# HP

## PURPOSE
Direct graphical output to an HP device. Several different HP models are supported.

## DESCRIPTION
DATAPLOT supports 3 basic types of HP devices. These are the HP 2622 and related terminals, HP-GL for plotters and printers, and the HP 7221 plotter. Each of these are described in more detail in the NOTE section below.

## SYNTAX 1
HP <model> <model2> <model3>
where <model> is the first model identifier;
      <model2> is the optional second model identifier;
and    <model3> is the optional third model identifier.

This form directs the HP output to the terminal.

## SYNTAX 2
DEVICE <1/2/3> HP <model> <model2> <model3>
where <model> is the first model identifier;
      <model2> is the optional second model identifier;
and    <model3> is the optional third model identifier.

This form designates one of DATAPLOT's 3 devices to be an HP device.

## EXAMPLES
HP-GL
HPGL
HP-GL 7475
HPGL 7475
HP-GL LJET
HP 2622
HP 2647
HP 7221

## NOTE 1
DATAPLOT supports the following HP-2622 type terminals.

```
MODEL                        RESOLUTION      COLORS
=====                        ==========      ======
2622, 2623, 2393, 9816, 512 x 390              0
9836, 216x, 236x
2647, 2648                   720 x 360          0
2627, 2397, 2390             512 x 390          8
```

All the above models use the same device driver. They differ only in the number of picture points used and in whether or not they support color. If you have an HP terminal not listed above, try using the HP 2622 (DEVICE 1 HP 2622) for a monochrome terminal or the HP 2627 (DEVICE 1 HP 2627) for a color terminal. You may need to specify the picture points as well (PICTURE POINTS <x resolution> <y resolution>).

## NOTE 2
Most HP plotters and printers use the HP-GL protocol. In addition, some non-HP plotter vendors support an HP-GL emulation mode. This protocol can vary somewhat among plotter models. Fortunately, this variation is typically in what commands are supported, not in how they work. DATAPLOT uses a subset of the HP-GL language that should be available on all HP-GL plotters. HP-GL plotters can also vary in the number of pens available, paper sizes available, and in the resolution (i.e., the number of picture points). DATAPLOT can handle some of this by entering the device command as follows:

DEVICE <id> HPGL <model> <paper size>

where <paper size> is one of the following:

| | | |
|---|---|---|
| A | - | 8 1/2 x 11 inches |
| B | - | 11 x 17 inches |
| C | - | 17 x 22 inches |
| D | - | 22 x 34 inches |
| E | - | 34 x 44 inches |

and <model> is one of the following:

7475, 7550 (A and B sizes supported, 8 pens)

7580 (A, B, C, and D sizes supported, 8 pens)

7585, 7586 (A, B, C, D, and E sizes supported, 8 pens)

9872 (A size only, 4 pens)

LJET, LASER(A size only, black and white)

For example, to set an HPGL plotter model 7475 with paper size A, enter the command:

DEVICE 2 HPGL 7475 A

Specifying the model number and paper size changes the number of picture points DATAPLOT assumes. Previously, it was hardcoded to the model 9872 units. This caused plots to be centered incorrectly on other models (although this could be alleviated via a PICTURE POINTS command). Also, the number of pen slots is based on the model number. The 9872 has 4 slots while the other models assume 8 slots. The mapping of a color to a pen number can be user modified with the PEN MAP command.

If your model is not listed above, simply use one of the above models (the 7475 is probably the best choice for most models). The default is model 9872 (with 4 pens and using A size paper).

The LJET model is used to support the HP LaserJet III printer in HP-GL emulation mode. It adds commands to put the LaserJet in HP-GL mode and to handle page advances correctly. HP-GL files from other models will not work correctly on the LaserJet III. Some HP LaserJet IV printers support Postscript directly (this is recommended over the HPGL emulation since it provides better hardware text).

The LaserJet II is not supported directly. One common solution is to purchase a Postscript cartridge for the LaserJet II printer. In addition, there are several programs available for converting Postscript output to various common printers such as the LaserJet II. One that we have specifically used with DATAPLOT Postscirpt files is Ghostscript/Ghostview. Ghostview is available at various ftp sites and is available for Unix and IBM/PC platforms. There are other programs, e.g. Freedom of the Press, that perform a similar function. However, we have not explicitly tested any of these other programs with DATAPLOT Postscript files.

## NOTE 2

DATAPLOT supports the HP 7221 pen plotter (enter DEVICE 1 HP 7221). This is now an essentially obsolete plotter (although it still works).

## NOTE 3

HP is upgrading the HPGL language to HPGL-2. DATAPLOT does not yet provide specific HPGL-2 support. However, HPGL-2 devices should still support standard HP-GL output.

## DEFAULT

Off

## SYNONYMS

None

## DEVICE NOTES (HP 2622)

**1.** HARDWARE TEXT - There are 7 hardware character sizes. However, only the first 2 sizes are of much use in practice.

```
DATAPLOT  SIZE           Hardware size
==============           =============
 0.0 <= size <   3.0          1
 3.0 <= size <   6.0          2
 6.0 <= size <   9.0          3
 9.0 <= size <  11.0          4
11.0 <= size <  14.0          5
14.0 <= size <  17.0          6
17.0 <= size < 100.0          7
```

**2.** COLOR - Those HP 2622 related terminals that support color provide the following colors:

BLACK, WHITE, RED, BLUE, GREEN, MAGENTA, CYAN, YELLOW

Enter the command SHOW COLORS HP 2622 for the DATAPLOT color to HP 2622 color mapping. The background color can be set to one of these supported colors.

**3.** HARDWARE FILL - All area fills are done in software.

**4.** DASH PATTERNS - The HP 2622 provides unique dash patterns for each DATAPLOT dash type (SOLID, DASH, DOTTED, DASH1, DASH2, DASH3, and DASH4).

**5.** LINE WIDTH - Wide lines are drawn in software.

**6.** GRAPHICS INPUT - The CROSS HAIR command is supported on the HP 2622.

## DEVICE NOTES (HP-GL)

**1.** HARDWARE TEXT - HP-GL hardware characters can be scaled to any size. Vertical strings are rotated 90 degrees. The appearance of hardware text may vary depending on the specific model used.

**2.** COLOR - The LASERJET model is monochrome, the 9872 model assumes 4 slots, and all other models assume 8 slots. If you have more than 8 colors, use the HPGL PEN MAP command (enter HELP PEN MAP for details) to define the color to slot number mapping for slots greater than 8. This command can also be used to override the defaults for slots 1 through 8. Enter SHOW COLORS CALCOMP for the default DATAPLOT color to pen slot mapping.

**3.** HARDWARE FILL - All area fills are done in software.

**4.** DASH PATTERNS - The HP-GL device provides unique dash patterns for each DATAPLOT dash type (SOLID, DASH, DOTTED, DASH1, DASH2, DASH3, and DASH4).

**5.** LINE WIDTH - Wide lines are drawn in software.

**6.** GRAPHICS INPUT - The CROSS HAIR command is ignored for HP-GL devices.

## DEVICE NOTES (7221)

**1.** HARDWARE TEXT - HP 7221 hardware characters can be scaled to any size. Vertical strings are not rotated 90 degrees.

**2.** COLOR - The HP 7221 plotter assumes 8 pen slots. Enter SHOW COLORS CALCOMP for the default DATAPLOT color to pen slot mapping.

**3.** HARDWARE FILL - All area fills are done in software.

**4.** DASH PATTERNS - The HP 7221 device provides unique dash patterns for each DATAPLOT dash type (SOLID, DASH, DOTTED, DASH1, DASH2, DASH3, and DASH4).

**5.** LINE WIDTH - Wide lines are drawn in software.

**6.** GRAPHICS INPUT - The CROSS HAIR command is ignored for HP 7221 device.

## RELATED COMMANDS

| | | |
|---|---|---|
| SHOW CALCOMP COLORS | = | Show the available colors for 8 slot pen plotters. |
| PEN MAP | = | Specify the color to slot mapping for various penplotters. |
| ZETA | = | Direct graphical output to a ZETA device. |
| CALCOMP | = | Direct graphical output to a Calcomp device. |
| POSTSCRIPT | = | Direct graphical output to a Postscript device. |
| TEKTRONIX | = | Direct graphical output to a Tektronix device. |

## APPLICATIONS

Graphics device specification

## IMPLEMENTATION DATE

Pre-1987 (various updates, such as the LJET model, have been added more recently)

## PROGRAM

DEVICE 2 HPGL LJET
PLOT SIN(X) FOR X = -6.28 0.01 6.28
QUIT

The HP-GL output, compatible with a LaserJet II printer, will be saved in the file DPPL1F.DAT. The DPPL1F.DAT file can be printed with the standard print utilities on your local operating system.