

GSX-86 tm  
Graphics Extension  
Technical Note  
for Customizing GINSTALL  
on 8086-based Operating Systems

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**INTRODUCTION**      This technical note outlines the GINSTALL files you use and modifications required to customize GINSTALL for devices available on your target microcomputer system.

GINSTALL is the GSX-86" menu-driven device driver installation utility. GINSTALL lets you create and maintain the GSX device driver assignment file, ASSIGN.SYS. GINSTALL prompts you to select devices from menus. After selecting devices, you can request GINSTALL to update a diskette. GINSTALL patches device drivers when necessary, copies the device drivers for the selected devices, and writes the assignment file to the diskette you specify when you start GINSTALL.

**REQUIREMENTS**      The following requirements are necessary to customize GINSTALL:

- o Digital Research Display Manager" to generate or modify screen displays
- o familiarity with the device drivers for the target microcomputer system

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**GINSTALL FILES**      The GINSTALL files you receive are listed in Table 1.

Table 1. GINSTALL Files

File	Description
GINSTALL.EXE for PC DOS and MS"-DOS or GINSTALL.CMD for CP/M-868 family	GINSTALL command file
GINSTALL.DIS	Display Manager display file
GINSTALL.TXT	text file describing devices
CURRENT.TRM	Display Manager terminal control codes

**CUSTOMIZE GINSTALL** You modify the CURRENT.TRM and GINSTALL.TXT files to describe the devices supported by the target microcomputer system. The following sections describe these files in detail.

**CURRENT.TRM File**      CURRENT.TRM contains terminal display codes. Display Manager requires these codes and escape sequences to manage GINSTALL's menus, clear the monitor's screen, and do inverse video operations.

You modify the CURRENT.TRM file so it contains the terminal control codes for the terminal on the target microcomputer. To build CURRENT.TRM, you can use the Display Manager Terminal Setup program, DMSET, which the Display Manager Productivity Tool Reference Manual describes in detail.



**GINSTALL.TXT File** GINSTALL.TXT contains the device descriptions GINSTALL displays for each device when you select INFO mode.

To modify this file, you can use a text editing program such as WordStar(r). Ensure the text editor does not insert extraneous control characters or modify the most significant bit; it must be zero. For example, WordStar used in document mode inserts carriage returns and modifies the most significant bit. So, with WordStar, you must use nondocument mode and you cannot use TABs when you edit GINSTALL.TXT.

**COMPONENTS** GINSTALL.TXT can consist of three types of sections: Category, Parameter, and Device. The Category and Device sections are required; the Parameter section is optional. The section header, which is the first four characters in each line of code, specifies either the type of section, or marks the continuation or end of a section. Table 2 lists the header types.

Table 2. Header Types

Heade@	Description
CATE	marks Category section
PAR[	marks Parameter section
DEVE	marks Device section
4 spaces	an empty header marking the continuation of the current section
EOSJ	marks end of a section



Each section consists of fields that vary in number and length. However, most fields, unless otherwise stated, consist of a numeric or alphabetic ASCII character string terminated either by a semicolon ( ; ) or Carriage Return/Linefeed (CR/LF) character sequence.

**CATEGORY SECTION** A Category section defines a device type. For example, GINSTALL.TXT usually contains a Category section for display monitors. Other commonly defined Category sections include printers and plotters. GINSTALL uses the information in the Category section to define types of devices. A Category section remains effective until GINSTALL reads the next Category section. Table 3 outlines the format for a Category section.

Table 3. Category Section Format

Field	Required	Type	Max Length	Description
		Characters		
1	YES	CHARACTER	37	describes the type of device belonging to the Category
2	YES	INTEGER	2	minimum logical device number of the Category
3	YES	INTEGER	2	maximum logical device number of the Category
4	YES	INTEGER	2	minimum number of devices from this category generally used by applications
5	YES	INTEGER	2	maximum number of devices from this category generally used by applications





Table 3. (continued)

Field	Required	Type	Max Length	Description
		Characters		
6	YES	CHARACTER	8	driver ID string precedes and identifies the patch location of drivers for this Category. A null string indicates no patch is required.

Sample Category Section

Figure 1 shows a sample Category section that defines a category for display monitors.

CAT[DISPLAY MONITORS;01;10;1;2;zyxg  
EOSI

Figure 1.  
Category Section for Display Monitors

Figure I shows you all the fields described in Table 3. Following the header and device type are the logical device numbers for monitor drivers, which range from Oi through iO. Table 4 lists suggested ranges for logical device numbers associated with specific device types.

Table 4.  
Suggested Logical Device Number Ranges

Range	Device
01-10	display monitors
11-20	plotters
21-30	printers
31-40	metafiles
41-50	cameras



After the logical device numbers are the minimum and maximum numbers of devices used by applications. Most applications require at least one monitor driver. Some applications can use two monitor drivers, one monochrome and one color.

The last character string, `zyxg`, is the device driver ID string. It precedes the location in the device driver that GINSTALL patches. All device drivers for devices in the same Category section must have the same device driver ID string. For example, all display monitor device drivers in the Category section in Figure I must have a driver ID string of `zyxg`.

When GINSTALL patches device drivers in a Category to provide additional support or modify existing support, a Parameter section immediately follows the Category section. For example, the display monitors Category can be followed by a Parameter section that contains a patch for mouse support.

**PARAMETER SECTION** One or more Parameter sections immediately follow a Category section if device drivers in a Category section give you options. The Parameter section defines the option the device driver supports, and contains the patch value GINSTALL uses to patch a device driver file for the supported option. One Parameter section exists for each type of option the driver supports. For example, if the device driver has a mouse option, a Parameter section lists mice and contains a patch value for each mouse supported. Refer to Figure 2 for details.

GINSTALL uses the driver ID string in the Category section to find the patch location. By replacing the byte following the driver ID string with the patch value from the Parameter section, GINSTALL patches the driver to support the selected option. For the display monitor, GINSTALL patches the byte following the string `zyxg` in the monitor driver with the patch value of the selected mouse.

You must define a Parameter section for each device driver patch, which tells GINSTALL the following:

- o information necessary for the prompts it displays
- o the one-byte patch value; GINSTALL patches the driver when you select the GINSTALL update function.

Refer to Table 5 for the format of a Parameter section.

Note: The Parameter must apply to all devices in the Category. If the Category requires no parameters, a Parameter section is not necessary.

Table 5. Parameter Format

Field	Required	Type	Max Length Characters	Description
1	YES	CHARACTER	37	description of parameter
2	YES	CHARACTER	1	dependency flag: n - not dependent on the previous Parameter y - dependent on the previous Parameter
3	YES	INTEGER	3	dependency number. If the position of the selected option in the list of options for the previous Parameter is less than or equal to this value, the Parameter defaults to a patch value of FFH. See example.
4	YES	CHARACTER	37	description of first option
5	YES	INTEGER	3	value to patch in the driver if the first option is selected
6	YES	CHARACTER	37	description of second option



+ Table 5. (continued)

Field	Required	Type	Max Length Characters	Description
7	YES	INTEGER	3	value to patch in the driver if the second option is selected
8	NO	CHARACTER	37	description of third option
9	NO	INTEGER	3	value to patch in the driver if the third option is selected
30	NO	CHARACTER	37	description of 14th option
31	NO	INTEGER	3	value to patch in the driver if the 14th option is selected

Sample Parameter Section      Figure 2 shows two Parameter sections that patch monitor device drivers for mouse support.

```
PARLSELECT MOUSE OPTION FOR DISPLAY MONITOR;NO
  No Mouse;0
  Microsoft Mouse (requires MOUSE.COM);2
  PC Mouse by Mouse Systems Corp.;1
  Summamouse;3
EOSI
PAREMOUSE C    ICATION PORT;y;2
  Communication Port #1;0
  Communication Port #2;1
EOSI
```

Figure 2. Parameter Sections  
of a Category for Monitors



The first Parameter section in Figure 2 defines the mice you can select for the monitor already selected. The first line of the section defines the Parameter and whether or not it is dependent on a previous Parameter. The n and 0 following the definition tells you the first Parameter section is not dependent on a previous Parameter section.

Subsequent lines in the first Parameter section contain the mouse options you can select. Each option appears on a separate line. The value following the option is the value GINSTALL patches in the driver; the implementation of the driver determines the range of patch values. The first option is no mouse; the value GINSTALL patches into the driver is 00H. The second option is the Microsoft mouse; the value GINSTALL patches into the driver is 02H, and so on.

The second Parameter section, MOUSE COMUNICATION PORT, sets the communication port the mouse uses. This Parameter is dependent on the previous Parameter, SELECT MOUSE OPTION FOR DISPLAY MONITOR. The dependent value is two.

**Dependent Value** The dependent value determines which options from the previous Parameter section require the current Parameter section. Options that do not require a subsequent Parameter section are listed first. Options requiring subsequent Parameter sections follow. Option numbers precede each option and are sequential. Therefore, the highest option number from the list of options in the previous Parameter section that does not require subsequent parameters is the dependent value.

The dependent value tells GINSTALL the following:

- o options in the previous Parameter section with values less than or equal to the dependent value do not use the current Parameter section.





o options from the previous Parameter section  
with values higher than the dependent value  
use the current Parameter section.

For an example, refer to the Parameter section in Figure 2 and the sample Parameter Selection Menu in Figure 3. If you select either option one or two from the first Parameter section, the MOUSE COMMUNICATIONS PORT Parameter is not relevant. GINSTALL patches the driver with the default value FFH and does not display the MOUSE COMMUNICATION PORT options. However, if you select any of the other mice options with an option number greater than two, GINSTALL prompts you to select a communication port for the mouse. If you select option one for port #1, GINSTALL patches the driver with the value 00H. If you select option two for port #2, GINSTALL patches the driver with the value 01H.

**Patching Drivers** When GINSTALL updates selections you make, GINSTALL patches the device drivers for the devices you selected before copying them to the diskette you specified when you started GINSTALL. At update time, GINSTALL patches the driver by replacing the bytes that follow the ID string in the driver with the patch values from the Parameter sections. GINSTALL places the patch values in the driver in the reverse order that they occur in the Parameter sections. Refer to the examples below.

**Parameter Examples** The following examples show how you patch values in Parameter sections that belong to a Category defining display monitors.

1. You select the SummaMouse" and Communication port #2. The patch contains the values:

	z	y	x	g	Port	Mouse
Hex Value:	7A	79	78	67	01	03



2. You select the No Mouse option and are not prompted for a communications port. The patch contains the values:

	z	y	x	g	Port	Mouse
Hex Value:	7A	79	78	67	FF	00

Using Parameters When you select a monitor from the list of device Categories, GINSTALL prompts you to select options from a Parameter list. The banner at the top of the monitor displays the Parameter Description. Below the banner, an option number precedes each option description. Figure 3 shows a sample Parameter Selection Menu.

#### SELECT MOUSE OPTIONS FOR DISPLAY MONITOR

##### Options

- 1 No Mouse
- 2 Microsoft Mouse (requires HOUSE.COM)
- 3 PC Mouse by Mouse Systems Corp.
- 4 SummaHouse

Enter Option Number  
ESCAPE: return to Main Menu

Figure 3. Parameter Selection Menu



**DEVICE SECTION** A Device section immediately follows the Parameter section. If no Parameter section exists, the Device section immediately follows the Category section. One and only one Device section exists for each device driver for the 40

devices in a Category section. The Device section describes each device driver for devices in a Category section. Refer to Table 6 for the format of the Device section.

Although only one device section exists for every device driver for each device in a Category, more than one device can use the same device driver. For example, Epson,-@, and IBM(R) printers use the same device driver.

Table 6. Device Section Format

Field	Required	Type	max Length Chardcters	Description
1	YES	CHARACTER	37	device driver description
2	YES	CHARACTER	12	d r i v e r filename. Assumes a default filename extension of SYS if no extension is given in this field.
3	YES	INTEGER	2	approximate driver size
4	YES	REAL	5	norizontal dimension of plot area in inches
5	YES	REAL	5	vertical dimension of plot area in inches
6	YES	INTEGER	5	horizontal dimension of plot area in pixels
7	YES	INTEGER	5	vertical dimension of plot area in pixels
8*	NO	CHARACTER	40	general comment



Table 6. (continued)

Field	Required	Type	ax Length	Des ription
		Characters		
9*	NO	CHARACTER	40	general comment
20*	NO	CHARACTER	40	general comment

Fields must end with a CR/LF character sequence. Semicolons are treated as text.

Sample Device Section      Figure 4 shows a Device section for a Category defining display monitors.

```
DEV[IBM Color Adapter COLOR MODE;IB14BLCP2;14;9;7;320;200
This driver is for the IBM color graphic
adapter card. It provides four colors at
a resolution of 320H x 200 pixels.
EOSI
```

Figure 4. Device Section

Figure 4 shows a Device section for the IBM Color Adapter Card in color mode. The device driver filename is IBMBLCP2.SYS. GINSTALL assumes the filename extension is SYS, if an extension is not given in this field. The device driver is approximately 14K. The size of the monitor's screen is nine inches horizontally and seven inches vertically. In pixels, the screen is 320 x 200. The last three lines in the Device section are general comments. Each of the 13 possible general comment lines (fields B-20 in Table 6) consist of one field per line. The field can consist of 40 characters and must terminate with a CR/LF character sequence. A semicolon at the end of a general comment line is treated as text.



