



Upgrading your 1394 GMC Turbo Firmware

Introduction

This publication describes how to update the firmware in your 1394 GMC Turbo (part number 1394-SJT-T-C or 1394-SJT-T-C-RL) using the HyperTerminal (Win 95) or Terminal (Win 3.1) communication accessories included with Windows. The 1394 GMC Turbo must be running firmware version 3.5 or later.

This kit contains:

- One diskette containing your new firmware.
- One copy of the firmware instructions.
- One firmware upgrade label.
- One copy of the firmware release notes.

Before You Begin

The firmware upgrade procedure requires you to initialize the 1394. Initializing the 1394 GMC Turbo resets the drive, defaults all settings back to the factory settings and clears the GML program from the drive's memory.

If you:	Go to:
Have a copy of your GML program	Step 12 of <i>Uploading your GML Program from your 1394 GMC Turbo</i> .
Do not have a copy of your GML program	<i>Uploading your GML Program from your 1394 GMC Turbo</i> .

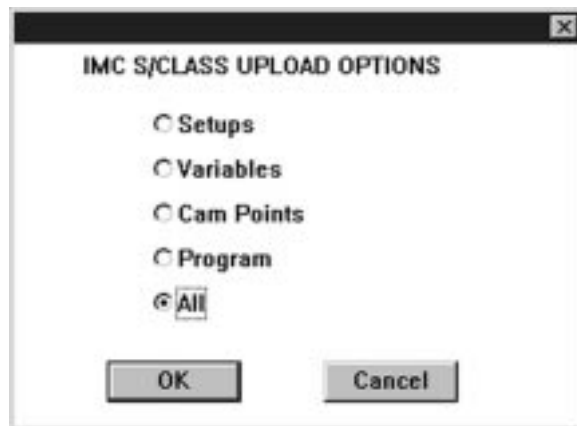
Uploading your GML Program from your 1394 GMC Turbo

If you are running GML Commander, refer to Chapter 10 of the *GML Commander User Manual (publication GMLC-5.1)* for uploading options. To upload your existing program from your 1394 GMC Turbo using GML version 3.9x:

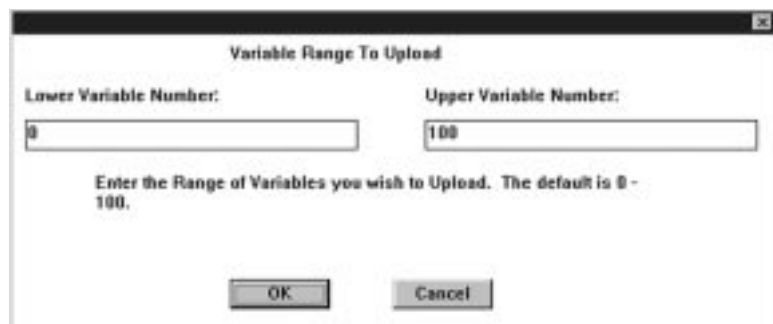
1. Open GML version 3.9x.

Important: If you are running GML Commander, refer to Chapter 10 of the *GML Commander User Manual (publication GMLC-5.1)* for uploading options.

2. From the Diagram menu, select **Online**. The Online Manager window appears.
3. Select **Upload Options**. The IMC S Class Upload Options window appears.

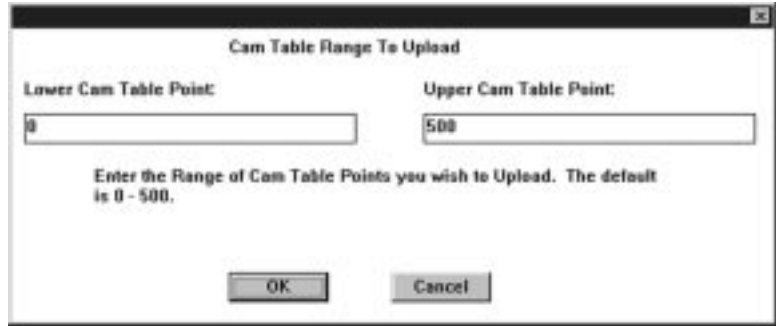


4. Select the items you want to upload.
5. Select **OK**. The Variable Range to Upload window appears.



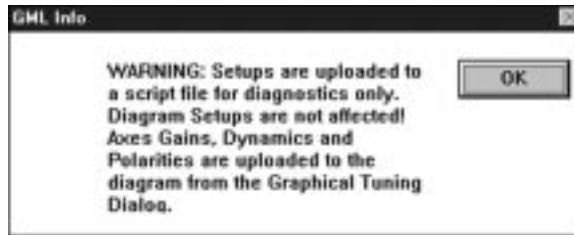
6. Enter the range of variables you want to upload.

7. Select **OK**. The CAM Table Range to Upload window appears.



8. Enter the Cam table points you want to upload.

9. Select **OK**. A GML Info window appears.



10. Select **OK**. The program begins to up load.

11. Once the upload is complete, save the file to the appropriate directory.

12.

If your computer is running:	Go to:
Windows 95	<i>Upgrading Firmware using Windows 95.</i>
Windows 3.1	<i>Upgrading Firmware Using Windows 3.1.</i>

Upgrading Firmware Using Windows 95™

The procedures below show how to upgrade your firmware using the HyperTerminal communication accessory that comes with Windows 95.

Setting up HyperTerminal in Windows 95

To set up HyperTerminal:

1. Close GML or any other application that occupies the COM port used to communicate with the 1394 GMC Turbo.
2. From the Start menu, select **Programs**. The Programs menu appears.

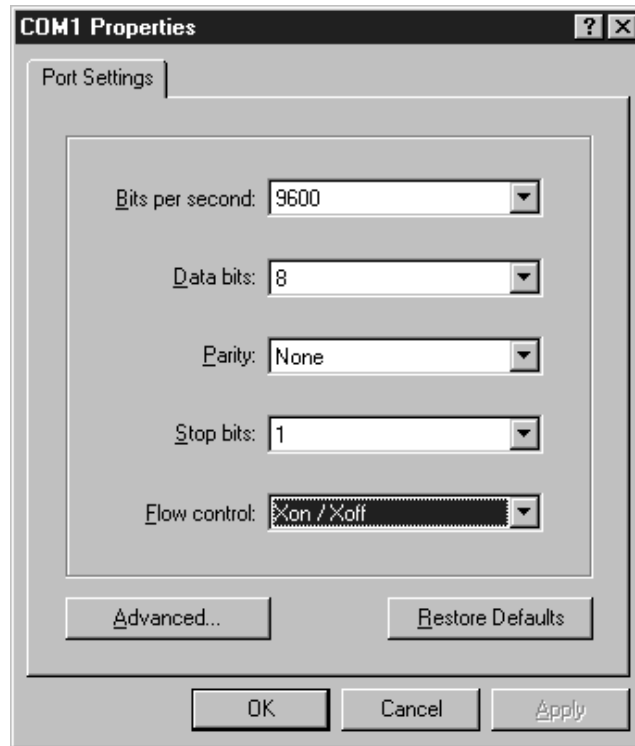
3. Select **Accessories**. The Accessories menu appears.
4. Select **HyperTerminal**. The HyperTerminal directory window appears.
5. Select **Hypertrm.exe**. The Connection Description window appears.
6. Type the name of your connection in the *Name* field.
7. Select an Icon to represent the name of your connection.
8. Select **OK**. The Phone Number window appears.
9. In the *Connect using* field, select an available COM port. This is the COM port (9-pin serial port) you will use to connect your PC to the 1394 GMC Turbo. In the example below, we use COM1.

Important: The number of the COM port depends on your computer hardware setup.



10. Select **OK**. The COMx Properties window appears.

11. Make the following selections in the COMx Properties window:



12. Select **OK**. The COM Port Properties window disappears.

Establishing Communications with the 1394 GMC Turbo

To establish communications between the 1394 GMC Turbo and the HyperTerminal program on your PC:

1. Verify that all 460/380V power has been removed from the system.



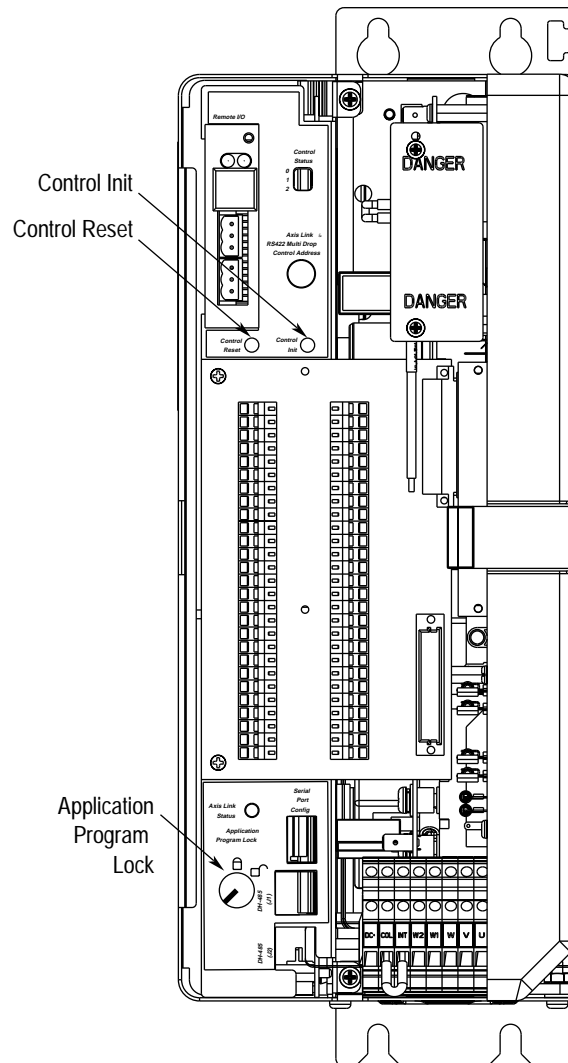
ATTENTION: To avoid the risk of injury, verify that all 460/380V power has been removed from the system. Bus voltage is not required for this procedure.

2. Apply 24V Control power to the 1394 GMC Turbo. Refer to Chapter 2 of the *1394 User Manual* (publication 1394–5.0) for more information on control power.
3. Open the system module door.

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4. While holding in the Control Init button, press and release the Control Reset button. Continue to hold in the Control Init button until the 1394 GMC Turbo completes the power up sequence (about 10 seconds). This resets the baud rate on the serial communications port (Port A) to 9600. Refer to Figure 1 for button locations.
5. Verify that the 1394 GMC Turbo memory is unlocked. Refer to Figure 1 for the lock's location.

Figure 1
Inside the 1394 GMC Turbo



6. Using a 9-pin serial cable, connect your computer to J3 on the 1394 GMC Turbo. J3 is the DB9 connector on the bottom of the unit toward the front.
7. From the Call menu in HyperTerminal, select **Connect**.
8. Press **Enter** to verify communications. The following Command prompts appear:
*
>
9. Type **.i** and press **Enter**. This command wipes out the stored application program in the 1394 GMC Turbo and sets default data values.
10. Press the Reset button on the 1394 GMC Turbo.
11. Go to *Minimizing Download Time (optional)*.

Minimizing Your Download Time (optional)

You can minimize your download time by increasing the baud rate in both HyperTerminal and the 1394 GMC Turbo. The default baud rate for the 1394 GMC Turbo is 9600. At this rate, the download will take approximately 12 minutes. If you increase your baud rate to 38400 the download time drops to approximately three minutes. If you do not want to change your baud rate, go to *Completing the Download using HyperTerminal*.

Important: If for any reason you lose your place within this procedure, press Enter (accept the defaults) until you exit the HyperTerminal Setup section (.s) and return to the command prompts. Once you return to the command prompts, go to Step 1 and begin again.

Changing the 1394 GMC Turbo Baud Rate Using HyperTerminal:

1. At the command prompts, type **.s** and press **Enter**. The following message appears:
Setup Password?
2. Type **set** and press **Enter**. You will not be able to see the letters you are typing. The following message appears:
Load Setups for App Module? NO
3. Press **Enter**. The following message appears:
Application Setup Menu? NO

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4. Press the **space bar** on your keyboard to change NO to YES and press **Enter**. The following message appears:

Application Password?

5. Type **app** and press **Enter**. You will not be able to see the letters you are typing.
6. Press **Enter** after each of the following messages:

Inhibit Program Upload? NO

Edit AxisLink Config? NO

Edit DH-485 Config? NO

Edit Axis Setup Parameters? NO

Edit Axis Fault Action Configs? NO

Edit Direct Command Mode Config? NO

Edit Operator Interface Config? NO

Edit Runtime Display Config? NO

7. When the Edit Serial Port Config? NO message appears, press the **space bar** on your keyboard to change NO to YES and then press **Enter**. The following message appears:

Port A Baudrate? 9600

8. Press the **space bar** until 38400 appears and press **Enter**. The following message appears:

Changing Baudrate...

9. Select **Disconnect** from the HyperTerminal Call menu.
10. From the HyperTerminal File menu, select **Properties**. The Properties window appears.
11. Select **Configure**. The Port Settings window appears.
12. Select **38400** in the *Bits per second* field.
13. Select **OK**. The Properties window disappears.
14. Select **Re-connect** to establish communications using the higher baud rate.

15. Press **Enter** after each of the following messages:

```
Edit RIO Config? NO
Run App Program on Power-up? NO
Machine setup Menu? NO
Hookup Diagnostic Menu? NO
Servo Setup Menu? NO
Save Setups to App Module? No
```

The following command prompts appear:

```
*
>
```

16. Go to *Completing the Download using HyperTerminal***Completing the Download using HyperTerminal**

To download the firmware code into the DRAM memory on the 1394 GMC Turbo:

1. Insert the firmware diskette included with the kit into your disk drive.
2. At the HyperTerminal command prompt, type **bz** and then press **Enter**. The following messages appear:

```
Update flash Memory Utility
Enter Password (not echoed):
```

3. Type **obrut** and then press **Enter**. You will not be able to see the letters you are typing. The following message appears:

```
Do you wish to download new operating system
F/W ? (Y | N)
```

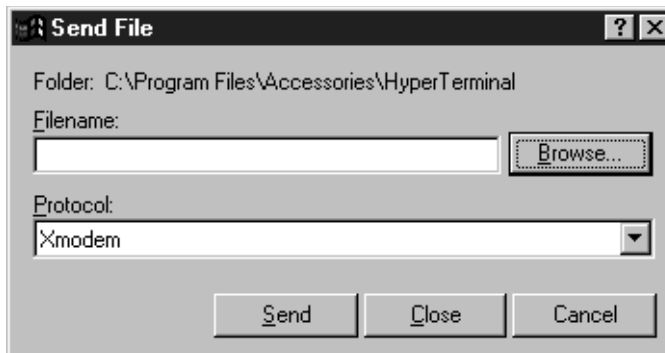
4. Type **Y**. The following message appears:

```
OK to proceed w/ Download (Y | N).
```

5. Type **Y**. The following message appears:

```
Disabling all interfaces except PORT A
Awaiting download of code....
```

6. From the *Transfer* menu, select **Send File**. The following window appears:



- 7.

If you have a:	Then select the:
1394-SJTxx-T-RL module	30810xxx.RAP file from your disk drive directory.
1394-SJTxx-T module	30800xxx.RAP file from your disk drive directory.

8. Select **Xmodem** from the Protocol field.
9. Select **Send**. The file begins to transfer from your computer to an unused portion of the 1394 system memory (DRAM).

10.

If the Image Received OK. Proceed with Reprogram? (Y N) message:	Do this:
Appears	<p>1. Type Y and then press Enter to start the image transfer from the 1394 system memory (DRAM) to the flash chip.</p> <p>ATTENTION: Interrupting this process can cause serious damage to the firmware inside your 1394 GMC Turbo.</p> <p>The following messages appear:</p> <p>System will inform you with a message when completed.</p> <pre>Flash ID OK, Beginning erase process.. Flash SECTOR=0 ERASE OK Flash SECTOR=1 ERASE OK * * * * * * Flash SECTOR=7 ERASE OK Flash ERASE OK, Beginning program process..</pre> <p>DO NOT INTERRUPT or system may become inoperable!</p> <p>FLASH UPDATE COMPLETED!</p> <p>RESET the controller for the Firmware change to take effect.</p> <p>2. Go to step 11.</p>
Does not appear ¹	<p>1. Press the Control Reset button on the 1394.</p> <p>2. Go back to <i>Completing the Download Using HyperTerminal</i>.</p>

¹ Depending on your computer hardware, you may only receive part of the echoed messages. If any portion of the Image Received OK. Proceed with Reprogram? (Y|N) message appears, Type **Y**, press enter and proceed with the *Appears* instructions.

11. Close HyperTerminal and Open GML.

12. Press the Control Init button while pressing the Control Reset button. Continue to hold in the Init button until the 1394 GMC Turbo completes the power up sequence (about 10 seconds). This resets the baud rate on the serial communications port (Port A) to 9600. Refer to Figure 1 for button locations.

Important: If you were operating at a baud rate other than 9600, you will have to change the baud rate in your GML program. Refer to your GML Programming Manual for more information.

13. In GML, select **Online** from the *Diagram* menu. The Online Manager window appears. As GML establishes communications with the 1394 GMC Turbo, verify that the new firmware revision number appears in the lower left corner of the Online Manager Window.

14. Select **Exit**. The Online Manager Window disappears.

15.

If you:	Then:
Uploaded your GML script from the controller	<ol style="list-style-type: none"> 1. Open the GML Script you saved. 2. Select Download script from the Script menu. 3. Resume operation. 4. Go to Step 16.
Have a copy of your GML diagram	<ol style="list-style-type: none"> 1. Open the GML diagram. 2. Select Online from the Diagram menu. 3. Select Download Diagram. 4. Resume operation. 5. Go to Step 16.

16. Place the firmware upgrade label on the left side of the 1394 GMC Turbo next to the data name plate.

Upgrading Firmware Using Windows 3.1™

The procedures below show how to upgrade your firmware using the Windows accessory, Terminal, found in Windows 3.1.

Setting up Terminal in Windows 3.1

To set up Terminal:

1. Close GML and any other application that occupies the COM port used to communicate with the 1394 GMC Turbo.
2. Select **Terminal** from the Accessories window.

3. From the Settings menu, select **Communications**. The Communications menu appears.
4. Set the following fields shown below:

Important: The COM Port you select from the Connector menu depends on your computer hardware setup. You need an unused COM port (9-pin serial port) to connect your PC to the 1394 GMC Turbo. In the example above we used COM1.

5. Select **OK**. The Communications window disappears.
6. From the Settings menu, select **Binary Transfers**. The Binary Transfers window appears.
7. Select **XModem/CRC**.

8. Select **OK**. The Binary Transfers Window disappears.

Establishing Communications with the 1394 GMC Turbo

To establish communications between the 1394 GMC Turbo and the Terminal program on your PC:

1. Apply power to the 1394 GMC Turbo.
2. Open the system module door.
3. While holding in the Control Init button, press and release the Control Reset button. Continue to hold in the Control Init button until the 1394 GMC Turbo completes the power up sequence (about 10 seconds). This resets the baud rate on the serial communications port (Port A) to 9600. Refer to Figure 1 for button locations.
4. Verify that the 1394 GMC Turbo memory is unlocked. Refer to Figure 1 for the lock's location.
5. Using a 9-pin serial cable, connect your computer to J3 on the 1394 GMC Turbo. J3 is the DB9 connector on the bottom of the unit toward the front.

6. Press **Enter**. The following command prompt appears.

*

>

This message indicates that you are now communicating with the 1394 GMC Turbo.

7. Type **.i** and press **Enter**. This command wipes out the stored GML application program in the 1394 GMC Turbo and sets default data values.
8. Press the **Control Reset** button on the 1394 GMC Turbo.
9. Go to *Completing the Download Using Terminal*.

Completing the Download Using Terminal

If you would like to minimize your download time by increasing your baud rate, refer to *Minimizing Your Download Time (optional)* on page 7. To download the firmware code into the DRAM memory on the 1394 GMC Turbo:

1. Insert the firmware diskette included with the kit into your disk drive.

- At the command prompt, type **bz** and press **Enter**. The following messages appear:

```
Update flash Memory Utility
Enter Password (not echoed):
```

- Type **obrut** and press **Enter**. You will not be able to see the letters you are typing. The following message appears:

```
Do you wish to download new operating system
F/W ? (Y | N)
```

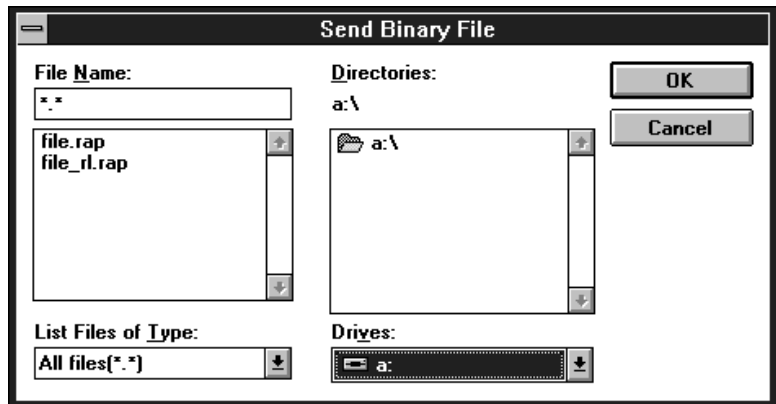
- Type **Y**. The following message appears:

```
OK to proceed w/ Download (Y | N).
```

- Type **Y**. The following message appears:

```
Disabling all interfaces except PORT A
Awaiting download of code....
```

- From the Transfer menu, select **Send Binary File**. The following window appears:



-

If you have a:	Then:
1394-SJTxx-T-RL module	<ol style="list-style-type: none"> Select the 30810xx.RAP file from the disk drive directory. Select OK.
1394-SJTxx-T module	<ol style="list-style-type: none"> Select the 30800xx.RAP file from the disk drive directory. Select OK.

At this point the file begins to transfer from your computer to an unused portion of the 1394 system memory (DRAM).

8.

If the Image Received OK. Proceed with Reprogram? (Y N) message:	Do this:
Appears	<p>1. Type Y and then press Enter to start the image transfer from the 1394 system memory (DRAM) to the flash chip.</p> <p>ATTENTION: Interrupting this process can cause serious damage to the firmware inside your 1394 GMC Turbo.</p> <p>The following messages appear:</p> <p>System will inform you with a message when completed.</p> <pre>Flash ID OK, Beginning erase process.. Flash SECTOR=0 ERASE OK Flash SECTOR=1 ERASE OK * * * * * * Flash SECTOR=7 ERASE OK Flash ERASE OK, Beginning program process..</pre> <p>DO NOT INTERRUPT or system may become inoperable!</p> <p>FLASH UPDATE COMPLETED!</p> <p>RESET the controller for the Firmware change to take effect.</p>
Does not appear	<p>2. Go to step 9.</p> <p>1. Press the Control Reset button on the 1394.</p> <p>2. Go back to <i>Completing the Download Using Terminal</i>.</p>

¹ Depending on your computer hardware, you may only receive part of the echoed messages. If any portion of the Image Received OK. Proceed with Reprogram? (Y|N) message appears, Type **Y**, press enter and proceed with the *Appears* instructions.

9. Close Terminal and Open GML.

10. Press the Control Init button while pressing the Control Reset button. Continue to hold in the Init button until the 1394 GMC Turbo completes the power up sequence (about 10 seconds). This resets the baud rate on the serial communications port (Port A) to 9600. Refer to Figure 1 for button locations.

Important: If you were operating at a baud rate other than 9600, you will have to change the baud rate in your GML program. Refer to your GML manual for more information.

11. In GML, select **Online** from the Diagram menu. The Online Manager window appears. As GML establishes communications with the 1394 GMC Turbo, verify that the new firmware revision number appear in the lower left corner of the Online Manager Window.

12. Select **Exit**. The Online Manager Window disappears.

13.

If you:	Then:
Uploaded your GML script from the controller	<ol style="list-style-type: none"> 1. Open the GML Script you saved. 2. Select Download script from the Script menu. 3. Resume operation. 4. Go to Step 14.
Have a copy of your GML diagram loaded on your computer	<ol style="list-style-type: none"> 1. Open the GML diagram. 2. Select Online from the Diagram menu. 3. Select Download Diagram. 4. Resume operation. 5. Go to Step 14.

14. Place the firmware upgrade label on the left side of the 1394 GMC Turbo next to the data name plate.

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