

Printing with the 'Interface 1bis'

Instructions

1. The printer driver

The 'BASIC ROM' of the 'Interface 1bis' was adapted for driving an **ESC/P** printer, rather than the original 'ZX Printer'. The output is spooled on a file and print server, connected via the USB port, from where it can be sent to a physical printer, which is expected to be configured for **10 CPI** (characters per inch), **6 LPI** (lines per inch) and Code Page **850** (because it contains the characters: £ and ©).

Block graphics and user defined graphics (UDG) are printed as bitmaps, at a density of 80 DPI (dots per inch), while all other characters are transmitted as ASCII codes. The output of the COPY command is rendered at the standard density of 60 DPI.

2. Printer output control

Both the page length and the line length, which is normally of 64 columns, but can be reduced to 32, in order to render a page layout similar to the original 'ZX Printer', can be set by POKE-ing the otherwise unused system variable at address 23681.

The system variables P_POSN and PR_CC as used follows:

Variable	Address	Length	Description	
P_POSN	#5C7F	23679	1	Column number
PR_CC	#5C80	23680	1	Lines per page minus line number
	#5C81	23681	1	Bit 7 reset = 64 columns set = 32 columns Bits 0-6 = Lines per page

The command:

```
OPEN #<str>,"P"
```

sends the initialization string, specified in the 'c:\TMP\IF1BISPR.INI' file, to the printer.

Control characters can be sent to the printer, from BASIC, via a stream opened to the "B" channel:

```
OPEN #6,"B"  
PRINT #6 CHR$ 12;
```

will send a 'form feed' control character to the printer.

3. The Print Server

The command to be used by the server machine, for sending the ZX Spectrum's print output to an attached printer, is specified in the 'C:\TMP\IF1BISPR.COMD' file.

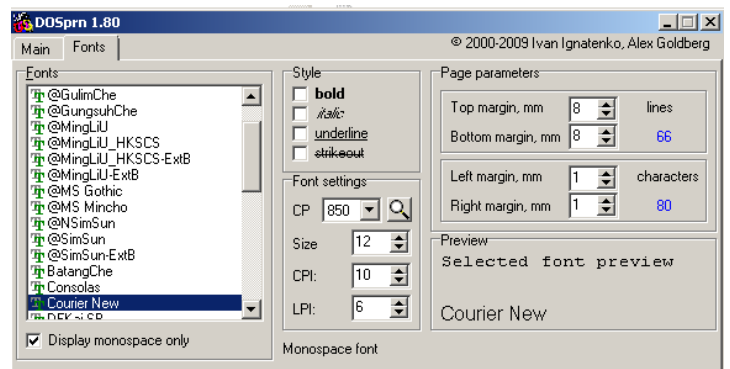
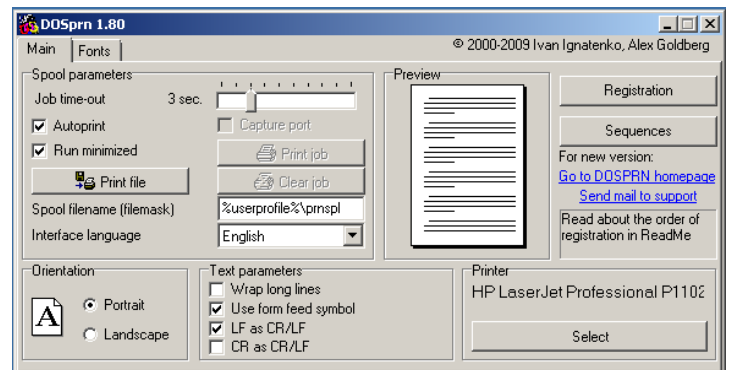
For an **ESC/P** printer connected to the LPT1 port, the command is:

```
TYPE %1 > LPT1:
```

In order to use other types of printers, installed under MS Windows, a suitable utility, like [DOSPRN](#), is required. If DOSPRN is installed at the default location, the command should be:

```
"%ProgramFiles%\DOSPRN\DOSPRN.EXE" %1
```

The utility must also be first configured to produce 10 CPI / 6 LPI output.



4. The Printing procedure

- 4.1 Connect the 'Interface 1bis' to the server machine, via a USB cable, and switch to 'Active mode'. Start the 'server applet'.
- 4.2 Execute a `NEW` command to set: 64 characters/line and 60 lines/per page.
- 4.3 `POKE` a different value into location 23681, if another page layout is desired.
- 4.4 Switch on the printer, connected to the server machine.
- 4.5 If necessary, initialize the printer by issuing the command:
`OPEN# 3, "P"`
- 4.6 Send a print job to the server, using one or more `LPRINT`, `LLIST` or `COPY` commands
- 4.7 Send the print job to the printer by typing '`p`' (on the server machine) in the server applet's console.
- 4.8 Repeat steps 4.6 and 4.7