

Updating WS90 and WS80 Firmware on macOS and Linux Using the Command Line

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Changes in this version: Added prerequisites, separate macOS and Linux instructions, and troubleshooting information

1. Before You Begin

1.1 USB cable requirements

The WS90 and WS80 use a Micro-USB port. Prepare a USB data cable with a Micro-USB connector at the device end and a connector supported by your computer at the other end. We recommend using the cable supplied with the device. If you use another cable, make sure it supports data transfer.



- Important: Some USB cables support charging only. A charge-only cable will prevent the computer from detecting the device.

1.2 Required software

This procedure uses dfu-util to install the firmware. Follow the instructions for your operating system.

2. macOS Instructions

2.1 Prerequisites

You need Homebrew and dfu-util. If Homebrew is not installed, open Terminal and run the following official Homebrew installation command:

- Homebrew installation command:
`/bin/bash -c "$(curl -fsSL https://raw.githubusercontent.com/Homebrew/install/HEAD/install.sh)"`

- After the installation finishes, follow any instructions displayed in Terminal before continuing.

Note: dfu-util does not require Java.

2.2 Install dfu-util

Open Terminal and run:

```
brew install dfu-util
```

- Verify the installation:

```
dfu-util --version
```

2.3 Allow USB accessories (important)

On supported Mac laptop computers, macOS may ask for permission before a new USB accessory can communicate with the Mac.

When you first connect the device, click Allow if the message "Allow accessory to connect?" appears.

- If you selected Don't Allow, or the message did not appear, open System Settings > Privacy & Security. Find "Allow accessories to connect" and choose the appropriate option. This setting may not appear on every Mac model.

Reconnect the USB cable after changing the setting.

If dfu-util cannot find the device, first check the USB permission, cable, USB adapter or hub, and DFU mode.

2.4 Download the firmware

Download the correct firmware for your exact device model from an official Ecowitt source.

Extract the package if it is compressed, and note the location of the .dfu file. Do not install WS90 firmware on a WS80, or WS80 firmware on a WS90.

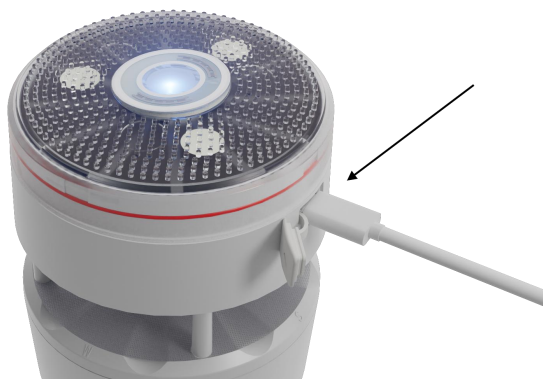
2.5 Connect the device and enter DFU mode

The pictures below show a WS90 as an example. For a WS80, use the corresponding USB port and RESET button on that model.

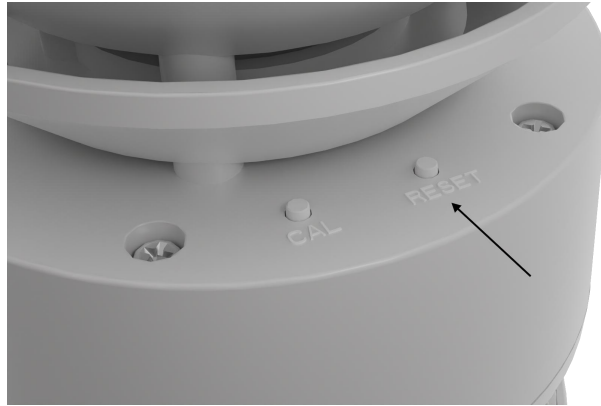
- Remove the white silicone cover from the WS90:



- Connect the WS90 to the computer with a USB data cable:



- Press the RESET button on the WS90:



The LED at the top of the device should flash rapidly. This indicates that the device is in DFU firmware update mode.



2.6 Check that the device is detected

In Terminal, run:

```
sudo dfu-util -l
```

Example output when the device is detected:

```
Found DFU: [0483:df11] ver=0200, devnum=19, cfg=1, intf=0, path="2-2.1",  
alt=0, name="@Internal Flash /0x08000000/192*256ba,320*256bg", serial="00000000001A"
```

If no DFU device is listed, check the following:

- The USB cable supports data transfer and is not a charge-only cable.
- The device is in DFU mode and its LED is flashing rapidly.
- macOS has permission to communicate with the USB accessory. Also try connecting directly to the Mac instead of through a hub.

2.7 Install the firmware

First, change to the folder containing the downloaded .dfu file. For example, if the file is in Downloads, run:

```
cd ~/Downloads
```

Then run the following command. Replace <firmware-file>.dfu with the exact file name for your device:

```
sudo dfu-util -a 0 -t 512 -D <firmware-file>.dfu
```

Example output after a successful transfer:

```
Download [=====] 100%      80200 bytes
Download done.
done parsing DfuSe file
```

Do not disconnect the USB cable while data is being transferred. If the update fails, return to Section 2.5 and repeat the procedure.

2.8 Finish the update

- 1. Disconnect the USB cable.
- 2. Press the RESET button.
- 3. Check the LED at the top of the device. It should remain on for a few seconds and then turn off, indicating that the device has returned to normal operation.

3. Linux Instructions

3.1 Install dfu-util

Use the command for your Linux distribution:

Debian, Ubuntu, and derivatives:

```
sudo apt update
```

```
sudo apt install dfu-util
```

Fedora and current RHEL-based distributions:

```
sudo dnf install dfu-util
```

Arch Linux and Manjaro:

```
sudo pacman -S dfu-util
```

- Verify the installation:

```
dfu-util --version
```

3.2 Download the firmware

Follow Section 2.4. Download the correct firmware for your exact model from an official Ecowitt source and extract the package if necessary.

3.3 Connect the device and enter DFU mode

Follow Section 2.5. Connect the WS90 or WS80 with a USB data cable, and press RESET. The LED should flash rapidly when the device enters DFU mode.

3.4 Check that the device is detected

Open a terminal and run:

```
sudo dfu-util -l
```

Note: sudo is used here to avoid common USB permission errors. Advanced users may configure an appropriate udev rule and run dfu-util without root privileges.

3.5 Install the firmware

Change to the folder containing the .dfu file, then run the following command. Replace <firmware-file>.dfu with the exact file name for your device:

```
sudo dfu-util -a 0 -t 512 -D <firmware-file>.dfu
```

See Section 2.7 for example output and retry instructions.

3.6 Finish the update

Follow Section 2.8: disconnect the USB cable, press RESET, and confirm that the LED returns to its normal behavior.

4. Troubleshooting (FAQ)

Q1: Terminal reports "command not found: dfu-util" on macOS.

Install dfu-util with Homebrew as described in Section 2.2. You can run `brew list dfu-util` to check whether it is installed.

Q2: `sudo dfu-util -l` reports "No DFU capable USB device available."

Check that:

1. The USB cable supports data transfer.
2. The device is in DFU mode and its LED is flashing rapidly.
3. macOS has allowed the USB accessory, if this setting is available.
4. The device is connected directly to the computer, if possible.

Q3: Does dfu-util work on recent versions of macOS?

dfu-util can be installed through Homebrew on supported macOS versions. Do not use Linux package-manager commands such as apt on macOS. If the device is not detected, check Section 2.6.

Q4: The progress bar stops during the firmware transfer.

Keep the USB connection stable and do not disconnect the cable while a transfer is active. If there is no progress or new terminal output for at least 30 seconds, reconnect the device, enter DFU mode again, and repeat the update from Section 2.5.

Q5: How can I check the installed firmware version?

After the device starts normally, open the Ecowitt app or web console and check the firmware version in the sensor information.

Appendix: USB Connector Information

The device end uses a Micro-USB connector.

The computer end may be USB-A or USB-C, depending on your computer. Use a suitable data cable or adapter.

- Important: The cable must support data transfer. A charge-only cable cannot be used for a firmware update.