

Embedded Software

OS 2102141 and Flash 2102411

PGC1000, NGCs 8203, 8206, 8209

AUGUST 28, 2021

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1 Purpose

These release notes detail new features and modifications, functional changes, and bug fixes made to the NGC embedded software: Operating System 2102141, and Flash 2102411.

NOTICE – Software update to the latest revisions is not mandatory. If you benefit from the software improvements listed in section 8 and you have NGCs with the digital board revisions listed in section 4, then you must obtain the latest PCCU, and NGC Flash and OS versions to update.



Do not attempt to update device(s) until you have reviewed this document and downloaded the required PCCU and NGC software versions. Both the latest Flash and OS must be loaded on the NGC using the latest PCCU version. A partial load of Flash only or OS only may result in loss of device functionality. **After installing the latest PCCU version, load the Flash before loading the OS.**

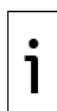
The latest software does not support Active Sync for communications. Once the update is complete, the NGC will support only Serial Port (USB) and TCP/IP (Ethernet) communications.

2 Earlier software versions

Table 2-1: Earlier software versions

Component	Part number
Flash (standard w/o hydrocarbon dewpoint)	2102411-042 or earlier
Operating System	2102141-015 or earlier

3 Latest software versions



IMPORTANT NOTE: The Flash and OS must be loaded in sequence for these versions. First load the Flash and then load the OS. A partial load of Flash only or OS only may result in loss of device functionality.

The following software versions are the latest versions:

Table 3-1: Latest software versions

Component	Part number
Flash (standard w/o hydrocarbon dewpoint)	2102411-043
Flash with hydrocarbon dewpoint	2103600-016
Operating System (OS)	2102141-016

4 Determine if you need to upgrade

It is not required to upgrade to the software versions listed in [Table 3-1](#). If your operations can benefit from the features and improvements available in these versions (detailed in section 8) and your devices have digital board revisions AD, AE, AF, AG, AH, AI, AJ, AK, and AL, then the upgrade is appropriate.

To locate the digital board REV, removal of the device's cover is required. In non-hazardous locations, the cover can be removed without powering off.

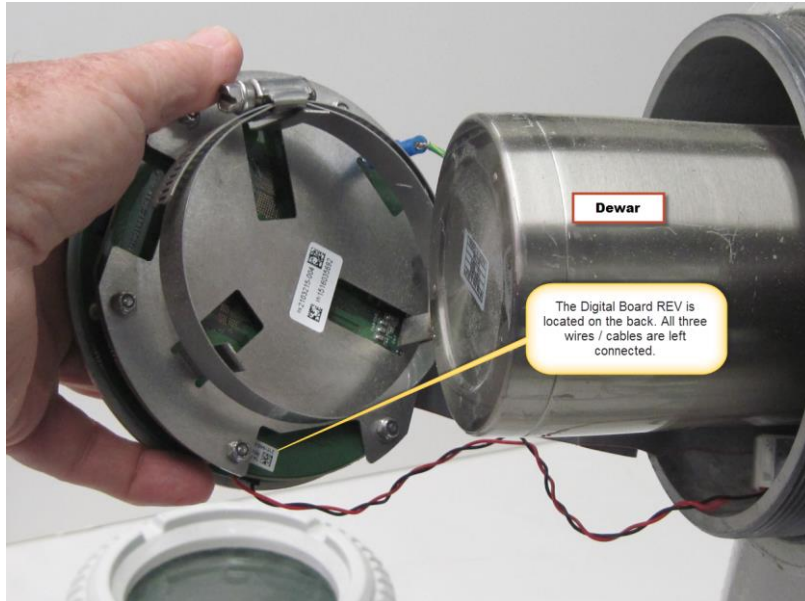


DANGER – Serious damage to health / risk to life. Do not open or remove cover(s) or apply power to the equipment while the covers are removed unless the area is known to be non-hazardous, and an explosive atmosphere is not present.

Locate board REV by removing the front of the enclosure:

1. Unscrew the front enclosure piece.
2. Loosen the screw clamp holding the display assembly to the Dewar.
3. Gently slide the digital display off the Dewar without loosening any connection wires or cables ([Figure 4-1](#)).

Figure 4-1: Locating revision without removing power to the unit



4. Take note of the revision to determine if the unit can be updated. See [Figure 4-2](#) for a close up of location of the board revision (REV). In the example below the REV in the sticker is "AL". Therefore, this would be a device that you can update to the latest software.

Figure 4-2: Revision location (close up)



5 Determine software part or version number

To determine the software part or version numbers currently installed in your device:

1. Connect to the device using the latest version of PCCU in entry mode.
2. On the navigation tree, select the top node on the tree, or the station name.
3. Select the **Registry** tab.
4. Locate and take note of the following:
 - Flash software part number
 - OS software part number



IMPORTANT NOTE: To check for the PCCU version, click **Help** on the top PCCU menu, then click **About PCCU32** from the drop down. Take note of the PCCU Version. If the version is earlier than what is published on the ABB websites, you must download, install, and update PCCU prior to the update to versions listed in [Table 3-1](#).

6 Software download from ABB website

Software is available for download from ABB websites. Review the following sections to determine how to locate and download software. Instructions for both the ABB main product website and the ABB download center (recommended) are included. Select one of the two methods described in sections [6.3 Download packages from the ABB Download center](#) and [6.4 Download packages from the ABB website](#) to locate and download the NGC software.

6.1 Software package components

ABB Totalflow devices' embedded software is distributed in packages. Packages may contain all or some of the components required for the device operation. Depending on the changes performed on each release, all or some components may have been modified. Packages may include:

- Operating system and boot software (OS, Boot)
- Main application (Flash)

For a more detailed description, see the Device Loader help topics available by clicking **Help** from PCCU.

6.2 Locate the software

Each customer package is identified by the software component included in the package and the part number and revision. For example:

- A package containing the flash for the NGC will be identified as FLASH package (2102411-NNN), where NNN is the revision of the package.
- A package containing the operating system (OS) for the NGC will be identified as OS package (2102141-NNN), where NNN is the revision of the package.

6.3 Download packages from the ABB Download center

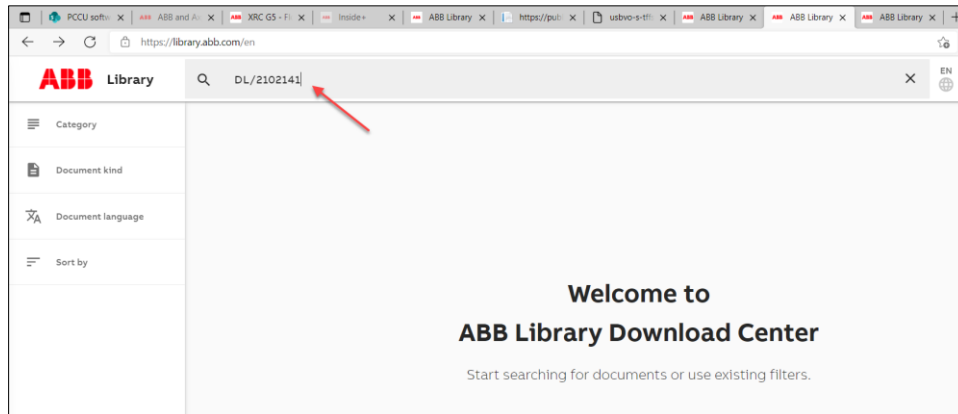


IMPORTANT NOTE: The images shown in these instructions may not always show the latest software revisions available. They are included to provide an example. Make sure you always select and download the desired/latest software.

To download from the ABB download center:

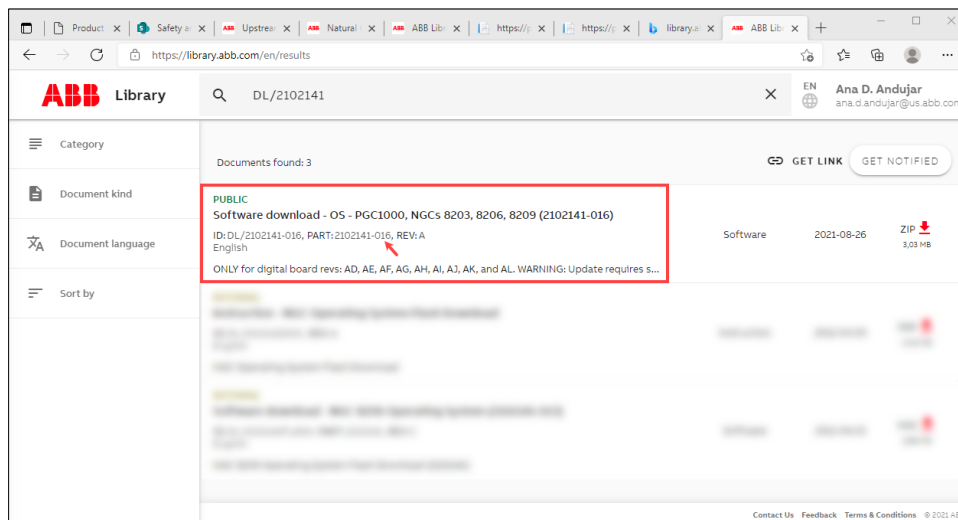
1. Go to library.abb.com and log in.
2. In the search field, type the part number as follows: DL/2102411 (for the Flash) or DL/2102141 (for the OS) and then, press the **Enter**.

Figure 6-1: ABB Download center search for software by part number



3. Locate the software when results of the search display below the search field. Several items may display for the same part number; ensure you locate the required software version.

Figure 6-2: Locate required software revision



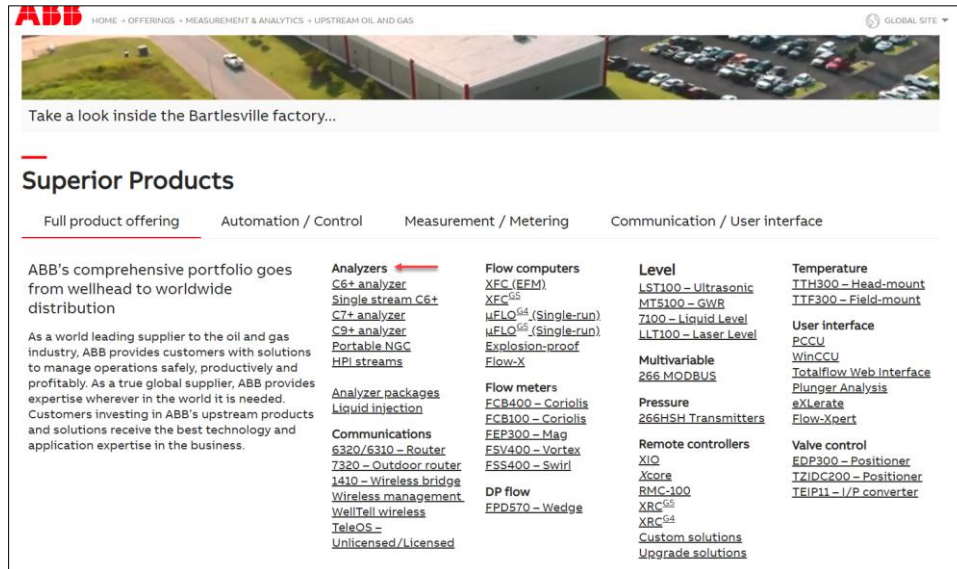
4. Select the download symbol to the right to download the software to your computer or laptop.
5. Repeat steps 2-4 for each package.
6. Proceed to section [6.5](#) Download verification SHA512 files, if necessary.

6.4 Download packages from the ABB website

To download from the ABB main product website:

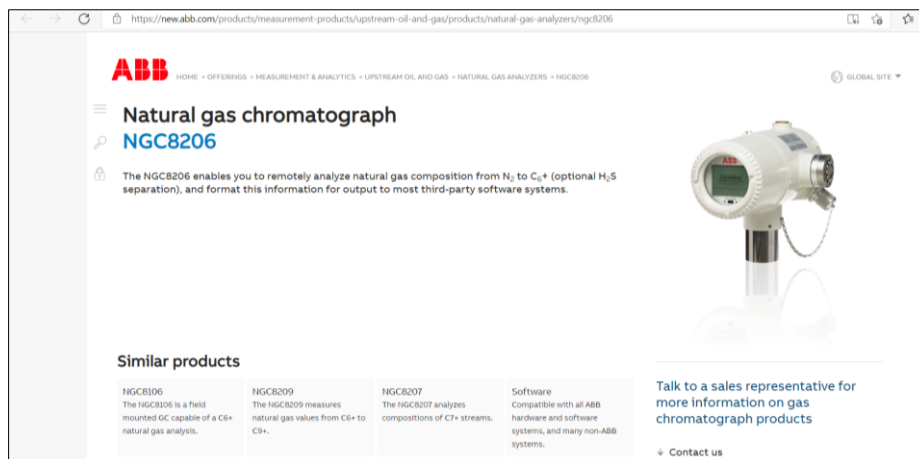
1. Go to www.abb.com/upstream.
2. Scroll down to locate the product list.

Figure 6-3: ABB Totalflow website – Main page full product offering



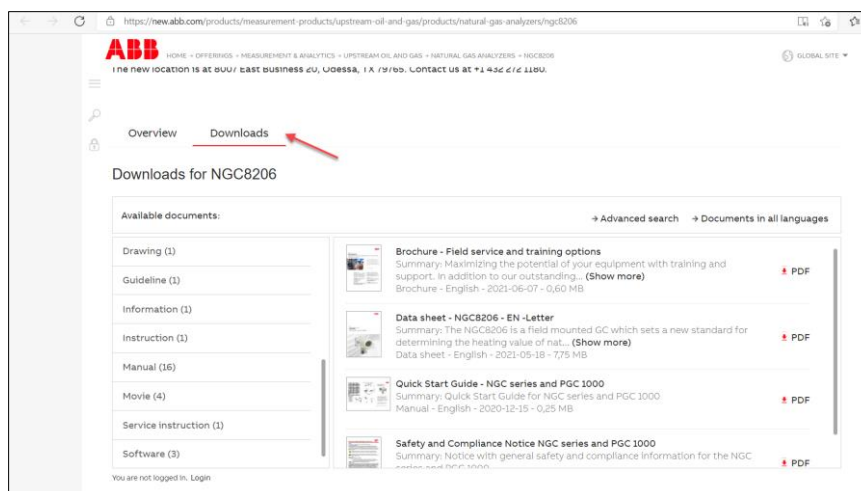
3. Select the product name (one in the NGC family) to display the product-specific web page.

Figure 6-4: ABB Totalflow website – Product-specific web page



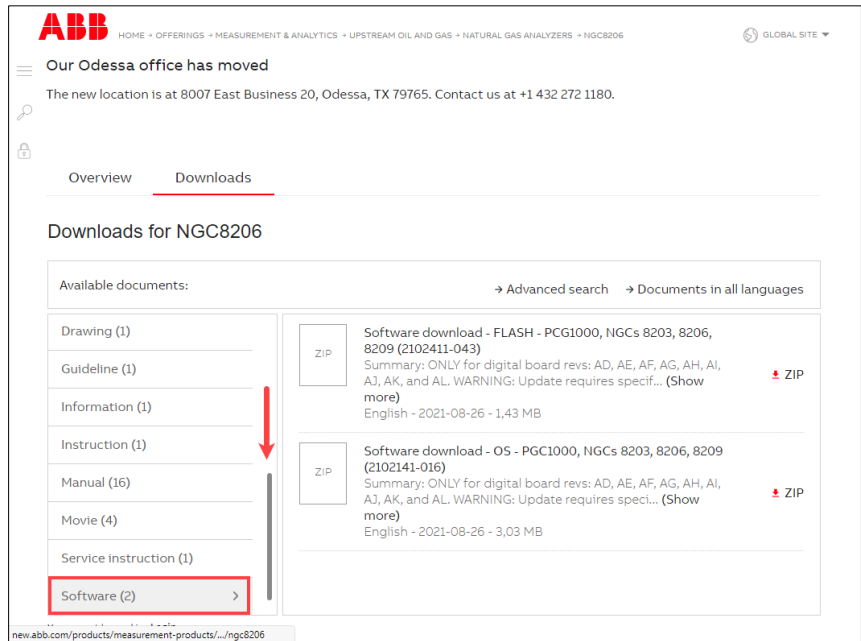
4. Scroll down the product page and select the **Downloads** tab.

Figure 6-5: NGC Downloads



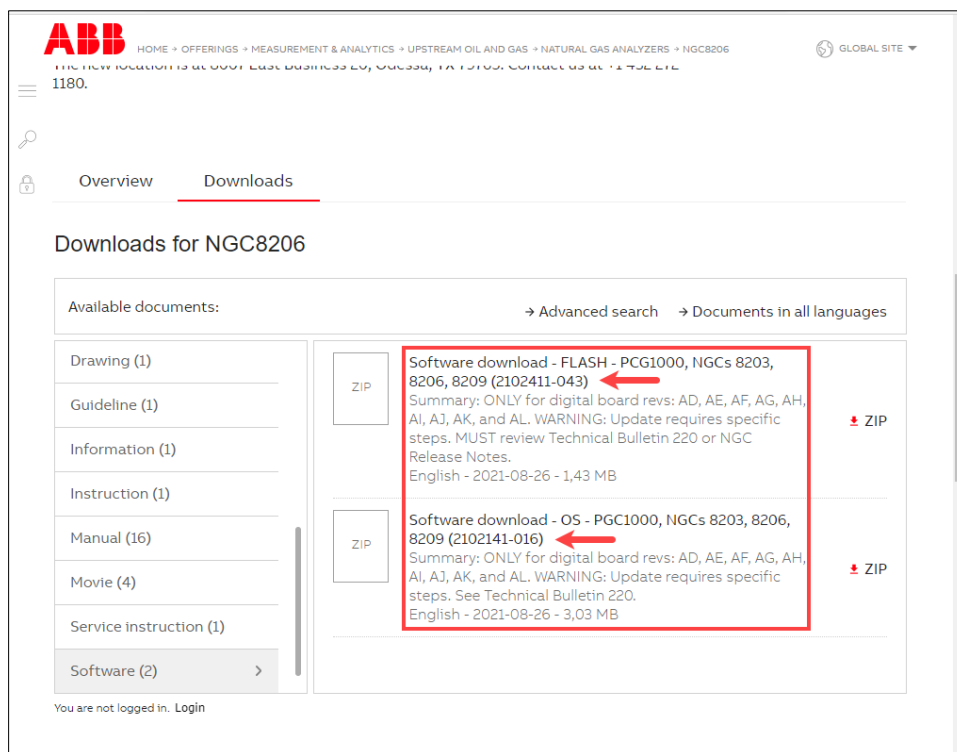
5. On the navigation pane (left), scroll down, select **Software**.

Figure 6-6: Search for software



6. On the list pane (right), select the required software package.

Figure 6-7: NGC software available for download



7. Click **Zip** to download.
8. Save the package if prompted. Select **Save as** to choose the desired location on the local drive. If the file is downloaded automatically, locate it in the Downloads folder in your system.
9. Locate and extract the file from the downloaded Zip file. The extracted file has a .pkg or .ngc extension.
10. Repeat steps 6 through 9 to download each required file.
11. Proceed to section [6.5 Download verification SHA512 files](#), if necessary (optional) or available.

6.5 Download verification SHA512 files (optional)

Perform this procedure only if SHA512 files are available for the packages. These files should be listed with the software packages if they are available. If not, skip the procedure.

For improved security (ensure that your downloaded package is intact), locate and select the specific SHA512 for the package number.

Download this file to your local drive when prompted. Check the files as instructed in Software Package Integrity Check Instructions (2107014MNAA).



IMPORTANT NOTE: The SHA512 file is used to verify that the downloaded software has not been corrupted during download and is valid. This is not required but highly recommended. See section [0](#) [SHA512 Security](#) Feature for more information. The SHA512 file name includes the number and version of the associated package. There is a file for each part number. Make sure you download the SHA512 that matches the software package number you need to check. For assistance downloading software, contact technical support.

7 Update to 2102411-043 and 2102141-016

Make sure that the downloaded Flash and OS files are in the laptop or system used for the upgrade. This procedure applies to device updates to Flash version 2102411-043 and OS version 2102141-016 when the NGC digital board revisions are: AD, AE, AF, AG, AH, AI, AJ, AK, or AL.

Connect directly to the NCG using Ethernet for the update (recommended). Make sure you save the device configuration and data before you begin the update. You will be prompted before the main 32-bit loader screen displays.



IMPORTANT NOTE: Use PCCU 7.70.1 or later. PCCU 7.69, 7.69.1, 7.70, and 7.71 have been discontinued and are no longer supported. If you do not have the latest PCCU, download PCCU software from the ABB library and install it in your system prior to update.



IMPORTANT NOTE: The Flash and OS must be loaded in sequence for these versions. First load the Flash and then load the OS. A partial load of Flash only or OS only may result in loss of device functionality.



NOTICE – Communications using Active Sync will no longer be available after update.

After the software, update the NGC only supports Serial Port (USB) and TCP/IP as communication options.

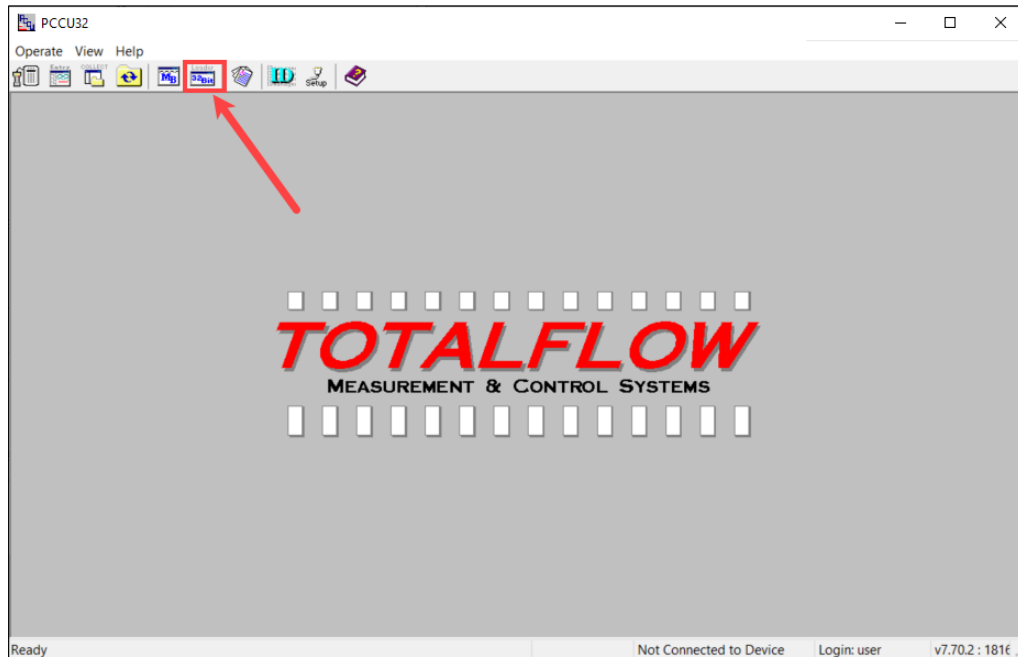
To load software:



IMPORTANT NOTE: If at any point during software loading, the process is interrupted or freezes, verify that the IP address in the Connection field is the address of the device you intend to update. Then, click **Start** to resume loading. Ensure the screen displays the message: Operation complete.

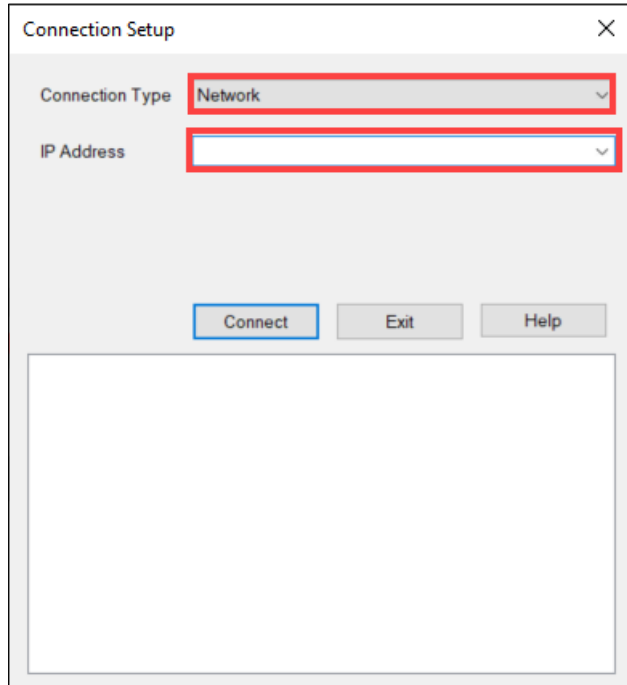
1. Using an Ethernet cable, connect your laptop to the device's Ethernet port. **Direct connection to the NGC's Ethernet port is the recommended connection for software update.** A network connection is not recommended. An update can be interrupted due to network failure or heavy traffic. This can cause a partial update or file corruption which will render the device unusable.
2. If you are connected to the device using the latest PCCU on entry mode, click **Close**.
3. If you are not connected using the latest PCCU, launch the latest version of PCCU.
4. Select the 32-bit loader icon on the PCCU top menu ([Figure 7-1](#)).

Figure 7-1: Select 32-bit loader



5. Click **Yes** at the warning if you have backed up your device data.
6. Connection Setup window ([Figure 7-2](#)):
 - a. Select **Network** in the Connection Type drop-down list. "Network" is the correct option, even though the physical Ethernet is point to point. A point to point connection is recommended for update.
 - b. Type the IP address of the target NGC in the IP Address field.

Figure 7-2: Loader Connection Setup window



7. Click **Connect**. The loader screen displays.



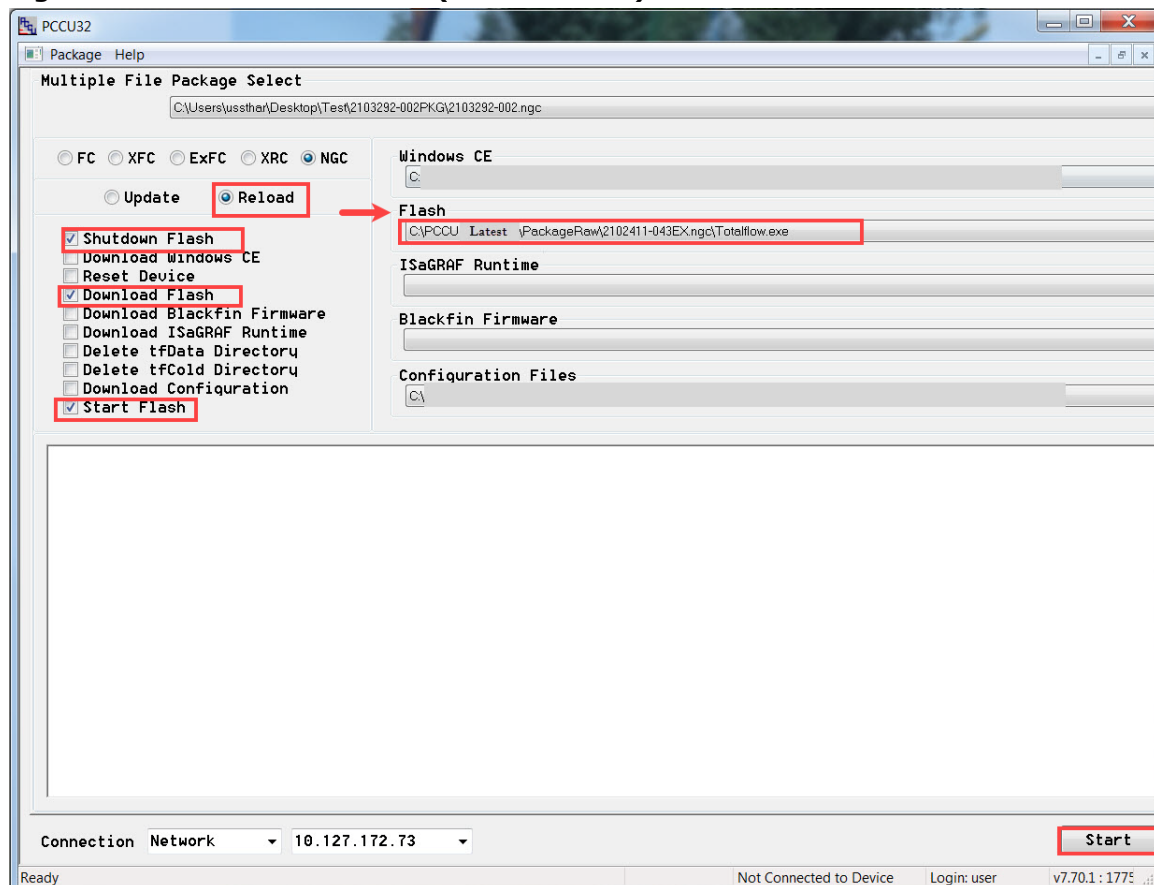
IMPORTANT NOTE: Always verify that, at the bottom left-hand corner of the loader screen, the option: **Network** displays in the **Connection** drop down list and that the IP address is the address of the target NGC. Avoid upgrading the wrong device. Direct connection to the device is always recommended to avoid connecting to the wrong device over a network.

7.1 Load the Flash

Load the Flash first (Figure 7-3):

1. Click the Flash browse button to locate the Flash file in your system.
2. Select the Flash file: 2102411-043EX.ngc
3. Select the Reload button.
4. Select the following reload options simultaneously: Shutdown Flash, Download Flash, and Start Flash.
5. Verify that the IP address in the Connection field is the address of the device you intend to update.
6. Click **Start**.

Figure 7-3: Load the Flash first (2102411-043)



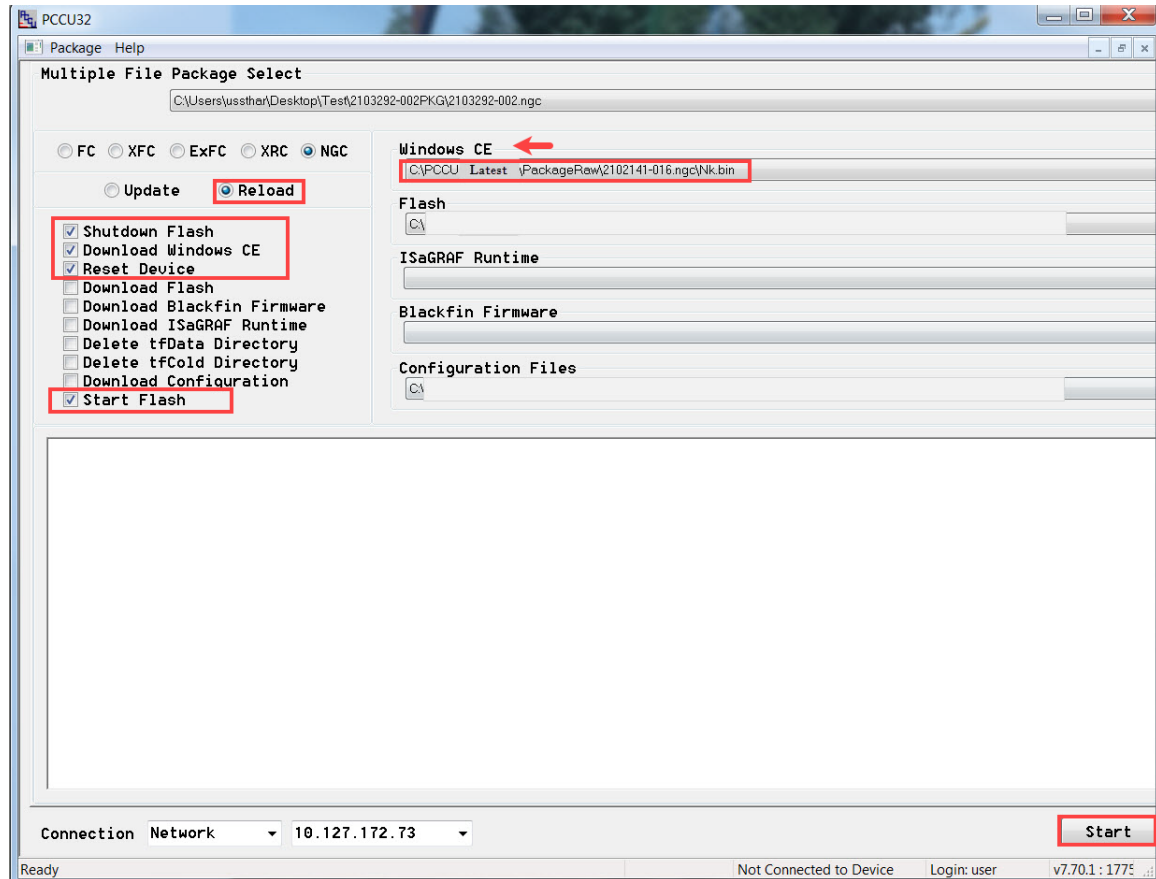
7. Verify that the screen displays the message: Operation complete.

7.2 Load the OS

Load the OS second (Figure 7-4):

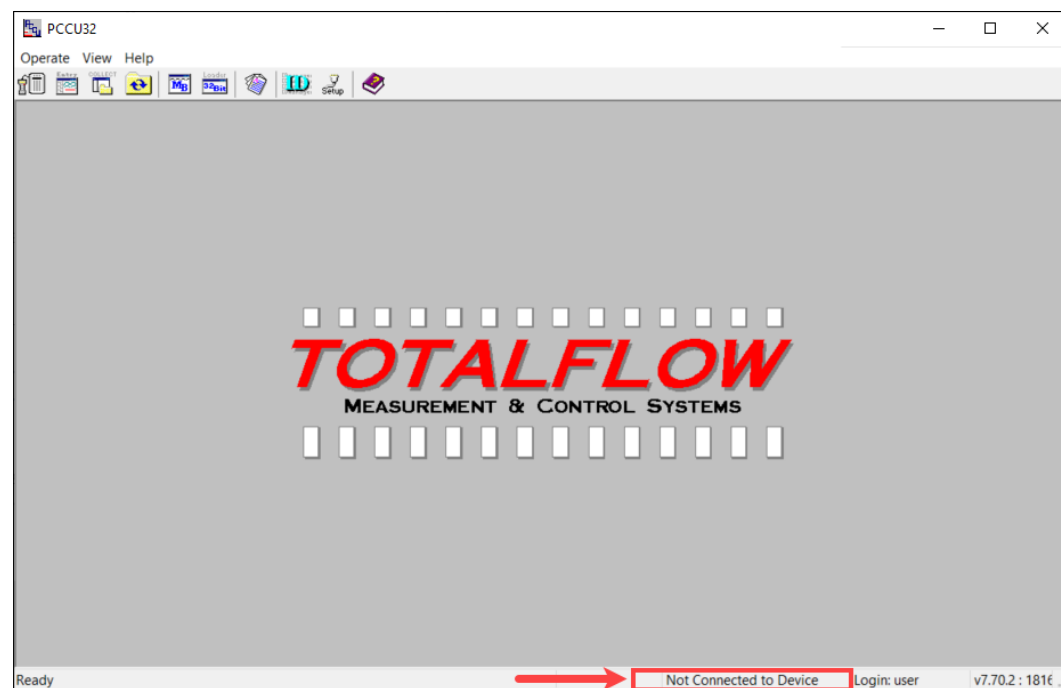
1. Click the Windows CE browse button to locate the Flash file in your system.
2. Select the OS file: 2102141-016.ngc.
3. Select the Reload button.
4. Select the following reload options simultaneously: Shutdown Flash, Download Windows CE, Reset Device, and Start Flash.
5. Verify that the IP address in the Connection field is the address of the device you intend to update.
6. Click **Start**.

Figure 7-4: Load the OS (2102141-016)



7. Verify that the screen displays the message: Operation complete.
8. Click **Close** to exit the 32-bit loader. The connection with the device using Ethernet closes and the home PCCU screen displays (Figure 7-5). Note that there is no connection with the device. Keep PCCU open for next procedure (section [7.3 Verify local communication using Serial Port option](#)).

Figure 7-5: Home PCCU Screen (disconnected from device)



7.3 Verify local communication using Serial Port option

When the update completes successfully, PCCU supports the **Serial Port** communication option for USB-based communication with the NGC. This option must be selected at communication setup. This procedure describes how to set up and verify connection with the NGC using USB communications. Make sure to exit 32-Bit Loader before starting this procedure.

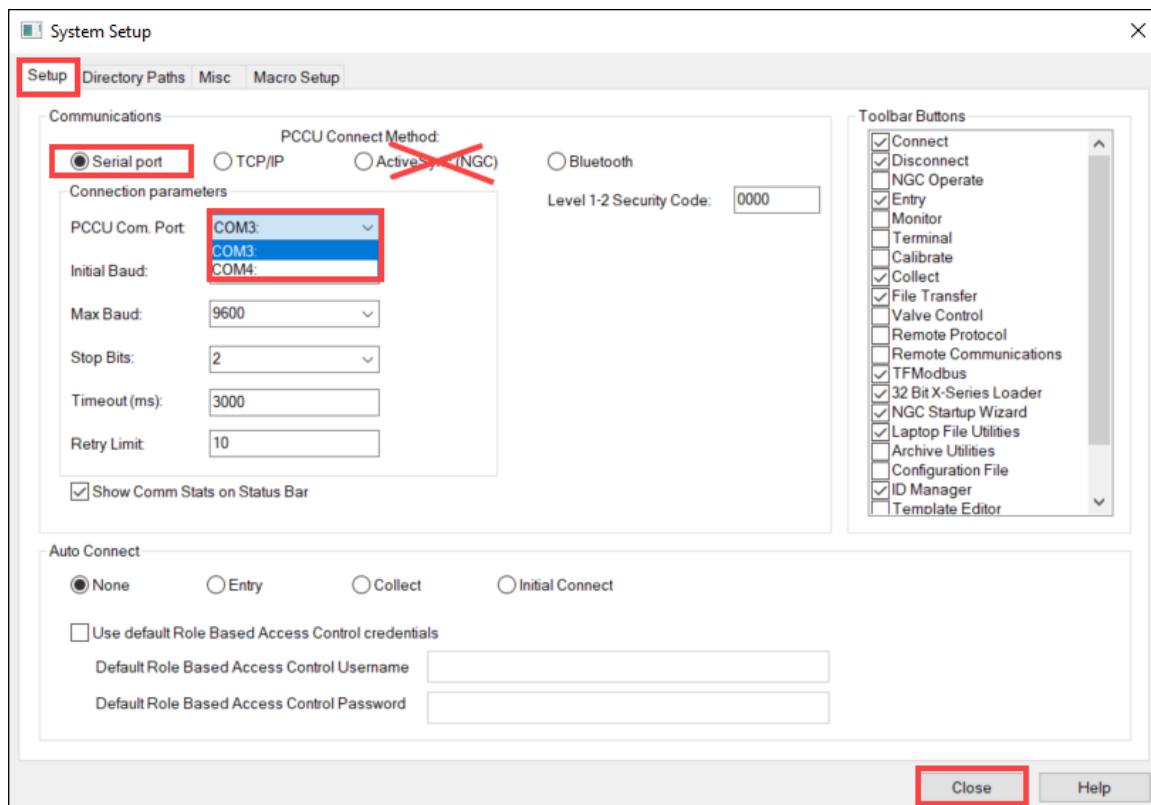


IMPORTANT NOTE: With the new software, Active Sync is no longer the option required for USB-based communication. Active Sync is not supported after the upgrade.

To connect with the NGC using USB (Figure 7-6):

1. Connect the laptop to the NGC's USB port with the appropriate USB cable.
2. Click **Setup** on the PCCU top menu.
3. Select **Serial Port** under Communications.
4. Select the laptop's serial port from the **PCCU Comm port** drop down list.
5. Click **Close** to exit setup.

Figure 7-6: Communication setup for USB



6. Click the Entry icon on the PCCU top menu and verify that the connection with the NGC is successful.

8 Release features

Features or enhancements for each version can be reviewed in this section.

8.1 Flash 2102411-043 and OS 2102141-016

The following new features have been added to the ABB Totalflow NGC software:

- New support for local communication with the NGC (OS):
 - Serial port TF loader service to support: Loader initializes when connecting to the NGC using the serial USB port. This communication option replaces the use of active synch USB communication and the need to utilize the Windows® Operating System mobile device center add-on in the PCCU laptop computer.

- New loader command to update OS registry settings.
 - Bug fix in TCP/IP loader performing multi-file uploads.
- New functions by application (Flash):
- Calculate, store, and collect gas safety calculations (soot index and incomplete combustion factor)
 - Calculate, store, and collect GPA Net Heating Values
 - Calculate and store intermediate working values used in the gas safety equations
 - Emulate calculations (pre-GOST, GPA Liquids, including bug fixes)
 - USB port communication support

9 Fixes

Bug or defect fixes for each version are described in this section.

9.1 Flash 2102411-043 and OS 2102141-016

The following bugs are fixed:

Bug Number	Description	Status
13089	Dual Cal blend not saving	FIXED
13093	Unable to use USB to connect using PCCU installed in Windows 10 OS	FIXED
13426	Gross heating value not accounting for contract temperature	FIXED

10 Known issues and workarounds

Known issues and workarounds are described in the following sections.

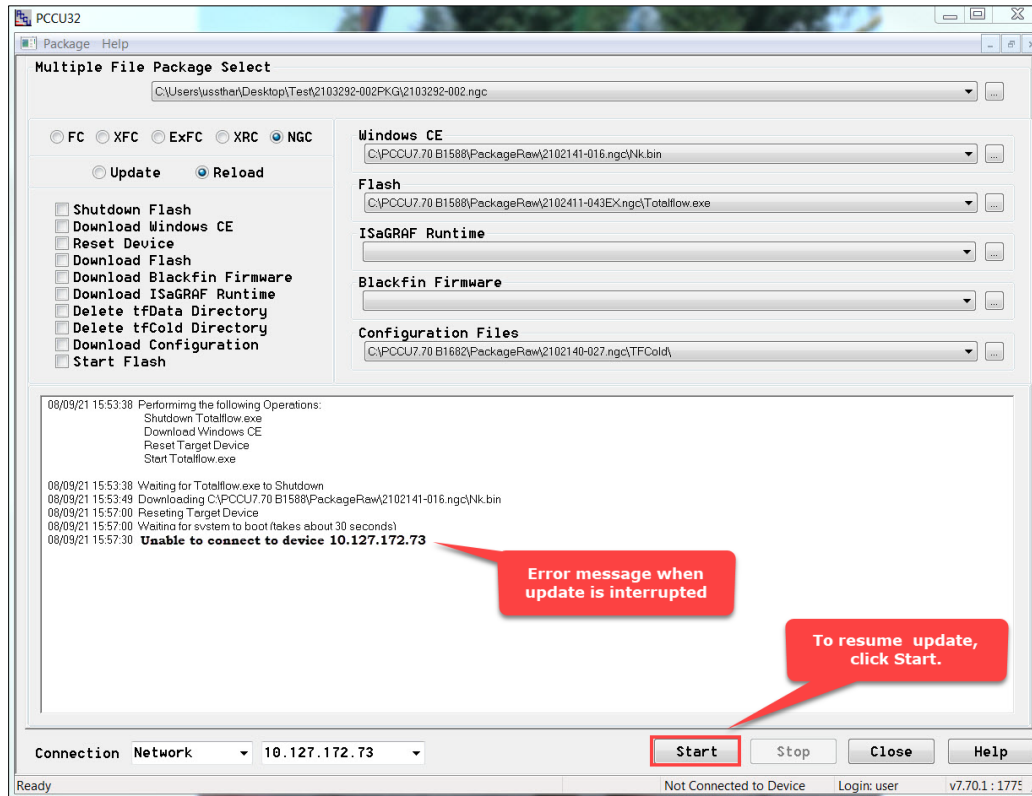
10.1 Software loading stops occasionally

Software loading using the 32-bit Loader may stop before completion. The screen displays the error: "Unable to connect to device <IP address>". See [Figure 10-1](#).

When this happens:

1. Click **Start** to resume software loading.
2. Verify that the loading completes. The screen should display the message: "Operation Complete".

Figure 10-1: Software loading interrupted



11 SHA512 Security Feature

SHA512 is an algorithm used to confirm the integrity of data that is downloaded from a site. ABB is now providing a checksum value for each software package downloaded from the ABB library that allows users to confirm that no data is missing or was changed during the download. A corresponding SHA file is available in the ABB library for all software packages. Please refer to the [Software Package Integrity Check Instructions \(2107014MNAA\)](#) for further information on using SHA512.

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