



***DMR Repeater  
Upgrade Guide***



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# Documentation Information

This section describes the conventions and revision history of this document.

## Documentation Conventions

### Icons

| Icon   | Description  |
|--|--|
|  <b>Tip</b>     | Indicates information that can help you make better use of your product.   |
|  <b>Note</b>    | Indicates references that can further describe the related topics.         |
|  <b>Caution</b> | Indicates situations that could cause data loss or equipment damage.       |
|  <b>Warning</b> | Indicates situations that could cause minor personal injury.               |
|  <b>Danger</b>  | Indicates situations that could cause major personal injury or even death. |

### Notations

| Item        | Description  |
|-------------|--|
| “ ”         | The quotation marks enclose the name of a software interface element. For example, click “OK”.   |
| <b>Bold</b> | The text in boldface denotes the name of a hardware button. For example, press the <b>PTT</b> key.   |
| ->          | The symbol directs you to access a multi-level menu. For example, to select “New” from the “File” menu, we will describe it as follows: File -> New. |

## Revision History

| Version | Date    | Description  |
|---------|---------|--|
| V2.0    | 2018-09 | Instructing you to upgrade repeater firmware to R9.0<br>(A9.00.08.508.iM/S9.00.08.508.iM/N9.00.08.508.iM/C9.00.08.508.iM). |
| V1.0    | 2018-08 | Instructing you to upgrade repeater firmware to R9.0<br>(A9.00.08.308.iM/S9.00.08.308.iM/N9.00.08.308.iM/C9.00.08.308.iM). |

# 1. Before You Start

## 1.1 Important Tips


Please carefully read the instructions below before operation:



- This document instructs you to upgrade repeater firmware to R9.0 (**A9.00.08.508.iM**, **S9.00.08.508.iM**, **N9.00.08.508.iM** or **C9.00.08.508.iM**).
- This document introduces the operations of local upgrade. For remote upgrade, refer to *DMR Conventional Series Remote Upgrade Application Notes*.
- Do not disconnect the repeater and the PC during upgrade; otherwise, data loss or repeater damage may occur.
- Do not run other Hytera applications during upgrade. If the upgrade is interrupted by another application, please try the upgrade again. But if the upgrade still fails, please restart the repeater and try the upgrade again.
- The RCBD data may be abnormal during upgrade due to unexpected reasons such as power-cut. Before upgrade, you can read the repeater through CPS and choose “File -> Save As” on CPS menu bar to back up the RCBD data. For RCBD data restore, see [Step 4 in 2.2.1 Upgrade via Manual Mode](#).
- If the repeater is abnormally during upgrade processing, please try the upgrade again. But if the upgrade still fails, please restart the repeater and try the upgrade again.
- After successful upgrade, re-program the repeater with CPS **V9.00.07.712.iM** or above.

## 1.2 Preparations

Please prepare the following items before you start.

- PC with operating system Win 7, Win 8, Win 8.1 or Win 10 of 32/64-bit.  
Win7 is taken as the example hereinafter.
- Upgrade Tool (Multi-Terminal Batch Upgrade Tool): The software has been successfully installed on PC.
- USB Driver: Please install the latest USB driver (R5.0). Refer to *Digital USB Driver Installation Guide R5.0* for the installation.
- Repeater to be upgraded.
- CPS (Customer Programming Software)
- Programming Cable: Programming cables for different models are listed below.

| Model                     | Programming Cable |   |
|---------------------------|-------------------|---|
| RD106X/RD98X/RD98XS/RD96X | PC47              |  |

| Model | Programming Cable |   |
|-------|-------------------|---|
|       | PC37              |   |
| RD62X | PC75              |  |

 **Note**

When PC37 is used, palm microphone and the hanger are also needed. Connect the palm microphone to the 10Pin port on the front panel of the repeater, and hook the palm microphone on the hanger.

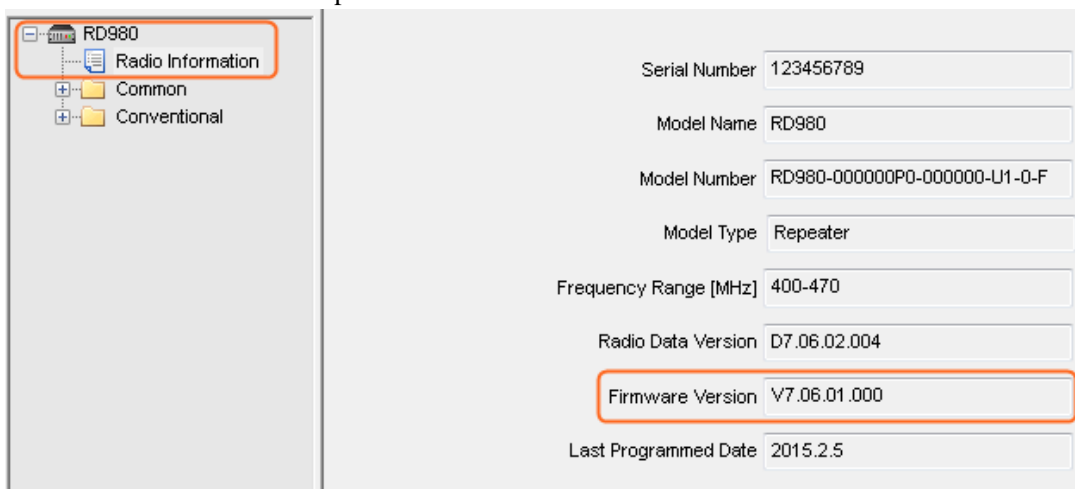
### 1.3 Firmware Version Check

 **Caution**

Please check whether repeater firmware satisfies the requirements before upgrade. If not applicable, please do not upgrade; otherwise the repeater may get damaged.

- Step 1** Connect the repeater with the PC.
- Step 2** Run the CPS to read data from the repeater.
- Step 3** Click **Radio Information** on the left of the CPS to check whether Firmware Version satisfies the requirements specified in [Appendix B: Applicable Model and Version](#).

RD98X is taken as the example:



- Step 4** Disconnect the CPS and repeater.

## 2. Upgrade and Check

Before upgrade, please make the repeater enter the download mode first.

### 2.1 Enter Download Mode

#### 2.1.1 RD106X/RD98X/RD98XS/RD96X

RD106X, RD98X, RD98XS and RD96X can be upgraded through PC47 or PC37 programming cable. The repeater enters the download mode differently when different programming cable is used.

##### Entering Download Mode via PC47

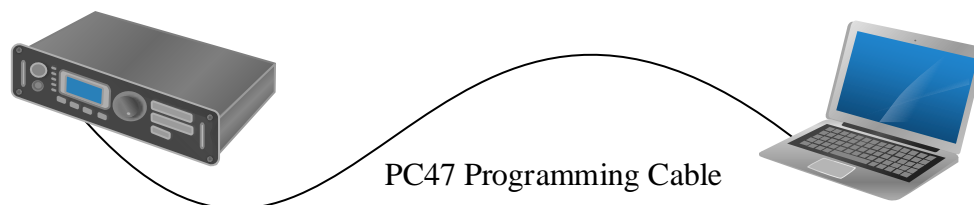
**Step 1** Power off the repeater.

**Step 2** Toggle the switch on PC47 to the **DL** end

**Note**

Do not toggle to the **DL** end during programming.

**Step 3** Connect the repeater to the PC via PC47.



**Step 4** Power on the repeater to enter the download mode.

The repeater enters download mode successfully when the LED flashes red for several seconds and then glows red solidly. Otherwise, power off the repeater and try the above operations again.

##### Entering Download Mode via PC37

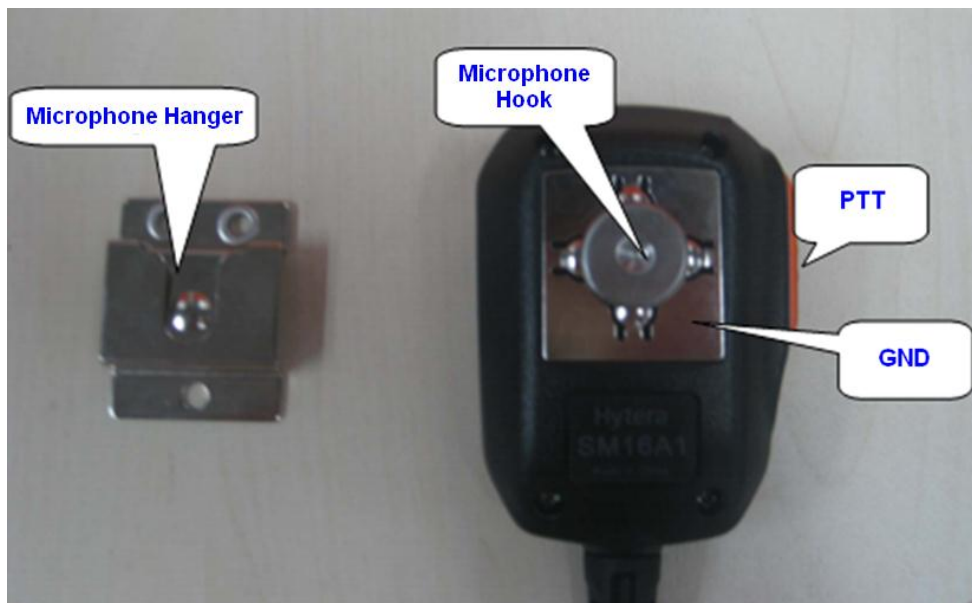
When PC37 is used, the palm microphone and its hanger are needed to make the repeater enter download mode.

**Step 1** Power off the repeater.

**Step 2** Connect the palm microphone to the 10Pin port on the front panel of the repeater, and hook the palm microphone on the hanger.

**Note**

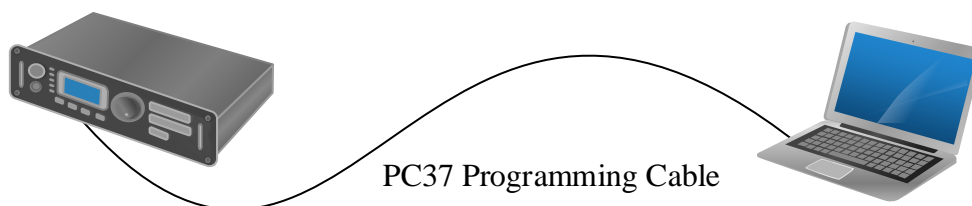
If the microphone hanger is not available, you can connect the hook to the GND using a metal conductor.



**Step 3** Hold **PTT** key on the palm microphone and power on the repeater.

The repeater enters the download mode successfully when the LED flashes red for several seconds and then glows red solidly. Otherwise, power off the repeater and try the above operations again.

**Step 4** Disconnect the palm microphone from the repeater, and connect the repeater to PC through PC37.



## 2.1.2 RD62X

The operations are the same as that in [Entering Download Mode via PC47](#) in section 2.1.1 [RD106X/RD98X/RD98XS/RD96X](#).

## 2.2 Start Upgrade

The Multi-Terminal Batch Upgrade Tool supports the upgrade in Manual Mode or Auto Mode.

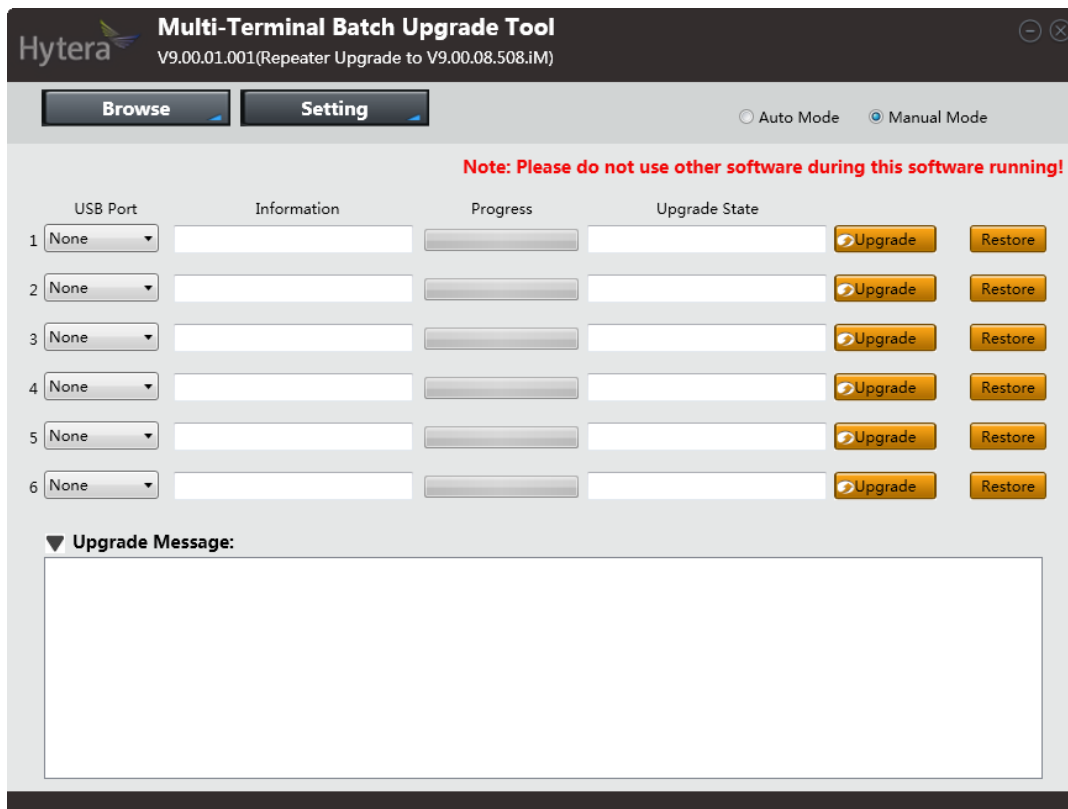
- Manual Mode: Select the USB port one by one for repeater upgrade.
- Auto Mode: The repeater upgrades automatically upon connecting to the PC.

The two upgrade methods are introduced as follows.

### 2.2.1 Upgrade via Manual Mode

**Step 1** Run the Multi-Terminal Batch Upgrade Tool.

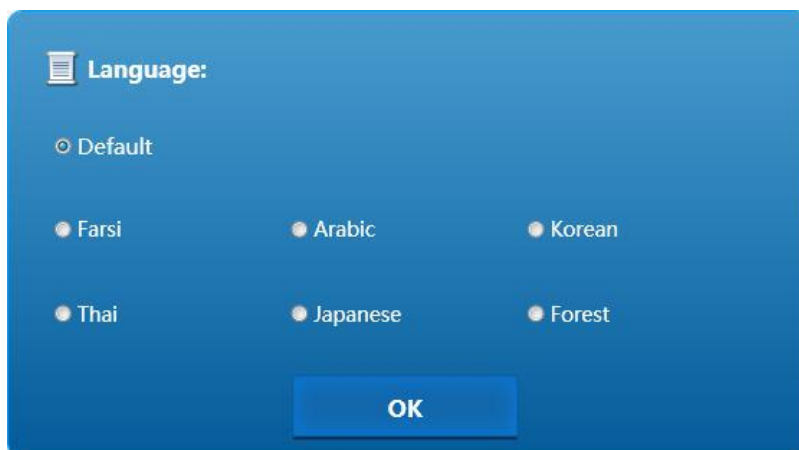




 **Note**

You can click **Setting** to select UI language of the upgrade tool.

**Step 2** Click **Setting**, select **Upgrade Language**, and then choose the language to be burnt into the repeater in **Language** window, and click **OK**.



 **Note**

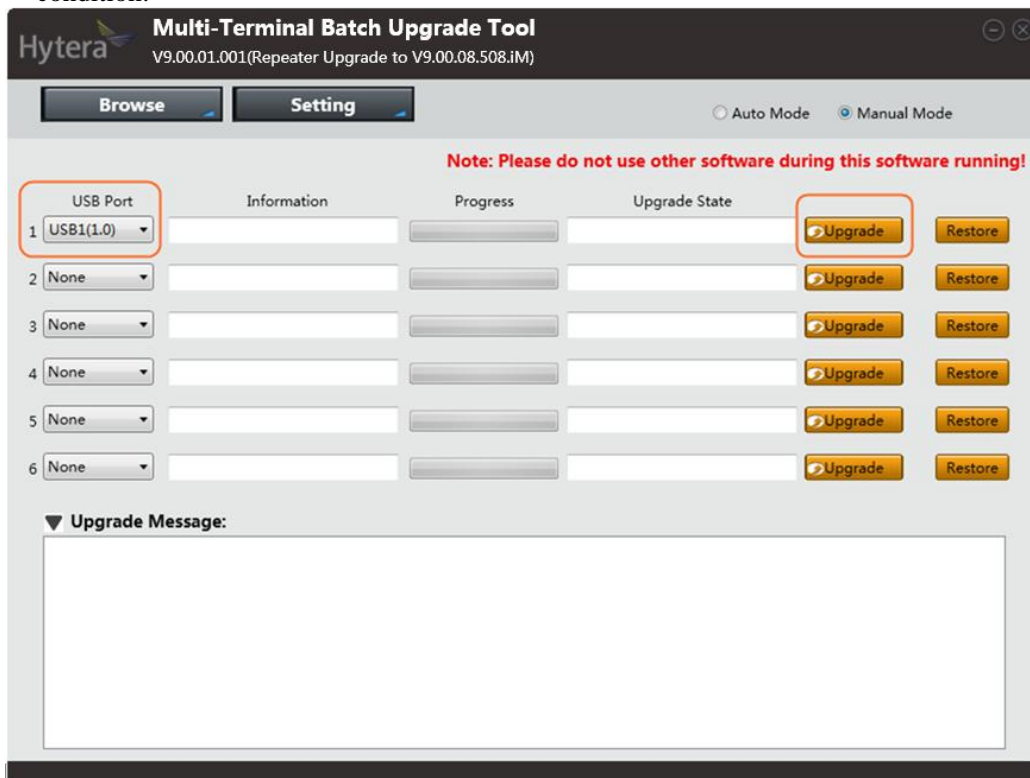
Currently, only **Default** and **Korean** options are available. When **Default** is selected, the upgrade tool automatically chooses the language package(s) based on the sales area of the repeater.

**Step 3** Select the USB port on main interface of the upgrade tool, and then click **Upgrade**.

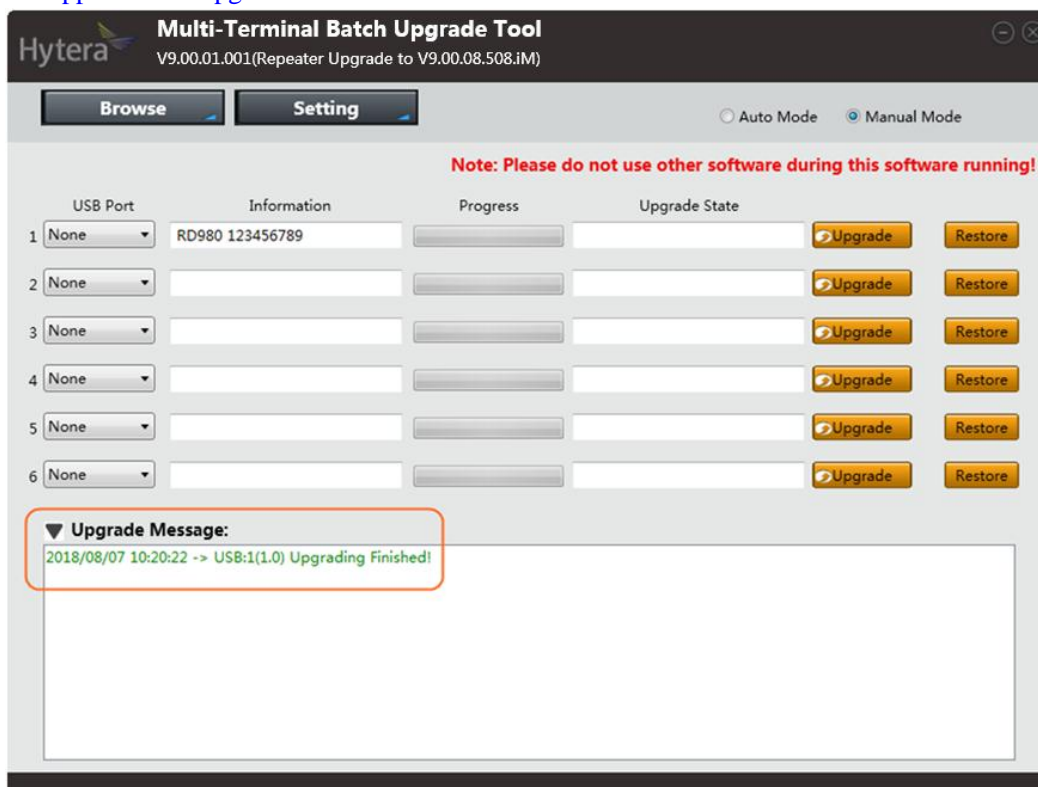
The upgrade tool starts to read data from the repeater, and then upgrades the repeater. Six repeaters with the same or different firmware version(s) can be upgraded at the same time.

**⚠ Caution**

Restart your computer when the tool warns that the current memory space does not meet the upgrade condition.



After the upgrade, repeater model and serial number appear in **Information**. If the upgrade is successful, “Upgrading Finished” appears in **Upgrade Message**. If failed, the cause appears in **Upgrade Message**, see [Appendix A: Upgrade Failure Causes and Solutions](#) for the solution.



**Step 4** (Optional) If some unexpected reasons (e.g. power-cut during upgrade) cause the abnormality of RCDB data during upgrade, please click **Restore**, select the backup RCDB data, and then click **Open**.

The upgrade tool starts to restore RCDB data of the repeater. After it, the repeater starts to upgrade again.

**Step 5** Power off the repeater.

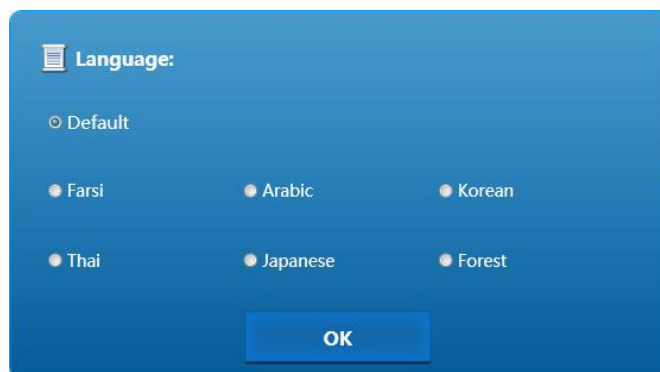


After upgrade, please toggle the switch on PC47 or PC75 to the **CPS** end.

## 2.2.2 Upgrade via Auto Mode

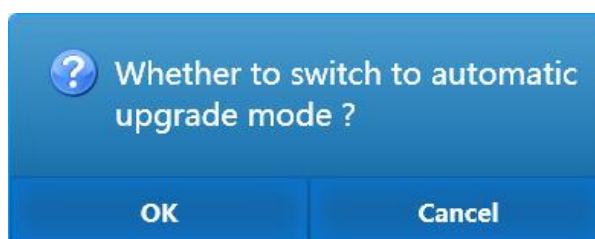
**Step 1** Run the Multi-Terminal Batch Upgrade Tool.

**Step 2** Click **Setting**, select **Upgrade Language**, and then choose the language to be burnt into the repeater in **Language** window, and click **OK**.



Currently, only **Default** and **Korean** options are available. When **Default** is selected, the upgrade tool automatically chooses the language package(s) based on the sales area of the repeater.

**Step 3** Select **Auto Mode** on main interface of upgrade tool.

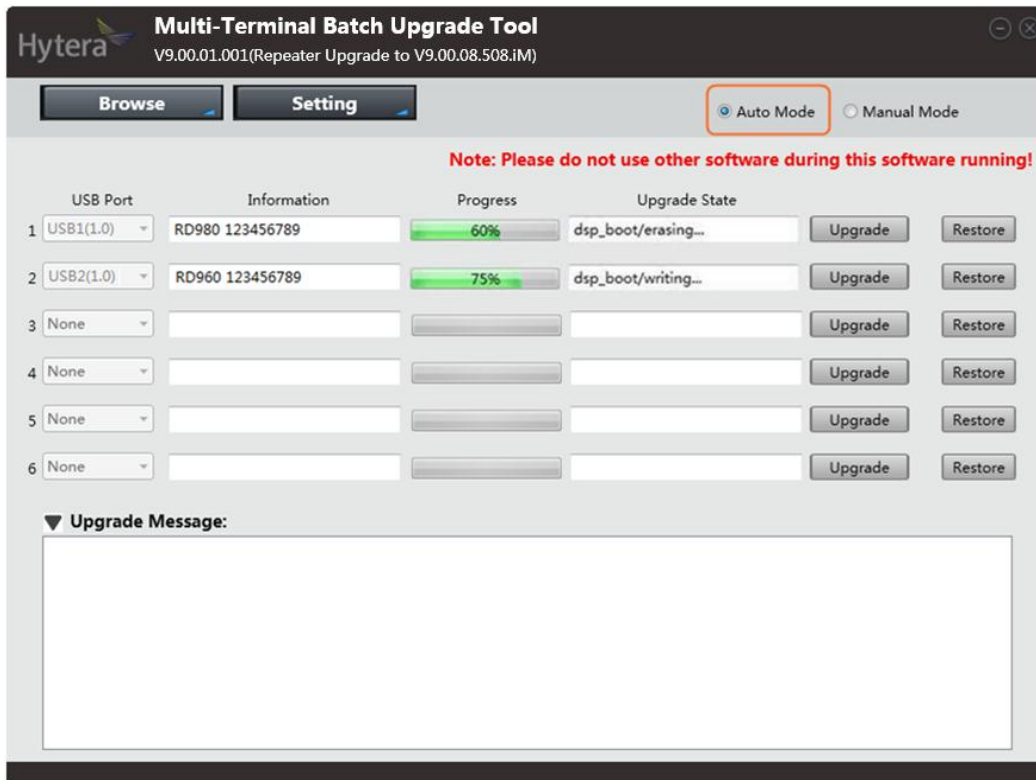


**Step 4** Select **OK** to switch to Auto Mode.

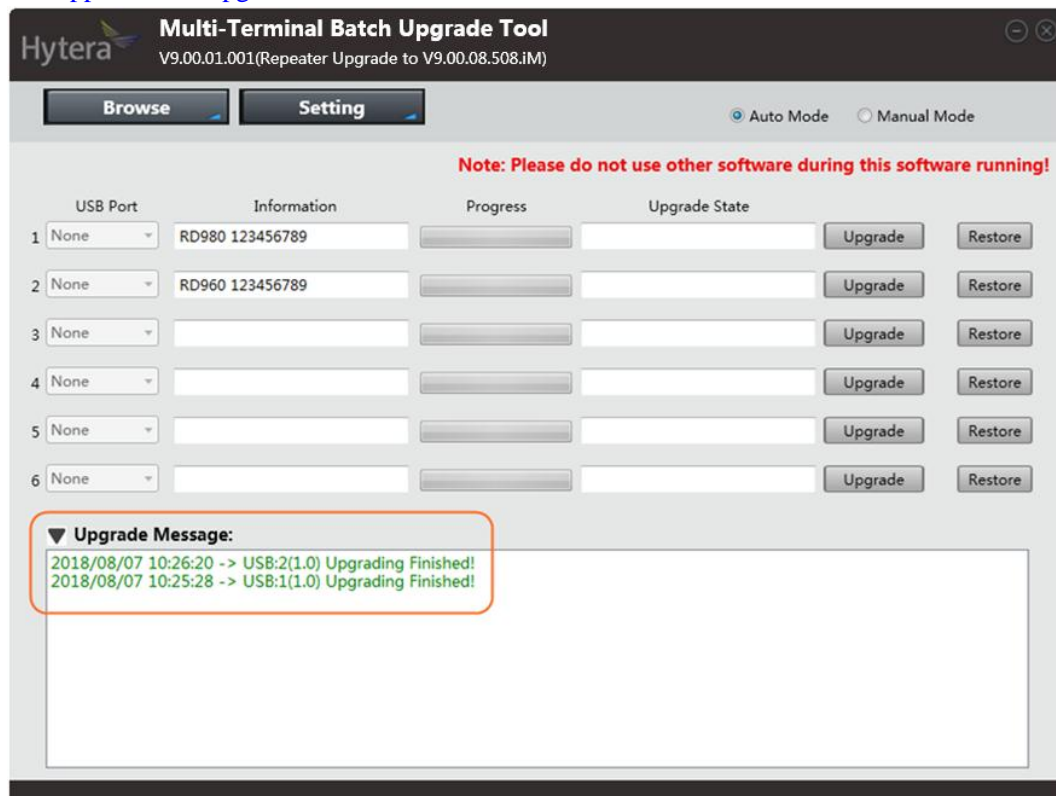
The upgrade tool starts to detect USB ports, read the data from the repeater, and then upgrades the repeater automatically. Six repeaters with the same or different firmware version can be upgraded at the same time.

**⚠ Caution**

Restart your computer when the tool warns that the current memory space does not meet the upgrade condition.



After the upgrade, repeater model and serial number appear in **Information**. If the upgrade is successful, “Upgrading Finished” appears in **Upgrade Message**. If failed, the cause appears in **Upgrade Message**, see [Appendix A: Upgrade Failure Causes and Solutions](#) for the solution.



**Step 5** (Optional) If some unexpected reasons (e.g. power-cut during upgrade) cause the abnormality of RCDB data during upgrade, please first switch to Manual Mode, and then do as [Step 4 in 2.2.1 Upgrade via Manual Mode](#) to restore RCDB data of the repeater.

The upgrade tool starts to restore RCDB data of the repeater. After it, the repeater starts to upgrade again.

**Step 6** Power off the repeater.

**Note**

After upgrade, please toggle the switch on PC47 or PC75 to the **CPS** end.

## 2.3 After-upgrade Check

After upgrade, you can check repeater firmware in **Radio Information** via CPS **V9.00.07.712.iM** or above.

For the repeater with display, you can check repeater firmware through repeater menu. Operate as follows.

**Step 1** Power on the repeater.

**Step 2** Press the **Navigation Knob** to enter the main menu.

**Step 3** Rotate the **Navigation Knob** to select **Radio Info**.

**Step 4** Press the **Navigation Knob** again to enter the **Radio Info** interface to check the repeater information.

The upgrade is successful if the firmware version is **A9.00.08.508.iM**, **S9.00.08.508.iM**, **N9.00.08.508.iM** or **C9.00.08.508.iM**.

## Appendix A: Upgrade Failures and Solutions

| Upgrade Failure Message   | Solution  |
|---|---|
| Undetectable download mode USB port!                                    | Please re-connect the repeater and the PC, re-connect the repeater and the cable, and then try the upgrade again.                 |
| Open USB failed!  | Please check whether the cable is properly connected to the repeater, and whether the USB port on PC is busy with other hardware. |
| Get bootloader version fails!   | Please re-connect the repeater and the PC, re-connect the repeater and the cable, and then try the upgrade again.                 |
| Upgrade components is incorrect, please re-install the upgrade program. | Please re-install the upgrade program.  |
| The radio type XXX is beyond the upgrade software!                      | Do not upgrade the repeater.  |
| The model number XXX is beyond the upgrade software!                    | Do not upgrade the repeater.  |
| The firmware version XXX is beyond the upgrade software!                | Do not upgrade the repeater.  |
| Customer code is beyond the upgrade software!                           | Do not upgrade the repeater.  |
| Opening file XXX failed!  | Please click <b>Upgrade</b> again. If still failed, please re-install the upgrade program.  |
| FUD file XXX format error!  | Please click <b>Upgrade</b> again. If still failed, please re-install the upgrade program.  |
| Data conversion failed, please re-upgrade!                              | Please re-upgrade.  |
| The extern file XXX does not exist!                                     | Please re-install the upgrade program.  |
| Reading data error XXX!   | Please restart the repeater and try the upgrade again.  |

| Upgrade Failure Message  | Solution  |
|--|---|
| Writing data error! RCDB data is already saved to file, from which you can restore your data when necessary. | Please restore RCDB data according to <a href="#">Step 4 in 2.2.1 Upgrade via Manual Mode</a> . |
| Automatic download mode failure, please manually enter the download mode.                                    | Please make the repeater enter the download mode manually.                                      |

## Appendix B: Applicable Model and Version

| Model                      | Firmware Version   |
|----------------------------|--|
| RD98X                      | A9.00.08.308.iM, S9.00.08.308.iM, N9.00.08.308.iM, C9.00.08.308.iM |
|                            | A9.00.09.002, S9.00.09.002, N9.00.09.002, C9.00.09.002             |
|                            | A9.00.08.008, S9.00.08.008, N9.00.08.008, C9.00.08.008             |
|                            | A8.05.07.004, N8.05.07.004, S8.05.07.004, C8.05.07.004             |
|                            | A8.05.07.001, N8.05.07.001, S8.05.07.001, C8.05.07.001             |
|                            | A8.01.03.001, S8.01.03.001, N8.01.03.001, C8.01.03.001             |
|                            | A8.01.04.004, S8.01.04.004, N8.01.04.004, C8.01.04.004             |
|                            | A8.00.09.001, S8.00.09.001, N8.00.09.001, C8.00.09.001             |
|                            | A7.06.04.000, N7.06.04.000, S7.06.04.000, C7.06.04.000             |
|                            | A7.05.10.003, N7.05.10.003, S7.05.10.003                           |
|                            | A7.00.09.005, N7.00.09.005, S7.00.09.005                           |
|                            | A6.05.10.004, S6.05.10.004,  |
|                            | A6.00.05.004, S6.00.05.004   |
|                            | A5.05.10.007, S5.05.10.007   |
|                            | A5.01.03.002, S5.01.03.002   |
| A5.00.10.005, S5.00.10.005 |  |
| RD98XS                     | A9.00.08.308.iM, S9.00.08.308.iM, N9.00.08.308.iM, C9.00.08.308.iM |
|                            | A9.00.09.002, S9.00.09.002, N9.00.09.002, C9.00.09.002             |
|                            | A9.00.08.008, S9.00.08.008, N9.00.08.008, C9.00.08.008             |
|                            | A8.06.08.004, N8.06.08.004, S8.06.08.004, C8.06.08.004             |
|                            | A8.05.07.004, N8.05.07.004, S8.05.07.004, C8.05.07.004             |
|                            | A8.05.07.001, N8.05.07.001, S8.05.07.001, C8.05.07.001             |
|                            | A8.01.03.001, S8.01.03.001, N8.01.03.001, C8.01.03.001             |
|                            | A8.01.04.004, S8.01.04.004, N8.01.04.004, C8.01.04.004             |



| Model                      | Firmware Version   |
|----------------------------|--|
|                            | A8.00.09.001, S8.00.09.001, N8.00.09.001, C8.00.09.001             |
|                            | A7.07.03.000, N7.07.03.000, S7.07.03.000, C7.07.03.000             |
|                            | A7.06.04.000, N7.06.04.000, S7.06.04.000, C7.06.04.000             |
|                            | A7.05.10.003, N7.05.10.003, S7.05.10.003                           |
|                            | A7.00.09.005, N7.00.09.005, S7.00.09.005                           |
|                            | A6.05.10.004, S6.05.10.004,  |
|                            | A6.00.05.004, S6.00.05.004   |
|                            | A5.06.06.000, S5.06.06.000   |
|                            | A5.05.10.007, S5.05.10.007   |
| RD62X                      | A9.00.08.308.iM, S9.00.08.308.iM, N9.00.08.308.iM, C9.00.08.308.iM |
|                            | A9.00.09.002, S9.00.09.002, N9.00.09.002, C9.00.09.002             |
|                            | A9.00.08.008, S9.00.08.008, N9.00.08.008, C9.00.08.008             |
|                            | A8.05.07.004, N8.05.07.004, S8.05.07.004, C8.05.07.004             |
|                            | A8.05.07.001, N8.05.07.001, S8.05.07.001, C8.05.07.001             |
|                            | A8.01.03.001, S8.01.03.001, N8.01.03.001, C8.01.03.001             |
|                            | A8.01.04.004, S8.01.04.004, N8.01.04.004, C8.01.04.004             |
|                            | A8.00.09.001, S8.00.09.001, N8.00.09.001, C8.00.09.001             |
|                            | A7.06.04.000, N7.06.04.000, S7.06.04.000, C7.06.04.000             |
|                            | A7.05.10.003, N7.05.10.003, S7.05.10.003                           |
|                            | A7.00.09.005, N7.00.09.005, S7.00.09.005                           |
|                            | A6.05.10.004, S6.05.10.004,  |
| A6.00.05.004, S6.00.05.004 |  |
| A5.06.06.000, S5.06.06.000 |  |
| RD96X                      | A9.00.08.308.iM, S9.00.08.308.iM, N9.00.08.308.iM, C9.00.08.308.iM |
|                            | A9.00.09.002, S9.00.09.002, N9.00.09.002, C9.00.09.002             |
|                            | A9.00.08.008, S9.00.08.008, N9.00.08.008, C9.00.08.008             |

| Model | Firmware Version   |
|-------|--|
|       | A8.05.07.004, N8.05.07.004, S8.05.07.004, C8.05.07.004<br>A8.05.07.001, N8.05.07.001, S8.05.07.001, C8.05.07.001 |
|       | A8.01.03.001, S8.01.03.001, N8.01.03.001, C8.01.03.001<br>A8.01.04.004, S8.01.04.004, N8.01.04.004, C8.01.04.004 |
|       | A8.00.09.001, S8.00.09.001, N8.00.09.001, C8.00.09.001   |
|       | A7.06.04.000, N7.06.04.000, S7.06.04.000, C7.06.04.000   |
|       | A7.05.10.003, N7.05.10.003, S7.05.10.003   |
|       | A7.00.09.005, N7.00.09.005, S7.00.09.005   |
|       | A6.05.10.004, S6.05.10.004,  |
|       | A6.00.05.004, S6.00.05.004   |
|       | A5.05.10.007, S5.05.10.007   |



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