

# VPIP (Vinculum Peripheral Interchange Program)

*(Beta Version – 24 February, 2014)*

With the recent introduction of the Universal Serial Bus (USB) interface cards for the Heathkit H8/H89 computers (<http://www.koyado.com/>) these classic machines now have the ability to access files on USB media such as memory sticks. This is a significant step forward for these computer systems, which previously have relied on floppy-disks for removable storage and backup. The heart of the USB capability is the VDIP-1 interface module from Future Technology Devices International (<http://www.ftdichip.com/>) running the Vinculum VNC1L Firmware. This module and firmware implement all of the details of the USB interface protocol. The purpose of the VPIP program is to provide a convenient interface to the USB device from the HDOS command prompt.

VPIP is loosely modeled after the PIP utility provided with HDOS, however it only implements disk-to-disk copy and file listing (directory) commands. You'll still need PIP to delete, rename or copy files to the screen or printer. Similarly to manipulate (copy, delete, rename, etc.) files on the flash drive you'll need to use a personal computer or other device. VPIP currently can only be used to access *storage* devices via the USB port, not printers, keyboards or other accessories.

You can run VPIP two ways: with a single command provided on the command line, or interactively. To run VPIP interactively type `VPIP` at the command prompt:

```
>VPIP ↵  
:V:
```

The `:V:` prompt will be displayed at the left margin of the system console whenever the VPIP program is awaiting input. To exit VPIP, type `CTRL-D` or simply enter a blank line.

VPIP refers to the USB device via a “pseudo device” designated `USB: .` In VPIP commands this looks and acts just like an HDOS device would.

## Copying Files

The general form of the command for copying files specifies a “destination” followed by an “=” and then one or more “source” specifications:

```
:V:DVn:DESTINAT.EXT=USB:SOURCE.EXT ↵
```

or

```
:V:USB:DESTINAT.EXT=DVn:SOURCE.EXT ↵
```

VPIP can only be used to copy files from an HDOS storage device to the USB device *or* from the USB device to an HDOS storage device. As an example:

```
:V:USB:MYPROG.BAK=SY0:MYPROG.FOR ↵
```

1 Files Copied

This example has the same effect as the HDOS copy command. In this case, the destination is a file named MYPROG.BAK on the USB device and the source file is a file called MYPROG.FOR, located on the SY0: drive.

You can omit storage device specifications and VPIP will attempt to do the right thing. For example:

```
:V:SY0:*.*=MYPROG.C ↵
```

Will cause VPIP to assume that the USB device is the source device (since the destination is an HDOS disk), and will look on the USB device for the program MYPROG.C and copy it to SY0:. If you specify only the USB device and not the system device, VPIP will assume SY0:, for example:

```
:V:*.*=USB:MYPROG.C ↵
```

Will look on the USB device for a file MYPROG.C and copy it to SY0:.

*If you omit both source and destination devices VPIP assumes the source device is the USB drive and the destination device is SY0:.* For example:

```
:V:=*.c ↵
```

Would copy all files on the USB device matching the file specification “\*.c” to the SY0: drive. *It is important to note that currently VPIP does not check whether a file already exists, so the above command would (without any warning) overwrite (replace) any existing files on SY0: with files of the same name on the USB device.*

The following are some examples of *illegal* VPIP commands:

<b><i>Command</i></b>	<b><i>Reason for being illegal</i></b>
USB:*.*=USB:TEST.*	USB to USB transfer not supported
SY0:TEST.DAT=DK1:MYTEST.DAT	Either source or destination needs to be USB:
TT:=USB:MYPROG.C	VPIP can only copy to/from storage class devices

## Wildcards and Multiple File Designation

### Wildcards

The “\* . \*” wildcard is another way of accessing multiple files. A “\*” can be substituted for the file name or extension portion of a file specification, for example:

SY1 : \* . EXT

or

USB : FNAME . \*

or

DK0 : \* . \*

are all valid uses of the “\*” wild card. You can also use “\*” to complete a field. For example

USB : V\* . \*

Will match any file on the USB flash drive that starts with the letter “V”. If the “\*” character starts a name or extension field *the characters beyond it in that field will be ignored*. So

SY0 : \*V . \*

Is the same as

SY0 : \* . \*

The “?” wild card can be used to match single letters in a portion of a file name. For example

CHAPTER? . DOC

Will match CHAPTER1 . DOC, CHAPTER2 . DOC, etc...

If you use “?” in a portion of a file designation you must use at least as many “?”s as there are characters in the name of the file you want to match. Thus

???? . \*

will match all files whose name contains *four or fewer* characters in the name portion of the filename. The file specification “???????? . ???” is identical to “\* . \*”.

## Listing Files (Directory)

Like PIP, VPIP accepts switches “/LIST” and “/BRIEF” (which can be abbreviated to “/L” and “/B” respectively). The LIST option will list all files that match the file specification, providing size and date information. The BRIEF option lists just the file names that match the file specification. These switches are used to perform a “directory” operation on the files.

## Future Plans

1. Support for file concatenation
2. Support for text devices (e.g. TT:, LP:, etc.)
3. Support for subdirectories on the USB device.
4. Warning before overwriting files.

### ***Notes on the Beta Version***

1. Files copied to the USB device are time stamped only if a real time clock is found, otherwise they will be stamped 12/20/04 at 00:00:00.
2. If an HDOS file system becomes full during a copy operation, the last file written will be closed even though it is only partially copied.