

Introduction

Code Corporation’s Reader Download Utility (RDU) can be used to accomplish the downloading of firmware, bootloader or JavaScript files to CR2 and CR3 Code Readers. These instructions focus only on the upgrading of firmware to CR2 and CR3 readers, using RDU.

Note: A separate document – **User Instructions for Reader Download Utility** – is available for your review. The document provides an overview of RDU’s wizard windows, reviews the utility’s overall functionality and includes a troubleshooting guide defining common error messages. This document is included in the Reader Download Utility (.zip) file and is available for download from Code’s website at: <http://www.codecorp.com/downloads/index.htm>

Note: Your reader must already be using the following versions of Firmware and Bootloader in order to utilize RDU:

- Firmware: 2016 (or greater)
- Bootloader: 2170 (or greater)

Following are instructions to guide you through the basic steps to upgrade firmware on your CR2 or CR3 reader using RDU.

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Call Code Technical Support should you need further assistance at: 801 495 2200; or email support@codecorp.com

Downloading and Extracting Reader Download Utility (.zip) File from Code's Website:

1. Go to Downloads page on Code's website at:
<http://www.codecorp.com/downloads/index.htm>
2. Locate the RDU download file in the list of 'Host Utility Downloads.' Click on the 'Download' button.

Note: You will be asked to click 'I Agree' on the User License Agreement web page before you can continue with the download process.
3. A File Download window will appear asking if you want to 'Open' or 'Save' the .zip file. Click 'Save.'
4. A browse window will open and ask you to select the location where you wish the .zip folder to be saved. After browsing to the desired location on your computer hard drive, click 'Save.'

Note: You may select any file location to save the .zip folder contents for RDU on your host computer. Please make note of the location of this file for future reference.

5. You have successfully saved the .zip folder containing the RDU application files to your host computer (Figure 1).



Figure 1

You will now extract the files within the .zip folder.

6. To extract the files, right click on the .zip folder and select 'Open.' The Compressed (zipped) Folders Warning window appears (Figure 2). Select 'Extract all.'

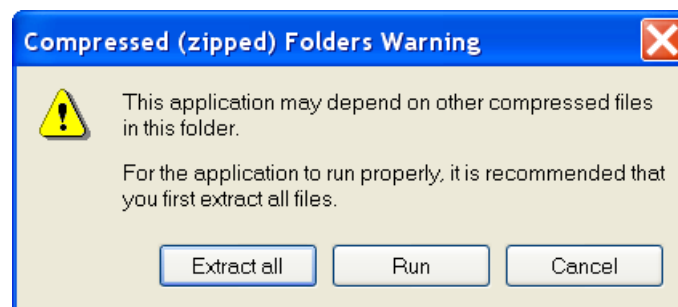


Figure 2

7. The Extraction wizard window appears (Figure 3). Click 'Next.'

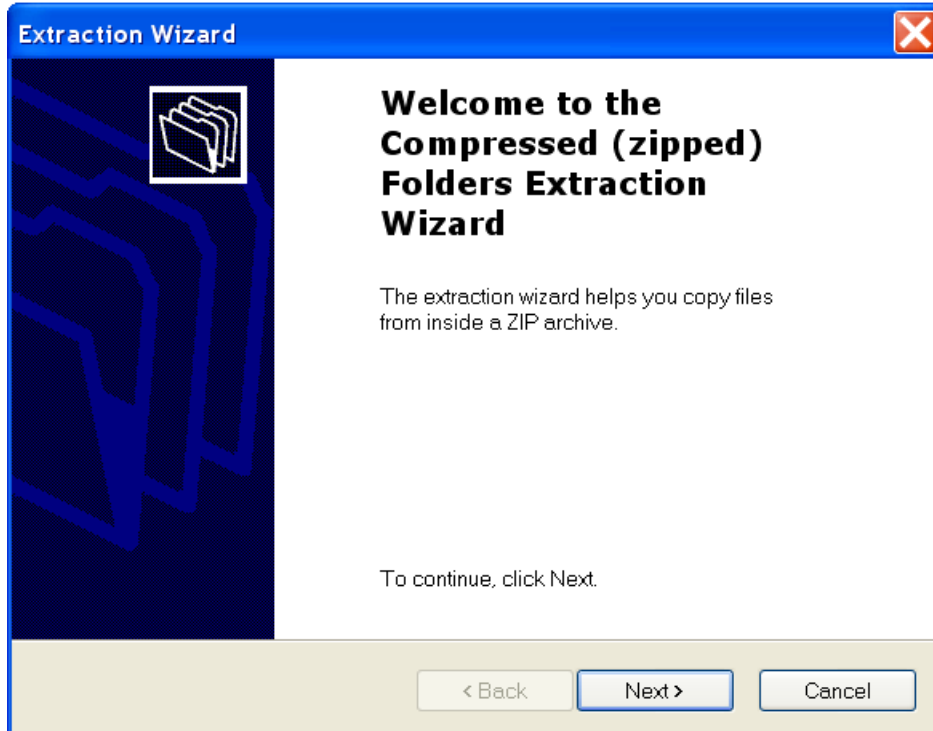


Figure 3

8. The Extraction Wizard will ask you to browse to the location where you wish to place the extracted files (Figure 4). Click 'Browse' to select the desired location on your computer hard drive. Once the location has been selected, click 'Next' to initiate extraction. The progress bar in the 'Extracting ...' field indicates progress of the extraction process.

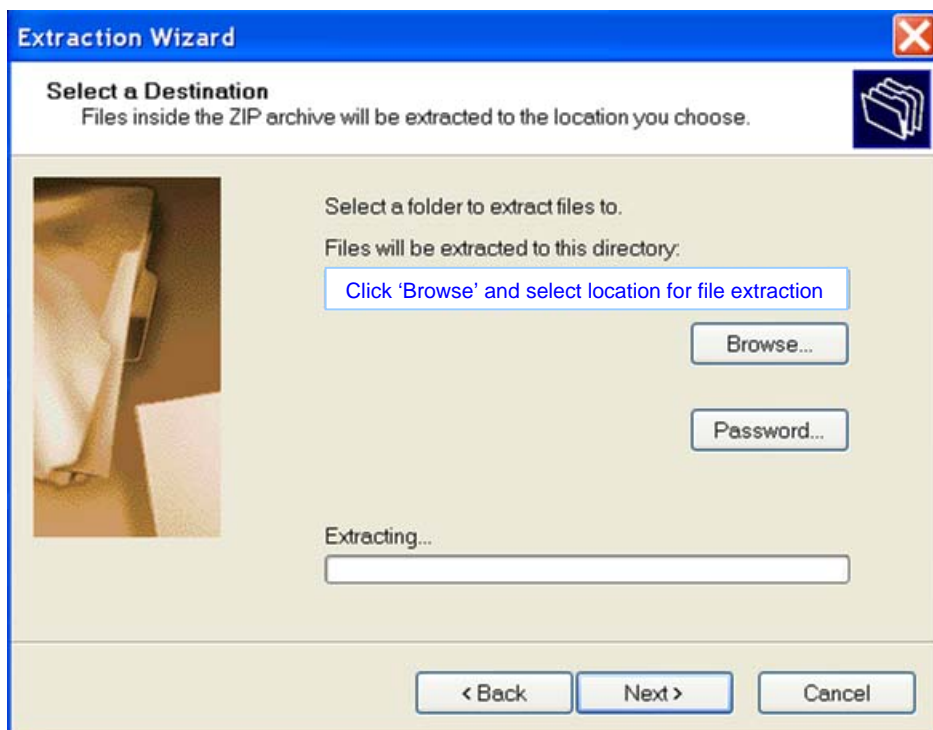


Figure 4

- Once the files have been successfully extracted, you will see the 'Extraction Complete' wizard window (Figure 5). Note that the location of the extracted files is listed in the wizard window. Check the box next to 'Show extracted files' if you wish to be automatically directed to the location of the extracted files once you indicate completion of the extraction process. Select 'Finish.'

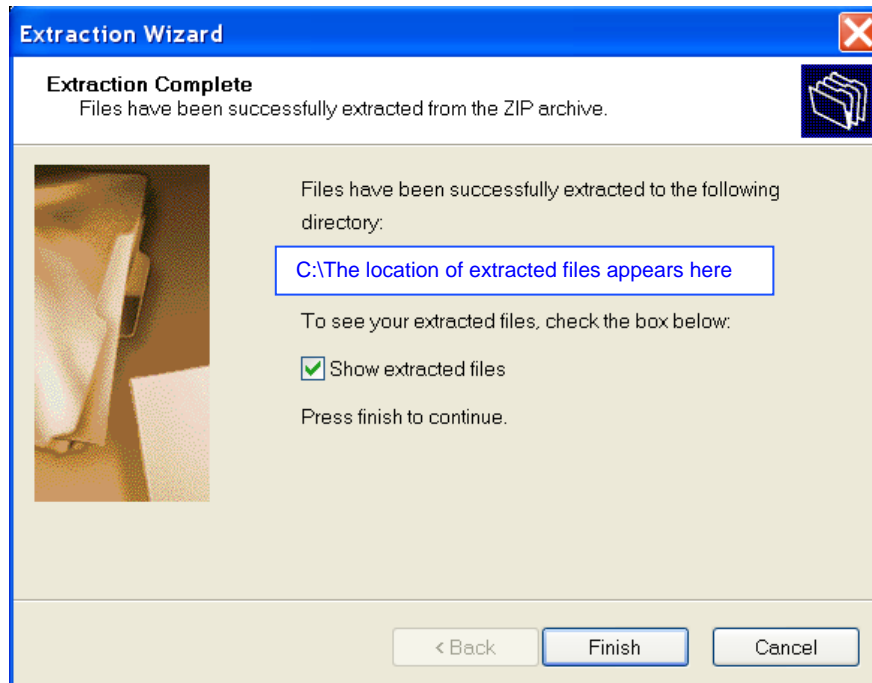


Figure 5

- If you checked 'Show extracted files' and after clicking 'Finish' you will view a list of the extracted files similar to the following (Figure 6):

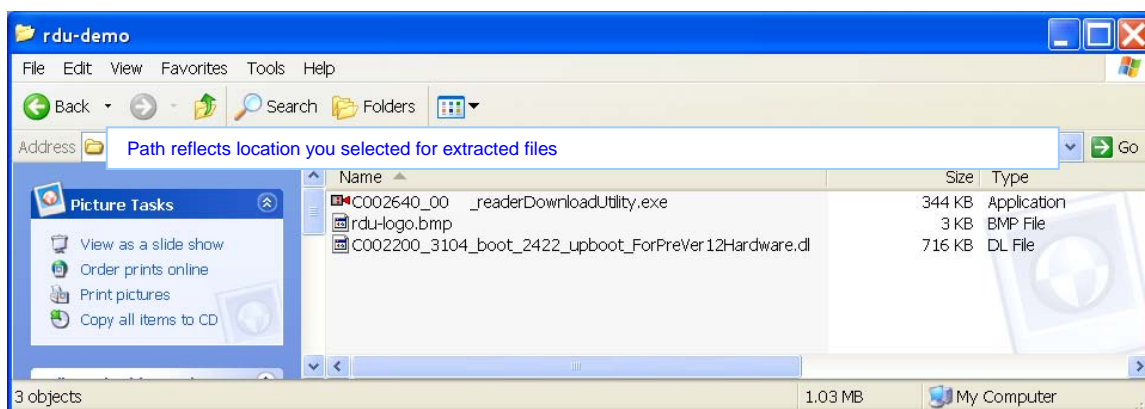


Figure 6

- You have successfully downloaded the RDU (.zip) file from Code's web site and extracted the files to a location on your host computer.

Downloading and Extracting Firmware Upgrade Files from Code's Website:

1. Locate the firmware upgrade file you wish to download to your reader by going to the downloads page on Code's website at: <http://www.codecorp.com/downloads/index.htm>
2. Locate the firmware upgrade downloadable file in the list of 'Firmware Upgrades' you wish to download to your reader. Click on the 'Download' button.

Note: You will be asked to click 'I Agree' on the User License Agreement web page before you can continue with the download process.

3. Using the instructions from the previous section – **Downloading and Extracting the RDU (.zip) File from Code's Website** – complete the download of the firmware upgrade zip file and extract its contents to a location on your computer. Make note of the location of the extracted files for future reference.

Decision Tree

Following is a decision tree to help you know the appropriate next steps for upgrading firmware on your reader.

- Do you know the current versions of bootloader and firmware on your reader?

Yes – Proceed.	No – Go to pg. 7 Determine Current ... to determine current versions before proceeding to next question.
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- Are both the bootloader and firmware versions higher than 3000?

Yes – Proceed to Upgrade Reader ... beginning on pg. 15.	No – Go to pg. 9 Upboot file Download . Next go to pg. 14 Bootloader Upgrade . Then proceed to Upgrade Reader ... beginning on pg. 15.
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Determine Current Firmware and Bootloader Reader File Versions using RDU:

Important Note: Before proceeding with a firmware upgrade of 3000+ you must first determine your reader's current firmware version. If the firmware version is below 3000 you must first download an 'upboot' file to your reader before attempting to upgrade firmware. Instructions for accomplishing a download of an upboot file, using RDU, follow (see pg. 8). The upboot file has been included in the RDU (.zip) folder should you need to download this file. In addition, if you wish to upgrade firmware on your reader to 3000+ from a firmware version below 3000, you must be running bootloader 3000+. You may use RDU to determine the current versions of firmware and bootloader. Knowing the reader's current versions of firmware and bootloader will help you identify any preparatory steps needed before upgrading firmware.

Note: Previously you will have downloaded the RDU (.zip) file from Code's website and extracted the files to a location on your computer. See **Downloading and Extracting the Reader Download Utility (.zip) File from Code's Website** previous.

Following are instructions for determining your reader's current firmware and bootloader versions, using RDU:

1. Cable your reader to the host computer with a USB or RS232 interface cable.
2. On the host computer, open the RDU application from the location where the .zip files were extracted; locate and open the .exe file:
C002640_00XX_readerDownloadUtility.exe (see example provided in Figure 7).

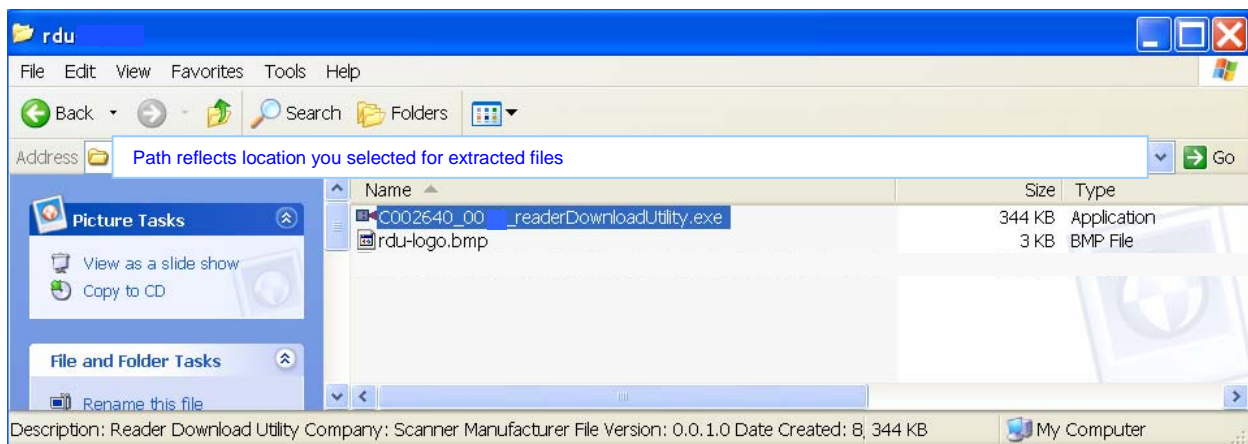


Figure 7

3. The application window will open and RDU's Connection and Communication Mode wizard window will appear (Figure 8). Select the communication method supported by the currently cabled mode (USB or RS232).

Note: If either RS232 or Virtual COM Port communication modes are selected you will next see a wizard window asking for confirmation of the Serial port (COM port) and/or Bits per second (baud rate). Use the drop down arrows to make your selection and click 'Next.'

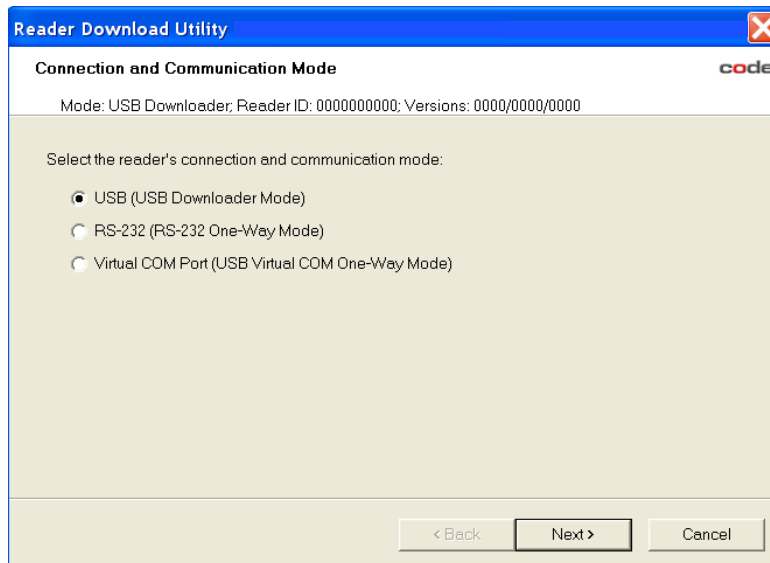


Figure 8

4. The Configuration wizard window appears (Figure 9).

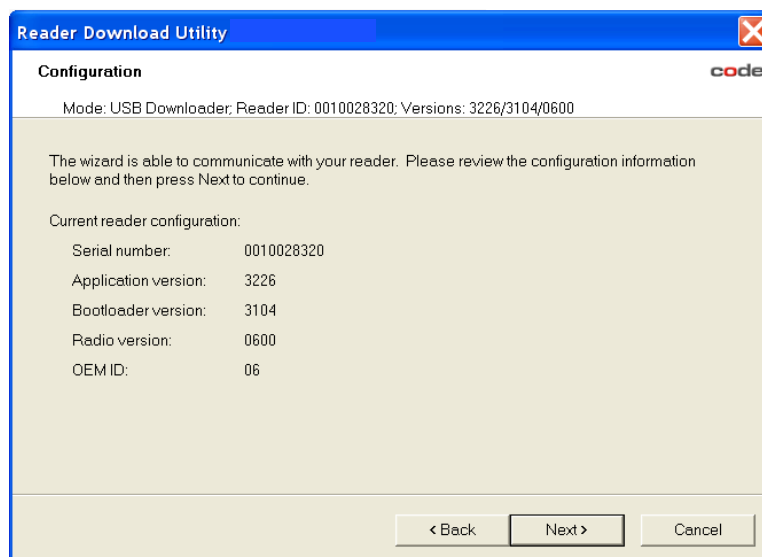


Figure 9

The Configuration window provides information regarding your reader's current status.

Important Note: If the Application version (firmware) and Bootloader version is lower than 3000 you must *first* proceed to **Upboot File Download** (and follow the instructions provided); and then *second* proceed to **Bootloader Upgrade** (and follow the instructions provided) before attempting to upgrade firmware.

Upboot File Download

Important Note: If your reader's current firmware is below 3000, you must first download an upboot file before attempting to upgrade firmware to 3000+.

1. Download the upboot file to your reader by first cabling your reader to the host computer with a USB or RS232 interface cable.
2. Initiate RDU by navigating to the extracted Firmware (.zip) files (see step 8, pg. 3) and open the readerDownloadUtility.exe file.
3. The Connection and Communication Mode wizard window will appear. Select the method of communication you will use to accomplish this download process (Figure 10). Click 'Next.'

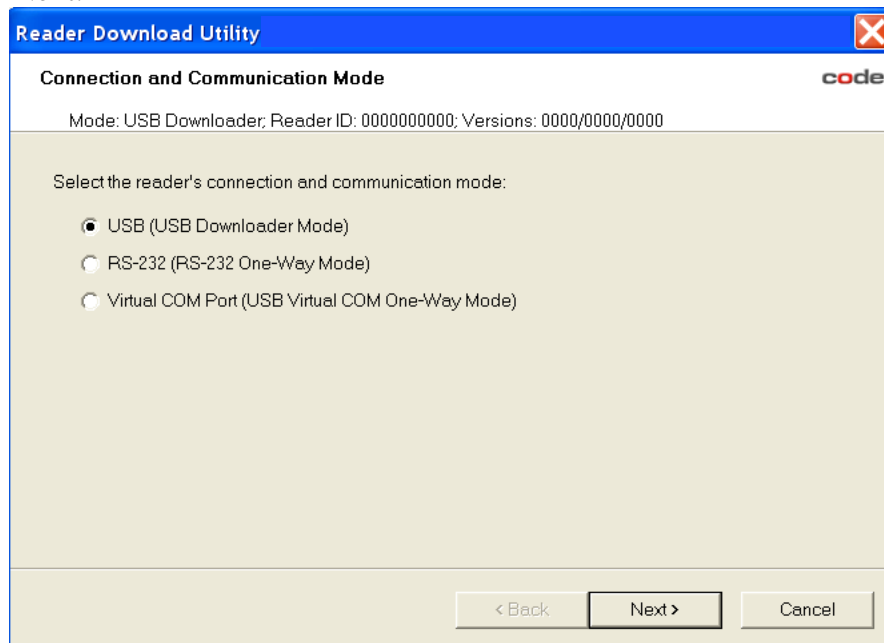


Figure 10

Note: When upgrading a reader with an upboot or boot file, use either USB Downloader Mode or RS232 One-way Mode only. Do not use Virtual COM Port.

4. If you selected RS232 communication mode an RS-232 Serial Port Settings wizard window (Figure 11) will appear asking for confirmation of the Serial port (communications port) in use and Bits per second (baud rate). Select the Serial COM port number and Bits per second you desire by using the drop down arrows. Click 'Next.'

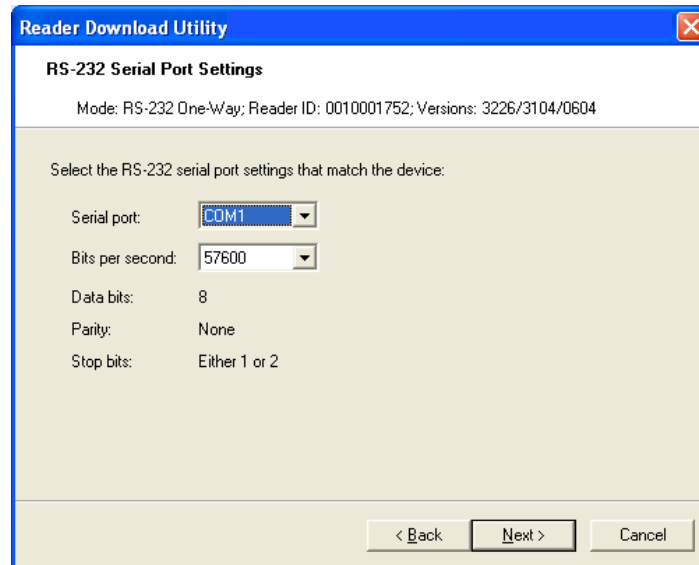


Figure 11

5. The Configuration wizard window appears (Figure 12). RDU's Configuration wizard window verifies your reader's current versions of firmware and bootloader.

Note: In the example provided (Figure 14), the application (firmware) and bootloader versions on the reader are both lower than 3000. If you wish to upgrade firmware to 3000+ you must first complete the download of an upboot file, and upgrade bootloader to a 3000+ version, before attempting to upgrade firmware.

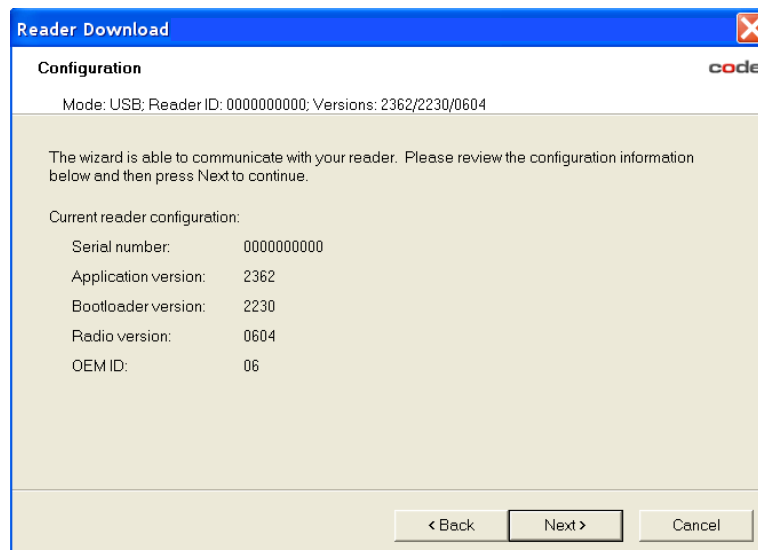


Figure 12

6. Click 'Next.' The File Selection wizard window opens, allowing you to navigate to the location of the extracted files in order to select the upboot file for download (Figure 13):

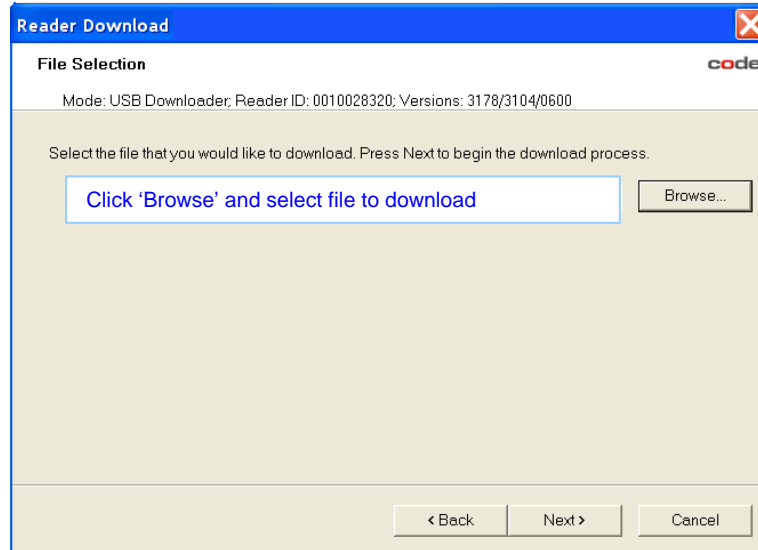


Figure 13

7. Click 'Browse' and navigate to the location of the extracted Firmware (.zip) file contents and select the upboot file to download. Locate this file:
C00220_3104_upboot_2422_boot_ForPreVer12hardware.dl

Note: Do not disconnect the reader during the download process.

8. The file's location will appear in RDU's File Selection wizard window. Click 'Next.' The download process will initiate.
9. The RDU wizard window reflects two separate progress bars (Figure 14). The Current progress bar indicates progress of the current file download and the Overall progress bar indicates the progress of the overall download process. Downloading the upboot file initiates several related processes. The entire process will take a few minutes to complete.

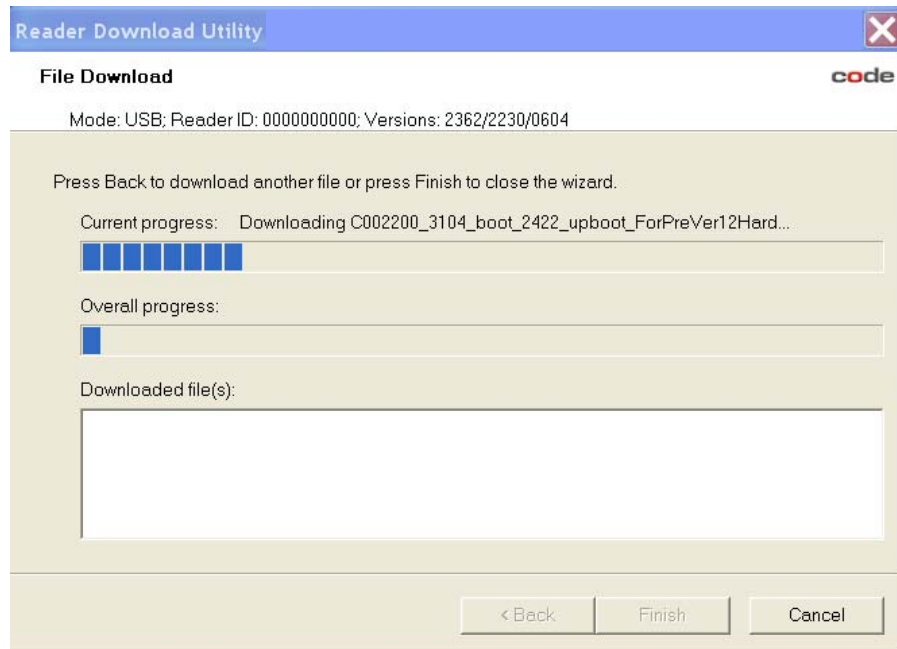


Figure 14

Note: While the download process, the CR2's LEDs will intermittently flash amber. The CR3 will display a message on the screen indicating a download is in progress.

10. Once the download is complete the reader will automatically reboot. The reboot process will take a few minutes to complete. The reader will beep once when restarting and then it will beep three times when all download processes are completed.
11. At completion, RDU's File Download wizard window will list all the downloaded files.
12. You have successfully downloaded the 'upboot' file to your reader, enabling you to continue the firmware upgrade process.
13. Select 'Back' and proceed to **Bootloader Upgrade** if your current bootloader version is below 3000 and you wish to upgrade to firmware 3000+. If currently running bootloader version higher than 3000, you may proceed directly to **Upgrade Reader Firmware Using RDU**.

Note: When the reader rebooted (after downloading the upboot file), it was restarted in Bootloader Mode and is ready to receive upgraded firmware or bootloader files.

Bootloader Upgrade:

Conduct a bootloader upgrade if you have confirmed your reader's bootloader version is below 3000, you have first completed the download of an upboot file and you wish to upgrade the reader's firmware to 3000+.

Important Notes:

1. You must first complete the download of an Upboot File before completing a Bootloader Upgrade when current bootloader version is below 3000 (see instructions beginning on pg. 9).
2. The reader must be in Bootloader Mode in order to receive a bootloader file upgrade.
How to put the reader in Bootloader Mode:

- The CR2 is in Bootloader Mode if the left LED is red and the right LED is green. If both LEDs are red, push either button to change the right LED to green.
- The CR3 is in Bootloader Mode when the LED is solid green. Push either button to cycle through modes.
- For either CR2 and CR3, you can scan the M-692_01 code below to ensure the reader is in Bootloader mode.

Bootloader Mode



M692_01

Begin Bootloader Upgrade Instructions by following the same instructions provided previously in **Upboot File Download** (beginning on pg. 9) with the following exceptions:

Step #4: While in Bootloader Mode and if using RS-232 communications mode, you must select the Bits per second rate of 57600 (on the reader and in RDU) in order to complete Bootloader Upgrade.

Note: You can only use RS-232 or USB communication modes to complete this upgrade.

Step #5: Select the bootloader file for download, navigating to the location of the extracted files from the firmware .zip folder download. The correct file for download will be named: V003153_XXXX_boot.bdl

Note: The process of downloading the bootloader file accomplishes the upgrade. To confirm upgrade completion, simply re-initiate RDU and follow the wizard steps until you reach the RDU Configuration wizard window where you can view current reader status.

Update Reader Firmware Using RDU:

Previously you will have downloaded the Firmware (.zip) file from Code's website and extracted the zipped files to a location on your computer (see instructions beginning pg. 2).

1. Cable your reader to the host computer with a USB or RS232 interface cable.
2. On the host computer, open the RDU application from the location where the .zip files were extracted; locate and open the file named: C002640_00XX_readerDownloadUtility.exe (Figure 15).

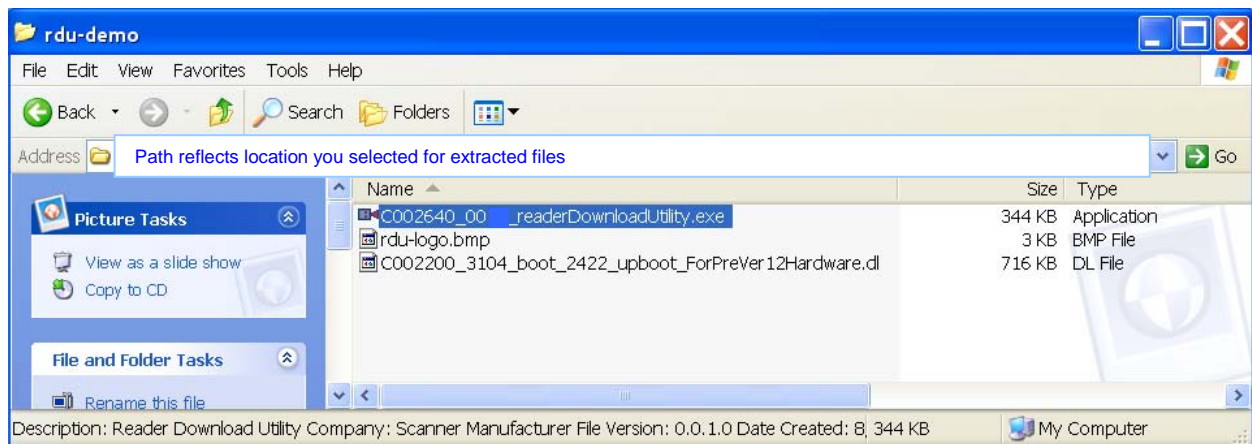


Figure 15

3. The application window will open. RDU's Connection and Communication wizard window appears (Figure 16). Select the method of communication you prefer to complete the file download and click 'Next.'

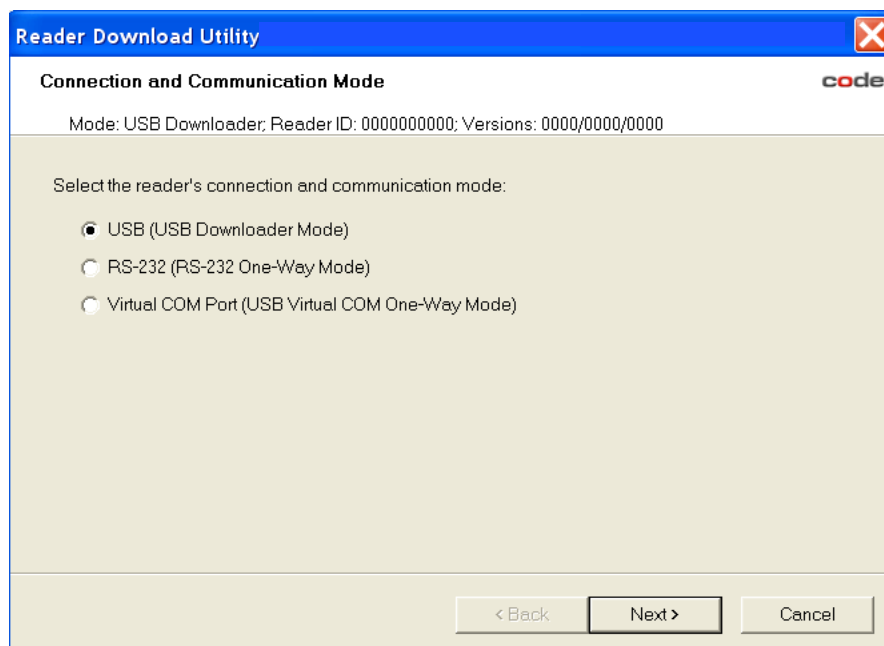


Figure 16

- If you selected RS232 or Virtual COM Port communication modes an RS-232 Serial Port Settings wizard window (Figure 17) will appear asking for confirmation of the Serial port (communications port) in use and Bits per second (baud rate). Select the Serial COM port number and Bits per second you desire by using the drop down arrows. Click 'Next.'

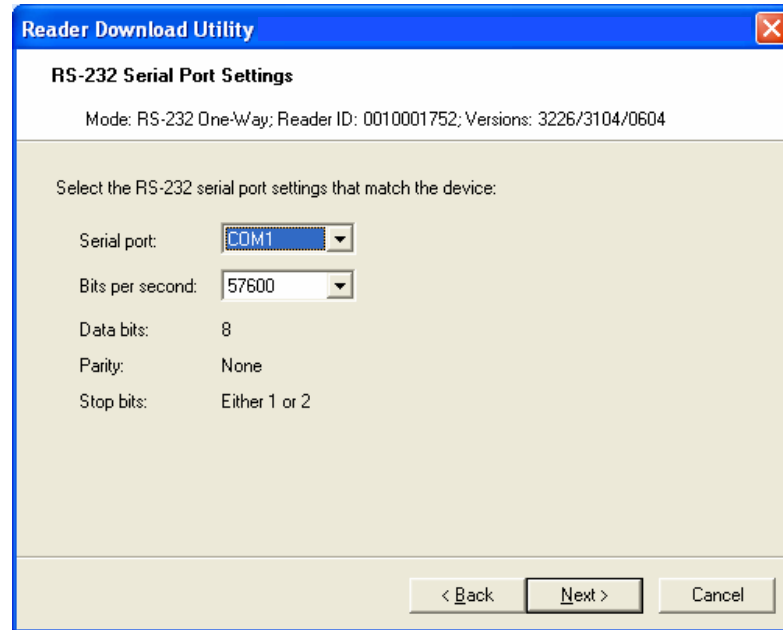


Figure 17

Note: If using USB communication mode, the RS-232 Serial Port Settings wizard window will not appear.

- The Configuration wizard window appears (Figure 18). This window simply provides information about the current status of the reader.

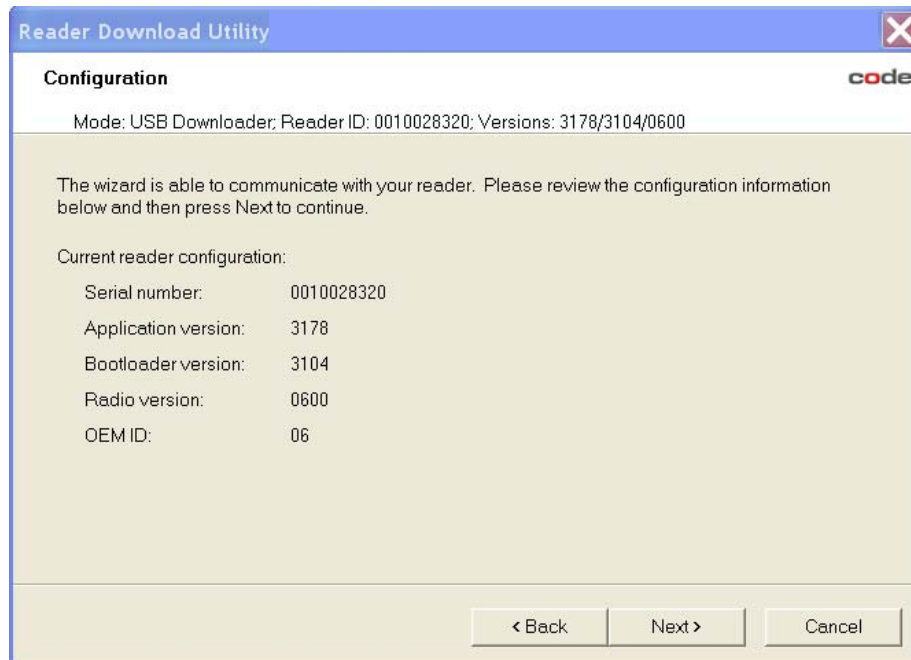


Figure 18

6. Click 'Next.' RDU's File Selection wizard window will appear (Figure 19).

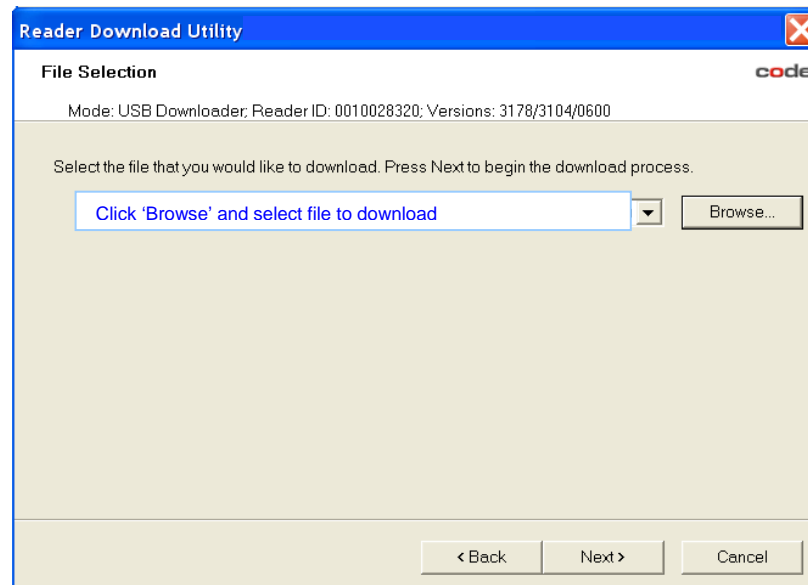


Figure 19

7. Click 'Browse' and navigate to the location of the extracted firmware upgrade file you previously downloaded from Code's website (see instructions beginning pg. 5). The file's path will appear in the window. Click 'Next.'
Note: Do not disconnect the reader during the download process.
Note: With future use you can click the down arrow on the file path window to select the path to previously downloaded files.

- The download process will initiate. RDU's File Download wizard window provides two progress bars; Current progress tracks the current file's download progress and Overall progress indicates progress for the overall download, sometimes involving more than one file download or related processes (Figure 20).

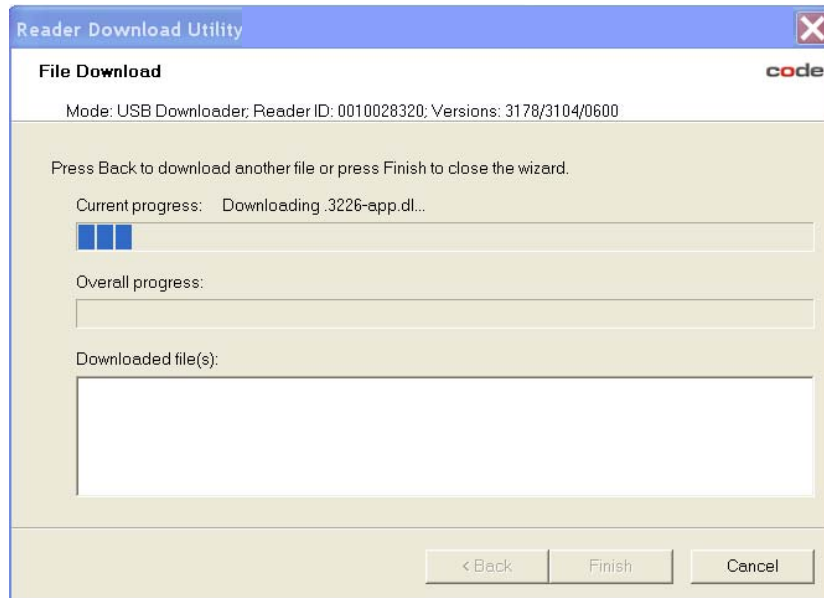


Figure 20

Note: While the download process, the CR2's LEDs will intermittently flash amber while the CR3 will display a message on the screen indicating a download is in progress.

- During the download process, several actions are taking place. Current progress messages will indicate the activities taking place (Figure 21) such as 'Waiting for the reader to reboot ...'

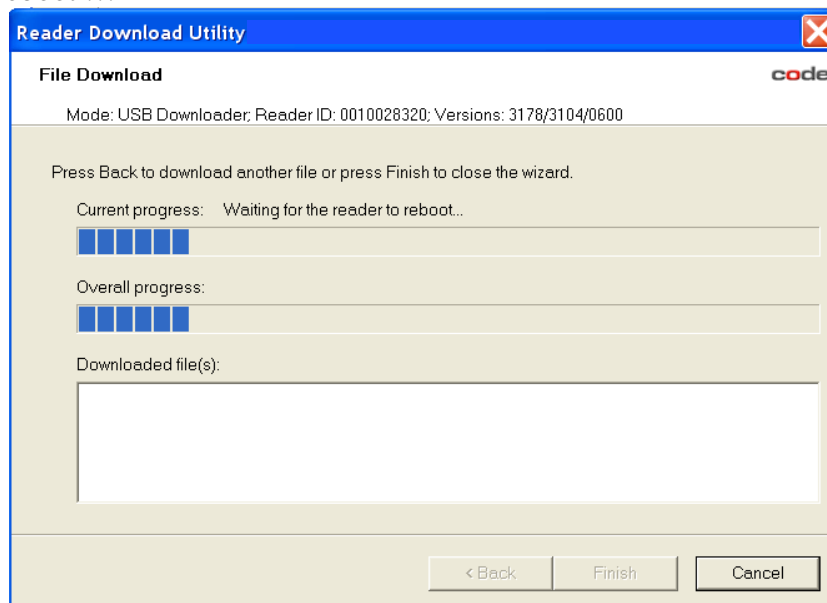


Figure 21

- Once the file download is complete, the Overall progress message indicates download completion. The downloaded files will be listed in the window provided. The 'Finish' button becomes available (Figure 22):

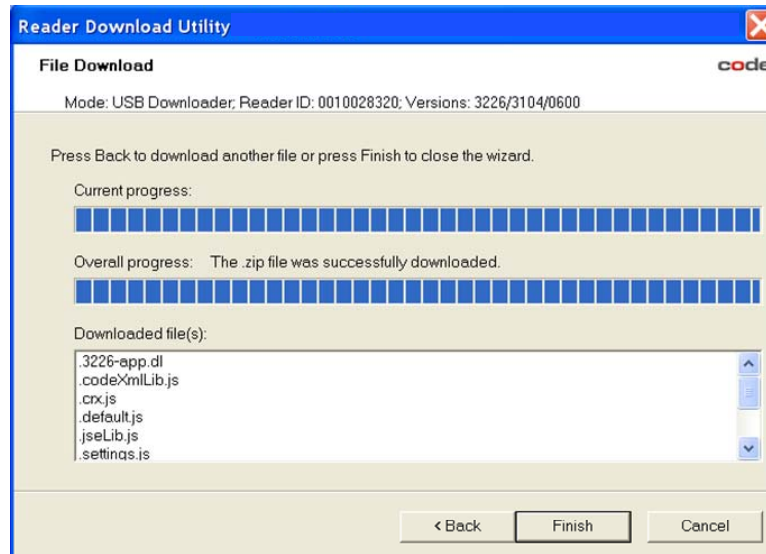


Figure 22

- Click 'Finish.' RDU's wizard window will close.
- You have successfully used RDU to upgrade firmware on your reader.