Flash Wizard Programming Instructions for XL200 Controllers

Updated 5.12.2012

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Required Equipment

- Windows PC or laptop computer
- "Straight-through" RS232 programming cable (or USB-to-RS232)
    - No longer than 6' (1.8 M)
    - RS232 pintout
        - 2 – 2
        - 3 – 3
        - 5 – 5
- XL200 Series machine controller
- 24VDC Power

XL200 Series Software and Hardware Versions

The XL200 Series machine controller can be field flashed with new software versions, and it can be flashed with different software models. The software model and version supported by any XL200 controller depends on the hardware revision of the unit.

As products are developed, tested, and then subjected to the realities of a manufacturing environment - improvements are made in terms of reliability and performance. New features and functions desired by customers are added and refined.

The process of evolving hardware is tracked by a Revision Letter at AMS Controls. In terms of the XL200 Series machine controller, there is a CPU Board Revision Letter and an Input/Output (I/O) Board Revision Letter. The CPU board dictates the highest software version supported by a particular unit, and the I/O board revision indicates whether the unit supports open loop software, closed loop software, or both.

Rev. A & B I/O boards could only support open loop or closed loop, but not both. This means if you own a XL200 controller with a Rev. A or Rev. B I/O board, you must have AMS change out the board in order to go from open loop to closed loop software, or closed loop to open loop software.

All I/O boards Rev. C and later support both open loop and closed loop software. You need only flash the unit with the desired software model.

| CPU Board Hardware Revision	Software Version
Rev. A & B	V1 & 2
Rev. C	V3
Rev. D	V4

Latest Release by Version

Software versions 1 and 2 are no longer supported or developed. Versions 3 and 4 are currently supported and are being developed concurrently for most features. Some features will show up in

version 4 software that will never be available in version 3 software, due to the limitations of the older hardware revision (this was also the case between v2 and v3).

Major Software Version Number	Final Release Version
V1	V1.11 (open loop models), V1.13 (closed loop models)
V2	V2.71.01 (all models)
V3	Check with AMS for latest version
V4	Check with AMS for latest version

What does the software version number mean?

Software versions are expressed as 3 sets of numbers separated by "points" (.). The first number refers to the *major software version* and often ties the version to a specific hardware revision. The second number is a *major release version*. Every so often, the Engineering Department at AMS generates a "new release" that includes any new developments, features, functions and bug fixes since the last release. The last number is a *maintenance release version*, usually created in situations where a customer is experiencing a serious bug that affects production, or has paid for a new feature that they desire immediately.
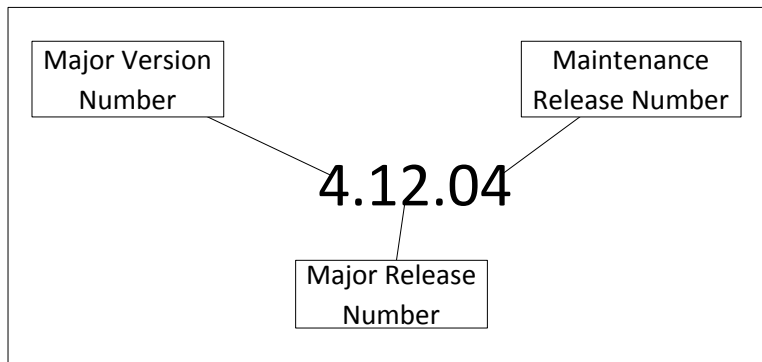
Software Version Breakdown

XL200 Series Software Flashing Procedure

Before attempting to flash a XL200 Series machine controller, users must contact AMS Controls for the appropriate flash file. The Flash Wizard software will usually be included in what is sent, or it can be downloaded from the AMS Controls website.

In order to create a flash file, AMS Technical Support Specialists must know the hardware version, current software model, desired software model, software version, and serial number of the controller to be flashed. Often, the Specialist can find most of this information with only the serial number of the controller, assuming adequate records have been kept and updated.

XL200 controllers currently loaded with Version 1 software can only be tracked by serial number in terms of their hardware revisions. Version 1 software did not display the controller's hardware information to the user.

Version 2 and higher software models display all their pertinent information in a single menu – Diagnostics\System Information. Normally, only the software model and serial number will be required by the Specialist at AMS. If records were lost or improperly updated, a digital picture of the System Information screen showing the Model, Serial Number, and hardware revision numbers might be required.

XL200 System Information Menu

When the flashing software and new flash file are received, the flash file name should match the new software model, version and serial number. For instance, XL212_v3_45_01_sn7505.FMF.

Flashing Software by Revision and Version

Different software versions and hardware revisions have slightly different procedures. Please verify your specific hardware and software versions to be sure you're using the correct procedure.

Authorization codes were always required by the original **XL200 Flash Program** software. Later, **Flash Wizard** was created and would often allow the user to program the XL200 Series machine controller without the need for an authorization code.

Flash Wizard does not require an authorization code if the software model does not change. That is, if the controller's software version is the only change, no code is required. If the software model will change with the flash, the user will be required to contact AMS Controls for an authorization code, unless AMS was contacted for the flash file, originally. Technical Support Specialists can embed the controller's serial number in the flash file so that **Flash Wizard** will not prompt for an authorization code.

V1& V2 Software for Rev. A Hardware

The first hardware generation of XL200 Series controllers required a different flashing program in order to change controller software model. The **XL200 Flash Program** was required, and this program ***always*** required the user to get an authorization code from AMS Controls. The code could not be generated ahead of time. The user must begin the flash process at the controller, receive a "flash code", contact AMS Controls with that code, and wait for an authorization code to be generated and sent back.

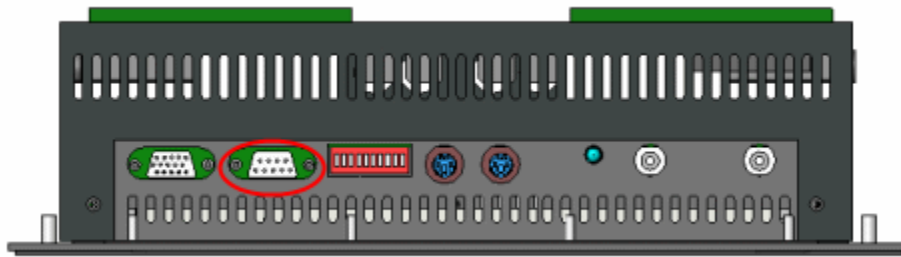To flash a controller with Rev. A hardware:

<p style="text-align:center;color:red;">***WARNING***</p>

On Rev. A hardware models, the controller <u>must not lose power</u> or <u>lose communication with the laptop</u> during this process. If this occurs, you might not be able to recover and the unit will have to be shipped to AMS Controls to be re-flashed.

1. Remove power from the XL200 Series machine controller.
2. If the XL200 is on an Eclipse network, disconnect the B connector from the back of the XL200 controller before continuing with the flash process.

3. Connect the laptop to the XL200 using the RS232 cable. The laptop should be plugged into AC power. Most laptops switch to a "low power" mode when running on battery power. This can interfere with Com Port communication.

   The RS232 cable should plug into the 9 pin port on top of the XL200 controller.

RS232 Port

4. Start the XL200 Flash Program software. It will probably state "Comport not open", since the software defaults to COM 2, and most laptops do not have a COM 2.
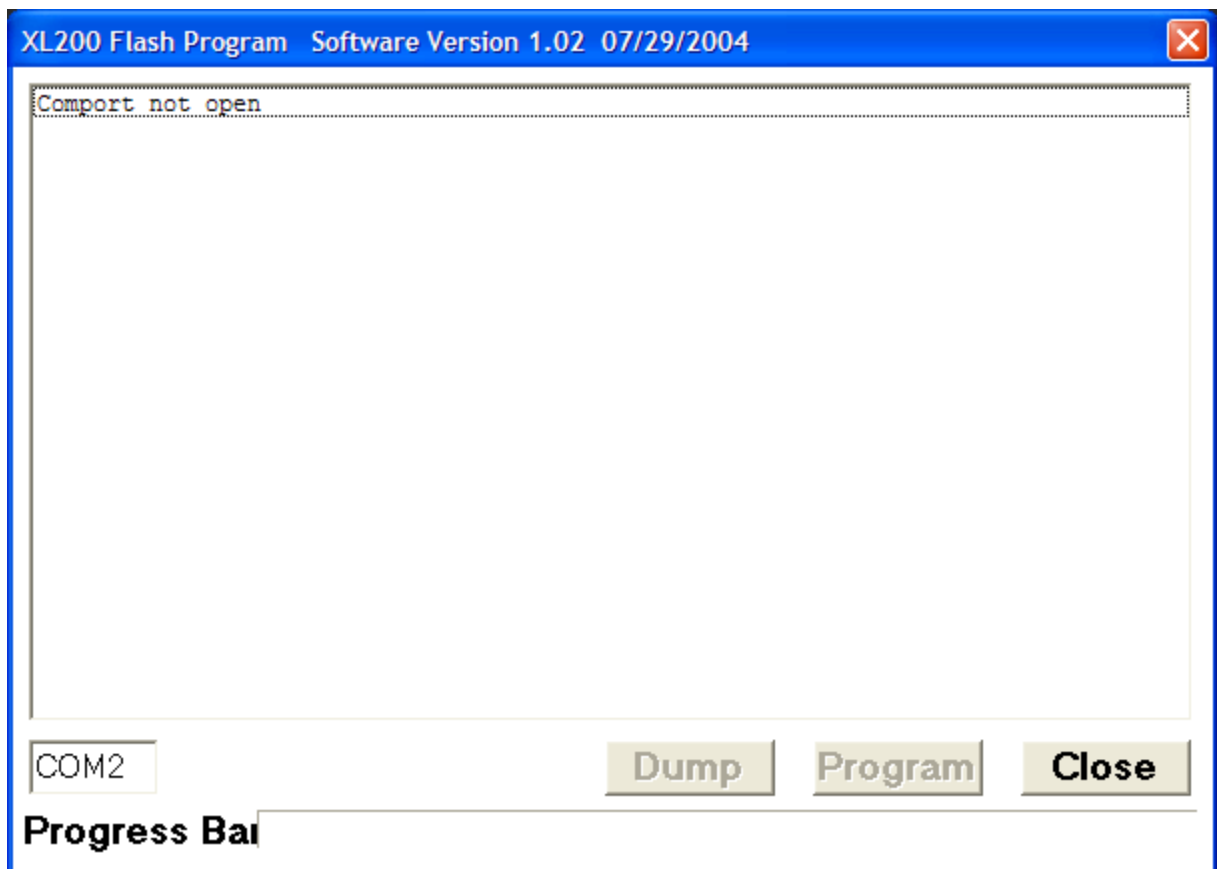

XL200 Flash Program Software

5. Using the textbox in the lower left-hand corner, change the com port to an existing port on the laptop and press the Tab key on the laptop keyboard.
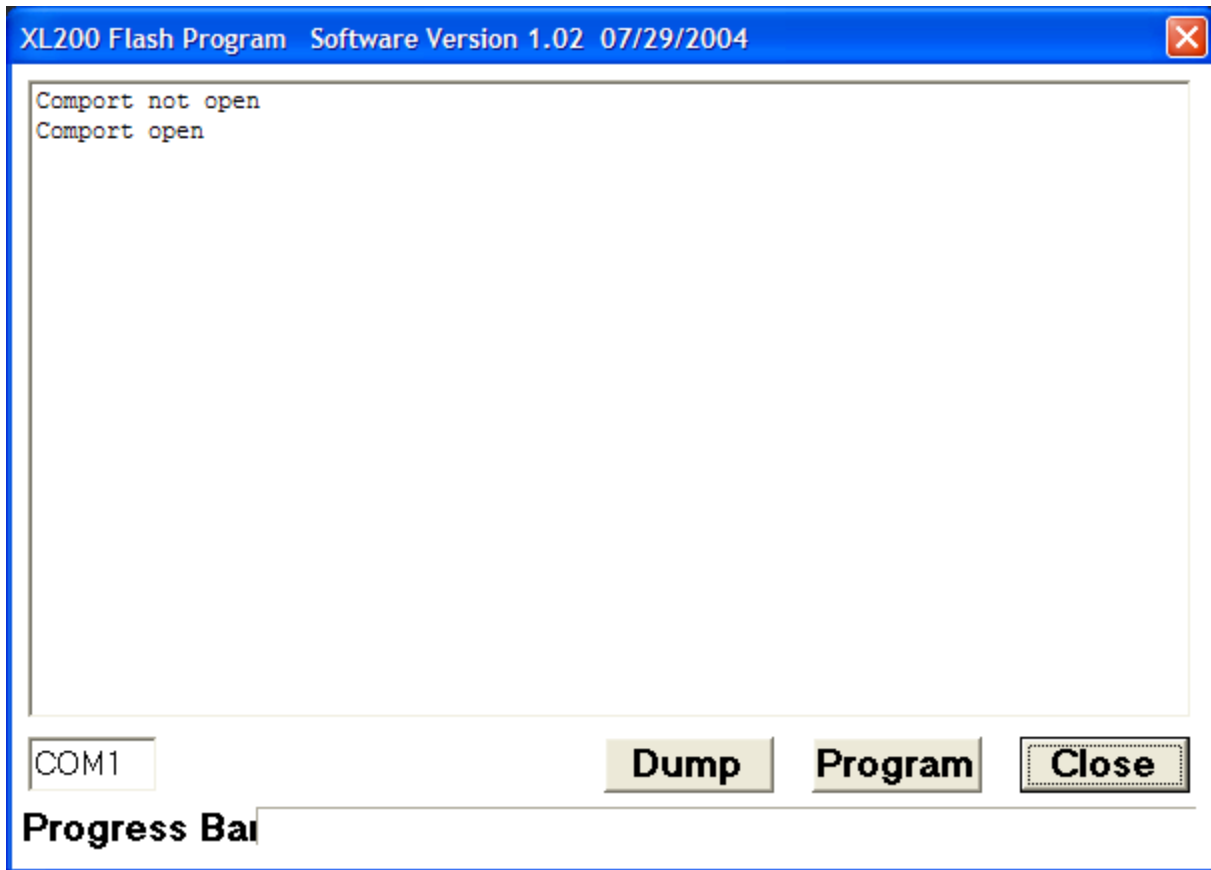
Flash Program Software Pointed to Valid Com Port

6. On the XL200 Series controller, turn DIP switch 10 to the ON position. This puts the XL200 into Program Flash Memory mode the next time it's powered up.
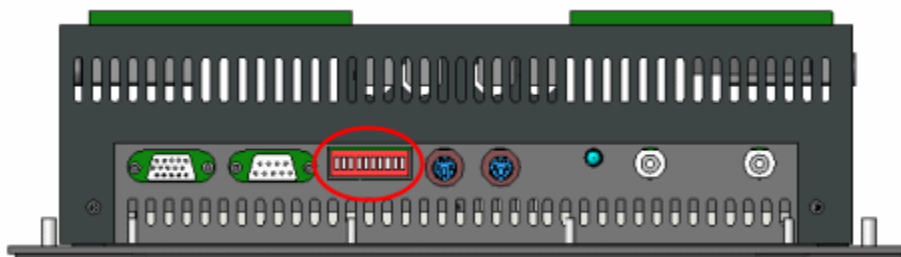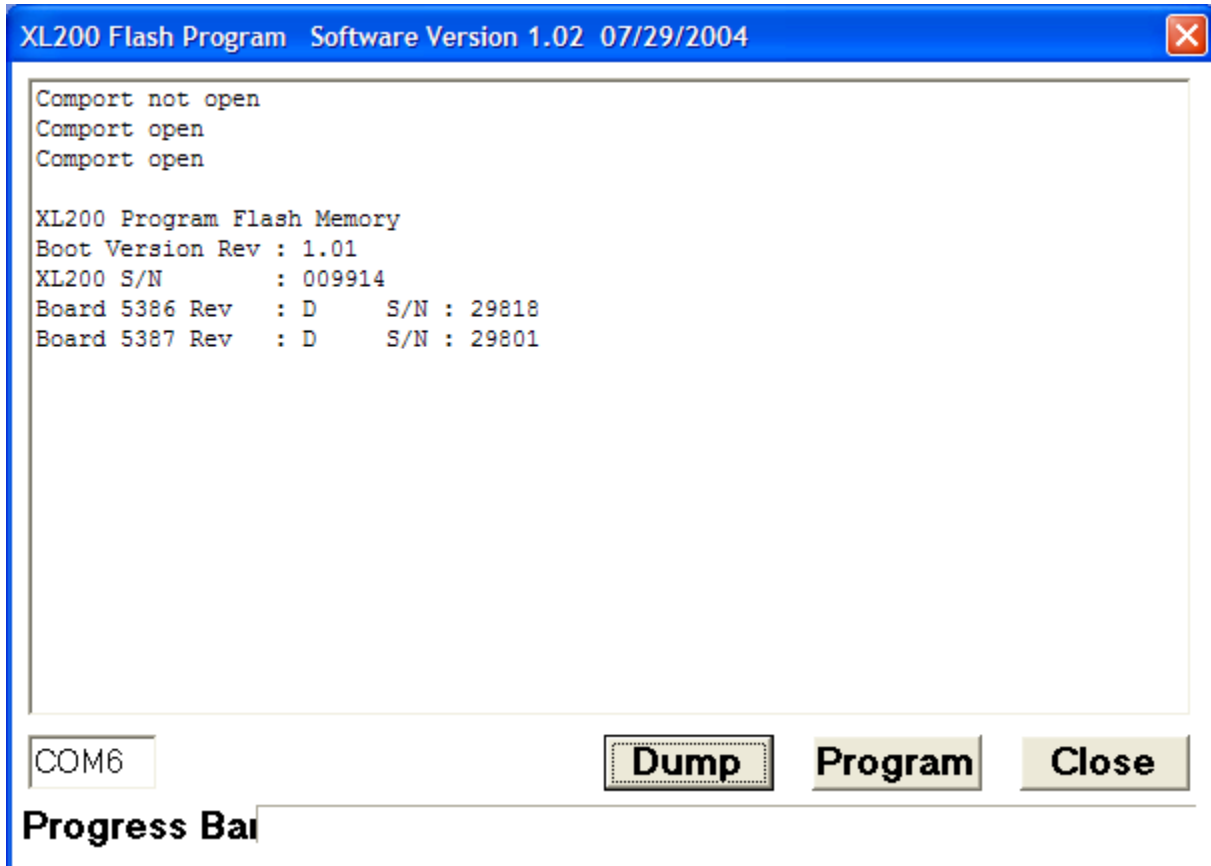

DIP Switches on Top of XL200

7. Apply 24 VDC to the XL200 CPU inputs (A1, A2). The XL200 should power up with a blue screen with white lettering that reads "XL200 Program Flash Memory". Whatever appears on the XL200 screen should also appear in the XL200 Flash Program software screen, indicating the laptop and XL200 are connected and communicating with each other.

   Note: The information in the following screenshot might not exactly match the data you see displayed on your laptop. This is normal.

XL200 Flash Program   Software Version 1.02 07/29/2004

```
Comport not open
Comport open
Comport open

XL200 Program Flash Memory
Boot Version Rev : 1.01
XL200 S/N        : 009914
Board 5386 Rev   : D      S/N : 29818
Board 5387 Rev   : D      S/N : 29801
```

COM6   Dump   Program   Close
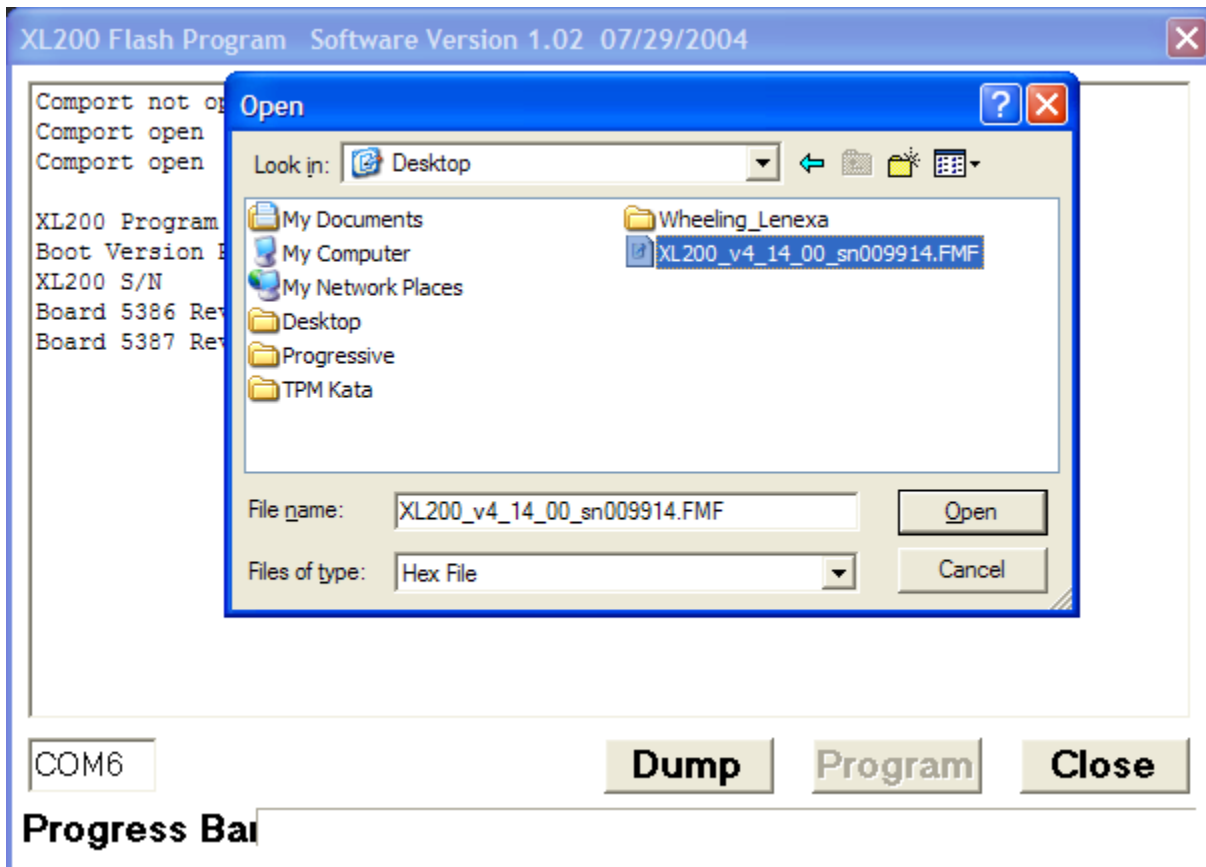
Progress Bar

Controller Connected and Communicating to Software

8. Click the Program button. The software will present the Open dialog box so that the correct flash file can be selected.
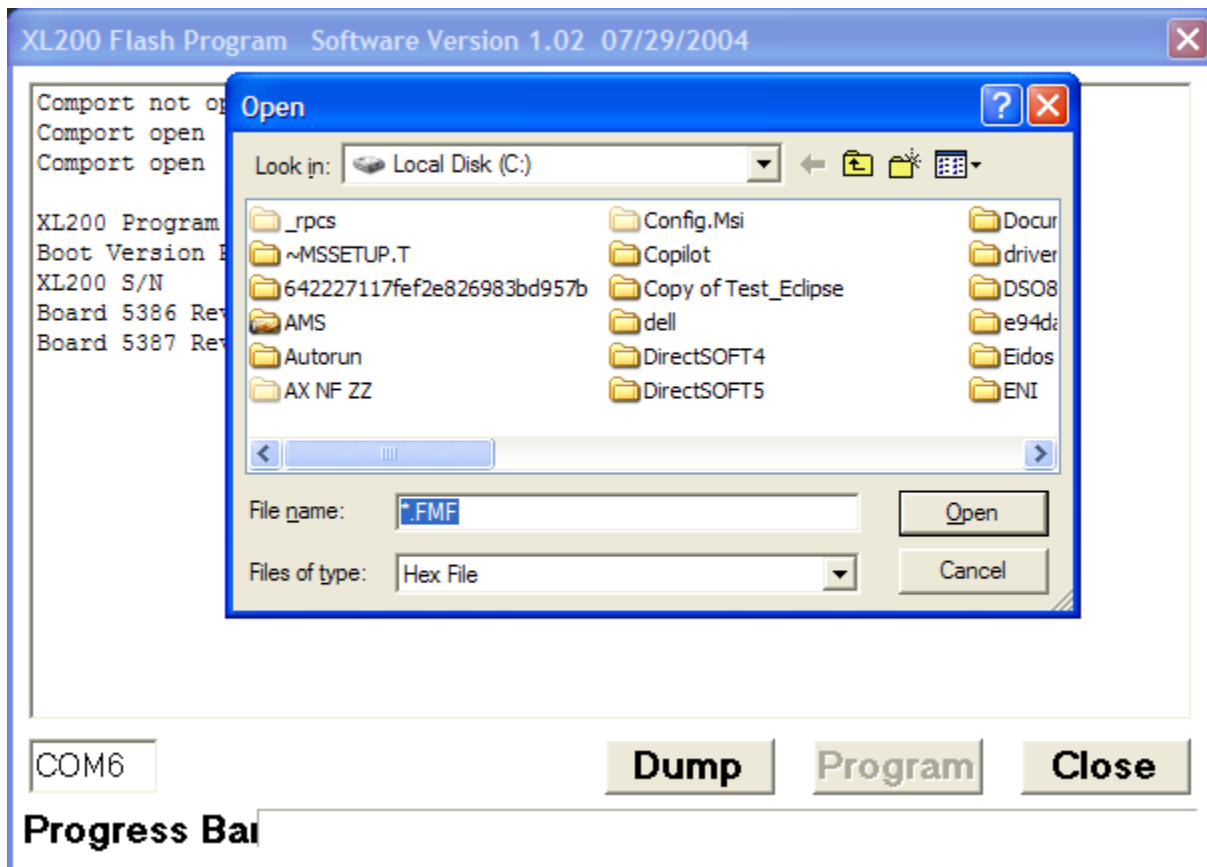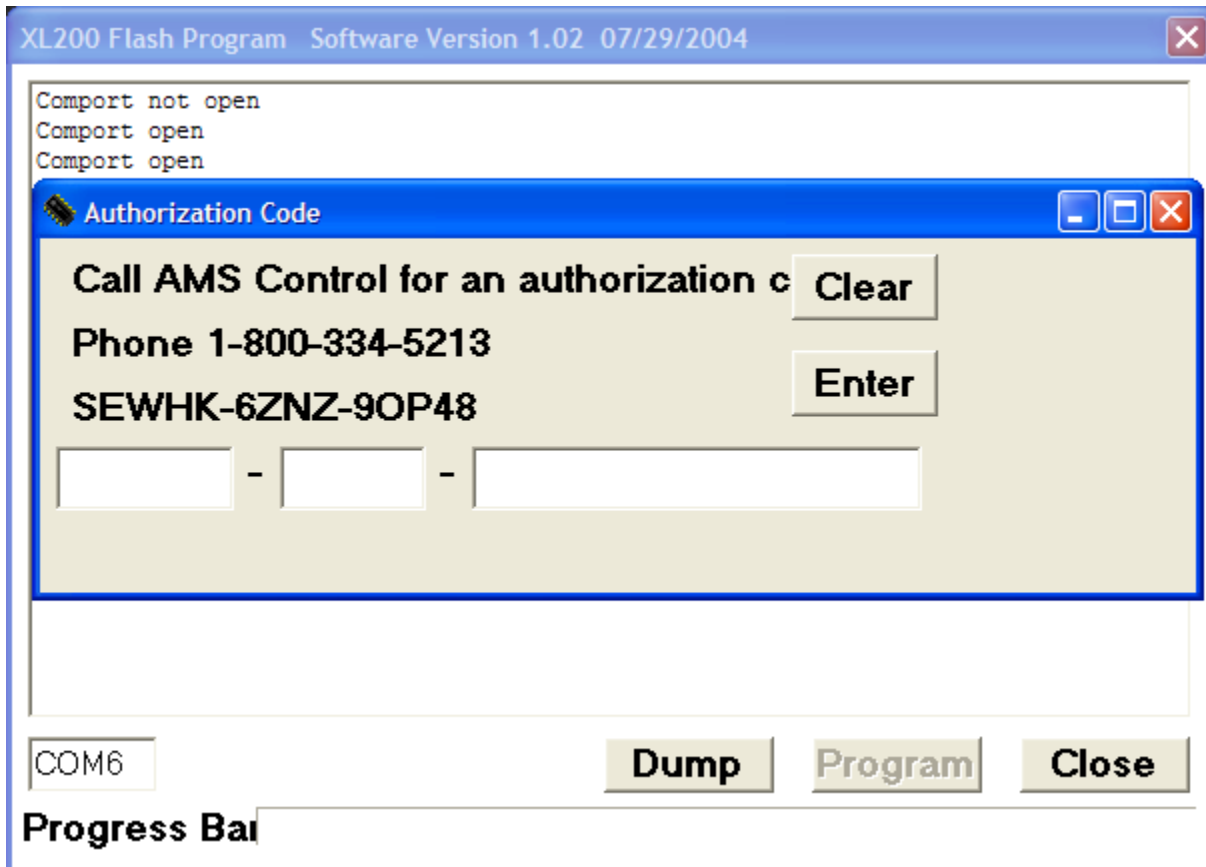

Open Dialog Allows Correct Flash File to be Selected

9. Navigate to the desired flash file and select it through the Open Dialog box.
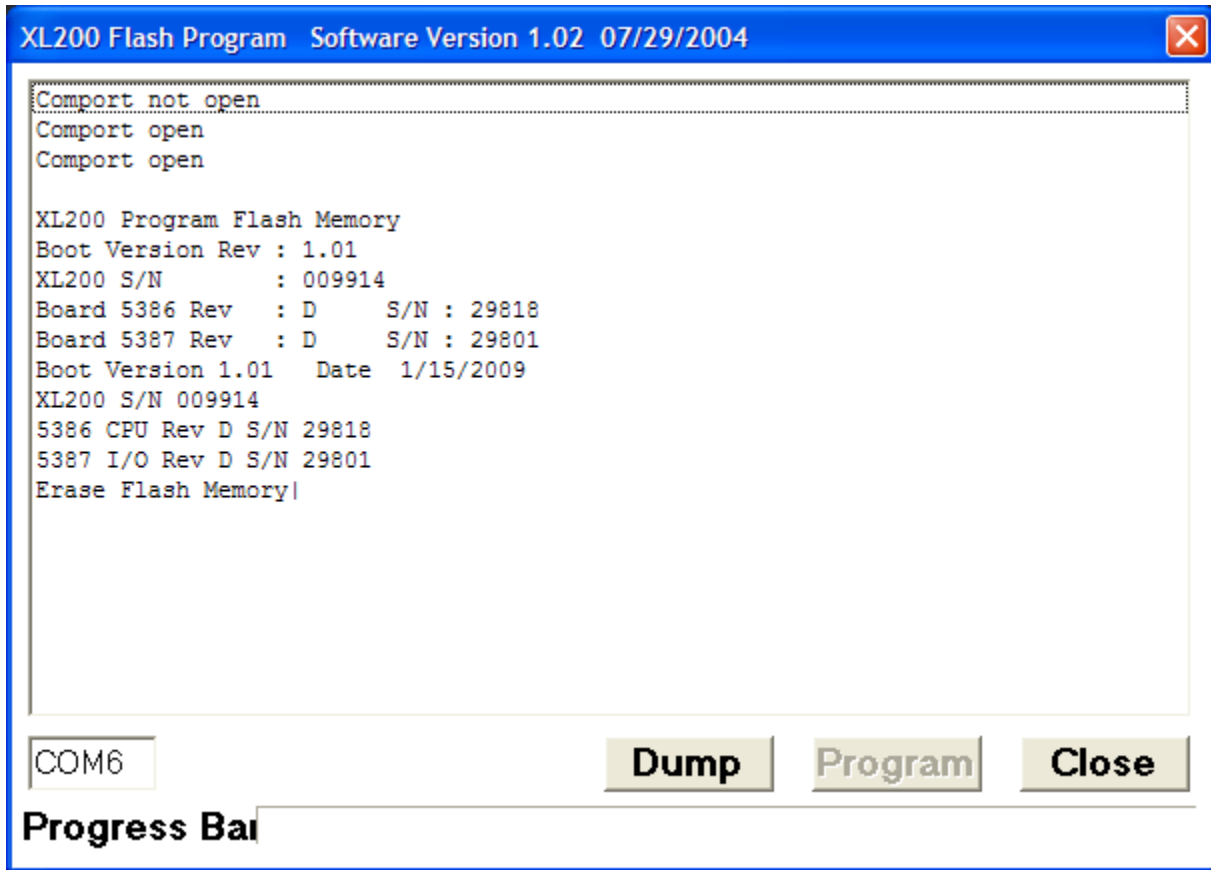

Flash File Selected and Ready to Open

10. Click the Open button. The XL200 Flash Program should immediately display a code, and is now waiting for an Authorization Code.
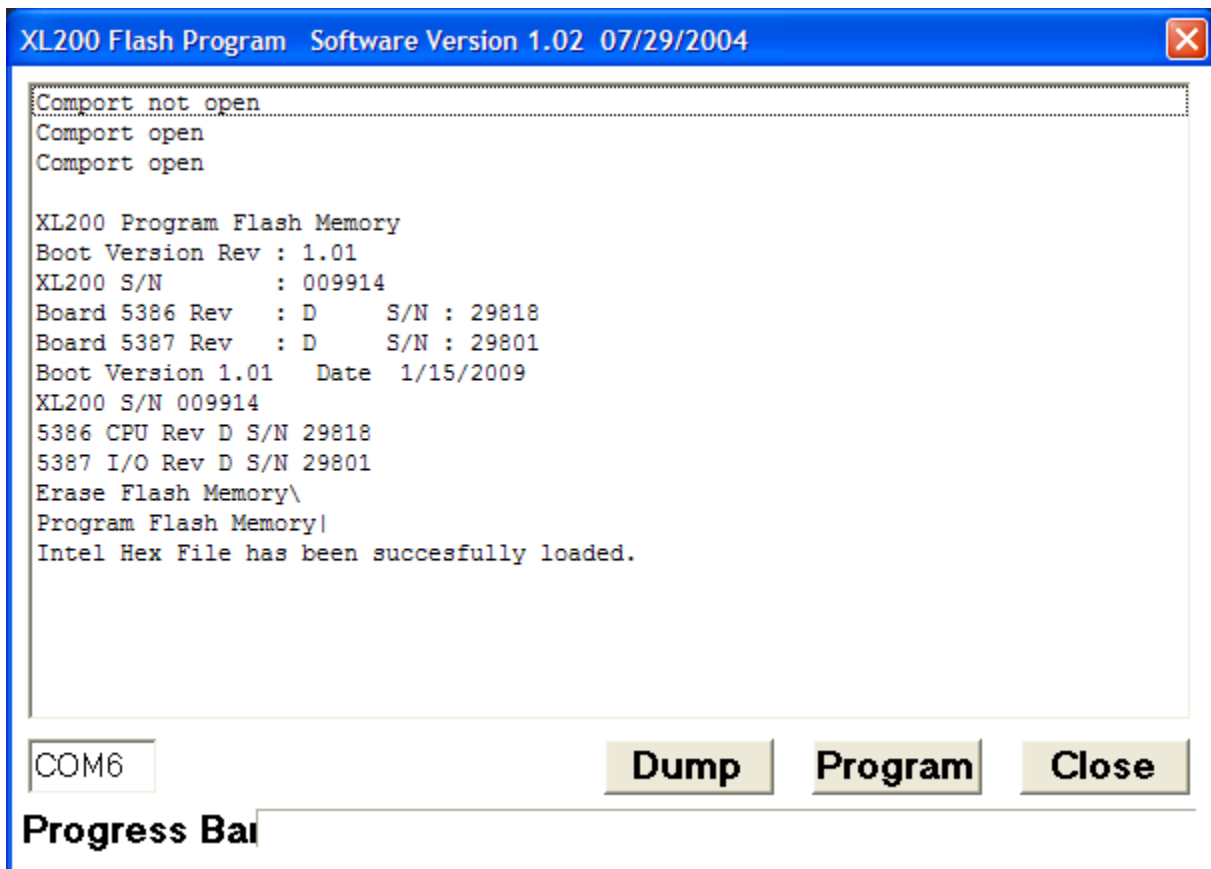

Code Required to Generate Authorization Code

11. Contact AMS Controls for the return authorization code. Enter the authorization code in the text boxes provided and click the Enter button. The flash process should begin. It typically takes about 20 minutes to complete programming.

```
XL200 Flash Program  Software Version 1.02 07/29/2004          ✕

Comport not open
Comport open
Comport open

XL200 Program Flash Memory
Boot Version Rev : 1.01
XL200 S/N        : 009914
Board 5386 Rev   : D      S/N : 29818
Board 5387 Rev   : D      S/N : 29801
Boot Version 1.01   Date  1/15/2009
XL200 S/N 009914
5386 CPU Rev D S/N 29818
5387 I/O Rev D S/N 29801
Erase Flash Memory|




COM6                         Dump   Program   Close
Progress Bar
```

Erasing Flash Memory before Programming New File

12. Once the flash process is complete, the message "Intel Hex File has been successfully loaded." At this point, the XL200 Flash Program software can be closed.

XL200 Flash Program   Software Version 1.02 07/29/2004

```
Comport not open
Comport open
Comport open

XL200 Program Flash Memory
Boot Version Rev : 1.01
XL200 S/N        : 009914
Board 5386 Rev   : D     S/N : 29818
Board 5387 Rev   : D     S/N : 29801
Boot Version 1.01   Date  1/15/2009
XL200 S/N 009914
5386 CPU Rev D S/N 29818
5387 I/O Rev D S/N 29801
Erase Flash Memory\
Program Flash Memory|
Intel Hex File has been succesfully loaded.
```

COM6   Dump   Program   Close

Progress Bar

Flash Programming Completed

13. Turn off power to the XL200 controller.
14. Disconnect the RS232 programming cable from the controller.
15. Re-connect the B connector if it was removed in Step 5.
16. Turn off DIP switch 10 on the top of the controller.
17. Turn on power to the controller. Answer whatever on-screen prompts are required to fully boot the unit to the Status menu.
18. Turn controller power off.
19. Press and hold the number "5" key on the keypad. While holding the "5" key down, re-apply power to the unit. Continue holding the "5" key until the following message is displayed:
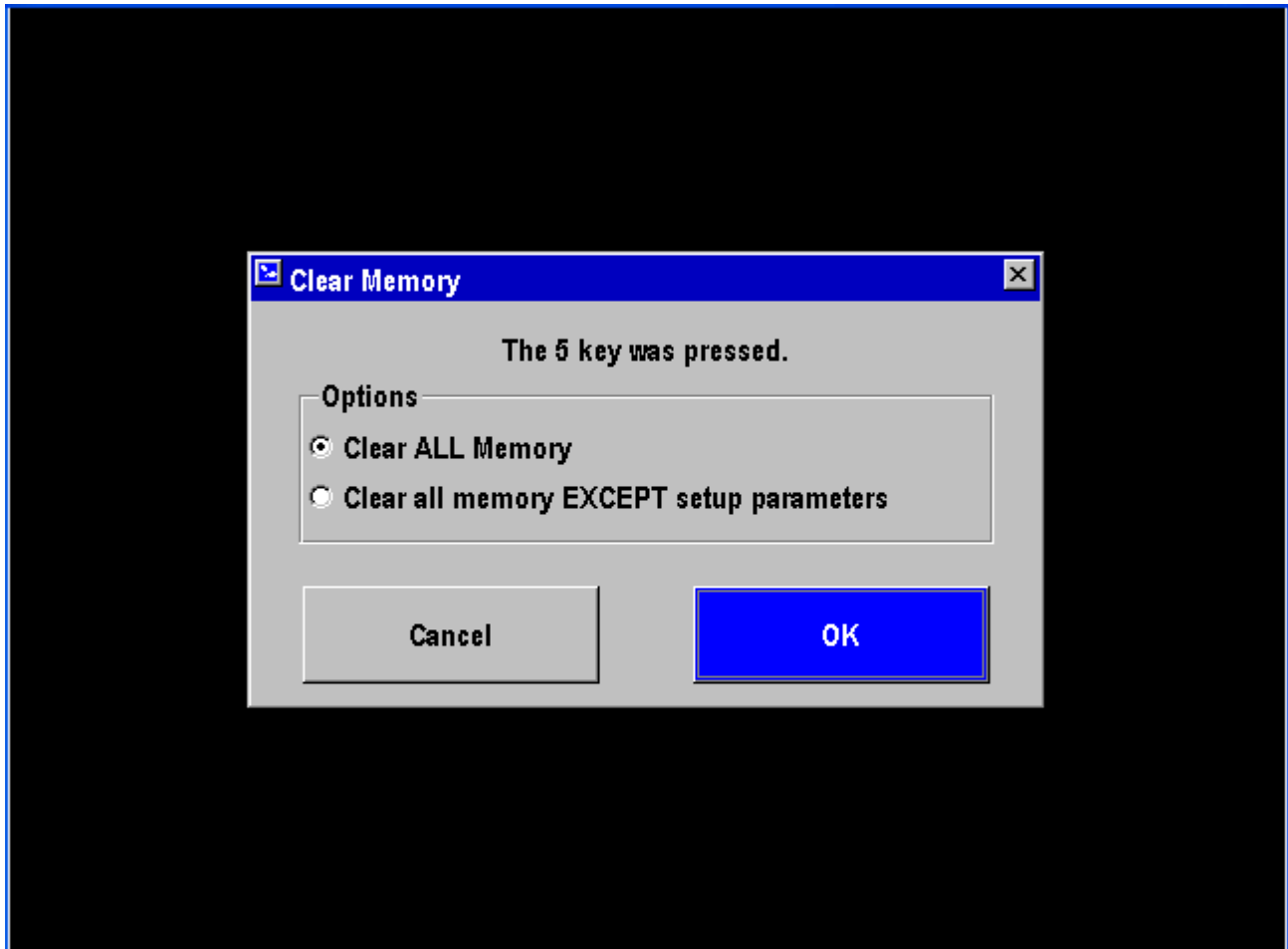
Clearing Memory after Flashing

20. Select the option for "Clear ALL Memory" and navigate to the OK button. Press the Enter key on the keypad.
21. Once the controller reboots, re-enter the unit's Eclipse data and let Eclipse download parameters, jobs, etc. into the controller. If the XL200 is not connected to Eclipse parameters, jobs, etc. must be re-entered by hand.

V1& V2 Software for Rev. B Hardware

XL200 Series machine controllers with Rev. B hardware could be flashed with v1 or v2 software using the **Flash Wizard** program from AMS Controls. **Flash Wizard** is free software that can be downloaded from the AMS Controls website. Typically, a Technical Support Specialist will include a copy of **Flash Wizard** with the file to be flashed into the controller.

When using **Flash Wizard**, a Technical Support Specialist can embed the unit's serial number in the flash file when it's created. If this is done, the user will not be required to obtain an authorization code from AMS Controls. If this is not done, the user must begin the flash process in order to receive an authentication code. This code is given to a Technical Support Specialist who will generate the authorization code.
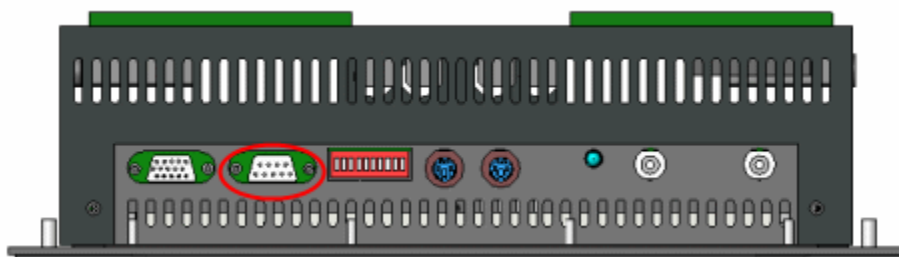
To flash a controller with Rev. B hardware:

*****WARNING*****

On Rev. B hardware models, the controller <u>must not lose power</u> or <u>lose communication with the laptop</u> during this process. If this occurs, you might not be able to recover and the unit will have to be shipped to AMS Controls to be re-flashed.

1. Remove power from the XL200 Series machine controller.
2. If the XL200 is on an Eclipse network, disconnect the B connector from the back of the XL200 controller before continuing with the flash process.
3. Connect the laptop to the XL200 using the RS232 cable. The laptop should be plugged into AC power. Most laptops switch to a "low power" mode when running on battery power. This can interfere with Com Port communication.
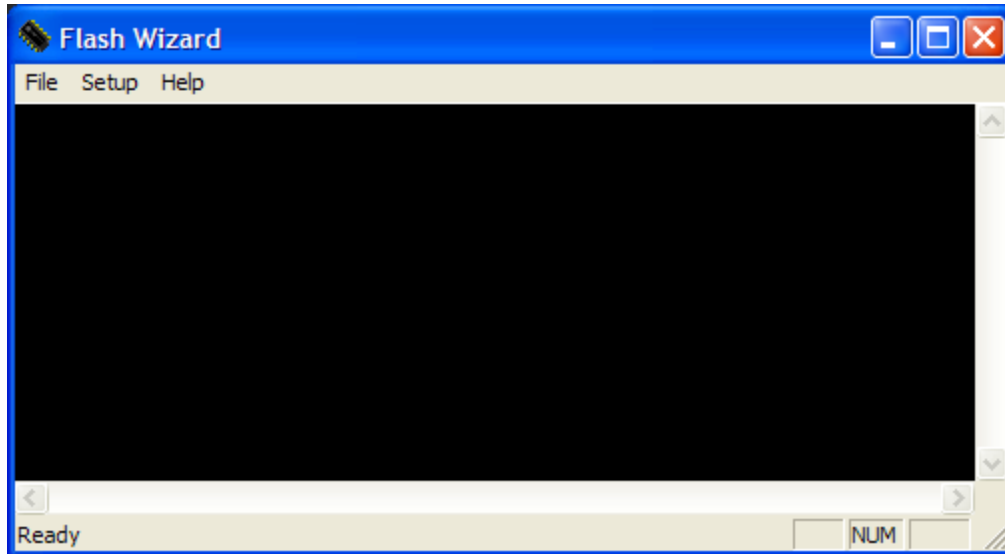
    The RS232 cable should plug into the 9 pin port on top of the XL200 controller.
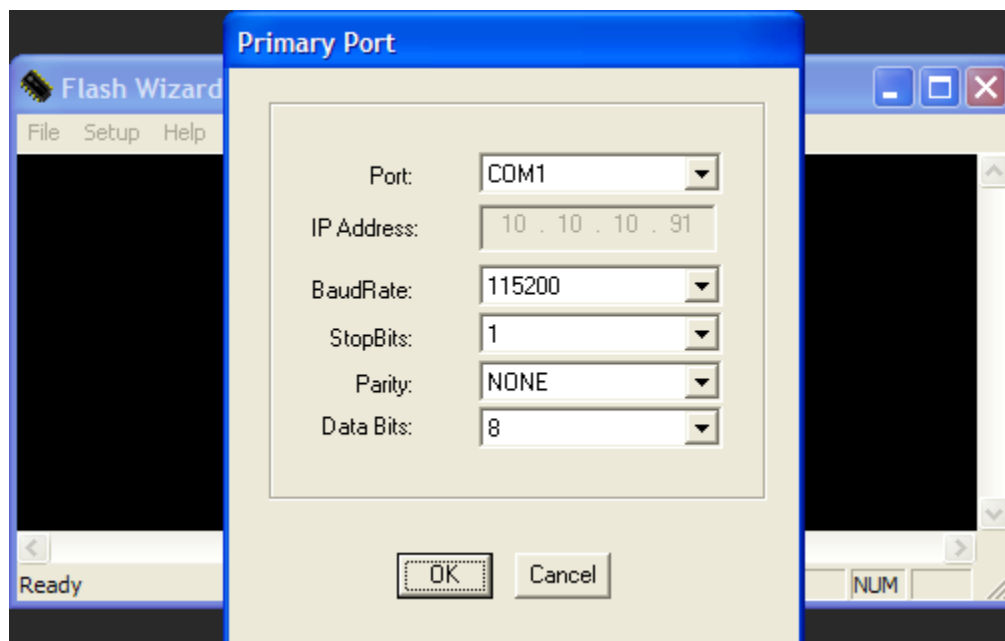

RS232 Port

4. Start the Flash Wizard software.
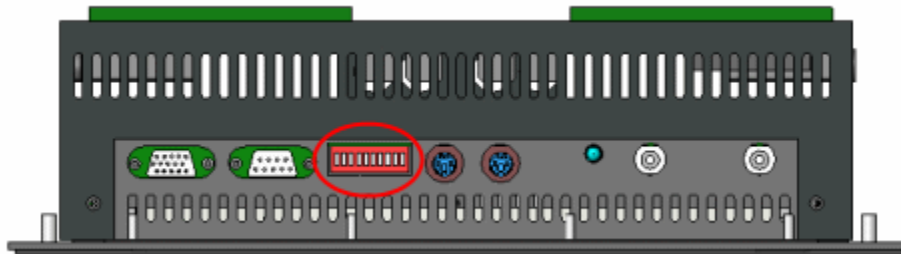

Flash Wizard software

5. If this is the first time running Flash Wizard on the current laptop/PC, then navigate to Setup\Port on the menu bar to configure the software for the correct communications port. Otherwise, skip to Step 6.

   Only the port number should change in the dialog. The other settings are default, and will always be correct for flashing a XL200 Series machine controller.
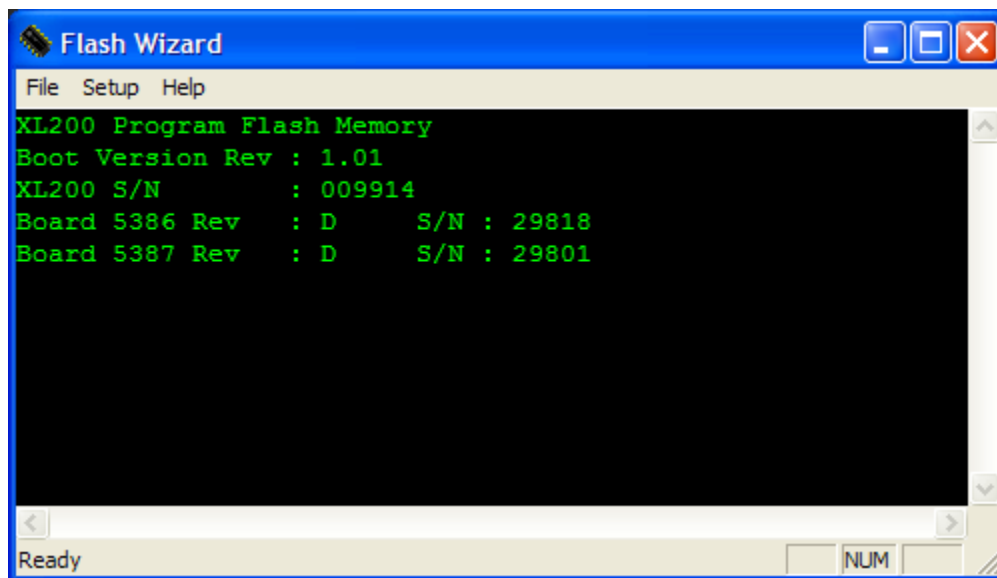

Port Setup Menu

6. On the XL200 Series controller, turn DIP switch 10 to the ON position. This puts the XL200 into Program Flash Memory mode the next time it's powered up.
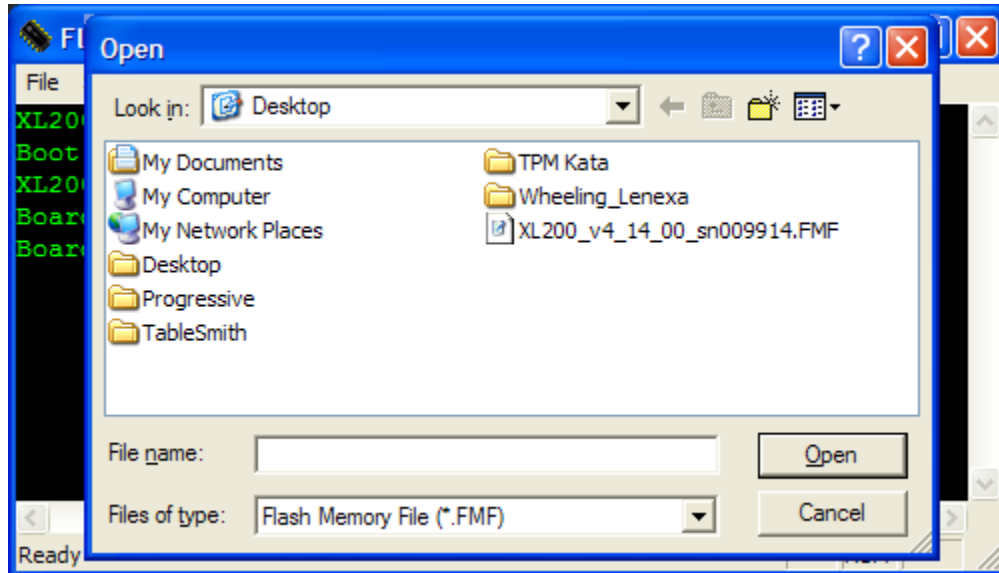

DIP Switches on Top of XL200

7. With the XL200 and laptop connected and Flash Wizard already running on the laptop, apply power the controller. The XL200 will boot to a blue screen with white lettering *XL200 Program Flash Memory* with some additional information specific to the controller. Whatever appears on the controller's screen should also appear in the Flash Wizard window.
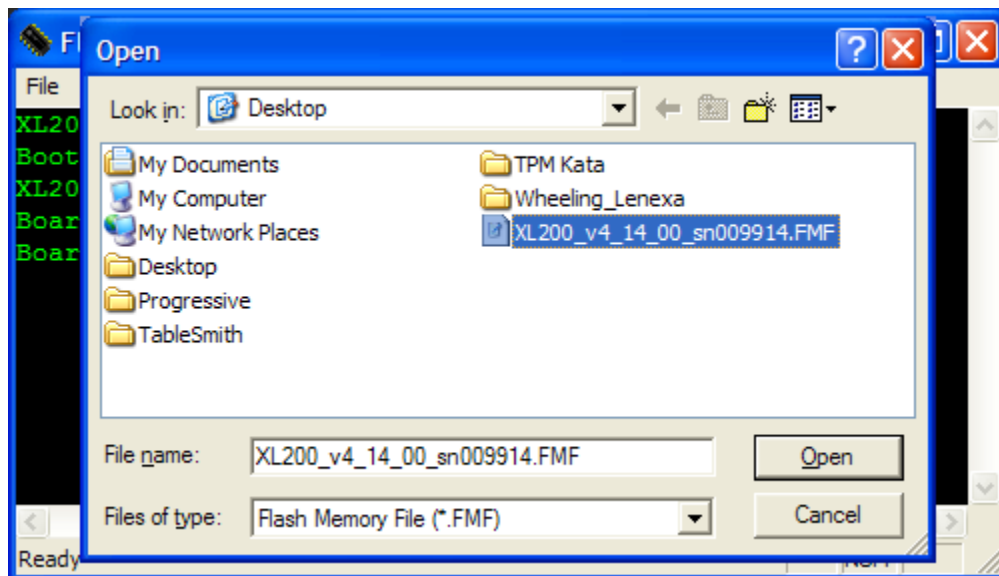

Flash Wizard Displays Same Information as XL200

8. Navigate to File\Flash XL200 Series. The Open dialog box will appear.
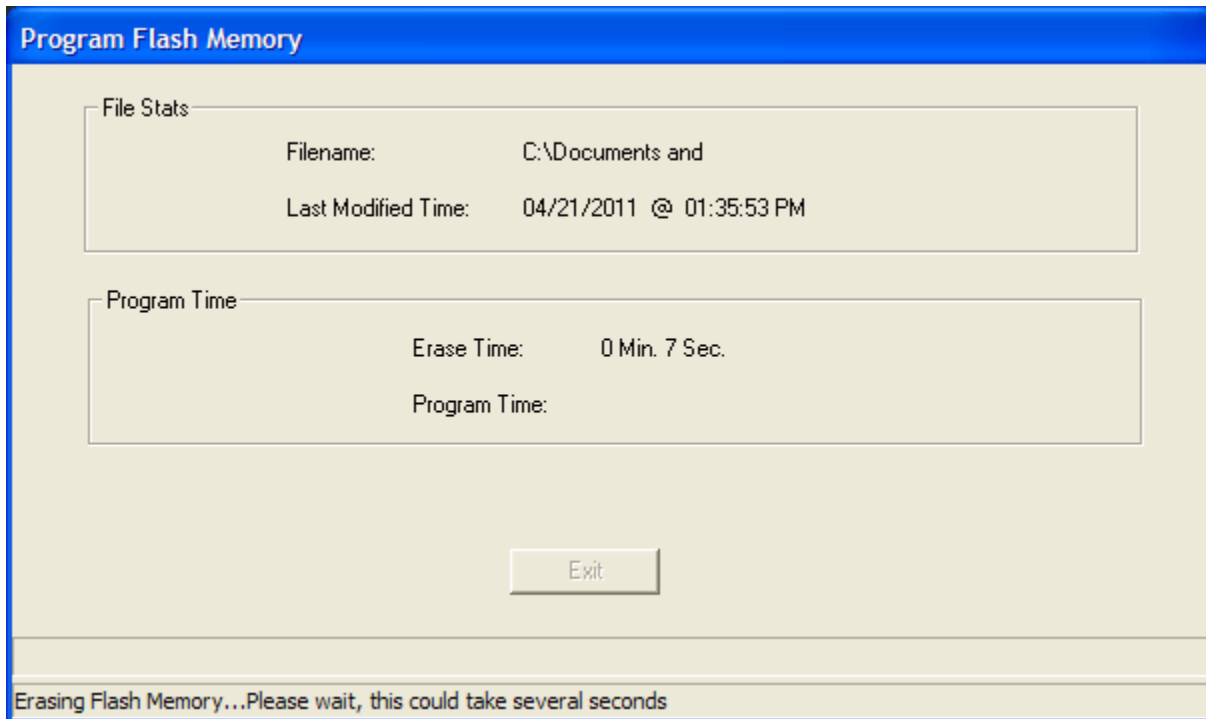

Open Dialog Allows Correct Flash File to be Selected

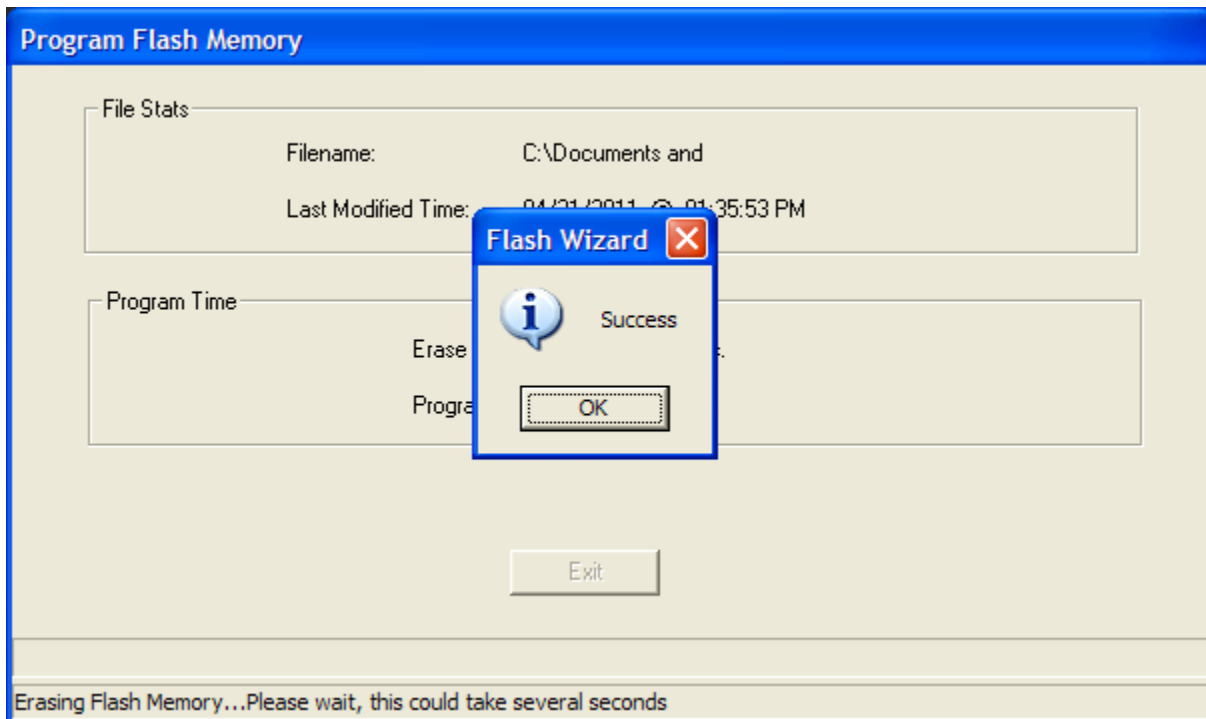9. Navigate to the desired flash file and select it through the Open Dialog box.

Flash File Selected and Ready to Open

10. Click the Open button and Flash Wizard will begin the flash process. If the purpose of the flash is to change software models, the user must obtain a file from AMS Controls that has the controller's serial number embedded within the flash file, or an authorization code will be required.

Existing Flash Programming is Erased Before New Flash Programming Begins

11. Once the flash process is complete, the *Success* dialog box will appear.

Flash Process Complete

12. Click the OK button on the Success dialog box.
13. Click the Exit button on the Program Flash Memory window.
14. Close Flash Wizard.
15. Remove power from the XL200 Series machine controller.
16. Turn DIP switch 10 to its OFF position.
17. If the B connector was removed in Step 2, re-insert the B connector at this time. Otherwise, skip to Step 18.
18. Turn on power to the controller. Answer whatever on-screen prompts are required to fully boot the unit to the Status menu.
19. Turn controller power off.
20. Press and hold the number "5" key on the keypad. While holding the "5" key down, re-apply power to the unit. Continue holding the "5" key until the following message is displayed:

Clearing Memory after Flashing

21. Select the option for "Clear ALL Memory" and navigate to the OK button. Press the Enter key on the keypad.

22. Once the controller reboots, re-enter the unit's Eclipse data and let Eclipse download parameters, jobs, etc. into the controller. If the XL200 is not connected to Eclipse parameters, jobs, etc. must be re-entered by hand.

V3 Software for Rev. C Hardware

XL200 Series machine controllers with Rev. C hardware can only be flashed with v3 software using the **Flash Wizard** program from AMS Controls. **Flash Wizard** is free software that can be downloaded from the AMS Controls website. Typically, a Technical Support Specialist will include a copy of **Flash Wizard** with the file to be flashed into the controller.

When using **Flash Wizard**, a Technical Support Specialist can embed the unit's serial number in the flash file when it's created. If this is done, the user will not be required to obtain an authorization code from AMS Controls. If this is not done, the user must begin the flash process in order to receive an authentication code. This code is given to a Technical Support Specialist who will generate the authorization code.
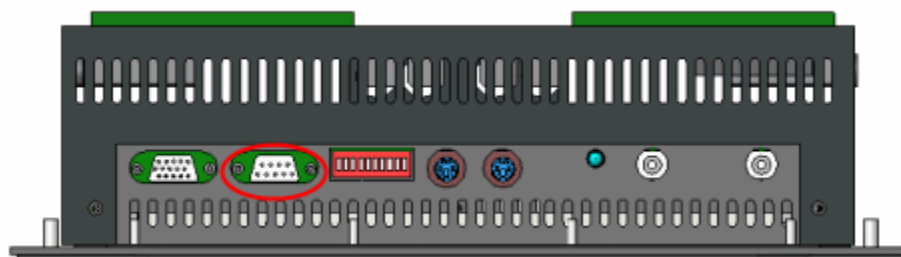
To flash a controller with Rev. C hardware:

Good News

On Rev. C hardware models, the controller's boot sector remains untouched. Even if the flash process fails before completion, or if power is lost, the controller can always recover by beginning the software flash portion again. The controller <u>does not</u> require special programming at AMS Controls.
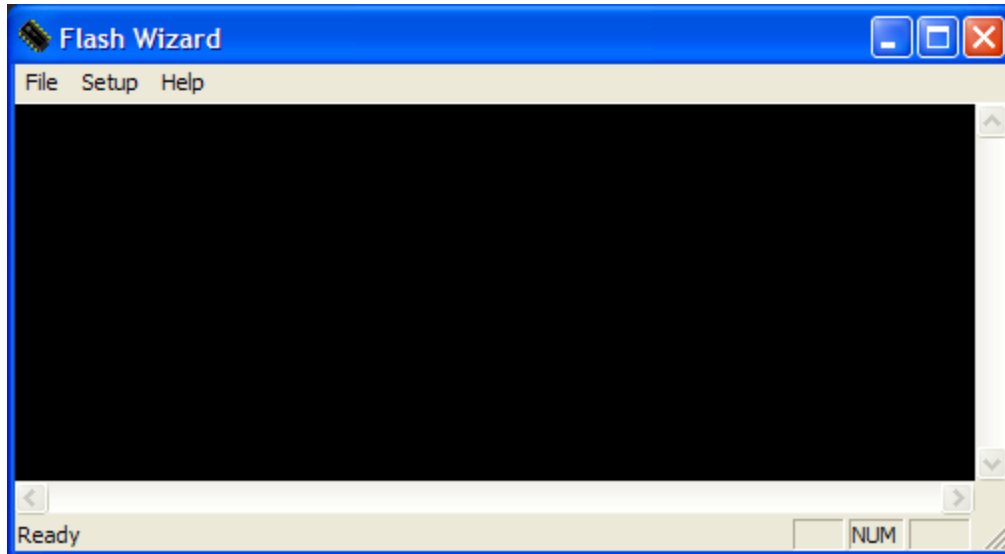
1. Remove power from the XL200 Series machine controller.
2. If the XL200 is on an Eclipse network, disconnect the B connector from the back of the XL200 controller before continuing with the flash process.
3. Connect the laptop to the XL200 using the RS232 cable. The laptop should be plugged into AC power. Most laptops switch to a "low power" mode when running on battery power. This can interfere with Com Port communication.

   The RS232 cable should plug into the 9 pin port on top of the XL200 controller.
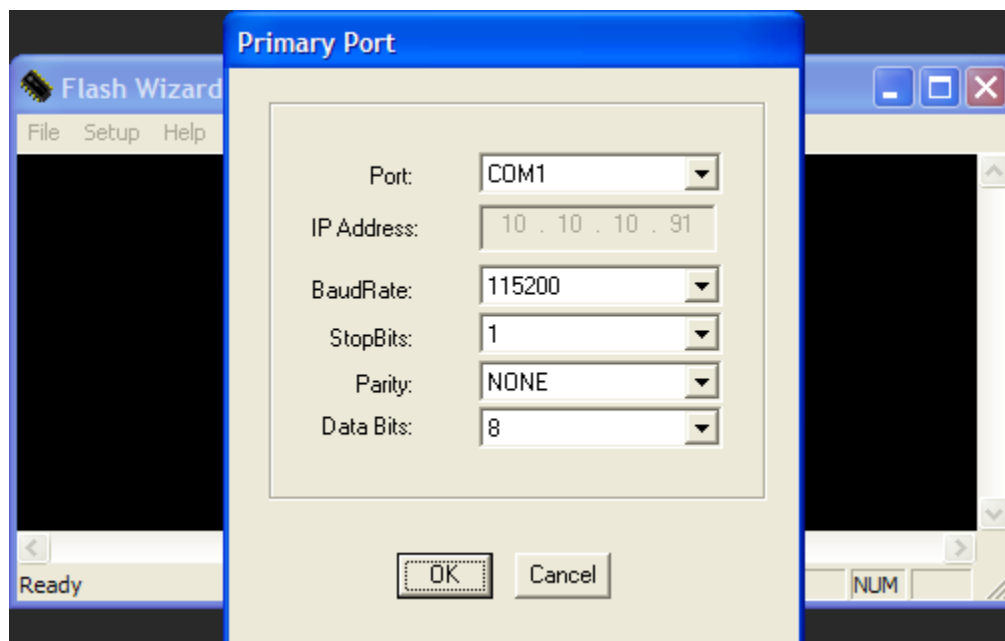

RS232 Port

4. Start the Flash Wizard software.

Flash Wizard software

5. If this is the first time running Flash Wizard on the current laptop/PC, then navigate to Setup\Port on the menu bar to configure the software for the correct communications port. Otherwise, skip to Step 6.
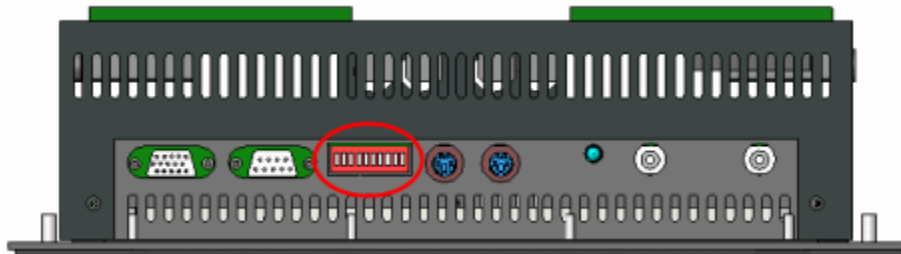
    Only the port number should change in the dialog. The other settings are default, and will always be correct for flashing a XL200 Series machine controller.
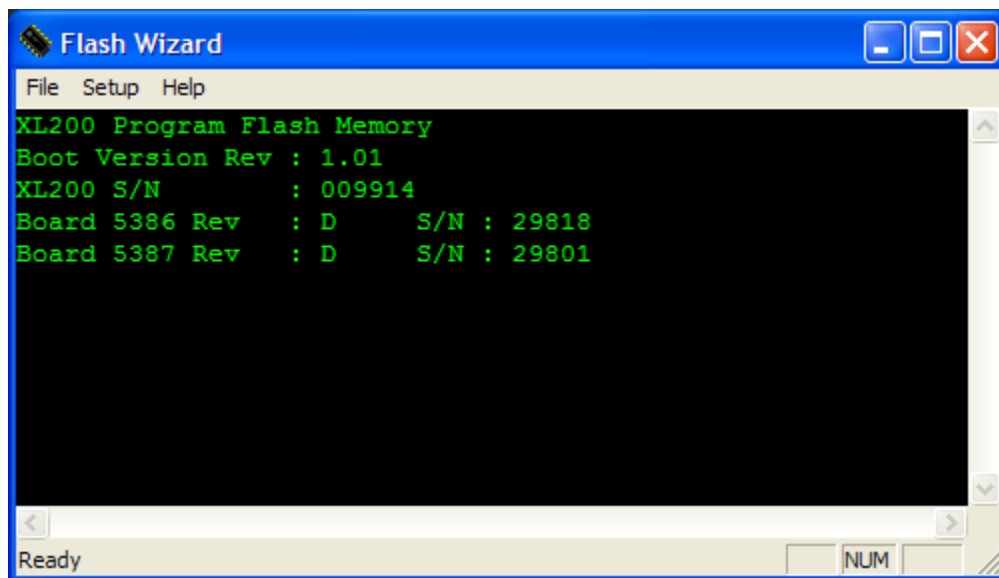

Port Setup Menu

6. On the XL200 Series controller, turn DIP switch 10 to the ON position. This puts the XL200 into Program Flash Memory mode the next time it's powered up.
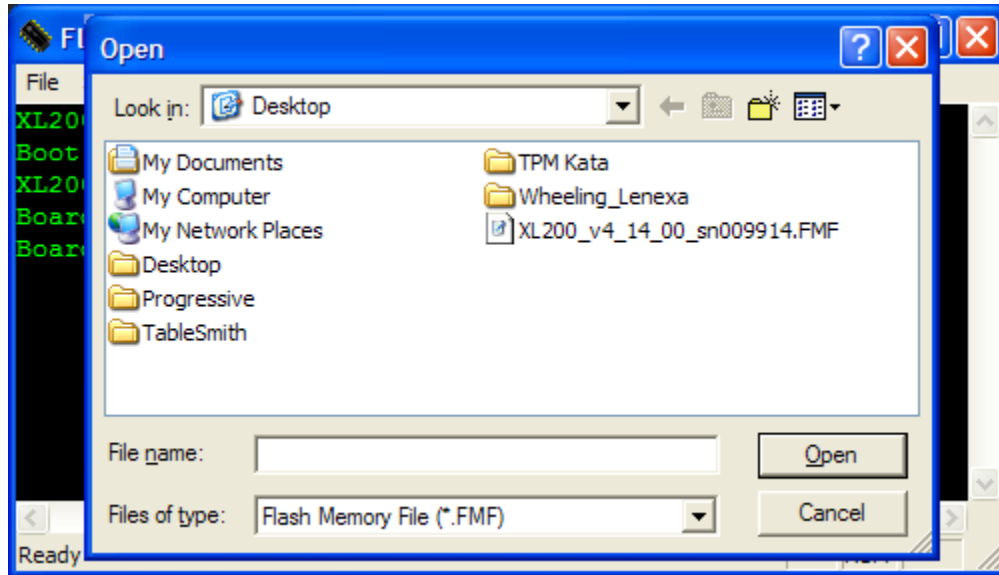

DIP Switches on Top of XL200

7. With the XL200 and laptop connected and Flash Wizard already running on the laptop, apply power the controller. The XL200 will boot to a blue screen with white lettering *XL200 Program Flash Memory* with some additional information specific to the controller. Whatever appears on the controller's screen should also appear in the Flash Wizard window.
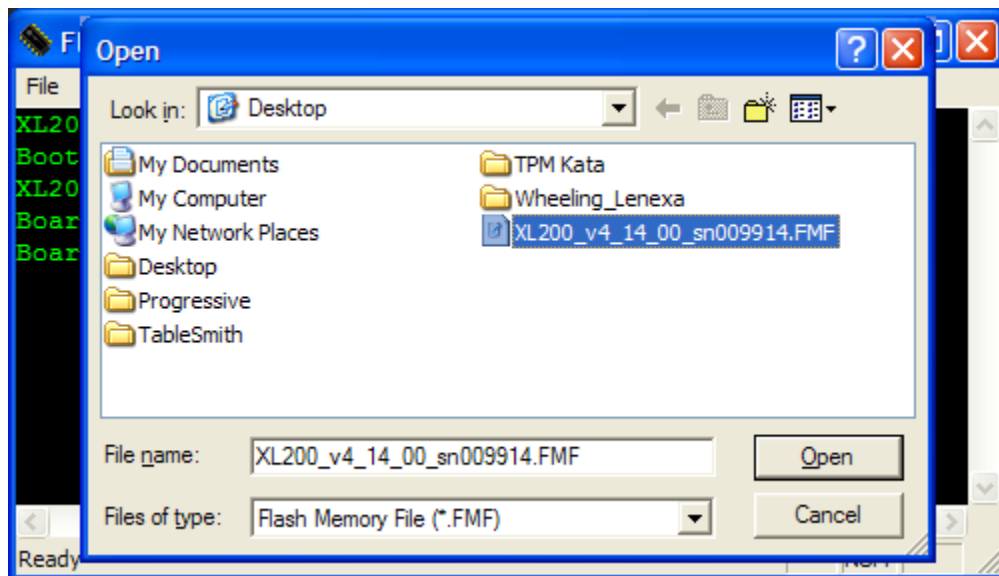

Flash Wizard Displays Same Information as XL200

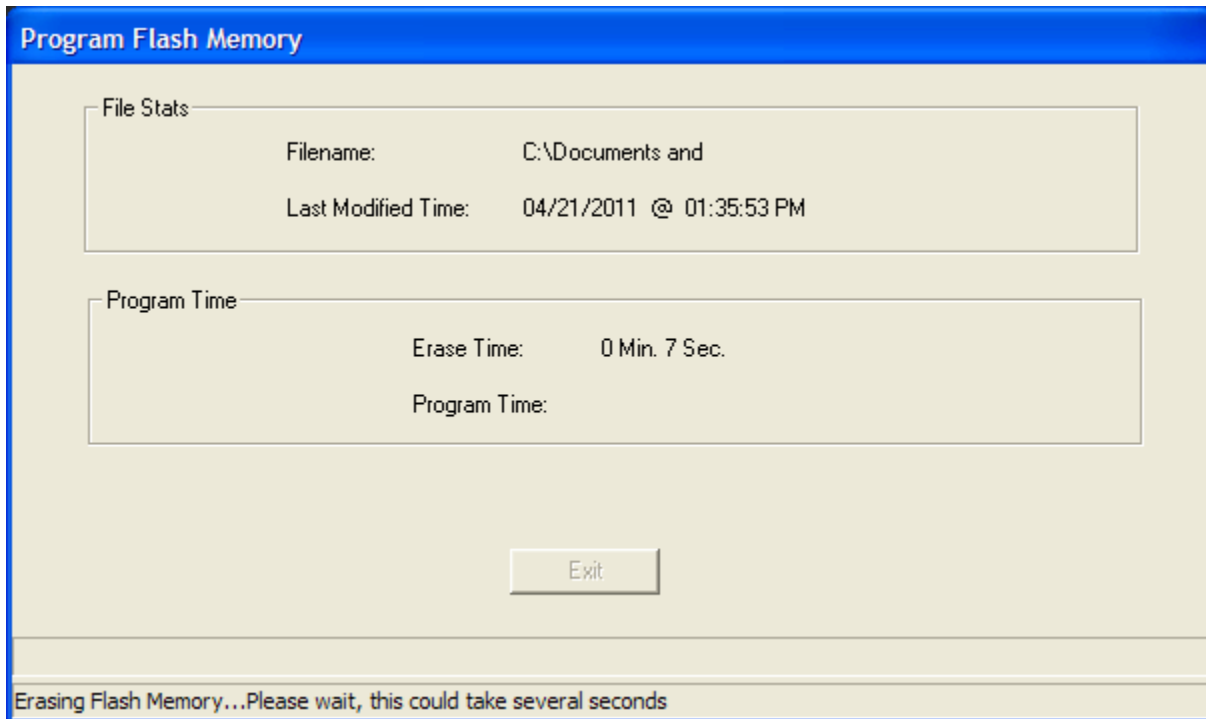8. Navigate to File\Flash XL200 Series. The Open dialog box will appear.

Open Dialog Allows Correct Flash File to be Selected

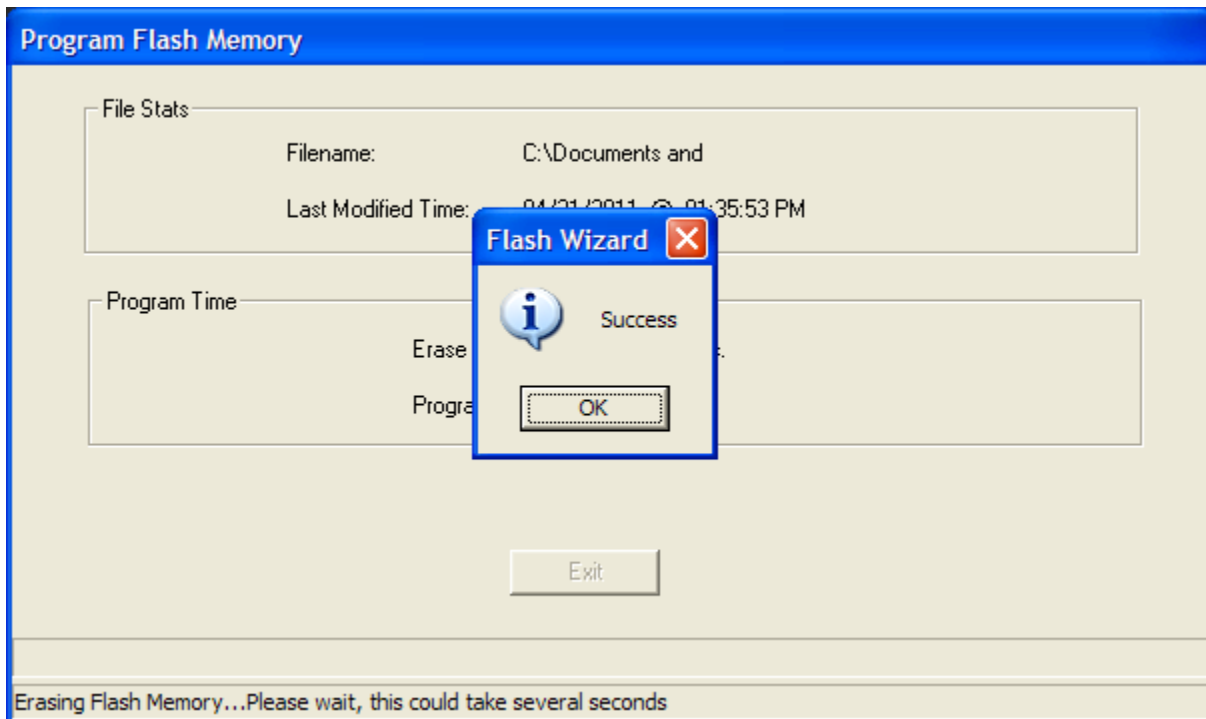9. Navigate to the desired flash file and select it through the Open Dialog box.

Flash File Selected and Ready to Open

10. Click the Open button and Flash Wizard will begin the flash process. If the purpose of the flash is to change software models, the user must obtain a file from AMS Controls that has the controller's serial number embedded within the flash file, or an authorization code will be required.
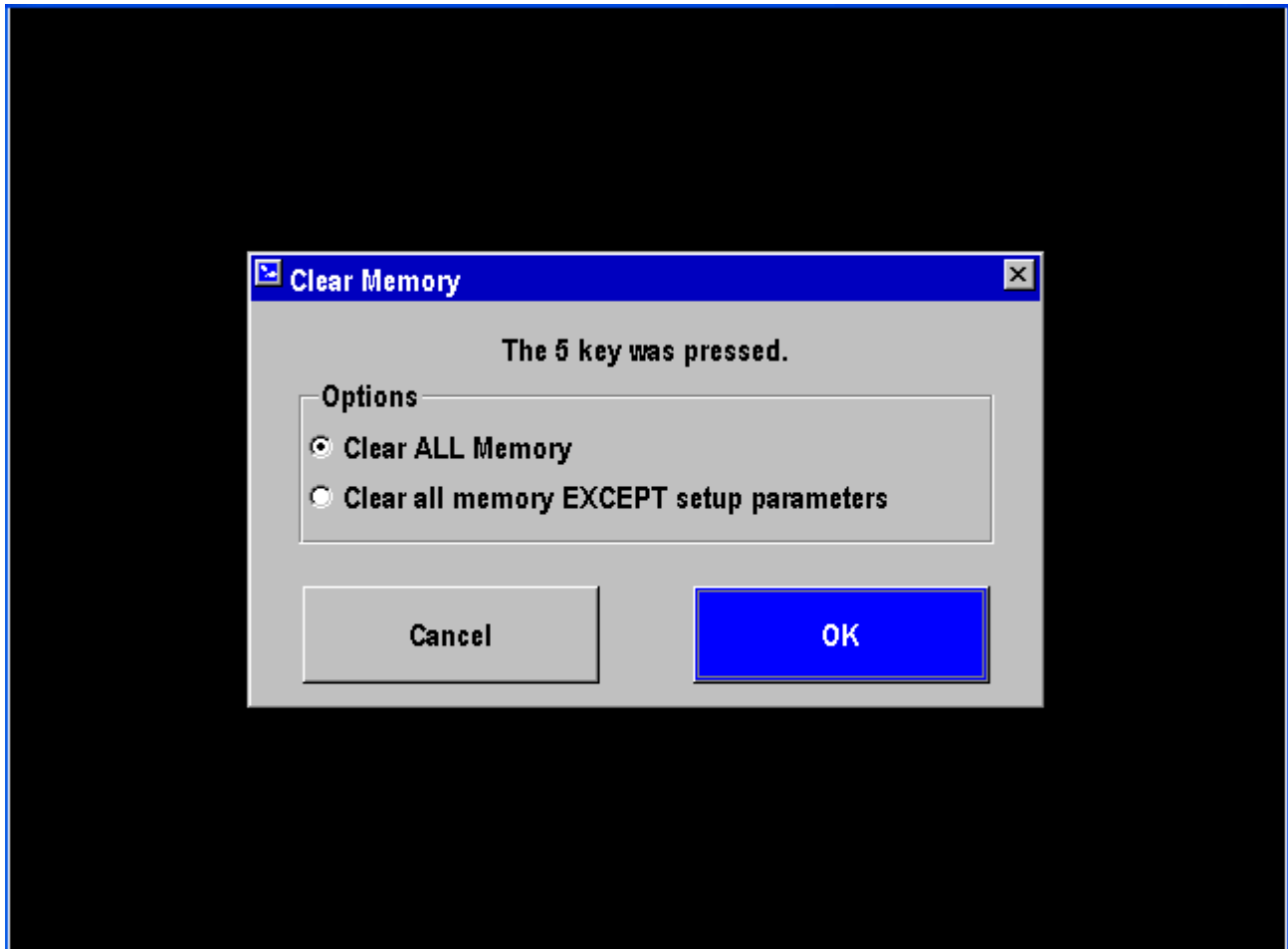

Existing Flash Programming is Erased Before New Flash Programming Begins

11. Once the flash process is complete, the *Success* dialog box will appear.

Program Flash Memory

File Stats

Filename: C:\Documents and

Last Modified Time: 04/21/2011 @ 01:35:53 PM

Flash Wizard ✕

(i) Success

OK

Program Time

Erase

Progra

Exit

Erasing Flash Memory...Please wait, this could take several seconds

Flash Process Complete

12. Click the OK button on the Success dialog box.
13. Click the Exit button on the Program Flash Memory window.
14. Close Flash Wizard.
15. Remove power from the XL200 Series machine controller.
16. Turn DIP switch 10 to its OFF position.
17. If the B connector was removed in Step 2, re-insert the B connector at this time. Otherwise, skip to Step 18.
18. Turn on power to the controller. Answer whatever on-screen prompts are required to fully boot the unit to the Status menu.
19. Turn controller power off.
20. Press and hold the number "5" key on the keypad. While holding the "5" key down, re-apply power to the unit. Continue holding the "5" key until the following message is displayed:

Clearing Memory after Flashing

21. Select the option for "Clear ALL Memory" and navigate to the OK button. Press the Enter key on the keypad.
22. Once the controller reboots, re-enter the unit's Eclipse data and let Eclipse download parameters, jobs, etc. into the controller. If the XL200 is not connected to Eclipse parameters, jobs, etc. must be re-entered by hand.

V4 Software for Rev. D Hardware

XL200 Series machine controllers with Rev. D hardware can only be flashed with v4 software using the **Flash Wizard** program from AMS Controls. **Flash Wizard** is free software that can be downloaded from the AMS Controls website. Typically, a Technical Support Specialist will include a copy of **Flash Wizard** with the file to be flashed into the controller.

When using **Flash Wizard**, a Technical Support Specialist can embed the unit's serial number in the flash file when it's created. If this is done, the user will not be required to obtain an authorization code from AMS Controls. If this is not done, the user must begin the flash process in order to receive an authentication code. This code is given to a Technical Support Specialist who will generate the authorization code.
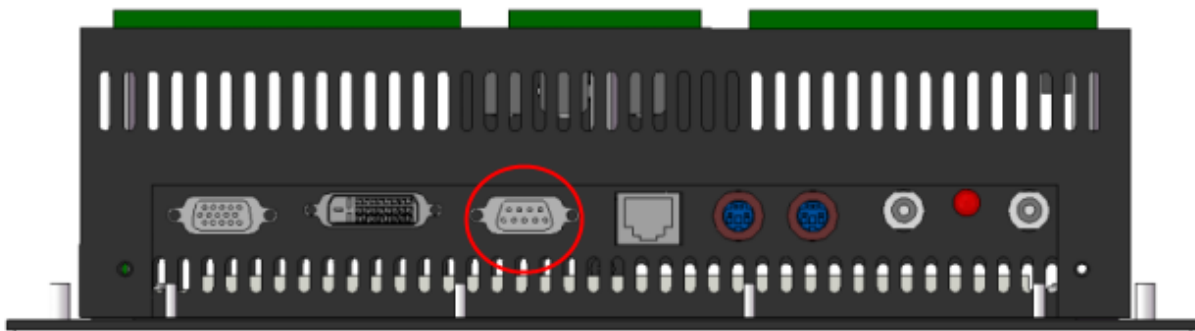
To flash a controller with Rev. D hardware:

<p style="color:red; font-weight:bold; text-align:center">***Good News***</p>

<p style="color:red; font-weight:bold; text-align:center">On Rev. D hardware models, the controller's boot sector remains untouched. Even if the flash process fails before completion, or if power is lost, the controller can always recover by beginning the software flash portion again. The controller <u>does not</u> require special programming at AMS Controls.</p>
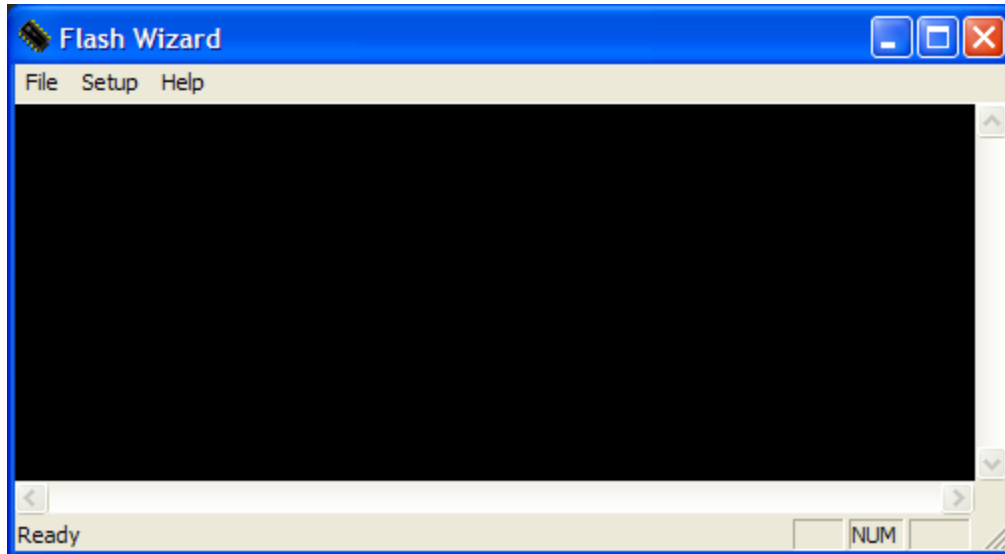
1. Remove power from the XL200 Series machine controller.
2. If the XL200 is on an Eclipse network that communicates via RS485, disconnect the B connector from the back of the XL200 controller before continuing with the flash process. If the local Eclipse network connects via Ethernet directly to the controller, there is no need to disconnect the Ethernet cable.
3. Connect the laptop to the XL200 using the RS232 cable. The laptop should be plugged into AC power. Most laptops switch to a "low power" mode when running on battery power. This can interfere with Com Port communication.

   The RS232 cable should plug into the 9 pin port on top of the XL200 controller.
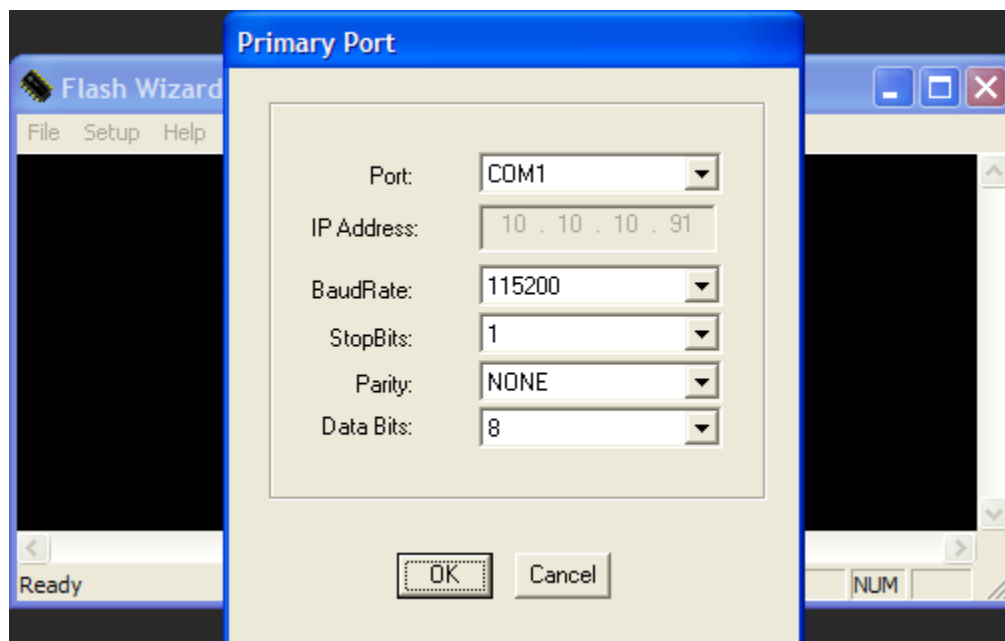

RS232 Port

4. Start the Flash Wizard software.

Flash Wizard software

5. If this is the first time running Flash Wizard on the current laptop/PC, then navigate to Setup\Port on the menu bar to configure the software for the correct communications port. Otherwise, skip to Step 6.

   Only the port number should change in the dialog. The other settings are default, and will always be correct for flashing a XL200 Series machine controller.

Port Setup Menu

6. With the XL200 and laptop connected and Flash Wizard already running on the laptop, put the controller into Program Flash Memory mode. On the Rev. D hardware model, this is accomplished by pressing and holding the Program key while powering the unit up.
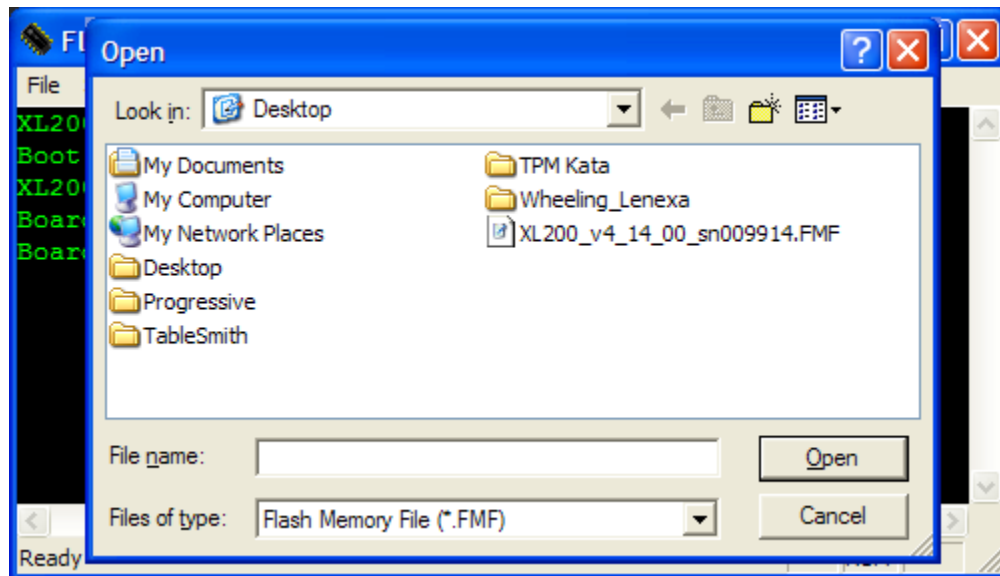
   The XL200 will boot to a blue screen with white lettering *XL200 Program Flash Memory* with some additional information specific to the controller. Whatever appears on the controller's screen should also appear in the Flash Wizard window.
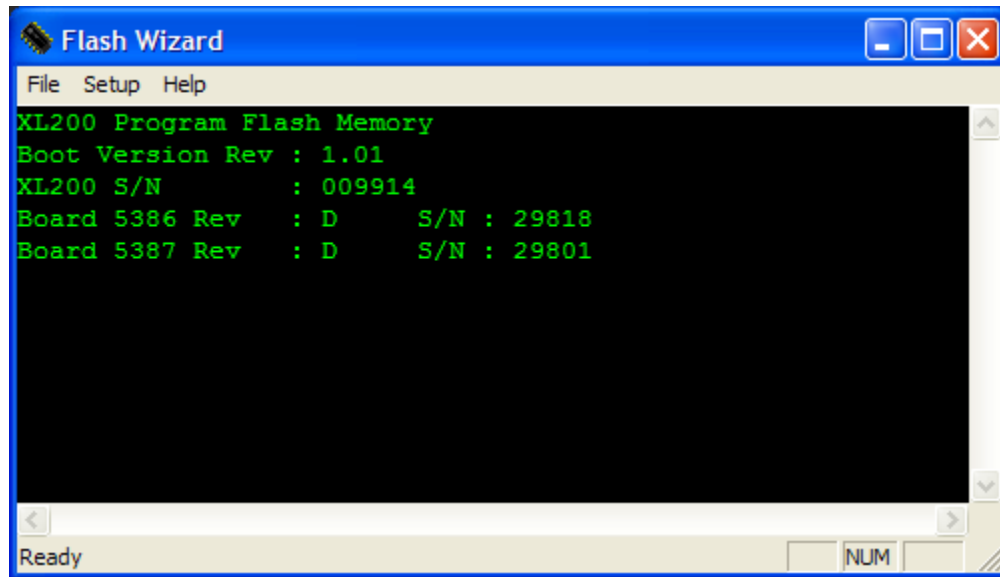
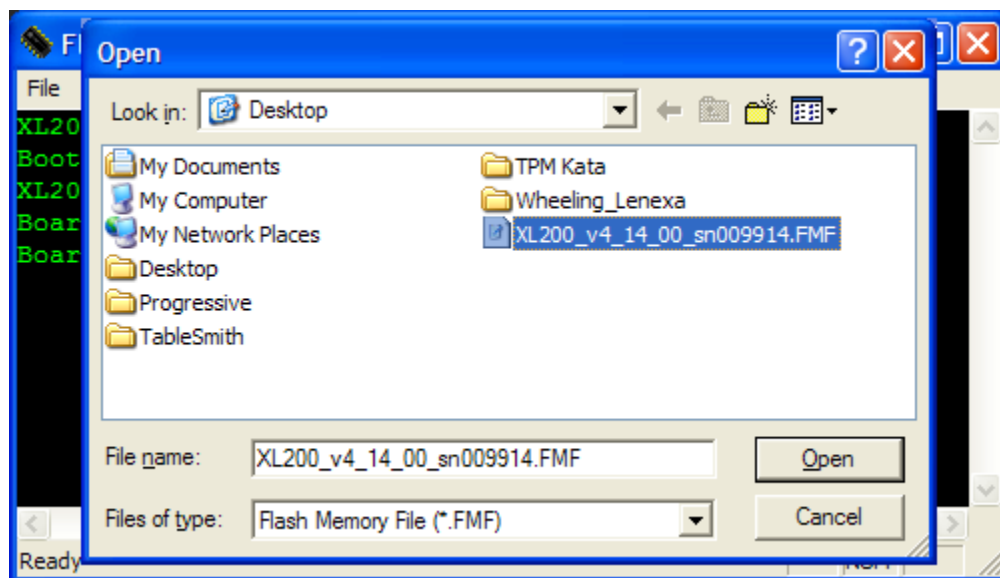**Flash Wizard Displays Same Information as XL200**

7. Navigate to File\Flash XL200 Series. The Open dialog box will appear.


Open Dialog Allows Correct Flash File to be Selected

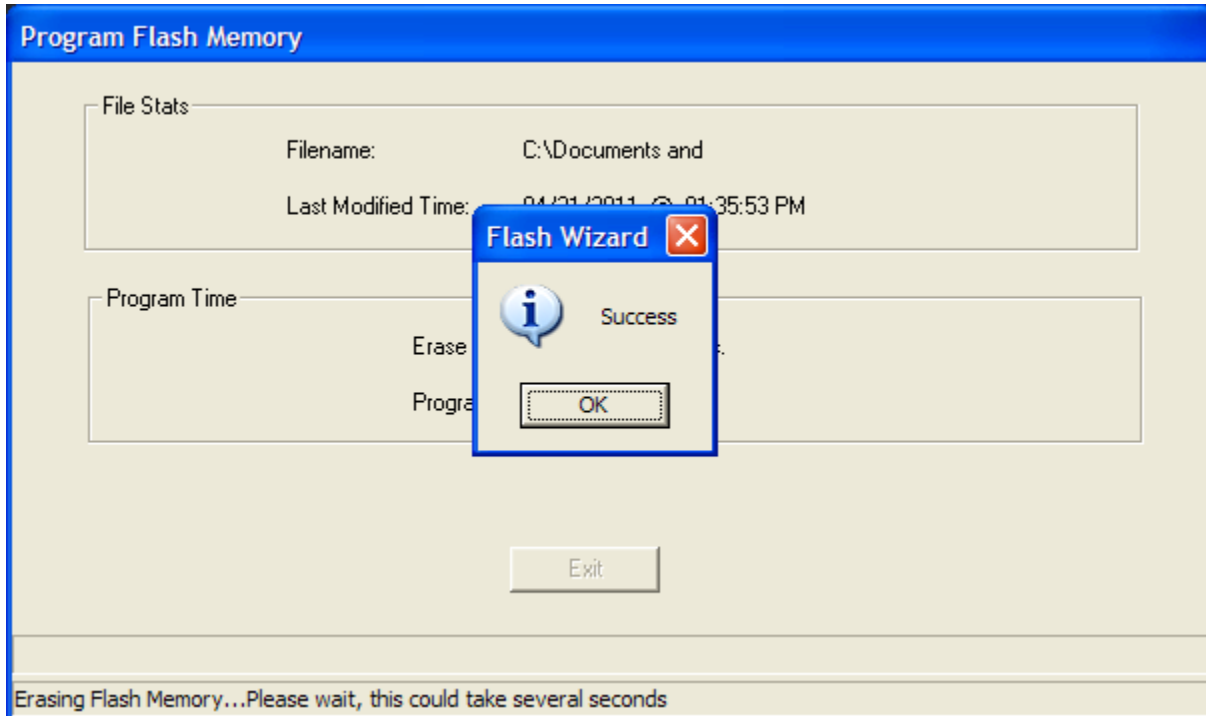8. Navigate to the desired flash file and select it through the Open Dialog box.

Flash File Selected and Ready to Open

9. Click the Open button and Flash Wizard will begin the flash process. If the purpose of the flash is to change software models, the user must obtain a file from AMS Controls that has the controller's serial number embedded within the flash file, or an authorization code will be required.
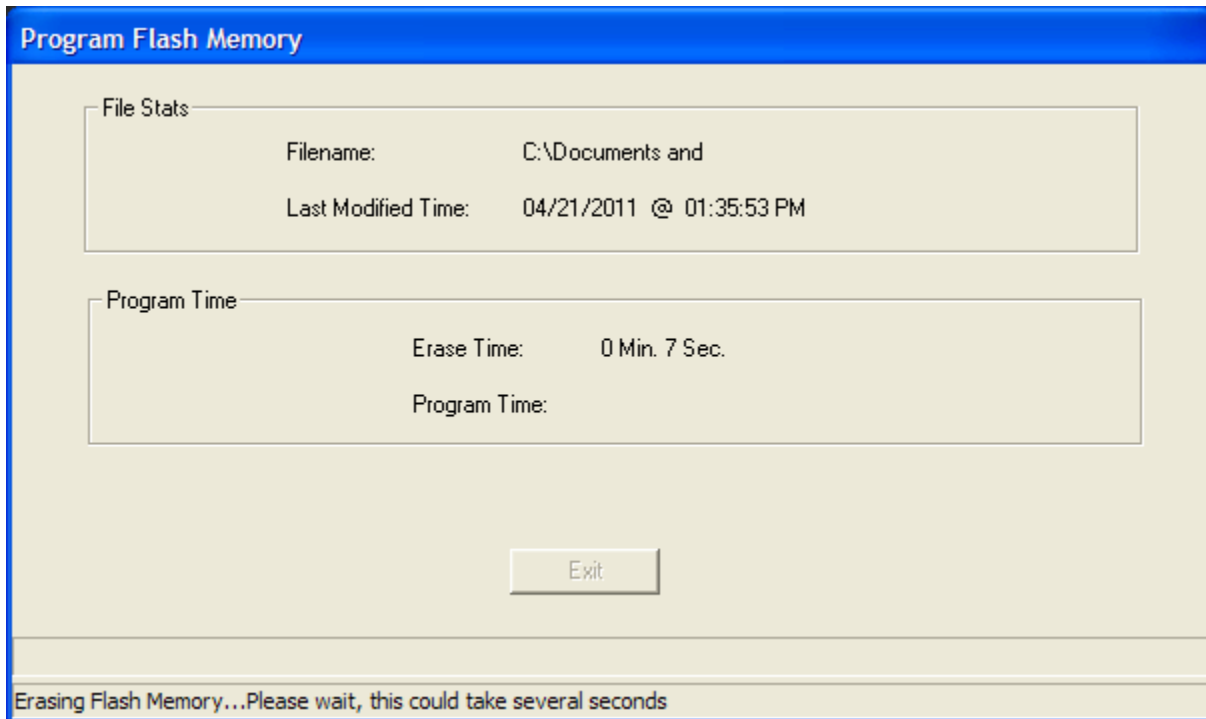

Existing Flash Programming is Erased Before New Flash Programming Begins

10. Once the flash process is complete, the *Success* dialog box will appear.

Program Flash Memory

File Stats
Filename: C:\Documents and
Last Modified Time: 04/21/2011 @ 01:35:53 PM

Flash Wizard ☒

ⓘ Success

[OK]

Program Time
Erase
Progra

Exit

Erasing Flash Memory...Please wait, this could take several seconds

Flash Process Complete

11. Click the OK button on the Success dialog box.
12. Click the Exit button on the Program Flash Memory window.
13. Close Flash Wizard.
14. Remove power from the XL200 Series machine controller.
15. If the B connector was removed in Step 2, re-insert the B connector at this time. Otherwise, skip to Step 16.
16. Turn on power to the controller. Answer whatever on-screen prompts are required to fully boot the unit to the Status menu.
17. Turn controller power off.
18. Press and hold the number "5" key on the keypad. While holding the "5" key down, re-apply power to the unit. Continue holding the "5" key until the following message is displayed:
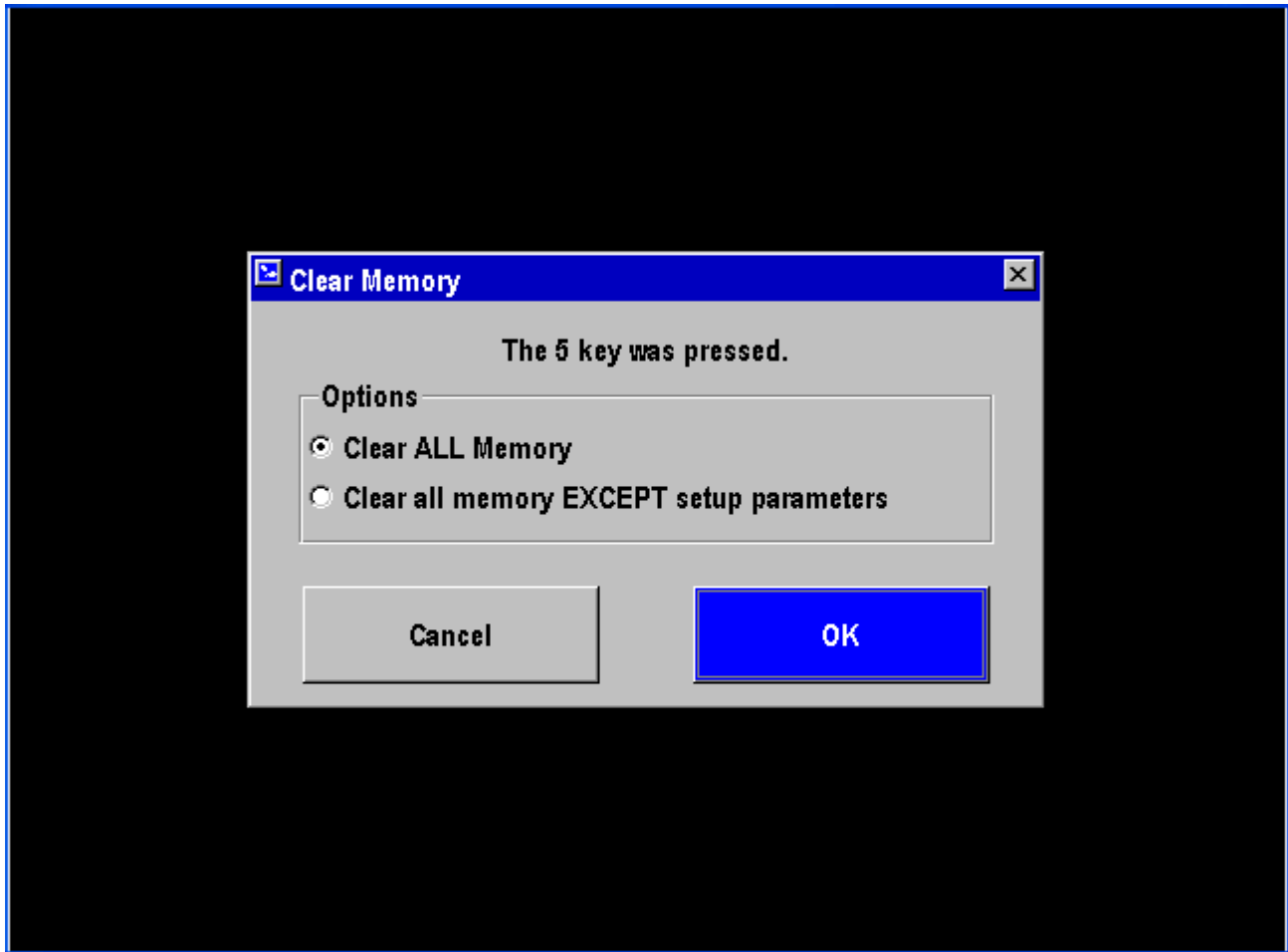
Clearing Memory after Flashing

19. Select the option for "Clear ALL Memory" and navigate to the OK button. Press the Enter key on the keypad.
20. Once the controller reboots, re-enter the unit's Eclipse data and let Eclipse download parameters, jobs, etc. into the controller. If the XL200 is not connected to Eclipse parameters, jobs, etc. must be re-entered by hand.