Automation

p/n 88-020679-01B

Gemini Addendum: ASCII Communications

Effective: November 15, 2002

Your Gemini Drive Has Changed

New Gemini GV6, GT6, GV6-PB, and GT6-PB Drives ship from the factory configured for ASCII communications. (Older drives shipped configured for binary communications.)

To communicate with your new drive:

- Use Motion Planner 4.2 (or later)
- Or, use an ASCII device, such as HyperTerminal

Cannot communicate with your Gemini drive?

You may be using an older version of Motion Planner, which does not support ASCII communications with Gemini drives.

To establish communications:

- Use Motion Planner 4.2 (or later)
- Or, see Configuration Procedure with Older Versions of Motion Planner on page 5.

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Change Summary

Revision B Changes

November 15, 2002

This document, 88-020679-01B, supercedes 88-020679-1A. Changes associated with Gemini Addendum revisions, and document clarifications and corrections are as follows:

Topic	Description
Troubleshooting	Provides descriptions of how Motion Planner determines whether a drive is using ASCII or Binary mode, specific circumstances where mode detection can fail, and outlines how to resolve the mode detection failure.

Communication Modes for Gemini Drives

The Gemini GV6, GT6, GV6-PB, and GT6-PB drives support two modes of communications:

- **Binary Mode** – the drive uses a binary language to communicate. A translator built into Motion Planner automatically translates this binary language to display ASCII on the screen (if Motion Planner is used).
- **ASCII Mode (default)** – the drive sends its binary language to an internal translator (which resides in firmware on an IC inside the drive). The translator converts the binary language to standard ASCII code, for communications with external ASCII devices.

You can use the ASCII command, described below, to configure the drive to communicate in either binary mode or ASCII mode.

Communications with Motion Planner (version 4.2 or later)

When you launch Motion Planner 4.2 (or later), and select a Gemini GV6, GT6, GV6-PB, or GT6-PB drive, Motion Planner automatically recognizes whether the drive is configured for binary mode or ASCII mode. Thereafter, any commands you issue are sent in the appropriate mode. Binary communications that Motion Planner receives from the drive are converted by its translator, for display in Motion Planner's terminal and editor windows. ASCII communications that Motion Planner receives from the drive are passed through directly for display in Motion Planner's terminal or editor windows.

For ease of use, we strongly recommend you use Motion Planner 4.2 or later. Its translator works automatically, with no configuration necessary on your part. Earlier versions of Motion Planner do not support ASCII communications with Gemini Drives.

ASCII Communications with External ASCII Devices

If you use an ASCII device to communicate directly with the drive, you may need to configure the drive to receive ASCII communications. See the next procedure for instructions.

NOTE: the drive ships from the factory with ASCII mode enabled.

Configuring the Drive for ASCII Communications

Follow these steps to configure the drive for ASCII communications. We assume below that the drive has previously been configured for binary communications (ASCII0). You will begin by using Motion Planner to send an ASCII1 command, and then switch to your ASCII device to continue with ASCII communications. (NOTE: the drive ships from the factory with ASCII mode enabled (ASCII1).)

Configuration Procedure (Motion Planner 4.2 or later)

1. From the Motion Planner terminal, issue an ASCII1 command to the drive. `ASCII1` instructs the drive to send its binary language to the drive's internal translator, for conversion to standard ASCII code.
2. Motion Planner will display a dialog box asking if you would like to RESET the drive. Click **Yes**.

   The `ASCII1` you issued in Step 1 will take effect after the RESET is issued. Motion Planner will automatically switch to ASCII communications following this RESET.
3. Configure the communication parameters for your ASCII device (such as HyperTerminal) as follows:

Bits per second	9600
Data bits	8
Parity	None
Stop bits	1
Flow control	Xon/Xoff (or software flow control)
Backspace sends ctrl–h	

4. Connect your ASCII device to the drive's RS-232/485 connector.

This completes the configuration procedure. You can now use your ASCII device to communicate with the drive in ASCII mode.

Configuring the Drive for Binary Communications

Follow these steps to configure the drive for binary communications. In this procedure, we assume that the drive has previously been configured for ASCII communications (ASCII1). You will begin by using any ASCII compatible device, such as Motion Planner 4.2 or later, to send an ASCII0 command.

Configuration Procedure

1. From the Motion Planner* terminal (or other ASCII compatible terminal), issue an ASCII0 command to the drive. ASCII0 instructs the drive to route all further communications directly to the DSP, without undergoing any type of translation (such as occurs in ASCII1 mode).

   * Motion Planner 4.2 or later

2. Establish binary communications with Motion Planner (done automatically), or other external device. No RESET is required to switch into binary mode.

This completes the configuration procedure. You can now communicate with the drive in binary mode.

Configuration Procedure with Older Versions of Motion Planner

We recommend that you use Motion Planner 4.2 or later, which supports ASCII communications with Gemini drives. If you must use an older version of Motion Planner, follow this procedure to configure a drive that is in ASCII mode (ASCII1) for binary communications (ASCII0).

1. Launch your older version of Motion Planner. When the product selection dialog appears, select “6K”, and select the COM port to which the drive is attached.
2. Issue the following command to the drive:

   ASCII0 (disables ASCII communications; enables binary communications)

3. Close the Motion Planner session.
4. Launch Motion Planner again. When the product selection dialog appears, this time select a Gemini drive (GV6, GT6, GV6-PB, GT6-PB).

This completes the configuration procedure. You can now use your older version of Motion Planner to communicate with the drive in binary mode.

Notes About ASCII Communications

Gemini Operating System 1.82 or Later Required

ASCII mode is only supported by Gemini Operating System 1.82 or later.

ASCII1 is Default Mode

The default mode for new drives shipped from the factory is ASCII mode (`ASCII1`). This allows you to connect your ASCII device to the drive and begin communicating in ASCII, if desired, without first connecting Motion Planner.

Reserved Commands

ASCII mode (`ASCII1`) does not support the use of the XONOFF or ECHO commands within a stored program.

Characters

Spaces, tabs, and non-alphanumeric characters are not stored in the drive's internal buffer. For example, if you type 'v200 ' and then type a backspace, the ending '0' will be removed from the internal buffer. Your terminal display will show the space disappear.

String Length

The longest string that can be entered is 55 characters (not counting spaces and tabs).

BOT Default

The default BOT (Beginning of Transmission) characters do not include a carriage return or line feed. See the `BOT` command description in the *Gemini Programmer's Reference* for options on other `BOT` characters.

RFS Command

The `RFS` command (Return to Factory Settings) does ***not*** return the ASCII command to the default setting (`ASCII1`). The value of the ASCII command remains unchanged after an `RFS` is executed.

TREVT Command

To determine the version of the embedded translator in your drive, use the TREVT command. See the *Gemini Programmer's Reference* for more information.

Translator Downloads

Motion Planner 4.2 or later will support translator upgrades. If you download a new translator to the drive, you must use RS-232, ***not*** RS-485. For download information, see the *Gemini Programmer's Reference*.

Daisy-Chaining

Motion Planner does not support daisy-chaining in ASCII mode (ASCII1). In order to daisy-chain and use Motion Planner, use binary mode (ASCII0). Other ASCII devices (such as HyperTerminal) will support daisy-chaining in ASCII mode.

Command Descriptions

ASCII (ASCII Communications Enable)

		Product	Rev
Type	Communication Interface		
Syntax	<a_><!>ASCII<b>	GT	NA
Units	b = enable bit	GV	NA
Range	0 (disable ASCII communications) or 1 (enable ASCII communications)	GT6	1.82
Default	1	GV6	1.82
Response	ASCII *ASCII1	GT6-PB	1.82
See Also	E, ECHO, XONOFF	GV6-PB	1.82

The ASCII command configures the drive to communicate in either ASCII mode or binary mode.

- **ASCII Mode (default)** – if ASCII mode is enabled (ASCII1), you can use standard ASCII communications to send commands to the drive.
- **Binary Mode** – If ASCII mode is disabled (ASCII0), you must use the Gemini drive's binary language to communicate with the drive. Motion Planner automatically translates ASCII commands into the drive's binary language.

Changing Communication Modes: When you change modes from ASCII to binary (ASCII1 to ASCII0), the change takes effect as soon as you issue the ASCII0 command. If you change modes from binary to ASCII (ASCII0 to ASCII1), you must issue a RESET command before the change takes effect.

RFS **COMMAND:** The RFS command (Return to Factory Settings) does not return the ASCII command to the default setting (ASCII1). The value of the ASCII command remains unchanged after an RFS is executed.

Troubleshooting

During power up, Motion Planner polls the Gemini drive to determine which communications mode the Gemini is using. To do this, Motion Planner sends an ASCII string to the Gemini drive using the Com6srvr. If Motion Planner receives an ASCII string within five seconds, it sets itself to ASCII mode. Otherwise, Motion Planner sets itself to Binary mode.

If during that five-second window the drive is disconnected or turned off, Motion Planner might not receive the necessary return ASCII string. Therefore, Motion Planner sets itself to Binary mode, even though the drive is using ASCII mode.

If there is no communication with your drive, try the following in Motion Planner (make sure the Gemini drive is powered up and connected to your computer):

1. On the **File** menu, click **New**.
2. Select **Terminal Emulator**, then click **OK**.
3. Send the `ASCII1` command.
4. Check communication using the `!TREV` command.

   If communication is now working, the Terminal responds with the following:

   `*TREV92-...`
5. If communication is not working, send the `ASCII0` command.
6. Check communication using the `!TREV` command.

   If communication is now working, the Terminal responds with the following:

   `*TREV92-...`