

# 5 Job Separation Commands

## Introduction

This chapter explains the JOB and EOJ commands. These commands are used to describe the boundaries of a job, indicating where the PJI job begins and ends. The commands can be used to name a job, and they support a non-printing mode for printing selected pages within a job. When used in combination with status readback, the printer also can send status information regarding when the printer starts processing the job and when the job is complete. This chapter also describes PJI security and job cancellation and their relationship to the JOB command.

# JOB Command

The JOB command informs the printer of the start of a PJI job and synchronizes the job and page status information. It also is used to specify which pages of a job are printed. Use the JOB/EOJ commands for spooling and related applications to monitor printing status, name a job, print portions of a job, or to mark job boundaries to keep the printer from treating a single print job as multiple jobs (for example, when printing a job with a banner page). Also, in jobs sent to those printers supporting the PASSWORD option, use a JOB command to specify the correct password. For printers that support the DISPLAY variable, the JOB command can be used to display a control panel message while printing the job.

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## Note

The JOB and EOJ commands always are used in pairs. Do not use one without the other.

Since the JOB command causes a reset condition, any SET commands must be positioned after the JOB command.

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## Syntax:

```
@PJI JOB [NAME = "job name"] [START=first page]  
  ⤴ [END = last page] [PASSWORD = number ]  
  ⤴ [DISPLAY = "display text"] [<CR>]<LF>
```

## Parameters:

Parameter	Functional Range	Default
NAME = " <i>job name</i> "	Roman-8 characters 33 thru 255, <SP>, <HT>	N/A
START = <i>first page</i>	1 to 2,147,483,647	1
END = <i>last page</i>	1 to 2,147,483,647	Entire job
PASSWORD = <i>number</i>	0 to 65,535	0
DISPLAY = " <i>display text</i> "	Roman-8 characters 33 thru 255, <SP>, <HT>	N/A

- **NAME = "job name"** — The command option NAME tags the print job with a job name. The variable *job name* can be any combination of printable characters and spaces or horizontal tab characters, with a maximum of 80 significant characters. The *job name* variable is a string and must be enclosed in double quotes, as shown in the command syntax. If the NAME option is included, the unsolicited job status includes the job name (if unsolicited job status is enabled).
- **START = first page** — The command option START is used to provide a non-printing mode for skipping to a selected portion of the job. It indicates the first page that is printed. If the START option is omitted, the printer starts printing at the beginning of the job. If the end of the job comes before the START page, no pages are printed.

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### Note

For duplex jobs, the front and/or back side of the page is also printed, depending on the value of START/END. If START is an even number, the front side of that page will also be printed. If END is an odd value, the backside of that page will also be printed. This allows the selected pages to be inserted back into the original duplex job.

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- **END = last page** — The command option END indicates the page number of the last page to be printed. The *last page* variable is relative to page 1 of the print job. If the END variable is omitted, the printer prints to the end of the job. If the end of the job is encountered before the START page, no pages are printed. If the end of job is encountered before the END page, printing terminates. Additionally, if the START page is greater than the END page, no pages are printed.
- **PASSWORD = number** — The command option PASSWORD allows the application to modify the NVRAM variables if the password matches the active password variable. (Using PJJ, the NVRAM variables are modified using either the DEFAULT or INITIALIZE commands; some printer language commands may also modify NVRAM variables.) Passwords are set using the DEFAULT command. The default password value is 0, which indicates PJJ security is disabled—any job can modify printer feature settings using the DEFAULT or INITIALIZE commands. If any other password value is active, PJJ jobs must issue the correct password value or they are disabled from using the DEFAULT or INITIALIZE commands. (See the “PJJ Job Security” section at the end of this chapter.)

- **DISPLAY="display text "** — The command option DISPLAY is used to display a job message on the control panel display. The message is displayed when the printer begins to work on this job and is removed when the last page of this job reaches the output bin. The variable "display text" can be any combination of printable characters and spaces or horizontal tabs, with a maximum of 80 characters. The actual number of characters displayed depends on the printer. The display limit can be determined by sending an INFO CONFIG command to the printer. The printer will return DISPLAY LINES = *value* and DISPLAY CHARACTER SIZE = *value* as part of the response.

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**Note**

For HP LaserJet 4PJ, 4V, 4MV, 5Si, 5SiMx, 5Si Mopier printers, if the LANG variable is set to Japanese, messages are displayed using the JIS X0201-76 character set.

For the LaserJet 4000, 5000, 8000, and 8100 series printers, if LANG is set to POLISH, CZECH, or HUNGARIAN, messages are displayed using the Latin 2 (ISO 8859/2) character set. If LANG is RUSSIAN, messages are displayed using Cyrillic (ISO 8859/5). For LANG=TURKISH, the display is in Latin 5 (ISO 8859/9). This is also true for the HP Color LaserJet 4500 printer, except there is no support for Turkish or Hungarian on this printer.

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**Comments:**

When a JOB command is received, the printer does not recognize the UEL command as a PJL job boundary until an EOJ command is received. UEL commands within a PJL JOB/EOJ command pair are treated as printer language resets; they default the print environment to the PJL Current Environment settings, instead of the User Default Environment.

If your application has status readback capabilities, you can monitor the job status using the USTATUS command with the JOB option. If job status is enabled and the printer receives a JOB command, it returns a job status message.

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**Note**

Resetting the page count associated with unsolicited page status affects only future pages. Pages already processed, but not yet printed, are not affected.

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JOB commands can be nested. For example, a spooling application can send a PJL job that uses the JOB command to another spooler that encapsulates the spooled job with another JOB/EOJ command pair. When this is done, note that the job name from the outer JOB command is cleared or overwritten by the inner command.

## Example: Using the JOB Command to Print Selected Pages

You can use the JOB command with the START and END options to print selected pages of a job. The entire job must be sent to the printer and formatted, but the printer does not begin printing until the page indicated in the START option.

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### Note

If there is a need to print more than one copy of each page, send the job multiple times using the START and END options to print collated copies. Using the SET command or a printer language “number of copies” command to print multiple copies of selected pages causes unexpected results, because the printer counts physical pages, not multi-copy collated pages.

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In this example, the JOB command:

- Informs the printer of the beginning of a print job.
- Names the print job “Jim's Job.”
- Instructs the printer to begin printing on page three of the job. (Since the END option is missing, the job prints from page three through the end of the job.)

Note that the name option for the JOB and EOJ commands need not be the same. You may use different names for each.

```
<ESC>%-12345X@PJL <CR><LF>
@PJL JOB NAME = "Jim's Job" START = 3 <CR><LF>
@PJL ENTER LANGUAGE = PCL <CR><LF>
<ESC>E . . . . PCL Job . . . . <ESC>E
↵<ESC>%-12345X@PJL <CR><LF>
@PJL EOJ NAME = "End of Jim's Job" <CR><LF>
<ESC>%-12345X
```

## Example: Using the JOB Command to Monitor Job Status

This example demonstrates a PostScript print job that is spooled before printing. The job actually consists of three separate sections (notice the UEL commands that bound the three sections—the first section does not need a closing UEL command since the printer is already in PJJ mode):

- The first section is sent by the spooler. These lines name the print job and send the USTATUS command so the spooler can monitor job status.
- The next section is a PostScript job sent to the spooler from a software application.
- The last section is sent by the spooler to end the job. When the last page is completely printed (in the output tray), the printer returns unsolicited status information notifying the spooler that the job is complete.

```
<ESC>%-12345X@PJJ <CR><LF>
@PJJ COMMENT **Beginning of Job ** <CR><LF>
@PJJ JOB NAME = "TF's Monitor Job" <CR><LF>
@PJJ USTATUS JOB = ON <CR><LF>
  <ESC>%-12345X@PJJ <CR><LF>
  @PJJ ENTER LANGUAGE = POSTSCRIPT <CR><LF>
  %!PS-ADOBE .. PostScript print job ... ^D
  ␣<ESC>%-12345X
␣<ESC>%-12345X@PJJ <CR><LF>
@PJJ EOJ NAME = "End of TF's Job" <CR><LF>
<ESC>%-12345X
```

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### Note

If the spooler received a print job that did not use PJJ (that is, the application generated a print job that consisted of just “%!PS-ADOBE .. PostScript print job ... ^D”, a LaserJet printer using context-sensitive switching would still print properly (provided PostScript is installed) and the spooler would still receive the unsolicited job status information.

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## Example: Nested JOB Commands

This example shows a PCL job that was sent to spooler 1, which in turn was sent to spooler 2 (the nested jobs are indented). Note that the first job name is overwritten by the second job name ("Spooler 1 Job") when the second JOB command is processed.

```
<ESC>%-12345X@PJL <CR><LF>
@PJL JOB NAME = "Printing Job Sent From
↳Spooler 2" <CR><LF>
  <ESC>%-12345X@PJL <CR><LF>
  @PJL COMMENT Printing a PCL job <CR><LF>
  @PJL JOB NAME = "Spooler 1 Job" <CR><LF>
  @PJL SET RESOLUTION = 600 <CR><LF>
    <ESC>%-12345X@PJL <CR><LF>
    @PJL ENTER LANGUAGE = PCL <CR><LF>
    <ESC>E . . PCL print job . .<ESC>E
    ↳<ESC>%-12345X
    ↳<ESC>%-12345X@PJL <CR><LF>
    @PJL EOJ NAME = "End Spooler 1 Job" <CR><LF>
    <ESC>%-12345X
  ↳<ESC>%-12345X@PJL <CR><LF>
  @PJL EOJ NAME = "End Spooler 2 Job" <CR><LF>
  <ESC>%-12345X
```

## Related Commands:

EOJ, USTATUS, DEFAULT

# EOJ Command

The EOJ command informs the printer that the job has completed. Use this command whenever you use the JOB command.

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## Note

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The JOB and EOJ commands are always used in pairs. Do not use one without the other.

## Syntax:

```
@PJL EOJ [NAME = "job name"] [<CR>]<LF>
```

## Parameters:

Parameter	Functional Range	Default
NAME = "job name"	Roman-8 characters 33 thru 255, <SP>, <HT>	N/A

- **NAME = "job name"** — Using the EOJ command, you can name your print job. The job name variable is a string and must be enclosed in double quotes as shown in the command syntax. The job name string need not be the same name used in the JOB command. If the NAME option is included, the unsolicited end-of-job status includes the job name (if unsolicited job status is enabled).

## Comments:

The EOJ command marks the end of the job started with the previous JOB command. The EOJ command:

- Resets the PjL Current Environment variables to their default (NVRAM) values, as if the printer powered down and then powered up again.
- Resets the page number associated with unsolicited page status.

- Terminates the non-printing mode (enabled by using the START/END options). The non-printing mode, if enabled by the last JOB command, only applies to the previously received data, and does not effect any future pages until another JOB command enables the non-printing mode again.

## **Effect on Unsolicited Job Status**

When the printer receives this command, it returns unsolicited job status information, if enabled, when the last page of the job exits the printer and is in the output tray. The EOJ command resets the page number associated with unsolicited page status. Resetting the page count associated with unsolicited page status only affects future pages. Pages already processed, but not yet printed, are not affected.

## **Related Commands:**

JOB, USTATUS

# PJL Job Security

HP LaserJet 2100 series, 4000 series, 4500 series, 5000 series, 8000 series, 8100 series, 8500 series, 4/4M Plus, 4V, 4MV, 4Si, 4SiMx, 5, 5M, 5Si, 5SiMx, 5Si Mopier, 5P, 6P, and 6MP printers support the following types of PJL security:

- Password protection of default feature settings—this type of security prevents applications from modifying the printer's default feature settings unless the correct password is specified.
- Control panel lock—prevents users from modifying control panel settings using the control panel keys.
- Disk lock (LaserJet 4V, 4MV, 4000 series, 5000 series, 8000 series, 8100 series, 8500 series, 5, 5M, 5Si, 5SiMx, 5Si Mopier only)—prevents writing to the printer's disk (or flash memory).
- File system initialization—for printers with a PJL file system, the FSINIT command will not initialize the file system unless specified in a secure job.

All types of security are set using the DEFAULT command and queried using DINQUIRE or INQUIRE.

## Password Protection of Default Feature Settings

You can use a password to protect the printer's default features by sending the @PJL DEFAULT PASSWORD = *number* command, specifying a number between 1 and 65,535 (the 0 value disables password protection). Once password protection is enabled, the DEFAULT or INITIALIZE commands are disabled unless the correct password is specified in the JOB command. Printer languages, such as PCL and PostScript, are also prevented from changing default variables.

Secure PJL jobs are able to use the DEFAULT and INITIALIZE commands (or printer language commands) to set default features, including the value of the PASSWORD, CPLOCK, and DISKLOCK variables, until the next EOJ command is received.

## Control Panel Lock

You can “lock” the control panel by sending the @PJM DEFAULT CPLOCK = ON command. When the control panel is locked, the user cannot change any control panel settings. If the user tries to change any control panel settings, the message “MENUS LOCKED” appears on the control panel display for about 5 seconds. The CPLOCK variable can only be changed from within “secure” PJM jobs (jobs with the correct non-zero PASSWORD value in the JOB command).

For the printers that support the MINIMUM, MODERATE, and MAXIMUM values for CPLOCK, MINIMUM locks out the RESET, CONFIGURATION, and I/O menus. MODERATE locks out the menus locked by MINIMUM, plus the PRINT QUALITY and PAPER HANDLING menus. The MAXIMUM value locks out the menus locked by MODERATE plus the PRINTING and INFORMATION menus and the Job Cancel key (MAXIMUM has the same effect as the ON value).

## Disk Lock

On printers which support Disk Lock, you can “lock” volume 0 by sending the @PJM DEFAULT DISKLOCK = ON command. When locked, you cannot write to volume 0 of the file system. It becomes read-only to prevent actions such as formatting, downloading fonts to the disk, deleting disk fonts, etc. If not locked, the disk is read/write. The DISKLOCK variable can only be changed from within a “secure” PJM job (a job that includes the correct, non-zero password value in the JOB command). The DISKLOCK variable is used mainly in networked or printer-shared configurations.

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### Note

You can use the DINQUIRE command to check the status of the PASSWORD, CPLOCK, and DISKLOCK variables. @PJM DINQUIRE PASSWORD returns ENABLED or DISABLED, @PJM DINQUIRE CPLOCK returns OFF or ON, and @PJM DINQUIRE DISKLOCK returns OFF or ON. You do not have to be in a secure job to use the DINQUIRE command to check these variables.

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## Example: Using PJJ Security

This example demonstrates how to set a password and to lock the control panel so users cannot modify control panel settings. It is assumed the password value at the start of job is 7654. The example changes the password to 1776.

```
<ESC>%-12345X@PJJ <CR><LF>
@PJJ COMMENT **Set Password** <CR><LF>
@PJJ COMMENT **& Lock Control Panel**<CR><LF>
@PJJ JOB PASSWORD = 7654 <CR><LF>
@PJJ DEFAULT PASSWORD = 1776 <CR><LF>
@PJJ DINQUIRE PASSWORD <CR><LF>
@PJJ DEFAULT CPLOCK = ON <CR><LF>
@PJJ DINQUIRE CPLOCK <CR><LF>
@PJJ EOJ <CR><LF>
<ESC>%-12345X
```

To unlock the control panel, you would send a job similar to the following job. This job specifies the correct password with the JOB command, and then uses the DEFAULT command to unlock the control panel.

```
<ESC>%-12345X@PJJ <CR><LF>
@PJJ COMMENT **Unlock Control Panel** <CR><LF>
@PJJ JOB PASSWORD = 1776 <CR><LF>
@PJJ DEFAULT CPLOCK = OFF <CR><LF>
@PJJ DINQUIRE CPLOCK <CR><LF>
@PJJ EOJ <CR><LF>
<ESC>%-12345X
```

To write to volume 0 of the file system, you would send a job like the following. This job specifies the correct password with the JOB command, and then uses the DEFAULT command to unlock, and then later to lock the disk.

```
<ESC>%-12345X@PJJ <CR><LF>
@PJJ COMMENT **Unlock Volume 0** <CR><LF>
@PJJ JOB PASSWORD = 1776 <CR><LF>
@PJJ DEFAULT DISKLOCK = OFF <CR><LF>
@PJJ DINQUIRE DISKLOCK <CR><LF>
@PJJ ENTER LANGUAGE = POSTSCRIPT <CR><LF>
%!PS-ADOBE . . . PostScript print job . . . ^D
^><ESC>%-12345X@PJJ <CR><LF>
@PJJ COMMENT **Lock Volume 0** <CR><LF>
@PJJ DEFAULT DISKLOCK = ON <CR><LF>
@PJJ DINQUIRE DISKLOCK <CR><LF>
@PJJ EOJ <CR><LF>
<ESC>%-12345X
```

# Job Cancellation

HP LaserJet 2100 series, 4000 series, 4500 series, 5000 series, 8000 series, 8100 series, 8500 series, 5, 5M, 5Si, 5SiMx printers and the LaserJet 5Si Mopier support job cancellation using the printer control panel. When a PJL print job is started using the PJL JOB command as described in this chapter, the following PJL information can be obtained from the printer:

- Start of job notification
- End of job notification
- Job cancellation unsolicited status

Each of these pieces of information is described below.

## Start of Job Notification

If unsolicited job status is enabled when the printer begins processing the PJL job, the printer responds to the PJL JOB command with an @PJL USTATUS JOB START response. If job ID reporting is enabled by sending @PJL SET JOBID=ON, the printer response includes a job ID number that is associated with the job name supplied in the JOB command.

For example, if the printer receives the following command:

```
@PJL JOB NAME = "job name"
```

If unsolicited job status and job ID reporting are enabled, the printer would generate an ID number (such as 346) and respond with:

```
@PJL USTATUS JOB<CR><LF>  
START<CR><LF>  
NAME="job name"<CR><LF>  
ID=346<CR><LF>  
<FF>
```

The printer-generated ID number can range in value from 0 to 32767. Job ID numbers are unique until they roll over to zero or until the printer power is cycled (at which time the ID defaults to 0).

## End of Job Notification

Near the end of the PJJ job, the application should send the EOJ command as described in this chapter. If unsolicited job status is enabled when the last page of the job is delivered to the output bin, the printer responds to the EOJ command with an @PJJ USTATUS JOB END response. If JOB ID reporting is enabled, the response includes a printer-generated ID number associated with the PJJ job name provided in the EOJ command. The response also contains a RESULT field. All possible values for the RESULT are shown in the following table:

RESULT Value	Description
OK	The last page of the job was sent to the output bin.
USER_CANCELED	The job was canceled from the control panel.
HOST_CANCELED	The job was canceled from a host system.
RESOURCE_CANCELED	The job was canceled because a resource was not available (for example, the media was not loaded).

Using the previous example, if the printer receives the following command containing the same job name as in the JOB command:

```
@PJJ EOJ NAME = " job name "
```

If unsolicited job status and job ID reporting are enabled, the printer would use the ID number associated with that job name and respond with:

```
@PJJ USTATUS JOB<CR><LF>  
END<CR><LF>  
NAME=" job name "<CR><LF>  
PAGES=123<CR><LF>  
ID=346<CR><LF>  
RESULT=OK  
<FF>
```

If the job had been cancelled instead of completed, the printer would respond with the same message except the RESULT value would be different.

## Job Cancellation Unsolicited Status

As soon as the printer receives notification that a job is cancelled, the printer provides the @PJM USTATUS JOB CANCELED message to the driver/spooler if unsolicited job status is enabled. Using the same job name and ID number as the previous example, the printer's response would be:

```
@PJM USTATUS JOB<CR><LF>
CANCELED<CR><LF>
NAME=" job name"<CR><LF>
ID=346<CR><LF>
RESULT=USER_CANCELED
<FF>
```

The job name provided in the NAME option of the PJM USTATUS JOB CANCELED response is the current job name if a current job name is available. The current job name is the job name retained in the printer at the time the last PJM JOB command was processed. The current job name could also have been supplied and/or modified using PostScript.

If a job name is supplied in the EOJ command and if unsolicited job status is enabled at the time the EOJ command is parsed, the NAME option of the PJM USTATUS JOB CANCELED response will contain the job name assigned in the EOJ command. Otherwise, the NAME line is eliminated from the response.

