

Peripheral Address Block Info

PAB Structure			
Byte	Bit	Contents	Meaning
0	All	I/O Op-code	
1	All	Flag/Status	As below
	0-2	Error code	
	3	Record type	0=Fixed 1=Variable
	4	Data type	0=Display 1=Internal
	5,6	Mode	00=Update 01=Output 10=Input 11=Append
	7	File type	0=Sequential 1=relative
2,3	All	Data buffer address	The address of the data buffer in VDP memory that will be written to or read from
4	All	Logical record length	The logical record length for fixed type records or the maximum record length for variable type records
5	All	Character count	The number of characters to be transferred for a WRITE Op-code, or the number of bytes actually read for a READ op-code
6,7	All	Record number	Only required for relative record types. The record number upon which the current operation will be performed. Range is 0 to 32767
8	All	Screen offset	Cassette interface only
9	All	Name length byte	The length of the file descriptor, which begins in byte 10
10 onwards	All	File descriptor	The device name, and if required, file-name with any options included.

Op-Code Descriptions		
Op-Code	Mnemonic	Description
0	OPEN	The OPEN operation must be performed before any data-transfer operation, except those performed with LOAD or SAVE. The file remains OPEN until a CLOSE operation is performed. The mode of operation must be given in byte 1 of the PAB.
1	CLOSE	Closes the file. If the file was opened in OUTPUT or APPEND mode, an EOF record is written to the device or file before closing the file. After the CLOSE operation, you can use the space reserved for the PAB for other purposes.
2	READ	The READ operation reads a record from the selected device and copies the bytes into the buffer specified in bytes 2 and 3 (data buffer address) of the PAB. The size of the buffer is specified in byte 4 (logical record length) of the PAB. The actual number of bytes stored is specified in byte 5 (character count) of the PAB. If the length of the input record exceeds the buffer size, the remaining characters are discarded.
3	WRITE	Writes a record from the buffer specified in bytes 2 and 3 (data buffer address) of the PAB. The number of bytes to be written is specified in byte 5 (character count) of the PAB

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4	RESTORE	The RESTORE operation repositions the file read/write pointer to the beginning of the file or, in the case of a relative record file, to the record specified in bytes 6 & 7 (record number) of the PAB. The RESTORE operation can only be used if the file was opened in INPUT or UPDATE mode. For relative record files, you can simulate a RESTORE in any mode by specifying the record at which the file is to be positioned in bytes 6 & 7 (record number) of the PAB. The next operation then uses the indicated record.
5	LOAD	<p>The LOAD operation loads a memory image of a file from an external device or file into VDP RAM. The LOAD operation is used without a previous OPEN operation. Note that the LOAD operation requires as much buffer in VDP RAM as the file occupies on the diskette or other device.</p> <p>For a LOAD operation, the PAB needs the op-code in byte 0 (I/O Op-code), the starting address of the VDP RAM memory area into which the files is to be copied in bytes 2 & 3 (Data Buffer Address), the maximum number of bytes to be loaded in bytes 6 & 7 (Record Number), the name length in byte 9 (Name Length), and the file descriptor information in bytes 10+ (File Descriptor).</p>
6	SAVE	<p>The SAVE operation writes a file from VDP RAM to a peripheral. The SAVE operation is used without a previous OPEN operation. Note that the SAVE operation copies the entire memory image from the buffer in VDP RAM to the diskette or other device.</p> <p>For a SAVE operation, the PAB needs the op-code in byte 0 (I/O Op-code), the starting address of the VDP RAM memory area from which the file is to be copied in bytes 2 & 3 (Data Buffer Address), the number of bytes to be saved in bytes 6 and 7 (Record Number), the name length in byte 9 (Name Length) and the file descriptor information in bytes 10+ (File Descriptor).</p>
7	DELETE	The DELETE operation deletes the file from the peripheral. The operation also performs a CLOSE
8	SCRATCH RECORD	The SCRATCH RECORD operation removes the record specified in bytes 6 & 7 (Record Number) from the specified relative record file. This operation causes an error for peripherals opened as sequential files.
9	STATUS	The STATUS is returned in byte 8 (Screen Offset) of the PAB. The status byte returns the status of a peripheral and can be examined at any time. All of the bits have meaning if the file is currently open. Bits 6 & 7 only have meaning for files that are currently open, otherwise they are reset. The bits meaning is as follows:
	Bit 0	If set, the file does exist. If reset, the file does not exist. On some devices, such as a printer, this bit is never set since any file could exist.
	Bit 1	If set, the file is protected against modification. If reset, the file is not protected.
	Bit 2	Reserved for possible future use.
	Bit 3	If set, the data type is INTERNAL. If reset, the data type is DISPLAY or the file is a PROGRAM file.
	Bit 4	If set, the file is a program file. If reset, the file is a data file.
	Bit 5	If set, the record length is VARIABLE. If reset, the record length is FIXED.
	Bit 6	If set, the file is at the physical end of the peripheral and no more data can be written.
	Bit 7	If set, the file is at the end of its previously created contents. You can still write to the file (if it was opened in APPEND, OUTPUT, or UPDATE mode) but any attempt to read data from the file causes an error.

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Error Codes

Errors are indicated in bits 0 through 2 of byte 1 (Flag/Status) of the PAB. An error code of 0 indicates that no *file* error has occurred. However, an error code of 0 with the COND bit (bit 2) set in the STATUS byte at >837C indicates a bad device name. The error codes are defined as follows:

Error Code	Meaning
0	Bad device name
1	Device is write protected
2	Bad open attribute, such as incorrect file-type, incorrect record length, incorrect I/O mode, or no records in a relative file.
3	Illegal operation. i.e. an operation not supported on the peripheral or a conflict with OPEN attributes.
4	Out of table or buffer space on the device
5	Attempt to read past end of file. When this error occurs, the file is closed. Also given for non-existent records in a relative record file.
6	Device error. Covers all hard device errors such as parity and bad medium/CRC errors
7	File error such as program/data file mismatch, non-existing file opened in INPUT mode, etc.

Error Conditions

If a non-existent DSR is called, the File Management System returns with the COND bit (bit 2) set in the STATUS byte at address >837C.

If the DSR detects an error, it indicates the error in bits 0 through 2 of byte 1 of the PAB. Therefore, your assembly language program must clear these bits *before* every I/O operation and check them *after* every I/O operation.