



***DMR Repeater
Upgrade Guide***



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Contents






Documentation Information.....	1
1. Important Tips before Upgrade	3
2. Before you Start	4
2.1 Firmware Version Check.....	4
2.2 Preparations	4
3. Upgrade and Check.....	6
3.1 Entering the Download Mode.....	6
3.1.1 RD98X/RD96X.....	6
3.1.2 RD62X	7
3.2 Starting Upgrade.....	7
3.3 After-upgrade Check.....	11
3.3.1 RD98X	11
3.3.2 RD96X/RD62X.....	11
A Applicable Model and Version	12

Documentation Information

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

Documentation Conventions

Instructional Icons

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

Notational Conventions

Item	Description
“ ”	The quotation marks enclose the name of a software interface element. For example, click “OK”.
Bold	The text in boldface denotes the name of a hardware button. For example, press the PTT 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
R8.1	01-2017	Eleventh release, instructing you to upgrade the firmware to R8.1 (A8.01.02.003/S8.01.02.003/N 8.01.02.003/C 8.01.02.003)
R8.0	11-2016	Tenth release, instructing you to upgrade the firmware to R8.0 (A8.00.09.001/S8.00.09.001/ N 8.00.09.001/ C 8.00.09.001)
R7.6	01-2016	Ninth release, instructing you to upgrade the firmware to R7.6 (A7.06.04.000, S7.06.04.000, N7.06.04.000 or C7.06.04.000).

Version	Date	Description
R7.0	02-2015	Eighth release, instructing you to upgrade the firmware to R7.0 (A7.00.09.003 or S7.00.09.003).
R6.5	09-2014	Seventh release, instructing you to upgrade the firmware to R6.5 (A7.00.08.003 or S7.00.08.003).
R6.0	02-2014	Sixth release, instructing you to upgrade the firmware to R6.0 (A6.00.05.004 or S6.00.05.004).
R5.5	08-2013	Fifth release, instructing you to upgrade the firmware to R5.5 (A5.05.10.003 or S5.05.10.003).
R5.1	03-2013	Fourth release, instructing you to upgrade the firmware to R5.1 (A5.01.03.002 or S5.01.03.002).
R5.0	11-2012	<ul style="list-style-type: none">● Third release, instructing you to upgrade the firmware to R5.0 (A5.00.10.005 or S5.00.10.005).● It is applicable to RD96X upgrade.
R4.5	06-2012	Second release, instructing you to upgrade the firmware to R4.5 (A4.05.13.003 or S4.05.13.003).
R3.5	05-2011	Initial release, instructing you to upgrade the firmware to R3.5 (A3.05.10.001).

1. Important Tips before Upgrade

To achieve a successful upgrade, please carefully read the instructions below before operation:

- This document instructs you to upgrade the firmware (R5.0 or above) in repeaters of specific models to **A8.01.02.003**, **N8.01.02.003**, **S8.01.02.003** or **C8.01.02.003**. For the firmware version below R5.0, please first upgrade the firmware to R5.0 or above first by using the upgrade kits of R7.0 or below.
- Do not disconnect the radio and the PC during upgrade; otherwise, data loss or radio damage may occur.
- Do not run other Hytera applications during upgrade. If the upgrade is interrupted by another application, please try the upgrade again by restarting the repeater and entering the download mode.
- Do not disconnect the power of repeater during upgrade. However, if the power is disconnected or error occurs during upgrade, restart the repeater for another try.
- If the repeater is powered on abnormally or cannot be powered on after upgrade, please try the upgrade again by restarting the repeater and entering the download mode.
- If the repeater is abnormally in upgrade processing, please try the upgrade again by restarting the repeater and entering the download mode.
- After successful upgrade, re-program the repeater with a CPS of **V8.01. 02.002** or above.

2. Before you Start

2.1 Firmware Version Check

Caution

Please check whether the firmware version of the repeater satisfies the requirements before upgrade.

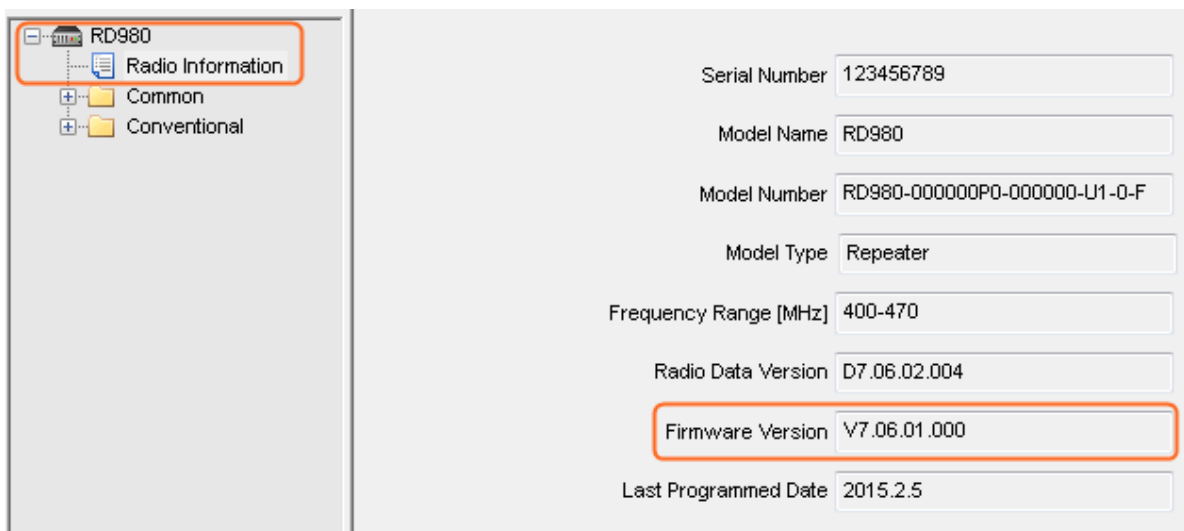
If not applicable, please do not upgrade; otherwise the repeater may get damaged.

Step 1 Connect the radio with the PC.

Step 2 Run the CPS to read data from the target repeater.

Step 3 Click “Radio Information” on the left of the CPS to check whether the “Firmware Version” satisfies the requirements specified in [Appendix A: Applicable Model and Version](#).

RD98X is taken as the example:



Serial Number	123456789
Model Name	RD980
Model Number	RD980-000000P0-000000-U1-0-F
Model Type	Repeater
Frequency Range [MHz]	400-470
Radio Data Version	D7.06.02.004
Firmware Version	V7.06.01.000
Last Programmed Date	2015.2.5

Step 4 Disconnect the CPS and repeater.




Step 5 Turn off the repeater.

2.2 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.
- DMR Upgradekit Repeater: The upgrade software has been successfully installed on PC.

- USB Driver: Ensure the USB driver has been successfully installed on PC; otherwise, the PC will not be able to recognize the radio. If not installed yet, please refer to *Digital USB Driver Installation Guide R5.0* for the installation.
- Repeater to be upgraded.
- Programming Cable: Programming cables for different models are listed below.

Model	Programming Cable	
RD98X/RD96X	PC47	
	PC37	
RD62X	PC40	

**Note**

When using the PC37 programming cable, 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.

3. Upgrade and Check

Make the repeater enter the download mode first before upgrade.

3.1 Entering the Download Mode

3.1.1 RD98X/RD96X

Using PC47 programming cable

PC47 programming cable can be used to make the repeater enter the download mode:

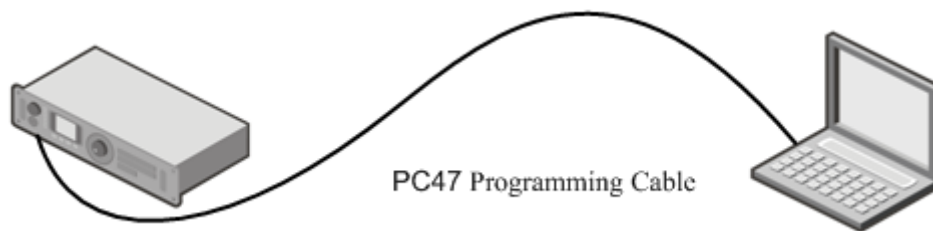
Step 1 Turn off the repeater.

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 Turn on the repeater to enter the download mode.

If the repeater enters the download mode successfully, the LED will flash red for several seconds and then glow red solidly. Otherwise, it indicates the access fails. In this case, you need to try to enter again.

**Note**

After upgrade, please toggle the switch on PC47 to the CPS end and then turn off the repeater.

Using PC37 programming cable

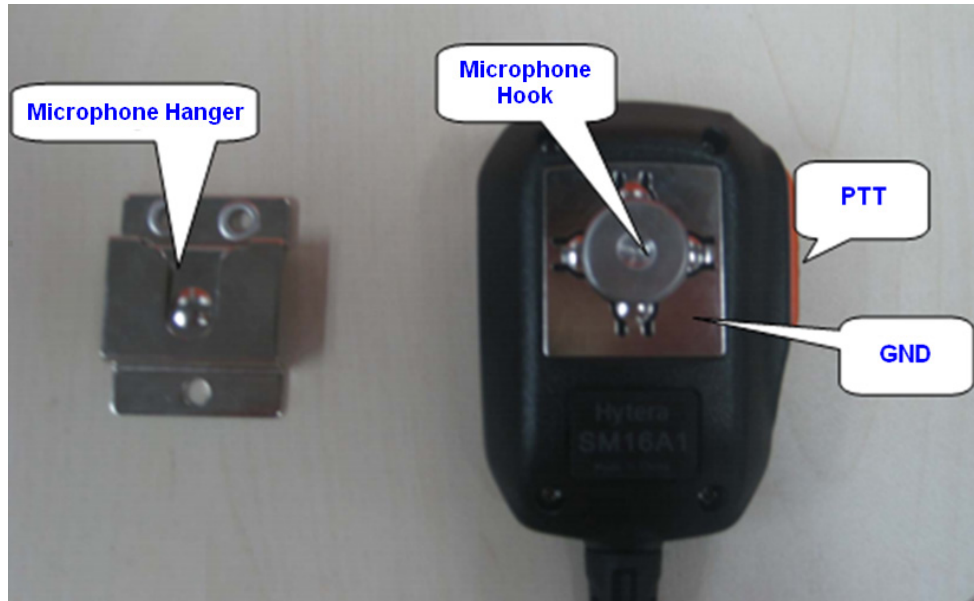
The palm microphone and its hanger can also be used to make the repeater enter the download mode:

Step 1 Turn 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**

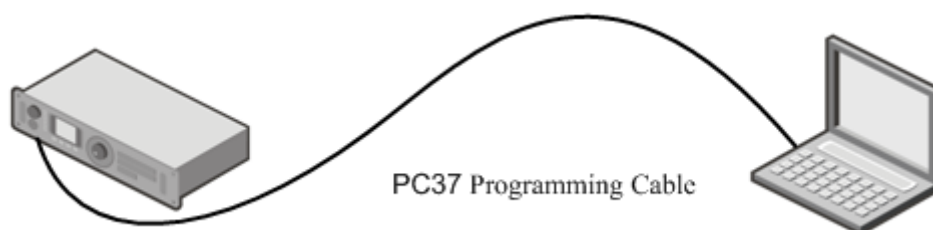
If the microphone hanger is not available, you can connect the hook to the GND using a metal conductor.



Step 3 Hold down the **PTT** on the palm microphone and power on the repeater, so as to let the repeater enter the download mode.

When the repeater enters the download mode successfully, the LED will flash red for several seconds and then glow red solidly. Otherwise, it indicates the access fails. In this case, you need to try to enter again.

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



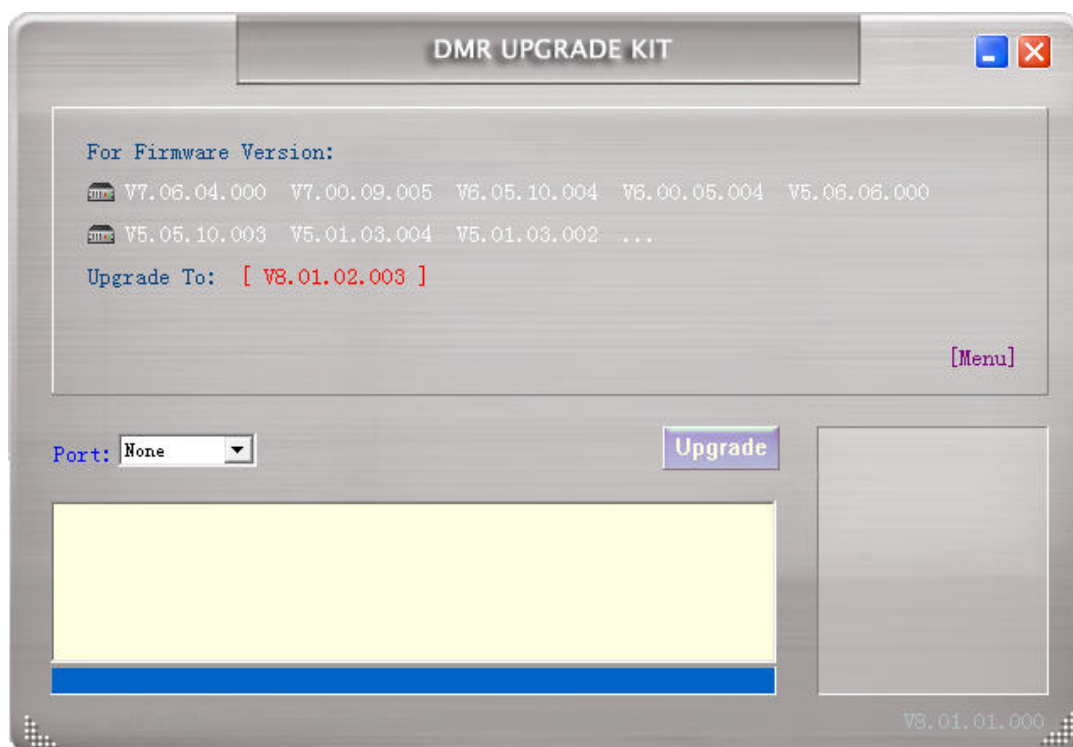
3.1.2 RD62X

The operations are the same as that in [Using PC47 programming cable](#) of 3.1.1 RD98X/RD96X section.

3.2 Starting Upgrade

After the repeater enters the download mode, please operate as follows:

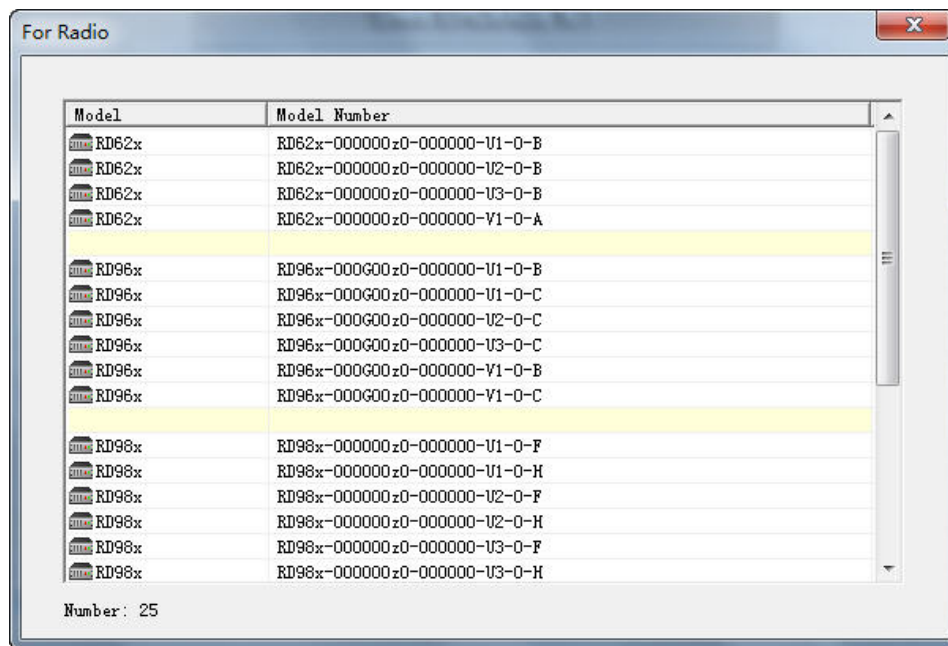
Step 1 Run the upgrade software to enter the main interface.

**Note**

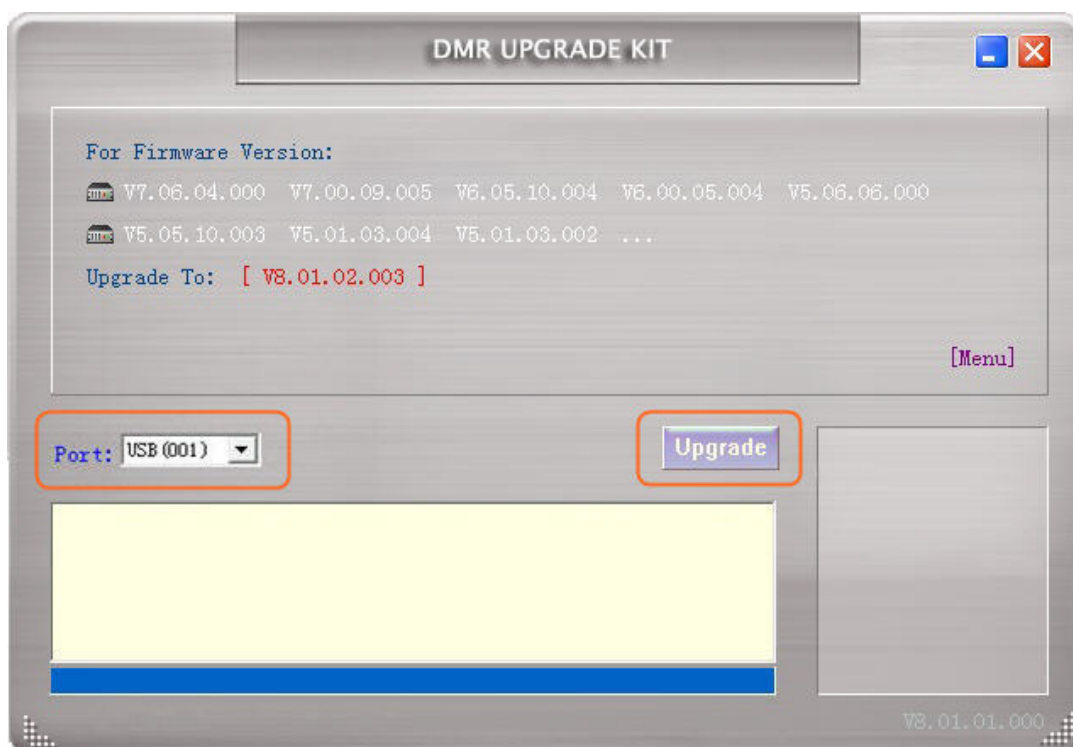
If a “Restore” button is displayed in the main interface, it indicates an abnormality of RCDB data during the previous upgrade. In this case, please restore the repeater with reference to [Step 4](#) below. Otherwise, the upgrade will fail.

Step 2 (Optional) Go to “Menu -> For Radio”.

The “For Radio” window appears. You can check in this window whether the repeater to be upgraded is included. See the figure below.



Step 3 In main interface of the upgrade software, select the corresponding USB port of the repeater and click “Upgrade”.



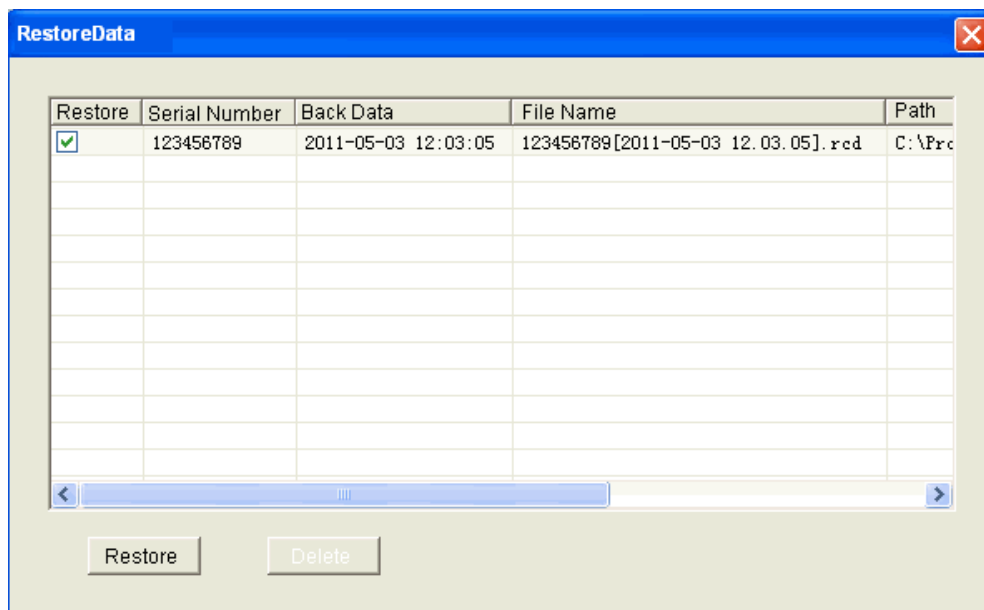
During the upgrade process,

- If the prompt “Open USB failed” appears, check whether the cable is properly connected to the repeater, and whether the USB interface is occupied by other software.
- The prompt “The firmware version [xx.x.xx.xxx] is beyond the upgrade software!” indicates the upgrade package is not compatible with the current firmware. Please stop upgrading right away.

- “Reading data error!” or “Writing data error!” or alerts alike indicates the USB connection has timed out. Click “OK”, and try the upgrade again by restarting the repeater and entering the download mode.
- The prompt “Writing data error! RCDB data is already saved to file, from which you can restore your data when necessary.” indicates an abnormality of the RCDB data during upgrade. Click “OK” and then you can see a “Restore” button in the main interface.

Step 4 (Optional) Restore the repeater in case of the RCDB data abnormality, in this way:

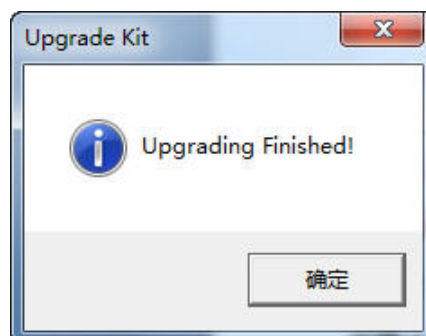
1. Click “Restore” to proceed to the corresponding interface.



2. Select the serial number of the repeater to be restored, and click “Restore” again.
If the serial number is not available, do not click “Restore”.

Step 5 A prompt box as shown below appears upon successful upgrade.

If no prompt appears, please try the upgrade again by restarting the repeater and entering the download mode.



Step 6 Click “OK” and turn off the repeater.

3.3 After-upgrade Check

Check whether the upgrade is successful.

3.3.1 RD98X

As LCD is designed for RD98X, the firmware information can be checked not only via the CPS (**V8.01.02.002** or above) but also via the repeater menu, do as follows:

Step 1 Turn 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.

Step 5 Check whether the firmware version is **A8.01.02.003**, **N8.01.02.003**, **S8.01.02.003** or **C8.01.02.003**.

If not, please check whether the firmware version is satisfied the upgrade requirements. If yes, please make repeater enter the download mode and repeat the above operations for update.

Step 6 Turn off the repeater.

3.3.2 RD96X/RD62X

As no LCD is designed for RD96X and RD62X, the firmware information can only be checked via the CPS, do as follows:

Step 1 Turn on the repeater.

Step 2 Use the CPS of **V8.01.02.002** or above to read data from the target repeater.

Step 3 Click the “Radio Information” to check whether the firmware version is **A8.01.02.003**, **N8.01.02.003**, **S8.01.02.003** or **C8.01.02.003**.

Step 4 Turn off the repeater.

A Applicable Model and Version

Model	Firmware Version
RD98X	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	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	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

Model	Firmware Version
	A5.06.06.000, S5.06.06.000
RD96X	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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