

# FX-80DRIVER

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FX-80Driver prints text and graphics on Epson FX-80-compatible printers. It implements a full device-independent graphics interface for the FX-80, and can print source code, TEdit documents, bitmaps and windows at a variety of qualities and speeds.

The FX-80Driver contains two printer drivers: a fast driver, for quick printing of draft-quality text, and a high-quality driver, for slower printing of mixed-font text and graphics. You can print early revisions of a document in fast mode, and then switch to high-quality mode for the final copy. The matrix shown in Figure 1 illustrates the capabilities of each mode:

	Fast	High-quality
TEdit	monofont only	yes
Sketch		yes
Windows		yes
Lisp source code	monofont only	yes
Grapher		yes

**Figure 1. FX-80 printer drivers**

For historical reasons, FX-80 in this document refers to any and all of the Epson FX-80 family of dot-matrix graphics printers. The module supports the FX-80, FX-85, FX-86 and FX-286. The Epson printers vary in speed and carriage width, but share a common command language.

## Requirements

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RS232 or TTY cable (see the wiring diagrams in the Introduction of this manual).

Serial interface card in the printer.

DLRS23C or DLTTY.

## Installation

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### FX-80 Serial Interface

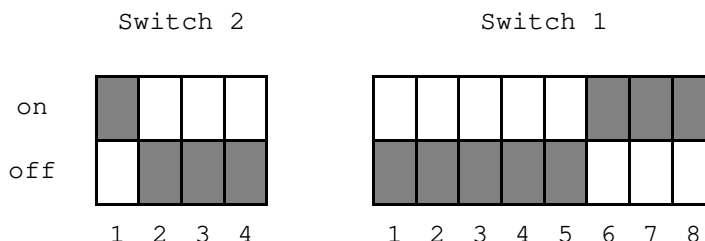
The FX-80Driver module requires that your Epson be equipped with a suitable serial interface (such as the Hanzon Universal Card).

The interface should be set up with XOn/XOff flow control enabled, 9600 baud or slower, 1 stop bit, 8 bit characters, no parity.

(See *The Hanzon Universal Card* booklet for instructions on the DIP switch settings.)

## FX-80 DIP Switch Settings

The FX-80 should have its DIP switches set as shown in Figure 2.



**Figure 2. FX-80 DIP switch settings**

Switch 1 says no automatic linefeed, no automatic paper feed, no buzz on paper-out, and to allow no software deactivation of the printer.

Switch 2 says to use the USA character set, Pica type, allocate 2KB for user-defined characters, allow paper-out detection, and print zeros as zeros.

Note: For the FX-85, -86 and -286 DIP switch settings, consult the corresponding *Epson User's Manual*.

## Software

Load `FX-80DRIVER.LCOM` and the required `.LCOM` modules from the library.

Store all of the font files (file names ending with `.displayfont`) corresponding to the fonts you wish to use on some convenient directory or directories.

`HQFX80-FONT-DIRECTORIES` should be a list that contains these directories; it should be the same as `DISPLAYFONTDIRECTORIES`.

Set `FASTFX80-DEFAULT-DESTINATION` (determines where output to the FASTFX80 lineprinter device goes) and `HQFX80-DEFAULT-DESTINATION` (determines where output to the HQFX80 lineprinter device goes) to one of the following values; they need not be the same:

Destination	RS232 port	TTY port	file
Value	{RS232}	{TTY}	FileName
Speed	9600 max.	4800 max.	n/a

Load the appropriate device driver for each of these destinations: `DLTTY.LCOM` for the TTY port, and `DLRS232C.LCOM` for the RS232C port.

Run the function `RS232C.INIT` or `TTY.INIT` (as appropriate), and set the baud rate to match the setting on the printer.

## User Interface

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You can set up the FX-80 to be your default printer, send FX-80 output to a file for later printing, or programmatically open an image stream that produces output on the FX-80.

Having the FX-80 set up as your default printer means that you can print the contents of windows by selecting the `HARDCOPY` menu item on the window of interest. You can also use the `HARDCOPY - TO A FILE` submenu item to spool your output for later printing. And you can write programs that use the `OPENIMAGESTREAM` function to create FX-80 format graphics output.

## Printing in Fast Mode

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You can print in fast mode by sending output to the printer `FASTFX80` or by opening an image stream to a file with extension `FASTFX80`. This mode is called fast because it uses the printer's built-in font, which allows a tight encoding of the document to be printed. Fidelity to the original document is not as good as in high-quality mode.

The following restrictions apply:

- Special characters (that is, most Xerox Network Systems extended characters, such as the bullet or dagger; see `CharCodeTables`, `VirtualKeyboards` in this manual) are ignored.
- Only one font is supported (though roman, italic, and bold typefaces do work).
- Graphics (lines, underlines, bitmaps) are ignored.
- Multiple column output does work.

### Set FX-80 Fast Mode

To set your default printer to be a fast mode FX-80, make the list (`FASTFX80` `FASTFX80`) the `CAR` of the list `DEFAULTPRINTINGHOST`.

### Set FX-80 Destination

To set the default destination of all output to `{LPT}.fastfx80`, set the variable `FASTFX80-DEFAULT-DESTINATION` to an appropriate file name string. See the table above; the file name could be that of a regular file like `{DSK}SPOOLED-FAST-OUTPUT`.

### Set FX-80 Page Size

To set the driver's page size to match the paper in the printer, set the two variables `\FASTFX80.INCHES-PER-PAGE` (page height in inches) and `\FASTFX80.INCHES-PER-LINE` (page width in inches) to appropriate values. The defaults are 11 and 8.5, respectively. These can be set in your Lisp `INIT` file.

### Print a File

Select the `HARDCOPY` command from the background (right-button) menu. The system first formats the file for printing. Then, when the FX-80Driver actually starts transmitting to the printer, a small abort window, bearing the name of the document and the name of the printer, will appear near the top of your screen.

## Abort a Print Job

Clicking on the item marked `ABORT` in the print window will cleanly terminate the printing of the document.

Note: After aborting a print job, you may need to turn the printer off and back on to make sure that other files will print successfully.

## Printing in High-Quality Mode

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Print in high-quality mode by sending output to the printer `HQFX80`, or by opening an image stream on a file with type `HQFX80`. High-quality mode printing supports all of Xerox Lisp's device-independent graphics operations, as well as multiple font printing and the XNS extended character set. It prints at 72 dot-per-inch resolution. Fidelity to the original document is better than in fast mode, though printing speed is slower.

### Set HQ Mode

To set your default printer to be a high-quality FX-80, make the list `(HQFX80 HQFX80)` the CAR of the list `DEFAULTPRINTINGHOST`. You can use the `PRINTERMENU` module or your favorite structure editor to do this.

### Set Destination

To set the default destination of all output to `{LPT}.hqfx80`, set the variable `HQFX80-DEFAULT-DESTINATION` to an appropriate file namestring. This could be `"{TTY}"`, `"{RS232}"`, or even the name of a regular file like `"{DSK}spooled-hq-output"`.

### Set Page Size

To set the driver's page size to match the paper in the printer, set the two variables `\HQFX80.INCHES-PER-PAGE` (page height in inches) and `\HQFX80.INCHES-PER-LINE` (page width in inches) to appropriate values. The defaults are 11 and 8.5, respectively. These can be set in your Lisp `INIT` file.

### Print a File

Select the `HARDCOPY` command. The system first formats the file for printing. Then, when the FX-80Driver actually starts transmitting to the printer, a small abort window, bearing the name of the document and the name of the printer, will appear near the top of your screen.

Note: After printing a document on `HQFX80`, you may need to turn the printer off and back on before you can print with `FASTFX80` on that printer.

### Abort a Print Job

See above.

## FX Printer Compatibility

(FX80-PRINT &KEY THING-TO-PRINT LANDSCAPE? COMPRESS?

HIGH-QUALITY?)

[Function]

*THING-TO-PRINT* may be one of a window, bitmap, or file path name. If *THING-TO-PRINT* is a path name, the file will be treated as either a TEdit or Lisp source file, and printed in the appropriate style.

In the window or bitmap cases, *LANDSCAPE?* specifies landscape printing (X-coordinates run down the left margin) when non-NIL;

*COMPRESS?* specifies FX-80 compressed printing mode.

If *HIGH-QUALITY?* is non-NIL and *THING-TO-PRINT* is a path name, output will be sent to the default high-quality FX-80 printer, otherwise to the default fast FX-80 printer.

The *LANDSCAPE?*, *COMPRESS?*, and *HIGH-QUALITY?* arguments all default to NIL.

## Limitations

Landscape printing has not been implemented.

## Examples

Send text output to fast FX-80:

```
(SETQ FX-80 (OPENIMAGESTREAM "{LPT}.FASTFX80"))
(CL:FORMAT FX-80 "HELLO, WORLD~%%")
(CL:CLOSE FX-80)
```

Print source code on fast FX-80 (assuming the FastFX80 is not your default printer, but is on the list DEFAULTPRINTINGHOST):

```
(LISTFILES (HOST FASTFX80) "{DSK}MYPROGRAM")
```

Note: Source code is stored in pre-pretty-printed form on the file. The pretty-printer's default linelength (width of a line in characters) is normally 102, which is too wide for the FastFX-80s 8.5-inch wide page. To create source files which print nicely on the fast FX-80, you should set the variable FILELINELENGTH to a more appropriate value before you MAKEFILE. 70 works nicely on 8.5-inch paper with a standard font profile, though your mileage may vary.

Print source code in the the fast FX-80 mode, assuming the FastFX80 is your default printer:

```
(LISTFILES "{DSK}MYPROGRAM")
```

Print TEdit file in fast FX-80 mode, assuming the FastFX80 is your default printer:

```
(LISTFILES "{WAYCOOL:}<PUBLIC>GENSYM.TEDIT")
```

Print text and graphics in high-quality mode:

```
(SETQ FX-80 (OPENIMAGESTREAM "{LPT}" 'HQFX80))
(MOVETO 300 300 FX-80)
```

```
(CL:FORMAT FX-80 "HELLO, WORLD~%")  
(DRAWCIRCLE 300 300 230 ' (ROUND 8) NIL FX-80)  
(CL:CLOSE FX-80)
```

Print source code in high-quality mode, assuming the high-quality FX-80 is not your default printer, but is on the list DEFAULTPRINTINGHOST:

```
(LISTFILES (HOST HQFX80) "{DSK}MYPROGRAM")
```

Note: See the previous note regarding FILELINELENGTH and the fast FX-80. The same holds for high-quality FX-80 printing, and we recommend 70 as the value for FILELINELENGTH.

Print source code in high-quality mode, assuming the high-quality FX-80 is your default printer:

```
(LISTFILES "{DSK}MYPROGRAM")
```

Print TEdit file in high-quality mode, assuming the high-quality FX-80 is your default printer:

```
(LISTFILES "{WAYGNARLY:}<PUBLIC>MAGNUMOPUS.TEDIT")
```

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