.icom.co.jp/world/support/
ⓘ See the IC-R8600 Instruction manual (Section 13) for detail about how to update the IC-R8600.

Step 2 Installing HDSDR

You can use HDSDR (freeware) as the SDR software.
Download HDSDR from the HDSDR website and install it.
http://www.hdsdr.de/
ⓘ Install HDSDR before installing the IC-R8600 USB I/Q Package for HDSDR.

Step 3 Installing the IC-R8600 USB I/Q Package for HDSDR

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To control the IC-R8600 from a PC using HDSDR, download the IC-R8600 USB I/Q Package for HDSDR from the Icom website, and install it.
http://www.icom.co.jp/world/support/

The IC-R8600 USB I/Q Package for HDSDR contains "ExtIO_ICR8600.dll*" and the IQ driver.
* The DLL file is normally stored in the same folder that is installed HDSDR as the default.
(Example: C:\Program Files\HDSDR)
ⓘ **DO NOT** connect the IC-R8600 and a PC until the driver installation has been completed.

Step 4 Connecting the IC-R8600 and a PC

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Connect the USB cable (User supplied) between the IC-R8600's [I/Q OUT] port and a PC's USB port, and then turn ON the IC-R8600.

Step 5 Using HDSDR

(See "About the HDSDR software operations.")

See "About the HDSDR software operations" for your reference of using the HDSDR software with the IC-R8600.

Updating the IC-R8600 USB I/Q Package for HDSDR:
If you already have the package installed, you can download the latest version and update it by executing an overwrite installation. (p. 4)

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System requirements

Required items

- A PC
- An A/B type USB cable

Minimum system requirements

Operating System	Microsoft® Windows® 10 (32/64 bit) Microsoft® Windows® 8.1 (32/64 bit) (Except for Microsoft® Windows® RT) Microsoft® Windows® 7 (32/64 bit) ⓘ In this guide, the OSs are described as “Windows 10,” “Windows 8.1,” and “Windows 7.”
USB port	USB 3.0 or 2.0
Remark	We recommend that you use the on-board sound chipset. The CPU may have a heavy load when an external sound device, such as USB audio converter, is used.

These are the minimum system requirements to use the IC-R8600 with the HDSDR software. Because the system requirements may differ, depending on your PC environment (permanently running software such as antivirus software, peripheral devices, settings of OS and other software), the operation is not guaranteed.

Operation notes

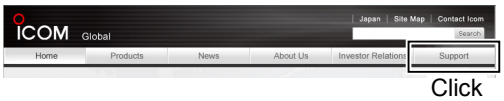
- Before connecting or disconnecting a USB cable, turn OFF the IC-R8600.
- To operate your PC and peripheral devices, follow the instructions provided in their manuals.
- Depending on the PC performance, OS, condition, speed, and so on, the USB audio may be interrupted, or control by the PC software may get delayed.
- If the CPU has a heavy load, the USB audio is easily interrupted. The settings of the audio player application may be changed after connecting the IC-R8600 to the PC.

ⓘ If the audio is interrupted:
- Set a lower sampling rate value in the HDSDR software.
- Close other application, if running.

Installing the IC-R8600 USB I/Q Package for HDSDR

◇ Downloading the IC-R8600 USB I/Q Package for HDSDR

1. Access the Icom website.
   http://www.icom.co.jp/world/
2. Click <Support>.



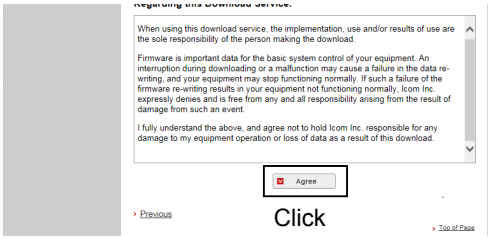
Click

3. Click “Firmware Updates/Software Downloads.”



Click

4. Click the desired file link.
5. Read “Regarding this Download Service” carefully, and then click <Agree>.

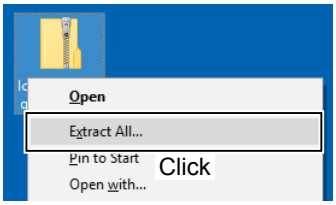


Click

6. Click “Save as” in the displayed File Download dialog.
7. Select the location where you want to save the file, and then click <Save> in the displayed File Download dialog.
   • The file starts downloading.

◇ Unzipping the firmware folder

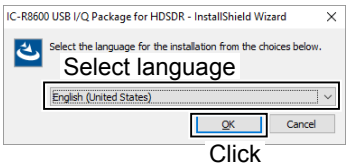
1. Right-click the downloaded firmware folder (zip format).
   • Right-click menu is displayed.
2. Click “Extract All...”
   • After unzipping, a folder is created in the same location as the downloaded folder.
   ⓘ The unzipped folder contains “setup32.exe” and “setup64.exe.”



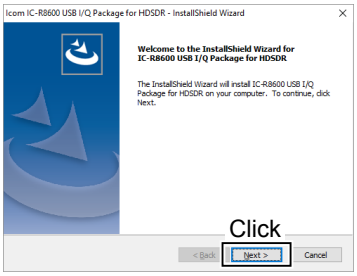
Click

◇Installing the IC-R8600 USB I/Q Package for HDSDR

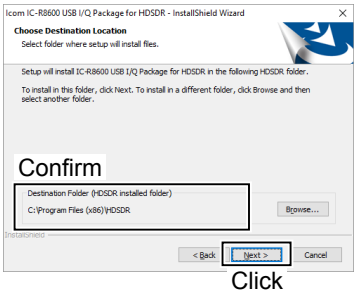
1. Double-click “setup32.exe” or “setup64.exe” contained in the unzipped folder.
   ⓘ “setup32.exe” is for a 32 bit operating system. “setup64.exe” is for a 64 bit operating system.
   ⓘ You can select whether or not to display the file extensions in the Folder Options screen.
   ⓘ If “User Account Control” is displayed, click <Yes> to continue.
2. Select “English” (or “Japanese”) and then click <OK>.
   ⓘ In this document, “English” is selected.



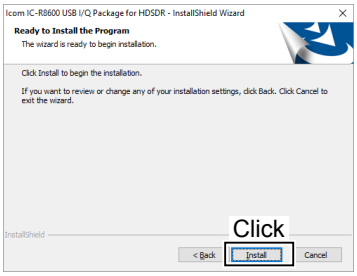
3. Click <Next>>.



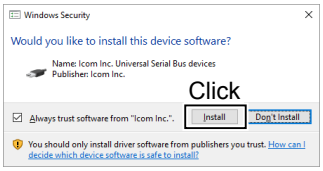
4. Confirm the destination folder, and then click <Next>>.
   ⓘ If you change the HDSDR installed folder and install HDSDR, click <Browse...> and select the HDSDR installed folder.



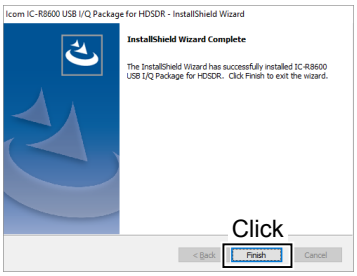
5. Click <Install>.



6. Click <Install>.



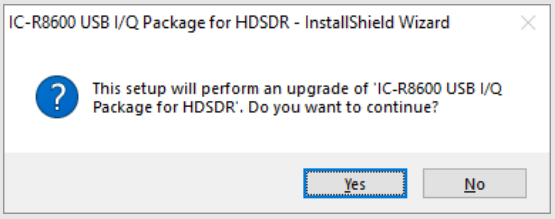
7. Click <Finish>.



NOTE:
You can uninstall the Icom IC-R8600 USB I/Q Package for HDSDR using the “Apps & features” in the “System” menu. To get started, click on Start > Settings > System > Apps & features.

About the overwrite installation:
If you already have the IC-R8600 USB I/Q Package for HDSDR installed, you can update it by following the procedure below.
ⓘ Be sure to turn OFF the IC-R8600 and quit the HDSDR application before executing the overwrite installation.

1. Start the overwrite installation by following Step 1 in the column to the left.
   • A confirmation dialog is displayed.

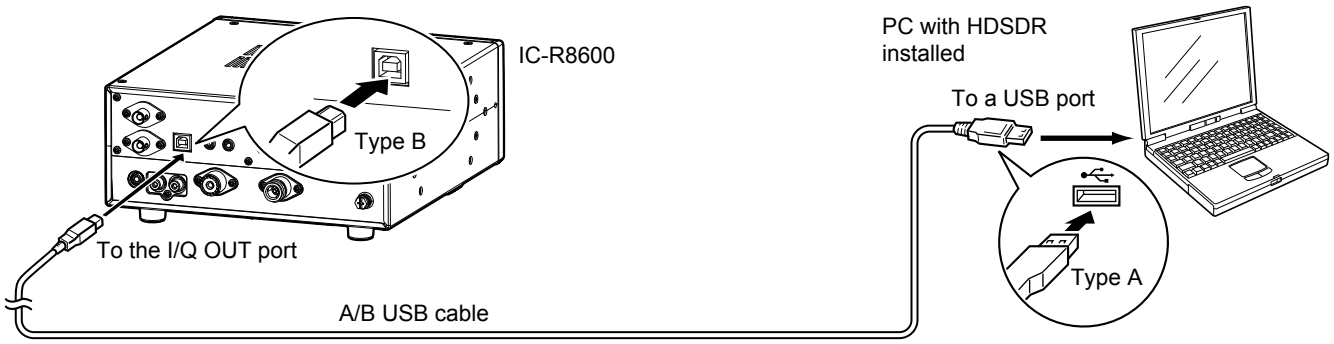


2. Click “Yes,” then follow the instructions displayed in the window.
   ⓘ You cannot change the language or destination folder.

Connecting the IC-R8600 and a PC

Connect a USB cable (User supplied) between the IC-R8600's [I/Q OUT] port and a PC's USB port.
ⓘ When you connect a USB cable for the first time, a PC starts installing the driver after turning ON the IC-R8600.

NOTE:
- **DO NOT** connect the IC-R8600 to a PC through any USB hub.
- Depending on the length of a USB cable, the receiver may not operate properly even if it is recognized by the PC. Use as short a cable as possible.



◇ Confirming that the driver has been successfully installed

After the installation has been completed, use the PC's Device Manager to confirm that the driver has been successfully installed.

To open the Device Manager screen

Windows 10

1. Click the folder icon on the taskbar.
2. Right-click "This PC," and then click "Properties."
3. Click "Device Manager."

Windows 8.1

1. Click the folder icon on the taskbar.
2. Right-click "This PC," and then click "Properties."
3. Click "Device Manager."

Windows 7

1. Click the folder icon on the taskbar.
2. Right-click "Computer," and then click "Properties."
3. Click "Device Manager."

To confirm the driver

1. Open the Device Manager screen.
   ⓘ If "User Account Control" is displayed, click <Yes>.
2. Confirm that "IC-R8600 I/Q OUT Port (WinUSB)" is displayed.
   - Windows 10/8.1:
     Double-click "Universal Serial Bus devices."
   - Windows 7:
     Double-click "USBDevice."

NOTE: If "IC-R8600 I/Q OUT Port (WinUSB)" is not displayed, the driver may not have been properly installed. Install the driver again, following "Installing the IC-R8600 USB I/Q Package for HDSDR". (p. 3)

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