Appendix K
The Parallel Interface

The FX printer uses a parallel interface to communicate with the computer; this appendix describes it.

Connector pin assignments and a description of respective interface signals are shown in Table K-1.

Table K-1. Pins and signals

Signal Pin	Return Pin	Signal	Direction	Description
1	19	$\overline{\text{STROBE}}$	IN	$\overline{\text{STROBE}}$ pulse to read data in. Pulse width must be more than 0.5 microseconds at the receiving terminal.
2	20	DATA 1	IN	These signals represent information of the 1st to 8th bits of parallel data, respectively Each signal is at HIGH level when data is logical 1 and LOW when it is logical 0.
3	21	DATA 2	IN	
4	22	DATA 3	IN	
5	23	DATA 4	IN	
6	24	DATA 5	IN	
7	25	DATA 6	IN	
8	26	DATA 7	IN	
9	27	DATA 8	IN	
10	28	ACKNLG	OUT	Approximately, 12-microsecond pulse. LOW indicates that data has been received and that the printer is ready to accept more data.
11	29	BUSY	OUT	A HIGH signal indicates that the printer cannot receive data. The signal goes HIGH in the following cases: 1) During data entry 2) During printing. 3) When Off-Line. 4) During printer-error state.
12	30	PE	OUT	A HIGH signal indicates that the printer is out of paper.

Table K-1, continued

Signal	Return	Signal	Direc-tion	Description
13	—	—	–	Pulled up to + 5 volts through 3.3K ohm resistance.
14	–	AUTO FEED XT	IN	When this signal is LOW, the paper is automatically fed 1 line after printing. (The signal level can be fixed to this by setting DIP switch 2-4 to ON.)
15	–	N C	—	Unused.
16	—	OV	—	Logic ground level.
17	–	CHASSIS GND	—	Printer's chassis ground, which is isolated from the logic ground.
18	—	N C	—	Unused.
19 - 30	–	GND	—	Twisted-pair return signal ground level.
31	—	INIT	IN	When this level becomes LOW, the printer controller is reset to its power-up state and the print buffer is cleared. This level is usually High; its pulse width must be more than 50 microseconds at the receiving terminal.
32	—	ERROR	OUT	This level becomes LOW when the printer is in: 1) Paper-end state. 2) Off-line. 3) Error state.
33	—	GND	—	Same as for Pins 19 - 30.
34	–	NC	—	Unused.
35	—	—	—	Pulled up to + 5V through 3.3K ohm resistance.
36	—	SLCT IN	IN	Data entry to the printer is possible only when this level is LOW; DIP switch 2-1 is set for this at the factory

Notes:

1. The column heading “Direction” refers to the direction of signal flow as viewed from the printer.
2. “Return” denotes the twisted-pair return, to be connected at signal ground level. For the interface wiring, be sure to use a twisted-pair cable for each signal and to complete the connection on the return side. To prevent noise, these cables should be shielded and connected to the chassis of the host computer or the printer.
3. All interface conditions are based on TTL level. Both the rise and the fall times of each signal must be less than 0.2 microseconds.

4. Data transfer must be carried out by observing the ACKNLG or BUSY signal. (Data transfer to this printer can be carried out only after receipt of the ACKNLG signal or when the level of the BUSY signal is LOW.)
5. Under normal conditions, printer cable pins 11, 12, and 32 are activated when the paper-out condition is detected. The ESCape"8" code disables pins 11 and 32, but not pin 12. Those computers that monitor pin 12 halt printing when the paper is out, making ESCape"8" ineffective.

Data Transfer Sequence

Interface timing

Figure K-1 shows the timing for the parallel interface.

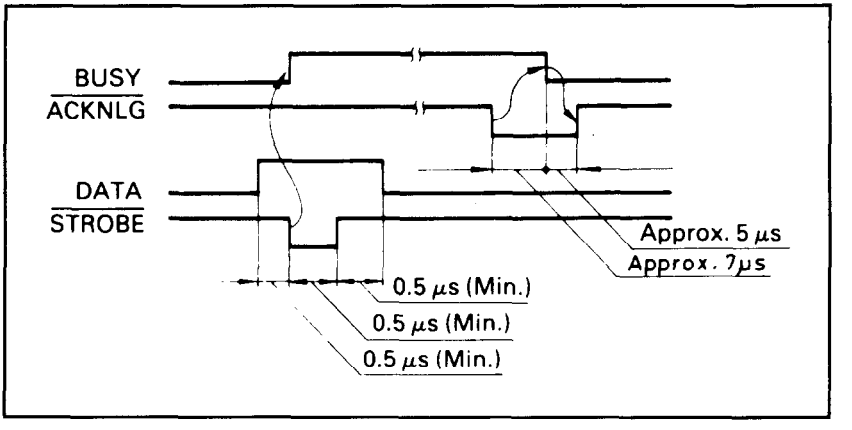

Figure K-1. Parallel interface timing

Signal relationships

Table K-2 shows the way data entry is handled in the On-Line and Off-Line states by showing the relationships between seven signal sets.

Table K-2. Signal interrelations

On-Line	$\overline{\text{SLCT IN}}$	DC1/DC3	$\overline{\text{ERROR}}$	BUSY	$\overline{\text{ACKNLG}}$	DATA ENTRY
OFF	HIGH/LOW	DC1/DC3	LOW	HIGH	Not generated	Disabled
ON	HIGH	DC1	HIGH	LOW/HIGH	Generated after data entry	Enabled (normal entry)
ON		DC3	HIGH	same	same	Enabled*
ON	LOW	DC1//DC3	HIGH	same	same	Enabled (normal entry)

*Data entry will be acknowledged, but the input data will be lost until DC1is input.

Note: $\overline{\text{ERROR}}$ status is assumed to result only in Off-Line state, and the $\overline{\text{ERROR}}$ status does not always mean $\overline{\text{SLCT IN}}$.