6

Reference information

HP DesignJet 200 specifications, a summary
of PJL programming information, and
regulatory conformance statements.

Plotter, cartridge and media specifications

Functional specifications

Cartridges	Two, 50-nozzle print cartridges. Total of 100 nozzles, 96 used by print engine.
Media sizes	Chapter 2 also details media sizes. E/A0-size: All media sizes within the range 210 mm to 917 mm (8.3 to 36.1 in) width, and 210 mm to 1625 mm (8.3 to 64 in) length.
	D/A1-size: All media sizes within the range 210 mm to 625 mm (8.3 to 24.6 in) width, and 210 mm to 1625 mm (8.3 to 64 in) length.
Margins (hard–clip limits)	Chapter 2 also details margins. Leading edge: 17 mm (0.67 in) Trailing edge: 17 mm (0.67 in) Sides: 5 mm (0.2 in) (all measurements ± 2 mm (0.08 in))
Maximum plotting area	Media size minus margins with tolerance.
Language	JIS ASCII, KATAKANA. HP-GL/2 (with Kanji level 1 and 2 character sets, stick font only.) HP-GL (7586B). DCIs. HP RTL (color mapping/area fill) PJL.
I/O	RS-232 and Centronics/Bi-Tronics built-in.
Automatic features	Media edge-sensing on four edges. Automatic language switching: – from HPGL to HPGL2 – from HPGL2 to RTL
Plotter throughput time	D/A1-size E/A0-size Draft print mode: appx. 3.8 mins. appx. 7.5 mins Final print mode: appx. 5.0 mins. appx. 10.0 mins.
Print resolution	300x300 dpi, dot depleted (Draft mode) 300x300 dpi (Final mode)
Accuracy (Maximum accumulated error)	±.38 mm (.015 in) or ±.2% of the specified vector length, whichever is greater, at 23°C (73°F), 50–60% relative humidity, on HP special polyester film.
Stand	Optional legs and bin kit (A1/D and A0/E).

Plotter dimensions

	C3180A (D-size)	**C3181A(E-size)**
Size	Depth: 302 mm (11.9 in) Width: 1007.5 mm (39.7 in) Height: 333 mm (13.1 in)	Depth: 302 mm (11.9 in) Width: 1307.5 mm (51.5 in) Height: 333 mm (13.1 in)
Weight	30 kg (66.2 lb)	40 kg (88.4 lb)

Environmental specifications

Hardware	Environmental Class B2
Operating environment: Plotter	Mechanical and electrical: 0 to 55°C (32 to 131°F) @ 20-80% relative humidity With cartridges and media: 10 to 40°C (50 to 104°F) @ 20-80% relative humidity Optimal print quality and media handling: 15 to 30°C (59 to 86°F) @ 20-80% relative humidity
Cartridges	10 to 40°C (50 to 104°F)
Storage environment:	
Plotter/media	–40 to 70°C (–40 to 158°F) @ 5-95% relative humidity
Cartridges	–40 to 60°C (–40 to 140°F)

Power specifications

Source	100–240V ac ±10%, 47–63 Hz
Consumption	140 W (2 A max.)

Acoustic specifications*

Operating sound pressure	54 dB(A)
Idle sound pressure	<20 dB(A)
Operating sound power	6.5 Bels (A)
Idle sound power	<3.6 Bels (A)

* These specifications are typical sound pressures at a one-meter bystander position. Idle specification assumes fan is off.

Plotter, cartridge and media specifications

Base memory	2-MB RAM soldered on main board
Upgrades	Expanded memory (to 10 MB max) using one: 2-MB, 4-MB or 8-MB memory expansion module (SIMM).

EMC specifications*

Canada	Canadian Department of Communications Radio Interference Regulations Class B compliant.
Europe	89/336/EEC EMC Directive compliant Meets EN 55022 Class B emission limits prEN 55024-2 ESD, prEN55024-3 Radiated Immunity, prEN 55024-4 Fast Transients.
Japan	Registered VCCI Class 2.
Korea	RRL certified
South Africa	SABS licensed
USA	Federal Communications Commission certified Class B computing device CFR 47 Part 15

* EMC= Electromagnetic compatibility

Safety specifications

Information Technology Equipment (ITE)
Movable
Class I
Plugable Type A
Installation Category II
Pollution Degree 2

For indoor controlled office environments use.

USA :	Underwriters' Laboratories "Listed" ITE, UL 1950
Canada :	Canadian Standards Association "Certified" ITE, CSA C 22.2-950
Europe (EC) :	EN 60950 compliant
Norway :	NEMKO approved EN 60950, EMKO TUE (74)DK 203

PJL summary

This section provides an overview of the Printer Job Language (PJL) included in the plotter. The PJL commands in the plotter allow a user to: enter and exit PJL mode, determine the status of the plotter, comment their PJL driver, and echo commands sent to the plotter.

General PJL rules

- All commands (except the Enter PJL Command) must begin with @PJL. PJL *must* be capitalized.

- Except for @PJL, commands are not case sensitive. This means that ENTER, Enter and enter are identical.

- All commands must end with either <CR><LF> or <LF>.

- The only legal characters in a value field are a horizontal tab (ASCII 9) plus ASCII characters 32 through 126.

- Only the first 256 characters of a command are recognized. Additional characters cause the entire command to be ignored.

- Values in parentheses ( ) are optional.

Enter PJL

<ESC>%-12345X

Use: Exits the current non-PJL and enters the Printer Job Language. If already in PJL, this command is ignored.

Remarks: This command performs the following actions:

- Prints all data received before this command.

- Shuts down the current language context in an orderly fashion.

Note that (<CR>)<LF> should *not* follow this command.

Enter non-PJL

@PJL ENTER LANGUAGE=# (<CR>)<LF>

Value	Meaning
HPGL2	Enter HP-GL/2 language context
HPGL	Enter HP-GL language context

Default: The plotter automatically switches out of PJL and into the language context selected on the Setup Sheet whenever it receives a command not prefaced with @PJL

Range: ASCII characters 9, 32–126

Remarks: This command allows you to exit PJL and enter another language context. It is recommended that the user exit PJL in this manner.

Echo Characters
sent to plotter

@PJL ECHO # (<CR>)<LF>

Use: This command causes the plotter to return the value included with the command back to the host.

Range: ASCII characters 9, 32–126. Maximum length of 256 characters. You can include up to 256 characters in the valid ASCII character range.

Remarks: The response to the Echo command will be: @PJL ECHO #
<CR><LF><FF> where # will be made up of ASCII characters 32–126 or ASCII
character 9 (horizontal tab). Once the command string (including the value field)
exceeds 256, the entire command is ignored.

Comment

@PJL COMMENT # (<CR>)<LF>

Use: This command allows you include comments in your PJL program. It has no
effect on the plotter. You can include up to 256 characters in the valid ASCII
character range (ASCII characters 9, and 32-126).

Unsolicited Status

@PJL USTATUS TIMED = # (<CR>)<LF>
@PJL USTATUS DEVICE = # (<CR>)<LF>

Use: The USTATUS command is used to define when the status of the plotter
should be returned to the host. There are two independent modes of the unsolicited
response: TIMED and DEVICE.

Note that only one of TIMED or DEVICE may be used in a single command,
although both can be active at the same time.

TIMED=#

Value	Meaning
0	Disables sending of an unsolicited response set using the TIMED= command. Has no effect on the sending of unsolicited responses enabled using the DEVICE=command.
1	Command is ignored.
2–600	Enables the sending of the current status every # seconds.
>600	Command is ignored.

Default: 0 (Timed response is disabled).

Range: Integers in the range 2 to 600, inclusive. All other values (including
negative values) cause the command to be ignored.

Remarks: When this command is included in the USTATUS string, it causes the plotter to send the current status every # seconds. Setting # to 0 disables the timed response, but has no effect on responses set using the DEVICE= string.

The syntax of the response from the plotter is:

```
@PJL USTATUS TIMED<CR><LF>
CODE=XXYYY<CR><LF>
<FF>
```

where *XX* is the category and *YYY* is the status code. The tables below list the status codes and categories.

Category	Meaning
10	The response is for informational purposes only.
20	A PJL syntax error has occurred.
30	An error has occurred, but the plotter will continue to operate. No user intervention is required.
40	User intervention is required.
41	Paper loading messages.
50	A hardware error has occurred and authorized service personnel should be called in.

Category	Code	Meaning
10	000	Wildcard error code
	001	Ready to plot
	003	Initializing
	004	Self-Test (including pen alignment)
20	000	Wildcard error code
	001	Syntax error
	002	Unsupported/Invalid command
	003	Unsupported/Invalid option
	004	Unsupported/Invalid personality/system
	005	PJL command buffer overflow
	006	Illegal character

Category	Code	Meaning
27	000	Wildcard error code
	001	Generic semantic error
40	005	Cartridge error during either align cartridges or reading setup sheet
	010	No electrical contact with one or both cartridges
	011	Accessing cartridges
	021	Lower lever or Lower window
41	100	Paper out
50	000	Wildcard error code
	001	Interface error
	002	Part malfunction

Device=#

Value (#)	Meaning
On	Directs the plotter to send a response whenever the status changes, except when a PJL syntax error occurs.
Verbose	Directs the plotter to send a response whenever the status changes, regardless of the cause.
Off	Turns off unsolicited status set by either DEVICE=ON or DEVICE= VERBOSE. Has no effect on unsolicited status set using the TIMED command.

Range: Only the values listed above are valid.

Default: Unsolicited responses are disabled, regardless of the status of the plotter.

Remark: When a response is sent from the plotter, it has the following syntax:

```
@PJL USTATUS DEVICE<CF><LF>
CODE=XXYYY<CR><LF>
<FF>
```

Where *XX* indicates the category and *YYY* indicates the status code. Status responses for category 20 will be generated only when DEVICE=VERBOSE is specified. Refer to the category and status code tables listed for TIMED.

Turn unsolicited
status off

@PJL USTATUSOFF (<CR>)<LF>

Use: This command can be used to disable the unsolicited status response enabled
by use of the USTATUS command. It disables all unsolicited responses regardless
of whether they were set using the DEVICE or TIMED command.

Read current status
code

@PJL INFO STATUS (<CR>)<LF>

Use: To provide the status code, as in @PJL USTATUS, but outputs it
immediately. Below is an example of the response to this command:

```
@PJL INFO STATUS<CR><LF>
CODE=XXYYY<CR><LF>
<FF>
```

where *XX* is the category and *YYY* is the status code. The tables for the @PJL
USTATUS command list the status codes and categories.

Identify Plotter

@PJL INFO ID (<CR>)<LF>

Use: This command provides a way to identify the plotter type. Below is an
example of the HP DesignJet 200 response to this command:

```
@PJL INFO ID<CR><LF>
"DESIGNJET 200"<CR><LF>
<FF>
```

Configuration
Information

@PJL INFO CONFIG (<CR>)<LF>

Use: This command returns a series of lines listing configuration information. Use
this command to request information such as which plotter languages are installed.
Variables appear in the response only if they are installed in the plotter.

Here's a sample of how the returned data would be formatted (<HT> means
"horizontal tab" [ASCII 9]):

```
@PJL INFO CONFIG<CR><LF>
LANGUAGES  [2 ENUMERATED]<CR><LF>
<HT>HPGL2<CR><LF>
<HT>HPGL<CR><LF>
USTATUS [2 ENUMERATED]<CR><LF>
<HT>DEVICE<CR><LF>
<HT>TIMED<CR><LF>
<FF>
```

Read unsolicited
status options and
bounds

@PJL INFO USTATUS (<CR>)<LF>

Use: This command gives a series of strings listing the types of unsolicited status
supported by the plotter. The listing also contains the possible values that can be
set (see the USTATUS command) as well as the current setting.

Here's a sample of how the returned data is formatted (<HT> means "horizontal
tab" [ASCII 9]):

```
@PJL INFO USTATUS<CR><LF>
DEVICE=ON [3 ENUMERATED]<CR><LF>
<HT>VERBOSE<CR><LF>
<HT>ON<CR><LF>
<HT>OFF<CR><LF>
TIMED=30 [2 RANGE]<CR><LF>
<HT>2<CR><LF>
<HT>600<CR><LF>
<FF>
```

Job

@PJL JOB NAME="job name" (<CR>)<LF>

Use: To inform the plotter of the start of a PJL job and to synchronize the job
information.

Value	Range	Default
NAME=	ASCII 33–255, <SP>, <HT>	Not applicable

Remarks: The job name variable is a string and must be enclosed in double
quotes.

End Of Job (EOJ)   ***@PJL EOJ NAME="job name" (<CR>)<LF>***

Use: Informs the plotter that the job has been completed. Use this command whenever you use the JOB command.

Value	Range	Default
NAME=	ASCII 33–255, <SP>, <HT>	(none)

Remarks: The job name variable is a string and must be enclosed in double quotes.

Reset   ***@PJL RESET(<CR>)<LF>***

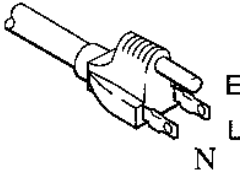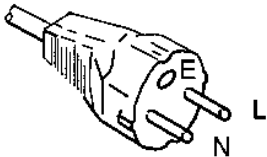**Use:** None.
Remark: This command is accepted but ignored.

Power cords

The power cord supplied with your plotter should meet the plug requirements for
your area. However, different power cords (international options) are available (see
below). If necessary, you can obtain a different power cable by contacting your
local Hewlett-Packard Sales and Support office or authorized dealer. Note the
following abbreviations used in the power cord options table below.

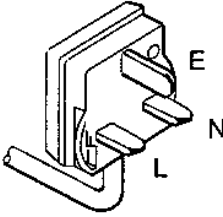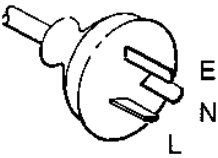**L** – Line or Active Conductor (also called "live" or "hot")
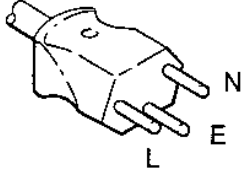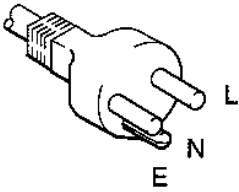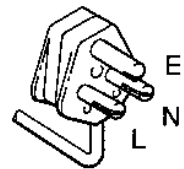
N – Neutral or Identified Conductor

E – Earth or Ground

Plug Type	Voltage	Country	HP Part Number
NEMA 5-15P	120 V ac	Canada Philippines Taiwan United States	8120–1378
	127 V ac	Mexico	8120–1378
MITI 41-9692	100 V ac	Japan	8120–4753
CEE 7-VII	220 V ac	Continental Europe Egypt Saudi Arabia	8120–1689

Plug Type	Voltage	Country	HP Part Number
BS 1363A	240 V ac 220 V ac	United Kingdom Hong Kong	8120–1351
ASC112	220 V ac 240 V ac	China (mainland) Australia New Zealand	8120–1369
SEV 1011	220 V ac	Switzerland	8120–2104
DHCR-107	220 V ac	Denmark	8120–2956
SABS	220 V ac	Republic of South Africa	8120-4211
	240 V ac	India	

Interface specifications

Serial (RS-232-C) interface

The plotter is configured as a DTE (data terminal equipment). Data is transmitted on pin 2 and received on pin 3. The connector on the plotter is 25-pin female.

Pin	Wire/Signal Name	RS-232-C	CCITT V.24	Source
1	Protective Ground	AA	101	
2	Transmitted Data	BA	103	DTE
3	Received Data	BB	104	DCE
4	Request to Send	CA	105	DTE
5	Clear to Send	CB	106	DCE
6	Data Set Ready	CC	107	DCE
7	Signal Ground	AB	102	
20	Data Terminal Ready	CD	108.2	DTE

Over the page are the pin configurations for some of the more common HP cables referenced in chapter 1, under the section "Choosing an interface cable."

Cable	HP Part Number	Connector Type	
		Plotter End	**Computer End**
Serial Printer/Plotter	24542G	male (25-pin)	female (9-pin)

```
Plotter End                    Computer End
  ┌────┐                         ┌────┐
  │ 4  │─────────────────────────│ 1  │
  ├────┤                         ├────┤
  │ 2  │─────────────────────────│ 2  │
  ├────┤                         ├────┤
  │ 3  │─────────────────────────│ 3  │
  ├────┤                         ├────┤
  │ 5  │──────────────●          │ 4  │
  ├────┤              │          └────┘
  │ 6  │──────────────┘
  ├────┤                         ┌────┐
  │ 7  │─────────────────────────│ 5  │
  ├────┤                         ├────┤
  │ 20 │──────────────●          │ 6  │
  └────┘              │          ├────┤
                      └──────────│ 8  │
  ┌────┐                         ├────┤
  │ 8  │─────────────────────────│ 7  │
  └────┘                         └────┘
```

Cable	HP Part Number	Connector Type	
		Plotter End	**Computer End**
Modem Eliminator	92219M	male (25-pin)	male (9-pin)

```
Plotter End                    Computer End
  ┌────┐                         ┌────┐
  │ 1  │─────────────────────────│ 1  │
  ├────┤                         ├────┤
  │ 7  │─────────────────────────│ 3  │
  ├────┤                         ├────┤
  │ 3  │─────────────────────────│ 5  │
  ├────┤                         ├────┤
  │ 20 │─────────────────────────│ 7  │
  ├────┤                         ├────┤
  │ 2  │─────────────────────────│ 9  │
  └────┘                         └────┘
```

Cable	HP Part Number	Connector Type (25-pin)	
		Plotter End	Computer End
Modem Eliminator	17255D	male	female
	17255M OR 13242G*	male	male

* Symmetrical; either end may be connected to the plotter. Other pins are connected in the 13242G but do not affect plotter operation.

Plotter End	Computer End
1	1
3	2
2	3
7	7
20	5
5	6
6	20

		Connector Type (36-pin)	
Cable	**HP Part Number**	**Plotter End**	**Computer End**
Parallel (Bi-Tronics and Centronics)	92284A	male	male

Regulatory notices

Electromagnetic compatibility (EMC)

FCC Statement
(U.S.A.)

The U.S. Federal Communications Commission (in 47 cfr 15.105) has specified that the following notice be brought to the attention of users of this product.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interferences by one or more of the following measures:

- reorient the receiving antenna

- increase the separation between the equipment and the receiver

- connect the equipment into an outlet on a circuit different from that to which the receiver is connected

- consult the dealer or an experienced radio/TV technician for help

The user may find useful the following booklet prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the US Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

C A U T I O N

Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this equipment not expressly approved by the Hewlett-Packard Company, may cause harmful interference and void the FCC authorization to operate this equipment.

DOC statement
(Canada)

Le présent appareil numérique n'émet pas de bruits radioéléctriques dépassant les limits applicables aux appareils numériques de la class B préscrites dans le Règlement sur le Brouillage Radioéléctrique édicte par le ministère des Communications du Canada.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

VCCI-2 (Japan)

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Korean EMI statement

이 기기는 업무용으로 전자파장해검정을 받은 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하였을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

Geräuschemission (Germany)

LpA < 70 dB
am Arbeitsplatz
im Normalbetrieb
nach DIN 45635 T. 19

Telecommunications statement

Tele–communications General Approval (UK)

The HP DesignJet 200 plotter, Models C3180A and C3181A, are approved under Approval Number NS/G/1234/5/100003 for indirect connection to public telecommunications systems within the United Kingdom.

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Española S.A.

Manufacturer's Address: Hewlett-Packard Española S.A.
Barcelona Peripherals Operation
Avda. Graells, 501
08190 Sant Cugat del Vallès
Barcelona, Spain

declares that the product

    Product Name: InkJet Plotter
    Model Numbers: HP C3180A, HP C3181A
    Product Options: All

conforms to the following Product Specifications:

    Safety: IEC 950: 1986 + A1, A2 / EN 60950 (1988) + A1, A2
CSA C22.2 No. 950 (1989)
UL 1950 (1989)

    EMC: CISPR 22: 1985 / EN 55022 (1988): class B[1]
IEC 801-2: 1991 / prEN 55024-2 (1992): 4KV CD, 8KV AD
IEC 801-3: 1984 / prEN 55024-3 (1991): 3 V/m
IEC 801-4: 1988 / prEN 55024-4 (1992): 1KV Power Supply
ports, 0.5KV Data/Signal Interfaces
EN 50082-1 (1992)
FCC Part 15 – Class B / DOC-B / VCCI-2 / RRL-A

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC

[1] The product was tested in a typical configuration with Hewlett-Packard personal computer and test systems.

Sant Cugat del Vallès (Barcelona), July 19th 1993   Jordi Balderas,
Quality Engineering Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department ZQ/Standards Europe, Herrenberger Strasse 130, D-7030 Boeblingen, Germany (fax: (49) 7031 143143).

To obtain a Material Safety Data Sheet (MSDS)

You can obtain current Material Safety Data Sheets (HP Part numbers 51608A and 51626A) for the cartridges used in the plotter by mailing a request to this address in the USA:

Hewlett-Packard Customer Information Center
19310 Pruneridge Avenue, Dept. MSDS
Cupertino, CA 95014