BURK
TECHNOLOGY

Instruction Manual

Burk Firmware Loader

USING THIS MANUAL

This manual is best viewed as a .pdf on a computer or tablet, as there are many hypertext links to help you get to the section you need. Since most of the initial setup requires a web browser, keeping a copy of the manual in .pdf form on the same machine is recommended.

The .pdf file has bookmarks to help with navigation, so be sure you have a current copy of Adobe Reader on your computer and have the Bookmarks enabled. You can download the most recent version at http://get.adobe.com/reader/.

To enable bookmarks, press 🔖 and expand the desired section by pressing .

You can also jump directly to a section from the **TABLE OF CONTENTS**. Just click on the section or page number to go directly there.

Please take a few minutes to familiarize yourself with the organization of this manual, as it will likely save time later when you need to find a specific piece of information quickly. Throughout the manual, you will find hypertext links like this: **USING THIS MANUAL** Click on the link to go directly to the named section.
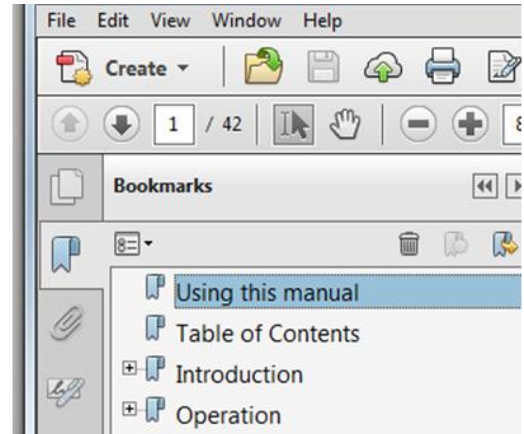
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INTRODUCTION AND PRODUCT APPLICABILITY

The Burk Firmware Loader is a tool that lets you update Burk firmware when new versions are released. The Burk Firmware Loader must be installed on a computer running the Windows 10 Pro 64-bit or Windows 11 Pro operating system.

Table 1 provides pertinent information for updating to the latest version of product firmware. Follow the instructions that apply to your specific product.

Table 1. Product-Specific Instructions for Firmware Uploads

PRODUCT	Update Process Summary
ARC PLUS	
ARC PLUS SL	
ARC PLUS TOUCH	
ARC SOLO	Update to the latest firmware version using the **BURK FIRMWARE LOADER PROCEDURE.**
ARCHER	
ARCTURUS	
PLUS-X VSWR	
RF SCOUT PLUS	
DUAL SWITCH CONTROLLER	

PRODUCT	Update Process Summary
CLIMATE GUARD	If your current firmware version is lower than 1.1.0, see the product-specific section **PORTS AND PROTOCOLS** The Burk product line uses two IP based protocols for updating firmware. For products including the ARC Plus, ARC Plus Touch, ARC Plus SL and Arcturus, the firmware is updated using the data port that you have set on the unit. These units employ a proprietary Burk Technology protocol using TCP communications over ethernet. The selected port must be open for TCP network traffic from the PC attempting the upload firmware to the Burk unit. For all other products the Burk Firmware Loader uses ports 69 TFTP/UDP protocol and port 21 FTP/TCP protocol. The connection process for these products is as follows: 1. An FTP connection is made to verify login credentials and start the upload process. 2. A TFTP connection is opened to push the firmware to the Burk unit. 3. The unit is rebooted and an FTP connection is made to load the separate web page (.bin) file if applicable. **Note**: Models such as the PlusConnect and the Plus-X 300 do not have a separate web page file. **Tip**: The Burk Firmware Loader allows you edit which ports get used externally for TFTP and FTP. When updating units via the public internet outside your company firewall, you can select alternate ports for TFTP and FTP then have them port forwarded to 69 and 21 internally to your network. This can be useful if direct access to ports 69 and 21 is not allowed. Normally you can leave the port settings at their default values. Climate Guard/Plus-X EM. If your current firmware version is 1.1.3 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X 300	If your current firmware version is lower than version 1.0.17, see the product-specific section **PLUS-X 300**. If your current firmware version is 1.0.17 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X 600	If your current firmware version is lower than version 1.0.10, see the product-specific section **PLUS-X 600**. If your current firmware version is 1.0.10 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X AC-8	If your current firmware version is lower than version 1.0.16, then see the product-specific section **PLUS-X AC-8**. If your current firmware version is 1.0.16 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X DUAL IP-8 ADAPTER	If your current firmware version is lower than version 1.0.10, see the product-specific section **PLUS-X DUAL IP-8 ADAPTER**. If your current firmware version is 1.0.10 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**

PRODUCT	*Update Process Summary*
PLUS-X EM	If your current firmware version is lower than version 1.1.0, see the product-specific section **PORTS AND PROTOCOLS** The Burk product line uses two IP based protocols for updating firmware. For products including the ARC Plus, ARC Plus Touch, ARC Plus SL and Arcturus, the firmware is updated using the data port that you have set on the unit. These units employ a proprietary Burk Technology protocol using TCP communications over ethernet. The selected port must be open for TCP network traffic from the PC attempting the upload firmware to the Burk unit. For all other products the Burk Firmware Loader uses ports 69 TFTP/UDP protocol and port 21 FTP/TCP protocol. The connection process for these products is as follows: 4. An FTP connection is made to verify login credentials and start the upload process. 5. A TFTP connection is opened to push the firmware to the Burk unit. 6. The unit is rebooted and an FTP connection is made to load the separate web page (.bin) file if applicable. **Note**: Models such as the PlusConnect and the Plus-X 300 do not have a separate web page file. **Tip**: The Burk Firmware Loader allows you edit which ports get used externally for TFTP and FTP. When updating units via the public internet outside your company firewall, you can select alternate ports for TFTP and FTP then have them port forwarded to 69 and 21 internally to your network. This can be useful if direct access to ports 69 and 21 is not allowed. Normally you can leave the port settings at their default values. Climate Guard/Plus-X EM. If your current firmware version is 1.1.3 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X GSC ADAPTER	If your current firmware version is lower than version 1.0.10, see the product-specific section **PLUS-X GSC ADAPTER**. If your current firmware version is 1.0.10 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X ICRU	If your current firmware version is 1.0.18 or lower, contact Burk Technical Support for assistance. If your current firmware version is 1.0.19 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUS-X IIU	If your current firmware version is 1.0.7 or lower, contact Burk Technical Support for assistance. If your current firmware version is 1.1.0 or higher, update to the latest version using the **BURK FIRMWARE LOADER PROCEDURE.**
PLUSCONNECT 3DX	To update the PlusConnect 3DX please follow the procedure **UPDATING FIRMWARE VIA THE POWER UP BOOTLOADER**

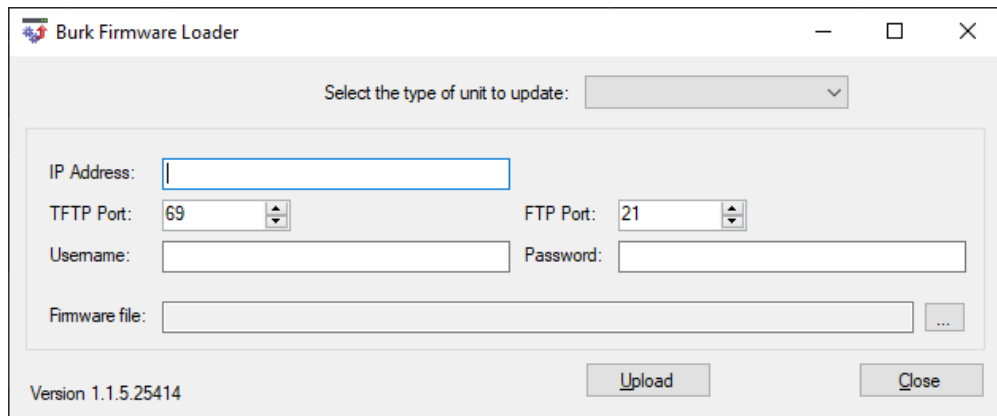| PRODUCT	Update Process Summary
PLUSCONNECT GATESAIR Z	See the product-specific section: **PORTS AND PROTOCOLS** **THE BURK PRODUCT LINE USES TWO IP BASED PROTOCOLS FOR UPDATING FIRMWARE**. For products including the ARC Plus, ARC Plus Touch, ARC Plus SL and Arcturus, the firmware is updated using the data port that you have set on the unit. These units employ a proprietary Burk Technology protocol using TCP communications over ethernet. The selected port must be open for TCP network traffic from the PC attempting the upload firmware to the Burk unit. For all other products the Burk Firmware Loader uses ports 69 TFTP/UDP protocol and port 21 FTP/TCP protocol. The connection process for these products is as follows: 7. An FTP connection is made to verify login credentials and start the upload process. 8. A TFTP connection is opened to push the firmware to the Burk unit. 9. The unit is rebooted and an FTP connection is made to load the separate web page (.bin) file if applicable. **Note**: Models such as the PlusConnect and the Plus-X 300 do not have a separate web page file. **Tip**: The Burk Firmware Loader allows you edit which ports get used externally for TFTP and FTP. When updating units via the public internet outside your company firewall, you can select alternate ports for TFTP and FTP then have them port forwarded to 69 and 21 internally to your network. This can be useful if direct access to ports 69 and 21 is not allowed. Normally you can leave the port settings at their default values. Climate Guard/Plus-X EM.
OTHER PLUSCONNECTS	Refer to the PlusConnect model-specific manual here: PlusConnect Downloads. For further instructions on updating firmware for your PlusConnect use the procedure **UPDATING FIRMWARE VIA THE POWER UP BOOTLOADER** (**E**xcluding GatesAir Z).

PORTS AND PROTOCOLS

The Burk product line uses two IP based protocols for updating firmware. For products including the ARC Plus, ARC Plus Touch, ARC Plus SL and Arcturus, the firmware is updated using the data port that you have set on the unit. These units employ a proprietary Burk Technology protocol using TCP communications over ethernet. The selected port must be open for TCP network traffic from the PC attempting the upload firmware to the Burk unit.

For all other products the Burk Firmware Loader uses ports 69 TFTP/UDP protocol and port 21 FTP/TCP protocol. The connection process for these products is as follows:

10. An FTP connection is made to verify login credentials and start the upload process.

11. A TFTP connection is opened to push the firmware to the Burk unit.

12. The unit is rebooted and an FTP connection is made to load the separate web page (.bin) file if applicable.

Note: Models such as the PlusConnect and the Plus-X 300 do not have a separate web page file.

Tip: The Burk Firmware Loader allows you edit which ports get used externally for TFTP and FTP. When updating units via the public internet outside your company firewall, you can select alternate ports for TFTP and FTP then have them port forwarded to 69 and 21 internally to your network. This can be useful if direct access to ports 69 and 21 is not allowed. Normally you can leave the port settings at their default values.

CLIMATE GUARD/PLUS-X EM – SPECIAL INSTRUCTIONS

If your current firmware version is greater or equal to 1.1.0, check with Table 1. If your current firmware version is lower than 1.1.0, follow these steps to upgrade to version (1.1.3) before updating to the latest version. The current firmware revision can be found on the System Information page by first clicking on the Setup page of the Climate Guard or Plus-X EM web interface.

1. Visit the Climate Guard or Plus-X EM support page at https://www.burk.com/downloads. In the box titled "Firmware & Downloads", right-click the correct firmware for your unit, as indicated in the table below, and choose **Save Link As** to save a copy of the file on your computer.

Table 2: Product-Specific Links

IF YOUR UNIT IS:	RIGHT-CLICK ON:	AND SAVE THE FILE AS:
CLIMATE GUARD	Climate Guard 1.0.x to 1.1.3	Cpu_1_1_3_WithBootLoader.bin

CLIMATE GUARD LT	Climate Guard LT 1.0.x to 1.1.3	CpuLt_1_1_3_WithBootLoader.bin
PLUS-X EM64	Plus-X EM64 1.0.x to 1.1.3	PlusXEM64_1_1_3_WithBootloader.bin
PLUS-X EM32	Plus-X EM32 1.0.x to 1.1.3	PlusXEm32_1_1_3_WithBootloader.bin

2. To upload the firmware, click the **Upload Firmware** link on the Setup page of the Climate Guard or Plus-X EM web interface. Click **Choose File** under **Main Firmware**, select the file saved above, and click **Upload**.

3. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**

> ⚠️ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**
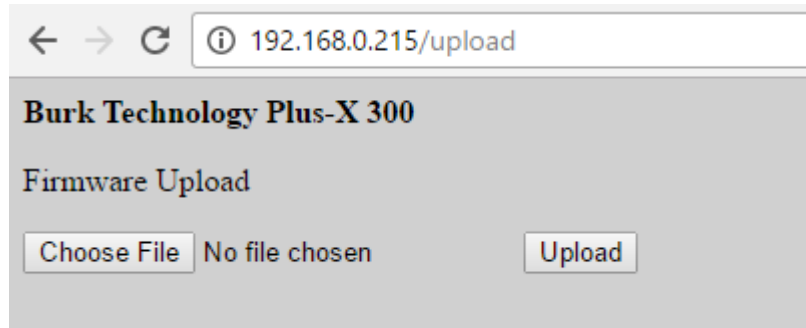
4. Proceed to the **BURK FIRMWARE LOADER PROCEDURE** to update to the latest version of firmware.

PLUS-X 300 – SPECIAL INSTRUCTIONS

If your current firmware version is greater or equal to 1.0.17, check with Table 1. If your current firmware version is lower than 1.0.17, follow these steps to upgrade to version (1.0.17) before updating to the latest version. The current firmware revision is displayed on the login screen when you first access the Plus-X 300 web interface.

1. Visit https://www.burk.com/downloads and select the Plus-X 300 support page. In the box titled "Firmware & Downloads", right-click *Plus-X 300 1.0.17 With Bootloader*, and choose **Save Link As** to save a copy of the file on your computer.

2. Extract the file *PlusX300_1_0_17_WithBootloader.bin* and place it in an accessible directory on your PC.

3. Log into the Plus-X 300 web interface and edit the URL in your web browser to [*address*]/upload, where [*address*] is the IP address assigned to the Plus-X 300. This will take you to the upload page.

4. Click **Choose File** to select the firmware file you just saved and click **Upload** to load the new firmware. The Plus-X 300 will reboot after the firmware upload is complete.

5. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**

> ⚠️ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**
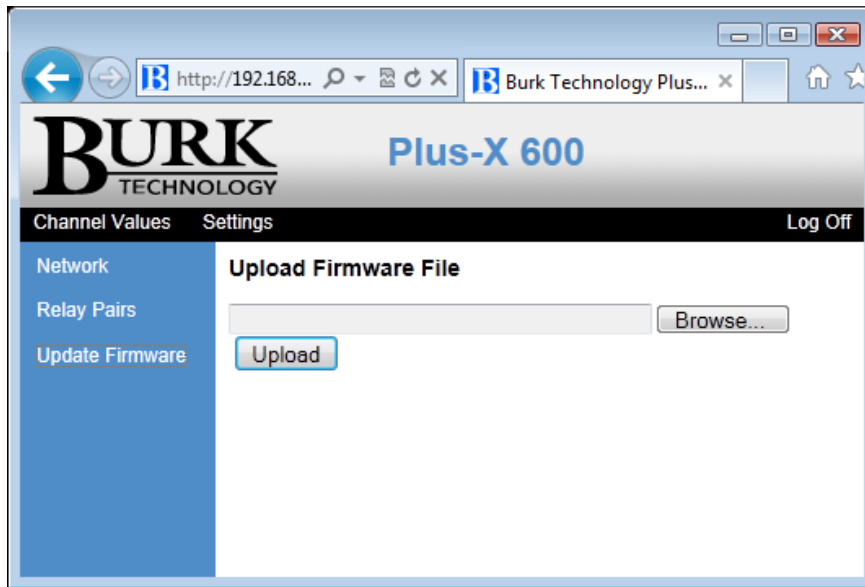
6. Press the Config button three (3) times to reset the unit to factory settings. This will enable DHCP in the Plus-X 300. Enter "PlusX300/" in your browser address bar to automatically find the unit in your network. If your network is not DHCP enabled, then you will need to change the IP address on your computer to 192.168.0.xxx in order to directly communicate with the Plus-X 300 by typing 192.168.0.100 into the address bar of your browser.

7. After making a connection with the Plus-X 300 via your browser, change network settings in the Plus-X 300 to have a static IP address within your network. Remember to change your computer settings back to their original settings before you continue.

8. Proceed to the **BURK FIRMWARE LOADER PROCEDURE** to update to the latest version firmware.

PLUS-X 600 – SPECIAL INSTRUCTIONS

If your current firmware version is greater or equal to 1.0.10, check with Table 1. If your current firmware version is 1.0.10 or lower, follow these steps to upgrade to version (1.0.10) before updating to the latest version. The current firmware revision is displayed on the login screen when you first access the Plus-X 600 web interface.

1. Visit https://www.burk.com/downloads and select the Plus-X 600 support page. In the box titled "Firmware & Downloads", right-click *Plus-X 600 1.0.10 With Bootloader*, and choose **Save Link As** to save a copy of the file on your computer.

2. Extract the file *PlusX600_1_0_10_WithBootloader.bin* and place it in an accessible directory on your PC.

3. Direct your browser to the IP address of the Plus-X 600, log on, navigate to the **Settings** page and select **Update Firmware** in the menu at the left side of the screen.

4. Click **Browse** button to select the firmware file you just saved and click **Upload** to load the new firmware. The Plus-X 600 will reboot after the firmware upload is complete.

5. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**
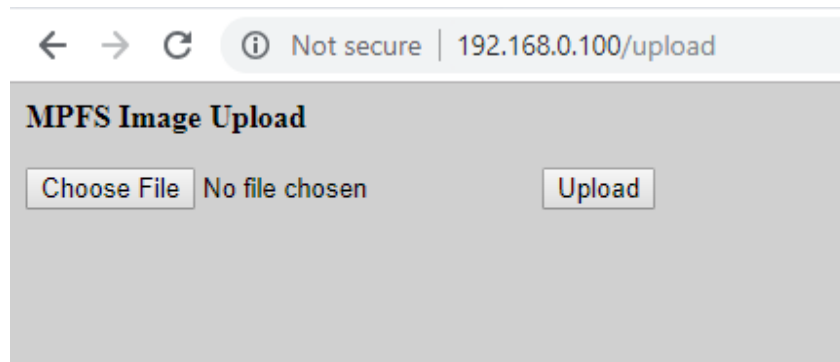
⚠ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**

6. Proceed to **BURK FIRMWARE LOADER PROCEDURE** to update to the latest version of firmware.

PLUS-X AC-8 – SPECIAL INSTRUCTIONS

If your current firmware version is greater or equal to 1.0.16, check with Table 1. If your current firmware version is lower than 1.0.16, follow these steps to upgrade to version (1.0.16) before updating to the latest version. The current firmware revision is displayed on the login screen when you first access the Plus-X AC-8 web interface.

1. Visit https://www.burk.com/downloads and select the Plus-X AC-8 support page. In the box titled "Firmware & Downloads", right-click *Plus-X AC-8 1.0.16 With Bootloader*, and choose **Save Link As** to save a copy of the file on your computer.

2. Extract the file *PlusXAC8_1_0_16_WithBootloader.bin* and place it in an accessible directory on your PC.

3. Log into the Plus-X AC-8 web interface and edit the URL in your web browser to [*address*]/upload, where [*address*] is the IP address assigned to the Plus-X AC-8. This will take you to the upload page.

4. Click **Choose File** to select the firmware file you just saved and click **Upload** to load the new firmware. The Plus-X AC-8 will reboot after the firmware upload is complete.

5. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**

> ⚠ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**

6. Proceed to the **BURK FIRMWARE LOADER PROCEDURE** to update to the latest version of firmware.

PLUS-X DUAL IP-8 ADAPTER - SPECIAL INSTRUCTIONS

If your current firmware version is greater or equal to 1.0.10, check with Table 1. If your current firmware version is lower than 1.0.10, follow these steps to upgrade to version (1.0.10) before updating to the latest version. The current firmware revision is displayed on the login screen when you first access the Plus-X IIU web interface.

1. Visit https://www.burk.com/downloads and select the Plus-X Dual IP-8 Adapter support page. In the box titled "Firmware & Downloads", right-click *Plus-X Dual IP-8 Adapter 1.0.10 With Bootloader*, and choose **Save Link As** to save a copy of the file on your computer.

2. Extract the file *PlusX_IP8_1_0_10_WithBootloader.bin* and place it in an accessible directory on your PC.

3. Log into the Plus-X Dual IP-8 Adapter web interface and click on the **Upload Firmware** link.

4. Click **Browse** to select the firmware file you just saved and click **Upload** to load the new firmware. The Plus-X Dual IP-8 Adapter will reboot after the firmware upload is complete.

5. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**
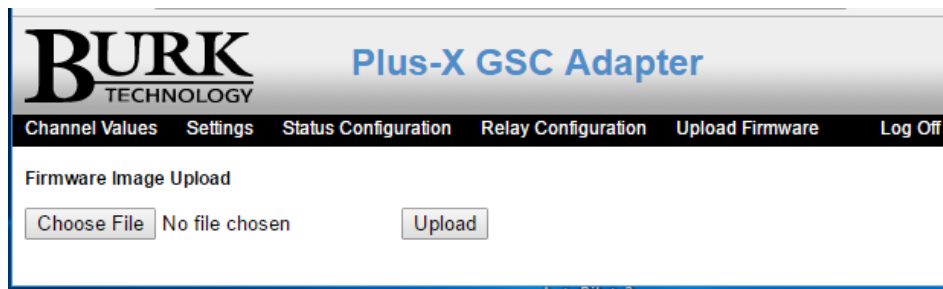
> ⚠️ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**

6. Proceed to the **BURK FIRMWARE LOADER PROCEDURE** to update to the latest firmware version.

Check firmware version on login screen when you first access the Plus-X GSC Adapter web interface. If your current firmware version is greater or equal to 1.0.10, check with Table 1. If your current firmware version is lower than 1.0.10 you cannot upgrade directly to the latest firmware version. First update to version 1.0.14 before updating to the latest version.

1. Visit https://www.burk.com/downloads and select the Plus-X GSC Adapter support page. In the box titled "Firmware & Downloads", right-click *Plus-X GSC Adapter 1.0.14 With Bootloader*, and choose **Save Link As** to save a copy of the file on your computer.

2. Extract the file *PlusX_GSC_1_0_14_WithBootloader.bin* and place it in an accessible directory on your PC.

3. Log into the Plus-X GSC Adapter web interface and click on the **Upload Firmware** link.

4. Click **Choose File** and select the firmware file you saved above.

5. Click **Upload** to load the new firmware. The Plus-X GSC Adapter will reboot after the firmware upload is complete.

6. It is recommended that you clear your browser's cache before continuing to the next step. See **APPENDIX A: CLEARING YOUR BROWSER'S CACHE.**
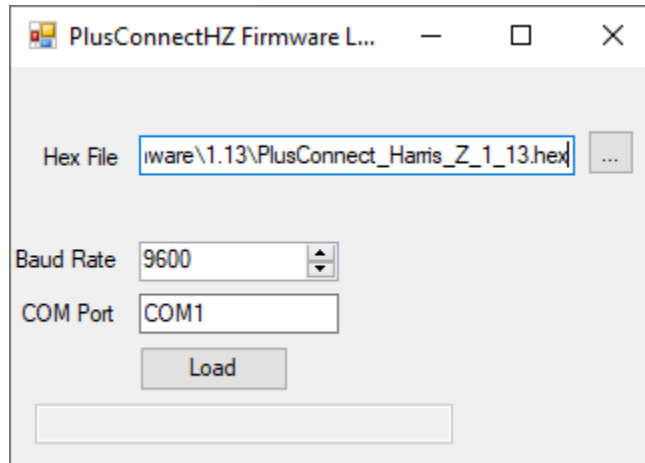
> ⚠ **WARNING: Do not leave this page until the browser refreshes. This may take a few minutes.**

7. Proceed to the **BURK FIRMWARE LOADER PROCEDURE** to update to the latest version.

The PlusConnect GatesAir Z uses its serial port to update the firmware using the Serial Pic Loader program which can be downloaded here: SerialPicLoader.exe Download. You will need to connect a DB9 serial null modem cable from the PC to the Plus connect to communicate with the Serial Pic Loader.

1. Download the latest GatesAir Z firmware from the link here:
   PlusConnect Downloads.

2. Press and hold the config button on the back of the PlusConnect while powering it up then release after 2 seconds to prepare it to accept firmware.

3. Start the Serial Pic Loader application.

4. Unzip the download package and load the .hex file for the PlusConnect Harris/GatesAir Z in the hex file field.

5. Set the baud rate to 9600 and set the COM port to the appropriate COM port for your setup.

6. Click Load and wait for a message that it completed successfully.

BURK FIRMWARE LOADER PROCEDURE – APPLICABLE TO ALL PRODUCTS

CONFIRM CURRENT VERSION OF BURK FIRMWARE LOADER ON YOUR COMPUTER

Significant changes have been made to the Burk Firmware Loader. You must use the current version to update the firmware in your Burk product. To find the current version visit https://www.burk.com/downloads and select the support page for the Burk Firmware Loader. If needed, download and run the Burk Firmware Loader executable file. This will install the Burk Firmware Loader on your PC.

BACK UP YOUR CONFIGURATION

Some firmware updates to ARC Plus, ARC Plus Touch, ARC Plus SL or Arcturus reset the configuration in your unit. Be sure to save a backup configuration using Autoload Plus before proceeding. Networking settings will not change during the update process.

DOWNLOAD FIRMWARE

Visit https://www.burk.com/downloads to select the support page for your unit and download the latest firmware version.

Note: For the ARC Plus, ARC Plus SL, ARC Plus Touch and Arcturus you need to un-compress (un-zip) this folder before using it with Burk Firmware Loader. For all other products DO NOT un-compress (un-zip) the downloaded file for your product.

CONFIGURE WINDOWS FIREWALL AND ANTIVIRUS

It may be necessary to configure the Windows Firewall to allow the Burk Firmware Loader to communicate with the device. Follow these instructions to configure the Windows Firewall.

1. Click Start > Control Panel > System and Security > Windows Firewall.

2. Select **Allow an app or feature through Windows Firewall**.

3. Select **Allow another program**.

Note: If Allow another program is un-selectable, click the Change Settings button first to unlock it.
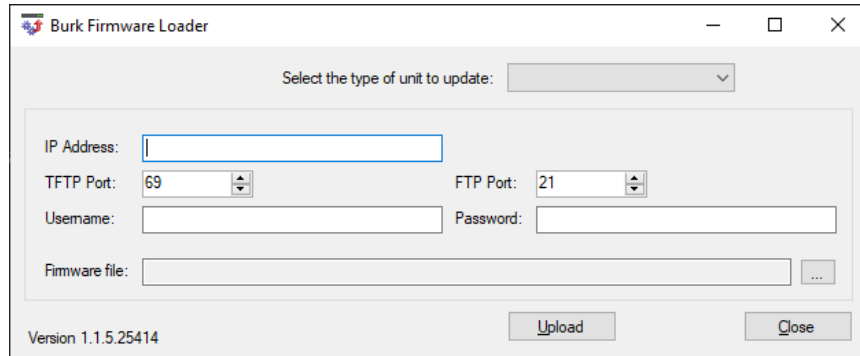
4. Click **Browse** and navigate to C:\Program Files(x86)\Burk Technology\Burk Firmware Loader.

5. Select **Burk Firmware Loader** > **Open** > **Add** > **OK.**

6. Note: Applications and services such as antivirus or malware protection may also need to be disabled in order for FTP and TFP protocols to run updates properly.

Note: Antivirus and malware protection programs may also block FTP and TFPT and may need to be disabled as well for the firmware to update successfully.
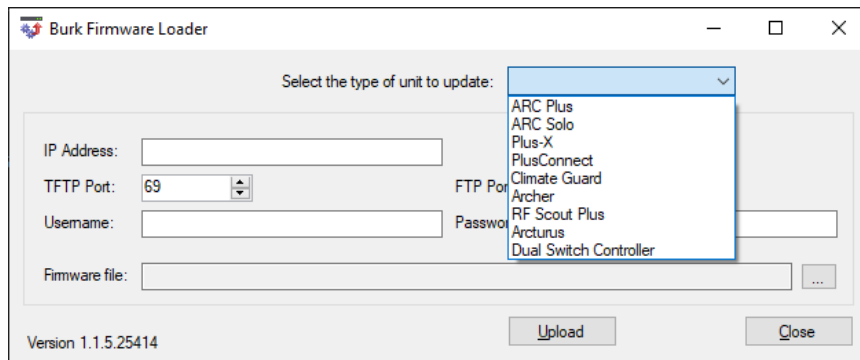
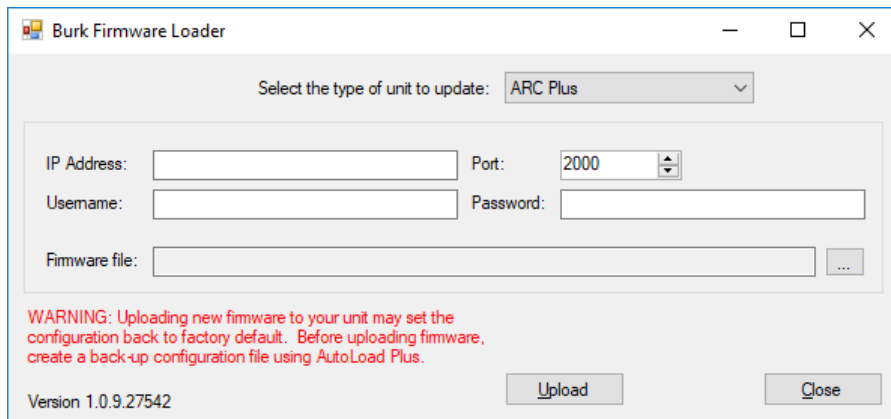To use the Burk Firmware Loader, follow these instructions.

1. Click **Start** > **All Programs** > **Burk Technology** > **Burk Firmware Loader** and launch the program.

2. Select your product type from the dropdown list.

3. Enter your unit's IP Address, Port number (if required), Username and Password.

4. Select the .zip folder or .bin file that you previously saved.

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> **Note**: For the ARC Plus, ARC Plus SL, ARC Plus Touch and Arcturus you need to un-compress (un-zip) this folder before using it with the Burk Firmware Loader. For all other products DO NOT un-compress (un-zip) the downloaded file for your product.

5. For Plus-X devices, ARC Solo, and Archer, enable the unit to accept the firmware upload:

    a. Direct your browser to the IP address of the Plus-X, ARC Solo or Archer unit, Log on and navigate to the Upload Firmware page.

    b. Click the **Enable Firmware Upload** button at the center of the page.

    c. Return to the Burk Firmware Loader within three minutes to complete the upload process.

6. Click **Upload** on the Burk Firmware Loader.

7. A notification window will open when the upload is complete. Click **OK.**

UPDATING FIRMWARE VIA THE POWER UP BOOTLOADER

This section defines the procedures for updating firmware using the power-on bootloader method on a Plus-X device, PlusConnect (excluding the GatesAir Z) or ARC Solo. If your device cannot be updated with the standard firmware upload method, you can use the power-on bootloader method to avoid sending a unit back for repair. If the device powers up with two amber lights for ~5 seconds then you can follow this procedure to restore the firmware on the unit.

> **Note**: Some PlusConnect models such as the GatesAir 3DX do not display the amber lights at power up. This procedure will still work with those models. This procedure will not work on ARC Plus models.

Process

1) Unplug the Plus-X, PlusConnect or ARC Solo device.

2) Open a command prompt in administrator mode and type the following command: **arp -D**. This will clear the arp table reference to real MAC address for the device. When in bootloader mode, the MAC address uses a default MAC address owned by Microchip.

3) Make sure your network adapter is on the subnet 192.168.0.X.

4) Using the Burk Firmware Loader, enter the IP address 192.168.0.100. No username or password is necessary.

5) In the product firmware zip file, unzip and load the HEX file that does **NOT** have the WithBootloader in the file name. The file you load in the firmware file field should have the product name and firmware revision only.

6) Click upload on the Burk Firmware Loader and then immediately power up the unit.

7) Change the IP on the firmware loader to the unit's original IP address and change the firmware file to the WebPages_x_x_x.bin file. Enter the username and password for this step and click upload so the updated web pages can loaded for the WEB interface.

This concludes the Burk Firmware Loader procedure.

APPENDIX A: CLEARING YOUR BROWSER'S CACHE

Each web browser requires a unique set of steps to clear its cache memory. The required steps for selected browsers are detailed below.

FIREFOX VERSION 71

1) Click on the menu icon (three horizontal bars) in the upper right corner of the browser window: ≡

2) Select **Options**, then select **Privacy and Security**.

3) Scroll down to **Cookies and Site Data** and click the **Clear Data** button.

CHROME VERSION 78

1) Click on the menu icon (three vertical dots) in the upper right corner of the browser window: ⋮

2) Select **Settings**.

3) Click on **Advanced** at the bottom of the page.

4) Select **Clear browsing data**.

5) Check the box for **Cached images and files**.

6) Click the **clear data** button.

EDGE VERSION 44

1) Click on the menu icon (three horizontal dots) in the upper right corner of the browser window: ⋯

2) Select **Settings** then select **Privacy and Security**.

3) Under **Browsing data**, click on **Choose what to clear**.

4) Check the box for **Cached data and files**.

5) Click the **Clear** button.