Delta CONTROLS

Using Flash Loader Version 3.40 Edition 1.6

Legal Notices

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1.60	December 9, 2011	Revised the document for 3.40 to include enteliBUS hardware.

USING FLASH LOADER VERSION 3.40

This document applies to Flash Loader Version 3.40 Release 1.

Overview

Flash Loader updates the supported controller's firmware (controller operating system) by transmitting a file to the flash memory of a controller. The file is a software image consisting of the boot code and the main code which contains the controller operating system. Once the file is transmitted to its flash memory, the controller operates with the new firmware.

As of 2011, supported controllers include DSC, DAC, DCU, BACstatII, enteliTOUCH and enteliBUS.

Note: *You need to save out the database before flashing and then load back in the database after flashing even for minor upgrades to avoid possible problems with database corruption.*

Using Flash Loader Help

The Flash Loader help file contains additional information not included in this short document. Press **F1** on a Flash Loader dialog field for context-sensitive help. Also, press the **? Help** button to open the Overview topic of the help file. The *Common Tasks: What do you want to do?* section of the *Overview* topic contains links to procedures for common tasks.

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Flash Supported Controllers Over a BACnet Network

From a central location, supported controllers can be flashed over the network. You do not have to physically go to the location of each controller and upgrade it using an RS-232 or RS-485 direct connection. To use this approach, at least one controller on the network must be Ethernet capable and communicating with the OWS via Ethernet. You do need to know and enter the address of each individual controller in the network that you want to flash.

As of 2011, supported controllers include DSC, DAC, DCU, BACstatII, enteliTOUCH and enteliBUS. If you are loading a Modbus special interface, see the Adding Modbus Units to a Controller section starting on page 18.

Note: *Only BACstat II Release 4 and newer devices can be upgraded using Flash Loader.*

Preparing to Flash Supported Controllers over a BACnet Network

1. Ensure that all the databases have been backed up.
   You need to save out and then load back in the databases even for minor upgrades to avoid possible problems with database corruption.
2. Use an Ethernet cable to connect your PC to the controller network. (If there is only one Ethernet controller this can be done by using a crossover cable and plugging directly into the controller. If there is more than one Ethernet controller, the connection should be made using a standard straight through Ethernet cable connecting to the controller network through a hub or switch.)

Running Flash Loader

- Click on the Windows **Start** button and select *Program Files\Delta Controls\ORCAview Flash Loader* **or** double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field shows the details of the selected upgrade file.

Firmware Type	File Name Convention	Supported Platforms
V3.30 or newer DSC or DAC	DSC-DAC V3XX B-xxxxx.FLS	DSC/DAC
enteliTOUCH	eTCH V3XX B-XXXX.FLS	enteliTOUCH
enteliBUS	enteliBUS V3XX B-XXXXXX.FLS	enteliBUS

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to the *BACnet Network* option.
3. From the **Adapter** field drop-down list, select the Ethernet adapter that connects the PC to the network of controllers.
4. Leave the **Password** blank unless a password is defined in the Flash Loader Password field on the Configuration tab of the DEV object in the controller. By default, the Password field in the DEV object of the controller is blank.
5. Click **OK**. The Settings dialog closes and the Settings parameters are saved for the next time Flash Loader runs.

Transmitting Upgrade File

1. Verify the settings are correct and that the required upgrade file is selected.
2. Type in the BACnet address of the controller that you want to flash.

Note: *Remember to enter in the full BACnet device address and not just the MAC address. For example, if a system level controller has a device address of 100 and a controller on its subnet has a MAC address of 5, (DIP switches set to 5 or software addressed to 5), then the device address will be 105. This is the address that is displayed in Navigator.*

3. If you would like to know the current firmware version in the device, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.
4. Click the **Program** button.

Note: *Do not disrupt transmission during the programming process. If the transmission is disrupted, you may have to program it again using either a Serial or MS/TP direct connection.*

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which may be preceded by a Deleting/Sending the Boot file stage. Flash Loader auto detects whether the boot file needs to be over-written.

5. When the Status field displays “Update complete”. Close the Flash Loader program.
6. Reload the database.
   The database is automatically upgraded to the new version.

Flash BACstat II Controllers Over a Linknet Network

From a central location, BACstat II* controllers on a Linknet subnet can be flashed over the network. You do not have to physically go to the location of each controller and upgrade it. To use this approach, at least one controller on the network must be Ethernet capable and communicating with the OWS via Ethernet.

Note: *Only BACstat II Release 4 and newer devices can be upgraded using Flash Loader.*

To flash a BACstat II device on a Linknet network, you need to know the BACnet address of the Linknet master device and enter it in the Address field of Flash Loader. Then, check the Linknet address box and set the Linknet address, of the device to be flashed, in the Linknet Address field of Flash Loader.

Preparing to Flash BACstat II Controllers Over a Linknet Network

- Use an Ethernet cable to connect your PC to the controller network. (If there is only one Ethernet controller this can be done by using a crossover cable and plugging directly into the controller. If there is more than one Ethernet controller, the connection should be made using a standard straight through Ethernet cable connecting to the controller network through a hub or switch.)

Note: *For this type of configuration you need to know the device address of the Linknet master device and the Linknet address of the device to be flashed, because you need to enter each individual address into Flash Loader to be able to flash each controller.*

Running Flash Loader

- Click on the Windows Start button and select Program Files\Delta Controls\ORCAview Flash Loader or double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field shows the details of the selected upgrade file.

- For a BACstat II, look for a filename similar to BACstat II R4.0 B-XXXX.FLS.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to the BACnet Network option.
3. From the **Adapter** field dropdown list, select the Ethernet adapter that connects the PC to the network of controllers.
4. Leave the **Password** blank unless a password is defined in the Flash Loader Password field on the Configuration tab of the DEV object in the controller. By default, the Password field in the DEV object of the controller is blank.
5. Click **OK**. The Settings dialog closes and the Settings parameters are saved for the next time Flash Loader runs.

Transmitting Upgrade File

1. Verify the settings are correct and that the required upgrade file is selected.
2. In the **Address** field, type in the BACnet address of the Linknet master of the controller that you want to flash.
3. Check the Linknet Address checkbox and enter the Linknet address of the controller you want to flash in the "Linknet Address" field.
4. If you would like to know the current firmware version in the device, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.
5. Click the **Program** button.

Note: *Do not disrupt transmission during the programming process.*

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which may be followed by a Deleting/Sending the Boot file stage. (Flash Loader auto detects whether the boot file needs to be over-written.)

6. When the Status field displays "Update complete", close the Flash Loader program.

Flash a DSC Controller Using a Direct Serial Connection

3.2x and newer DSC controllers can be flashed using a direct serial (RS-232) connection. DAC controllers cannot be flashed using this method as they do not have an RS-232 port. If you are loading a Modbus special interface, see the Adding Modbus Units to a Controller section starting on page 18.

Preparing to Flash a DSC Controller using a Direct Serial Connection

1. Ensure that the database is backed up, and that the current address DIP switch position is recorded.
   You need to save out and then load back in the databases even for minor upgrades to avoid possible problems with database corruption.
2. Put the DSC in Loader Mode by turning power OFF, putting all address DIP switches to ON and then turn on the power again.*
3. Use a serial cable to connect the RS-232 port on the DSC to your PC COM Port.

Note: *Room Controllers use software addressing so they do not have DIP-switches.*

To place these controllers into loader mode, do the following steps:

- Disconnect power to the Room Controller
- While holding down buttons 1 & 4 (the outside two buttons on the top row) re-connect the power. After a few seconds release the buttons. The controller will now be in loader mode. In Loader Mode a V3 Room Controller LCD screen will display LOADER.

Running Flash Loader

- Click on the Windows **Start** button and select *Program Files\Delta Controls\ORCAview Flash Loader* or double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field shows the details of the selected upgrade file.

- For a V3.30 or newer DSC or DAC, look for a filename similar to DSC-DAC V3XX B-xxxxx.FLS
  In 3.30 the DAC and DSC images were merged into one file and Flash Loader automatically determines which one should be loaded into the device.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to *Standard RS-232* for a DSC.
3. From the ***Port*** field drop-down list, select the PC COM Port you are using.
4. Click **OK**. The Settings dialog closes and the Settings parameters are saved for the next time Flash Loader runs.

Transmitting Upgrade File

1. If you would like to know the current firmware version in the device, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.
2. Click the **Program** button.

Note: *Do not disrupt transmission during the programming process. If the transmission is disrupted, you will have to program it again.*

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which may be preceded by a Deleting/Sending the Boot file stage. Flash Loader auto detects whether the boot file needs to be over-written. The flashing process normally takes 3 minutes for each controller.

3. When the Status field displays “Update complete”, close the Flash Loader program.
4. Power OFF the controller, return the address DIP switches back to their original position and power ON the controller.
5. Reload the database.
   The database is automatically upgraded to the new version.

Flash a DSC/DAC Controller Using a Direct MS/TP Connection

3.2x and newer DSC and DAC controllers equipped with a Service Access port can be flashed using either a direct wired MS/TP connection with a CON-768 or using a wireless Bluetooth connection with a CON-768BT. The CON-768 (direct connection) is an RS-232 to RS-485 converters manufactured by Delta Controls. The CON-768BT is a newer wireless Bluetooth converter manufactured by Delta Controls.

Note: *It is also sometimes possible to recover controllers that have been interrupted partway through a flash upgrade by attempting to re-flash them using this method.*

If you are loading a Modbus special interface, see the Adding Modbus Units to a Controller section starting on page 18.

Preparing to Flash a DSC/DAC Controller Using a Direct MS/TP Connection

1. Ensure that the database is backed up, and that the current address DIP switch position is recorded.
   You need to save out and then load back in the databases even for minor upgrades to avoid possible problems with database corruption.
2. For wireless upgrade using CON-768BT, make sure that the Bluetooth dongle (USB key) is plugged into your computer and you have installed the Bluetooth driver. Refer to the CON-768BT Installation Guide.
3. Disconnect the NET1 RS-485 port from any other controllers.
4. Put the DSC/DAC in Loader Mode by turning power OFF, putting all address DIP switches to ON and then turn on the power again.*
5. Use a CON-768 or CON-768BT and an RJ11 cable to connect to the Service Tool port on the DSC/DAC to your PC COM Port.
6. ***Note:** Room Controllers use software addressing so they do not have DIP-switches. To place these controllers into loader mode, do the following steps:

- Disconnect power to the Room Controller
- While holding down buttons 1 & 4 (the outside two buttons on the top row) re-connect the power. After a few seconds release the buttons. The controller will now be in loader mode. In Loader Mode a V3 Room Controller LCD screen will display LOADER.

Running Flash Loader

- Click on the Windows **Start** button and select *Program Files\Delta Controls\ORCAview Flash Loader* **or** double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field shows the details of the selected upgrade file.

- For a V3.30 or newer DSC or DAC, look for a filename similar to DSC-DAC V3XX B-xxxxx.FLS
  In 3.30 the DAC and DSC images were merged into one file and Flash Loader automatically determines which one should be loaded into the device.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to *Micronet RS-485*.
3. From the ***Port*** field drop-down list, select the PC COM Port you are using. If you are using a PC or laptop with Bluetooth configured for the CON-768BT, you would select a virtual enumerated COM port. Refer to the CON-768BT Installation Guide.
4. Click **OK**. The Settings dialog closes and the Settings parameters are saved for the next time Flash Loader runs.
5. Press the Global button on the main dialog. This button auto detects the address of a single device on a RS-485 network. This button is only available when the Protocol is set to Micronet RS-485

Transmitting Upgrade File

1. If you would like to know the current firmware version in the device, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.

Note: *For wireless upgrade using CON-768BT:* During Query, the Bluetooth LED will turn on and flicker, indicating a Bluetooth connection. The Red Rx and Green TX LEDs will flicker with traffic.

2. Click the **Program** button.

Note: *Do not disrupt transmission during the programming process. If the transmission is disrupted, you will have to program it again.*

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which may be preceded by a Deleting/Sending the Boot file stage. Flash Loader auto detects whether the boot file needs to be over-written. The flashing process normally takes 3-5 minutes for each controller.

3. When the Status field displays “Update complete”, close the Flash Loader program.

4. Power OFF the controller, return the address DIP switches back to their original position and power ON the controller.
5. Reload the database.
   The database is automatically upgraded to the new version.

Flash a V3 DCU to V3

The only way to flash a V3 DCU is to use a direct RS-232 connection to the COM 1 on a DCU. Flash Loader must run on a PC directly connected to a single DCU via an RS-232 connection. The RS-232 cable length should be 6 ft or less. It is not possible to program the firmware of a DCU over a network. Each DCU must be flashed individually.

Preparing to Run Flash Loader

1. Ensure that the DCU database is backed up, and that the current address DIP switch position is recorded.
   You need to save out and then load back in the databases even for minor upgrades to avoid possible problems with database corruption.
2. Put the DCU in Loader Mode by turning power OFF, putting all address DIP switches to ON and then turn on the power again. In Loader *Mode,* the CPU, Scan, User and Prog lights should be ON solid.
3. Use a serial cable to connect COM1 on the DCU to your PC COM Port.

Running Flash Loader

- Click on the Windows **Start** button and select Program Files\Delta Controls\ORCAview Flash Loader **or** double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

- In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field describes the selected upgrade file. For a V3 DCU, look for a filename similar to: DCU V3XX B-xxx.FLS.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to *Standard RS-232* for a DCU.
3. From the **Port** field drop-down list, select the PC COM Port that you are using.
4. Click **OK**. The Settings dialog closes and the parameters are saved for the next time Flash Loader runs.

5. If you would like to know the current firmware version in the DCU, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.
   If query does not succeed, see *Troubleshooting* on page 19 of this document.

Transmitting Upgrade File

1. Click the **Program** button.

Caution: Do not disrupt transmission during the programming process. If the transmission of the Boot sector is disrupted, re-connection to the DCU will no longer be possible, and you will have to return it to Delta Controls.

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which may be preceded by a Deleting/Sending the Boot file stage. Flash Loader auto detects whether the boot file needs to be over-written.
  The flashing process normally takes three minutes. As the new firmware is being transmitted the CPU, Scan and Prog LEDs on the DCU controller board will be ON solid and the User LED will blink On and Off.

2. When the Status field displays “Update complete”, close the Flash Loader program.
3. Put the address DIP switches back into the original position.
4. Reload the database.
   The database is automatically upgraded to the new version.

Flash a V2 DCU to V3

The only way to flash a V2 DCU is to use a direct RS-232 connection to the COM 1 on a DCU. Flash Loader must run on a PC directly connected to a single DCU via an RS-232 connection. The RS-232 cable length should be 6 ft or less. It is not possible to program the firmware of a DCU over a network. Each DCU must be flashed individually.

Preparing a V2 DCU for Flashing to V3

1. Ensure that the DCU database is backed up, and that the address DIP switch position is recorded.
2. Ensure that the DCU hardware and I/O boards are capable of running V3 firmware before proceeding with the upgrade.
3. Put the DCU in Loader Mode by turning power OFF, putting all address DIP switches to ON and then turn on the power again. In Loader Mode the CPU and User lights should be ON solid.
4. Install the Flash Loader software key that is needed for V2 to V3 upgrades.
5. Use a serial cable to connect COM1 of the DCU to your PC COM Port.

Running Flash Loader

- Click on the Windows Start button and select Program Files\Delta Controls\ORCAview Flash Loader **or** double click on the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

- In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field describes the selected upgrade file. For a V3 DCU, look for a filename similar to: DCU V3XX B-xxx.FLS.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to *Standard RS-232* for a DCU.
3. From the **Port** field drop-down list, select the PC COM Port that you are using.
4. Check the **Update from V2** checkbox.
5. Click **OK**. The Settings dialog closes and the parameters are saved for the next time Flash Loader runs.

6. If you would like to know the current firmware version in the DCU, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.
   If query does not succeed, see *Troubleshooting* on page 19 of this document.

Transmitting Upgrade File

1. Click the **Program** button.

Caution: Do not disrupt transmission during the programming process. If the transmission of the Boot sector is disrupted, re-connection to the DCU will no longer be possible, and you will have to return it to Delta Controls.

- Flash Loader transmits the new firmware to the controller. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Boot file stage followed by a Deleting/Sending the Main file stage.
  The flashing process normally takes three minutes. As the new firmware is being transmitted the CPU, Scan and Prog LEDs on the DCU controller board will be ON solid and the User LED will blink On and Off.

2. When the Status field displays “Update complete”, close the Flash Loader program.
3. Put the address DIP switches back into the original position.
4. Load a suitable Version 3 database into the controller.

Note: *If you are finished flashing V2 DCUs, remember to power OFF the PC and replace the parallel port Flash Loader software key with the ORCAview software key in order to run the OWS again. (A USB port software key can be added or removed without powering down the PC.)*

Flash a V2 DAC/DSC to V3

It is possible to flash a single DAC/DSC such as a V2 DAC25x (Room Controller) using a MicroNet RS-485 connection, but in most cases it is preferable to use a serial RS-232 connection.

Preparing to Run Flash Loader

1. Ensure that the database is backed up.
2. Install the Flash Loader software key that is needed for V2 to V3 upgrades.
3. Put the DAC25x into Loader Mode by holding down the top left and top right buttons when the controller is powered up.
4. Use a serial cable to connect COM1 on the DAC25x to your PC COM Port.
5. When you flash a DAC25x from V2 to V3, the hardware does **not** have to be upgraded or changed. You need to purchase a Flash Loader software key when you upgrade V2 firmware to V3.

Running Flash Loader

- Click on the Windows Start button and select Program Files\Delta Controls\ORCAview Flash Loader **or** double click the ORCAview Flash Loader icon on the desktop.
  The Flash Loader dialog box opens.

Selecting an Upgrade File

- In the **Filename** dropdown list, select the required file. Press the browse button to select a file that is in a different location. The Upgrade File Details field shows the details of the selected upgrade file. Look for a filename similar to: DSC-DAC V3XX B-xxxxx.FLS.

Changing the Connection Settings

1. Click the **Settings** button.
2. On the Settings dialog, set the **Protocol** to *Standard RS-232*.
3. From the **Port** drop-down list, select the PC COM Port that you are using.
4. Click **OK**. The Settings dialog closes and the parameters are saved for the next time Flash Loader runs.
5. If you would like to know the current firmware version in the device, click the **Query** button.
   Before Querying, you must select an upgrade file type that conforms to the controller platform so that Flash Loader will use the proper Query method. Flash Loader displays the current Version and Build number of the firmware in the Device Details field.

Transmitting Upgrade File

1. Click the **Program** button.

Caution: Do not disrupt transmission during the programming process. If the transmission of the Boot sector is disrupted, re-connection to the DAC25x will no longer be possible, and you will have to return it to Delta Controls.

- Flash Loader transmits the new firmware. The Status and Progress fields indicate the current upgrade operation. Upgrade operations include a Deleting/Sending the Main file stage which will be preceded by a Deleting/Sending the Boot file stage. Flash Loader auto detects whether the boot file needs to be over-written.

Note: *If upgrading DACs from V2 to V3 using either a direct RS-232 or RS-485 connection, there may be times when the Boot finishes loading and a timeout occurs just before the Main file is loaded. When this happens the DAC needs to be reset back into loader mode even if it appears to be OK. With the DAC in loader mode, click the program button again and the main file loads and completes the upgrade from V2 to V3. Only one paid upgrade is used despite the timeout.*

2. When the Status field displays “Update complete”, close the Flash Loader program.

Note: *If you are finished flashing a V2 controller, remember to power OFF the PC and replace the parallel port Flash Loader software key with the ORCAview software key in order to run the OWS again. (A USB port software key can be added or removed without powering down the PC.)*

3. Load a suitable version 3 database into the controller.

Adding Modbus Units to a Controller

enteliBUS, DSC and newer DAC controllers with 8Mbit or more of flash can have the Modbus special interface loaded into them in the field. Newer DAC controllers have 8 Mbit of flash (4 Mbit previously) and 512 Kbytes of SRAM (256 Kbytes previously).

Products that support the Modbus firmware can have more than one Modbus unit connected to the controller. You can increase the number of connected Modbus units as needed. The maximum number depends on the controller type.

As of Mid 2011, only DSM_RTR, DSM-T0B and eBMGR can have up to 30 Modbus unit, but the rest of the Modbus supported controllers can have up to 5.

The Flash Loader can flash a suitable enteliBUS/DSC /DAC controller with a Modbus special interface using:

Ethernet connection: See p 4. Flash Supported Controllers Over a BACnet Network

Direct Serial connection: See p 8. Flash a DSC Controller Using a Direct Serial Connection

Direct MS/TP connection: See p 10. Flash a DSC/DAC Controller Using a Direct MS/TP Connection

Important Notes

- Controllers must be upgraded to V3.30 Release 2 (or newer) before the Modbus special interface can be added.
- To add the Modbus firmware or additional Modbus units to a controller, a valid Flash Loader hardware key must be attached to the PC. Adding Modbus units to a controller decrements appropriate credits on the hardware key, just as credits are decremented if the controller does not already have the Modbus special interface firmware.
- If a V3.22 controller with a Modbus special interface is upgraded to V3.3X or 3.4x. the special interface will be lost in the upgrade. You can however reload the Modbus special interface back into the controller using the procedure detailed below, which will use up credits on the hardware key. Another option would be to send the controller back to Delta Controls for an RMA upgrade.
- To obtain further status information on the Flash Loader hardware key and how many credits it takes per type of upgrade, right-click on the loader icon in the top left of the dialog and then click on Flash Costs.

Adding Modbus Units

1. Ensure a valid Flash Loader hardware key (for V3.30 Release 3 or newer) has been attached to the PC, with sufficient credits. The key needs to be installed to access additional Modbus settings.
2. Run the V3.30 Release 3 version (or newer) of Flash Loader.
3. Select and load a valid V3.30 Release 2 (or newer) DAC/DSC/enteliBUS upgrade file into Flash Loader.
4. Select the Enable Features checkbox on the Flash Loader main window. This will expand the window below to include extra fields for adding Modbus units to a controller. If the Flash Loader hardware key is installed and you do not get these options, then the controller does not support upgrading to Modbus capability.
5. Press the Query button to determine the settings in the current controller.
6. Set the Modbus Units to Add to Device field to the desired value. This represents the number of new units you wish to add to any that may already exist in the controller.

Note: *The maximum value allowed in this field is limited by internal fixed settings in the current controller.*

7. Press the Add Features button to add Modbus units to the current controller.

Note: *If the current controller does not have the Modbus special interface in it already, the controller firmware will be upgraded first using the current firmware file, then the Modbus special interface will be automatically loaded into the controller, along with the number of units you selected, and the appropriate number of credits on the hardware key will be decremented in the process.*

Flash CON-768BT Firmware

The CON-768BT supports upgrading its own firmware using Flash Loader. It must be connected to an Ethernet controller, and then flashed like an MS/TP subnet controller.

Upgrading the CON-768BT firmware

1. Plug the CON-768BT into an Ethernet controller Service Tool port., and then connect the Ethernet controller to the PC via Ethernet.
2. In Flash Loader Settings, choose options to allow connection to the Ethernet controller, using the BACnet Network protocol setting and appropriate Network Adapter.
3. Using a paper clip or similar, press the Reset button through the Reset hole on the back of the CON-768BT device. Look for the Status LED to briefly turn off then back on, confirming a Reset. This button resets the CON-768BT to a special Flash Loader mode

NOTE: *Pressing the Reset button enables loader mode and the CON-768BT responds to Flash Loader for a 2 minutes period. The CON-768BT Bluetooth passcode is also reset to the factory default 0000 (four zeros).*

4. In the main Flash Loader window, choose an address of 127.
5. Select the correct CON-768BT firmware and click Query.
6. When the Status Query field displays Query Complete, click Program to complete the firmware upgrade.

Troubleshooting

If the transmission was disrupted during flashing over a BACnet network:

- If flashing over a network, you may not be able to Query the controller even though the boot sector is OK. For a DAC/DSC, try querying the controller using a serial (RS-232 / RS-485) connection to verify the integrity of the main image file. For a BACstat II Release 4 or newer controller, try changing the Address field to the MAC address of the device that failed, and do another query.

If the transmission to a BACstat II over Linknet was disrupted during flashing:

If flashing over a network, you may not be able to Query the controller even though the boot sector is okay. For a BACstat II Release 4 or newer controller, change the "Address" field to the MAC address of the device that failed, uncheck the "Linknet Address" checkbox and try the query again.

Controller did not flash over Ethernet when an address was entered:

- Remember to enter in the full BACnet device address and not just the MAC address. If the System controller address is 100 and the controller MAC address is 5, then the device address will be 105

If there are problems flashing over a direct serial (RS-232) connection:

- Ensure that the RS-232 serial cable is less than 6 feet long.
- Disconnect modem serial cables and Ethernet cables from the controller.
- If problems persist in flashing a controller in the field, then remove the controller from its location, and flash it at a less noisy place. In some cases, the controller may be located near a large electrical cable or electrical equipment that gives off electromagnetic radiation which interferes with flashing over a serial cable.
- Check the RS-232 connection. Is the RS-232 connection hooked up to COM1 on the DCU/DSC?
- Make sure that the **COM Port** selected in the Port/Network field of the Settings dialog is the PC COM Port that the device is connected to.
- Make sure the **Protocol** on the Settings dialog is set correctly. Use Standard RS-232.
- Are all the DCU/DSC address DIP switches set to ON during flashing? Is the controller in flash mode?
- Try clearing the controller's database with the Run/Clear Jumper.

- Make sure the Update from V2 checkbox on the Settings dialog is checked or unchecked depending on the Version of firmware currently in the controller. (Checked for V2 and unchecked for V3)

If the transmission was disrupted during flashing:

- To tell if a DCU's Boot sector is corrupt, power off the DCU and put it into Flash Mode. If the lights are barely lit when power is applied to the DCU then that means the Boot sector is corrupt. Contact Delta Controls Customer Solutions at (604) 574-9444 as soon as possible.
- If transmission of the Main sector is disrupted, the firmware will not be complete and the DCU will not function properly. If this happens, you will have to repeat the whole flashing process over again. Flash Loader will not be able to recognize the firmware on the device and it will cost a paid upgrade to Flash in the new image file.

If the DCU baseboard is not working after an upgrade from V2 to V3:

- Turn the DCU power on and off several times.
- Flash the DCU again with the baseboard attached to the DCU. There is no charge for a V3 to V3 flash.