



## Abstract:

Red Lion Controls (RLC) IPm Remote Terminal Unit (RTU) (aka, Sixnet RTU) firmware, builds 4.3.179 and 4.9.152, adds support for software error correction of FLASH. This document explains the steps required to take advantage of the new firmware features as well as how to downgrade upgraded firmware (e.g., for troubleshooting).

## Products:

RLC ST-IPm-6350/ST-IPm-2350/ST-IPm-1350/VT-IPm-1410/VT-IPm-2410/VT-mIPm-245-D/VT-mIPm-241-D/VT-mIPm-135-D/VT-mIPm-131-D/VT-IPm2m-213-D/VT-IPm2m-113-D/VT-ulIPm-431-H/VT-ulIPm-441-H/ST-GT-1210/ET-GT-ST-3

## Use Case / Problem Solved: Short Description

To upgrade to the newer firmware to take advantage of the improved error correction code available in firmware versions 4.9.152 and 4.3.179 and `bootloaderNov_2017.tgz`. To downgrade from 4.3.179 to 4.3.174 or from 4.9.152 to 4.9.143, install the `DisableAdvancedErrorCorrection.tgz` file first.

## Required Software:

Sixnet I/O Tool Kit version 3.60.118

`bootloaderNov_2017.tgz` - Boot loader upgrade package

***Note:** Once this boot loader upgrade is successful, it will **not** be possible to go back to firmware versions 4.3.163, or earlier.*

`DisableAdvancedErrorCorrection.tgz` - Error correction downgrade package (Must be used to downgrade firmware.)

`EnableAdvancedErrorCorrection.tgz` - Error correction upgrade package (Used to re-enable advanced error correction.)

## Required Firmware:

### 4.3.179 applies to the following products:

ST-IPm-6350/ST-IPm-2350/ST-IPm-1350/VT-IPm-1410/VT-IPm-2410/VT-mIPm-245-D/VT-mIPm-241-D/VT-mIPm-135-D/VT-mIPm-131-D/VT-IPm2m-213-D/VT-IPm2m-113-D/VT-ulIPm-431-H/VT-ulIPm-441-H/ST-GT-1210/ET-GT-ST-3

### 4.9.152 applies to the following products:

ST-IPm-6350/VT-mIPm-245-D/VT-mIPm-135-D/VT-IPm2m-213-D/VT-IPm2m-113-D

## Required Operating System:

Microsoft Windows XP, or above

## Introduction

This document describes how to upgrade RTU firmware in the field to take advantage of improved software error correction of FLASH, as well as how to downgrade upgraded firmware.

### Upgrading Boot Loader Of An RTU In The Field

The following process will install the new boot loader and delete any firmware currently installed on the RTU. Note that a firmware load using serial and IP connections must be performed after this operation.

1. Download the 'bootloaderNov\_2017.tgz' installer and the 4.9.152 or 4.3.179 firmware via [www.redlion.net](http://www.redlion.net).
2. To install the boot loader upgrade package, highlight the target RTU in the Sixnet I/O Tool Kit project file and go to *Operations-->File Operations*.
3. Referring to Figure 1, go to the File Operations window and select the *Install Tar Bundle* option and click the *Load* button. Select the bootloaderNov\_2017.tgz file and click the *Open* button to begin the boot loader installation; the Load Archive popup shows file transfer progress.

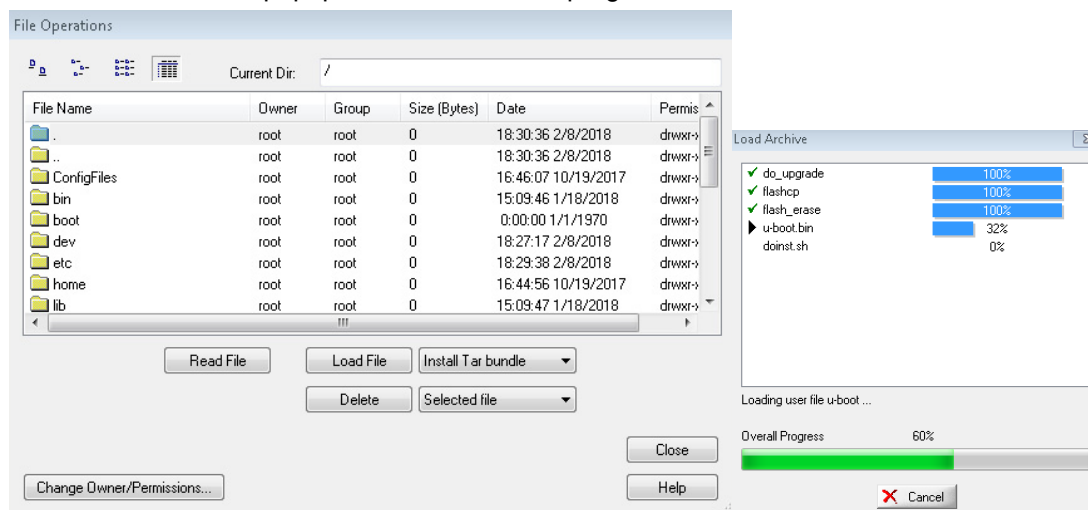


Figure 1.

4. A "Reply from script exec: Successfully updated u-boot" message will appear in the Report Views when the file transfer is successful.
5. Cycle power to the RTU. Upon boot up, the RTU will install the Nov 2017 boot loader and erase existing firmware; Status LED will continually blink, indicating that the firmware is absent.
6. To load the 4.3.179 or 4.9.152 firmware, connect to the RTU using serial and Ethernet connections. Then, go to *Operations-->Advanced Operations-->Upgrade Firmware*. The Firmware loader wizard will open. Follow the instructions on the screen to update the firmware.
7. Verify a successful firmware update by going to *Operations-->Advanced Operations-->Read Firmware Version*. The correct overall build will be 4.9.152 or 4.3.179 and the boot loader will have a November 2017 date attached to it. With this combination of firmware and boot loader installed, the RTU will use advanced error correction in the RTU's file system.

### Downgrading From 4.9.152 Or 4.3.179 To 4.9.143 Or 4.9.174

Sometimes it is necessary to downgrade an RTU's firmware, such as when performing certain troubleshooting. To downgrade, the advanced error correction settings must first be disabled with a tar bundle package installation before the downgraded firmware is loaded.

1. Download the 'DisableAdvancedErrorCorrection.tgz' file from [www.redlion.net](http://www.redlion.net).
2. To install the DisableAdvancedErrorCorrection.tgz file, highlight the desired RTU in the Sixnet I/O Tool Kit project file and go to *Operations-->File Operations*.
3. In the File Operations window select the *Install Tar Bundle* option and click the *Load* button. Select the 'DisableAdvancedErrorCorrection.tgz' file and click the *Open* button. The package will install and change the RTU's settings.
4. Once the package is successfully installed, a "Reply from script exec: Successfully removed ECC\_ - TYPE=BCH" message will appear in the Report Views window.
5. Cycle RTU power to have the changes to take effect.
6. Supported firmware versions below 4.9.143 and 4.3.174 may now be installed on the RTU.

### Enable Advanced Error Correction In 4.9.152 And 4.3.179 Firmware Versions

Perform this operation only if the advanced error correction was previously disabled; refer to previous downgrading instructions.

1. First, verify that the boot loader Nov 2017 version is installed on the RTU. To do this go to *Operations-->Advanced Operations-->Read Firmware Version*. The overall build must be 4.9.152 or above or 4.3.179 or above; the boot loader must have a November 2017 date.
2. Download the 'EnableAdvancedErrorCorrection.tgz' file from [www.redlion.net](http://www.redlion.net).
3. To install the EnableAdvancedErrorCorrection.tgz file, highlight the desired RTU in the Sixnet I/O Tool Kit project file and go to *Operations-->File Operations*.
4. In the File Operations window, select the *Install Tar Bundle* option and click the *Load* button. Select the 'EnableAdvancedErrorCorrection.tgz' file and click the *Open* button. The package will install and change the RTU's settings.
5. Once the package is successfully installed, a "Reply from script exec: Successfully added ECC\_ TYPE=BCH" message will appear in the Report Views window.
6. Cycle RTU power to have the changes to take effect.

## Disclaimer

It is the customer's responsibility to review the advice provided herein and its applicability to the system. Red Lion makes no representation about specific knowledge of the customer's system or the specific performance of the system. Red Lion is not responsible for any damage to equipment or connected systems. The use of this document is at your own risk. Red Lion standard product warranty applies.

### Red Lion Technical Support

If you have any questions or trouble contact Red Lion Technical Support by emailing [support@redlion.net](mailto:support@redlion.net) or calling 1-877-432-9908.

For more information: <http://www.redlion.net/support/policies-statements/warranty-statement>

