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

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

Serial interface card in the printer.

DLRS23C or DLTTY.

Installation

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.

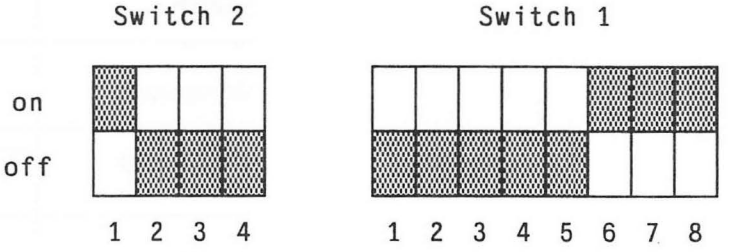

Figure 2. FX-80 DIP switch settings

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

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

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

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 multi-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")
```