
Morovia MICR/E-13B PCL Font User Guide

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The fonts under `pcl` directory are PCL Version of Morovia MICR/E-13 fonts. These are “soft” font, so named because they reside in the RAM area in a printer after being downloaded. Although they can be used just like a built-in hardware font, they can not survive power outages. Therefore, we recommend that your application sends the font file at the beginning of every print job to avoid situations that the font is lost because someone just pressed the power button. Some high-end printers store soft fonts in their hard drive and automatically load the fonts at the startup. In this case, the soft fonts can be treated as if part of the printer.

Note

All fonts included are 600-dpi bitmapped fonts. The printer must have a native resolution of 600dpi or above.

1. Font List

Table 1. Font List

Filename	Typeface	Usage
<code>mrvmicr.sfp</code> ^a	MRV MICR	the normal MICR font that produces the most accurate MICR strip on most laser printers and check stocks
<code>mrvmicrw.sfp</code>	MRV MICRW	wider variant
<code>mrvmicrn.sfp</code>	MRV MICRN	narrower variant
<code>mrvmicrb.sfp</code>	MRV MICRB	bolder variant
<code>mrvmicrbw.sfp</code>	MRV MICRBW	bolder wider variant
<code>mrvmicrbn.sfp</code>	MRV MICRBN	bolder narrower variant
<code>mrvmicrl.sfp</code>	MRV MICRL	lighter variant
<code>mrvmicrlw.sfp</code>	MRV MICRLW	lighter wider variant
<code>mrvmicrln.sfp</code>	MRV MICRLN	lighter narrower variant
<code>micr.sfp</code> ^b	MICR	Same as MRV MICR except typeface name.

^aIn previous releases, this file is named as `mrvmicrwithmrv.sfp`.

^bIn previous releases, this file is named as `mrvmicrnomrv.sfp`.

For applications to use a soft font, the font must be sent to the printer first. This process is called *downloading*. The font only needs to be sent once, and will reside in the printer for all the time until a power recycle happens. When your application needs to print the barcode, it sends a special command to switch from the default font to the barcode font. This is called *selecting font*. After the font is selected, you send the full barcode string (which includes start character, data, checksum and stop character) to printer. At last, you send a PCL command to tell printer to switch back to the default font.

A PCL command always begins with the ESC character (referred as `<esc>` throughout of this manual). The ASCII value for this character is 27. It is followed by one or two characters (called commands). A PCL command may contain parameters, and termination characters. If you are not familiar with PCL commands, you may want to read PCL 5 Technical Reference Manual [<http://h20000.www2.hp.com/bc/docs/support/SupportManual/bpl13210/bpl13210.pdf>] thoroughly, or use it as a desktop reference.

2. Downloading Font to Printer

You can download the fonts to the printer by writing some code. On the other hand, in many occasions you might want to do it under command prompt or in a shell environment. The downloading involves three steps:

1. Designate a Font ID to the soft font. The Font ID should be unique among all soft fonts.

The PCL command to use is `<esc>*c#D`, while `#` is the decimal value of the Font ID.

2. Send the actual soft font.
3. Make the font permanent by sending PCL command `<esc>*c5F`.

Step 1 and 2 must be carried out in one connection. If for some reason they can not be sent together in one command line, you need to merge data into one file and send this file instead. We'll explain how to achieve this soon.

There are several methods to send the data above to the printer, depending on the platform and connection choice. For example, if the printer is directly connected to a computer via a parallel port, or the printer is shared among a Windows network, you can use `copy` to send data to the printer. If it is a network printer connected to a TCP/IP network, you will need to use `lpr` command.

In preparation of downloading the soft font to your printer, consider that the number you will assign as the font ID. Each soft font must have a unique number associated. Any font with the same ID overwrites the previous one.

In the example we provided, we put the font ID command in file `C80D.txt`. Another file `c5F.txt` contains the command for step 3.

2.1. Windows

On Windows you can use `copy/b` command to send data to printer.

```
c:\> copy /b C80D.txt +mrvmicr.sfp +c5F.txt LPT1:
```

If your operating system is DOS which only supports 8.3 file format, you need to shorten the file name before running the command.

If the destination printer is on the network, use the printer's network name in the place of LPT1. For example, the following command sends the font to a network printer which is shared as HPLaserJon computer Chicago:

```
c:\> copy/b C80D.txt +mrvmicr.sfp +c5F.txt \\Chicago\HPLaserJ
```

2.2. UNIX/LINUX

On UNIX and LINUX platforms, you can use `cat` command to copy file to a raw device.

For example, the following command sends the font file to printer:

```
#cat C80D.txt +mrvmicr.sfp +c5F.txt /dev/lpt1r
```

Here, `/dev/lpt1r` refers to the printer connected to the LPT1 port. The `r` means raw device.

2.3. LPR

When the printer is connected to a TCP/IP network directly, the best method is to send commands through `lpr` command. A TCP/IP device may be identified with a full qualified DNS name, or an IP address. In our test lab, we assigned our network printer a fixed IP address `192.168.1.22`, and we use this address in the examples below. In `lpr` manual page, it is also referred as `Printer Name`.

Another name you will need is **Queue Name**. The queue names are names assigned to the "processors" in the print server. Most print servers and network printers have hardcoded queue names. Some allow you to define your own queue. On HP JetDirect printer servers, the raw PCL queues are named as `raw`, `raw1`, `raw2` and `raw3`. In test files we use `raw` as the queue name.

Note that `lpr` command only accepts 1 file at a time. However, the `step1` and `step2` commands must be sent in one stream, otherwise the printer will discard them altogether. As a result, you will need to merge these three files into one first. On Windows, you can use `copy` command:

```
copy /b C80D.txt +mrvmicr.sfp +c5F.txt total.bin
```

On Linux/Unix platforms, use `cat` command:

```
cat c80D.txt mrvmicr.sfp c5F.txt > total.bin
```

Now we can send these files (Windows):

```
lpr -S 192.168.1.22 -P raw -ol total.bin  
lpr -S 192.168.1.22 -P raw -ol data.txt
```

You need to replace the ip address, the queue name and the file name with the appropriate ones in your environment.

On Linux/UNIX platforms, things are more complicated. The configuration varies from platform to platform. Generally you need to set up the printer first. On RedHat Linux, this can be done using `printtool`. You assign a printer name (queue name) in the configuration, and you use this name in `lpr` command. Assume that the name is `HPPrinter`, the `lpr` command on RH Linux becomes:

```
lpr -P HPPrinter -o raw total.bin
lpr -P HPPrinter -o raw data.txt
```

2.4. Verifying the existence of fonts

Normally if the printer has sufficient memory, the download will be successful. You usually won't need to worry about the memory issue. To verify that the font is residing in the printer, you can write some code which selects the font and prints a couple of lines of text. High end printer model usually has a LCD control panel that provides a way to print the PCL font list. If a LCD panel is on the printer, you can do the following to print a PCL font list, and check the font name against the list:

- Press the *ENTER/MENU* key on the control panel.
- Use the > or < key to select Reports and press *ENTER/MENU*.
- Use the > or < key to select *PCL Font List* and press *ENTER/MENU*. The printer exits the Menu settings and prints the list.

Although soft fonts can survive many PCL commands, they are residing in the RAM area, not the ROM. Therefore they are not able to survive a power loss. Thus, it is a good idea to download the font at each printing job. Our font size is very small (1K ~ 10K) and downloading only takes approximately 1 second. Each time the font downloaded will automatically overwrite the one downloaded earlier if the two fonts share the same Font ID.

The image below is taken from the actual print out on a HP LaserJet 2300 model.

HP PCL5e Permanent Soft Fonts

<u>Font</u>	<u>Pitch/Point</u>	<u>Escape Sequence</u>	<u>Font #</u>	<u>Font ID</u>
 MRV MICR	8.00/12.0	<esc>(14Y<esc>(s0p8.00h12.0v0s0b32768T SOFT 1	1	80

3. Selecting the font

After the font is successfully installed, you can use the font by issuing Font Selection command. The command

```
<esc>(80X
```

Selects the font we just installed. Here 80 is the font ID of the font we just installed.

To switch back to the default font, using the command:

```
<esc>(3@
```

For a detailed example, check `data.txt` under `pcl` directory.

Font can also be selected use *symbol set*, or combination of *symbol set* and *typeface family*. For example, both the statement below selects MRV MICR font:

```
<esc>(14Y
```

```
<esc>(14Y<esc>(s32768T
```

For a list of typeface family values of Morovia MICR/E-13B fonts, see Section 4, “Supplemental Information”.

4. Supplemental Information

Table 2. Symbol Set Values

Symbol Set Name	Set ID	Kind Value
MICR E-13B	14Y	473

Table 3. Typeface Family Values

Value	Typeface Name	Value	Typeface Name
32768	MRV MICR	32769	MRV MICRW
32770	MRV MICRN	32771	MRV MICRB
32772	MRV MICRBW	32773	MRV MICRBN
32774	MRV MICRL	32775	MRV MICLW
32776	MRV MICRLN	32777	MICR