Logical Systems Incorporated

The Help Systems

T A B L E   O F   C O N T E N T S

The LDOS HELP Systems

Introduction

This documentation covers all three HELP packages. Certain pages may not pertain to the individual package which you have purchased.

For a listing of the programs which should be contained on each package, refer to Appendix A of this manual.

The documentation additionally covers all three packages on two different operating systems, LDOS 5.1.3 and LDOS 6.1. Therefore, certain paragraphs will be different for each version. When this occurs, it will be prefaced by the appropriate version number. Please do not make the mistake of assuming that the sections which do not pertain to your specific version are relevant.

The reason for their inclusion is so that you may, at no additional expense, see exactly what the other packages are like.

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The Help System Utility is designed to convert any type of textual information into a readily accessed file which can then be displayed to the video screen. It is designed to be implemented either as a stand alone application, or from within a calling program. The Help system is comprised of the following Modules:

1. HELP/CMD   This program is the stand alone Help module which is invoked from the LDOS Ready prompt, or from within languages or programs that allow system commands to be executed.

2. HELPRES/CMD   This program resides the HELP System in high memory so that it may be accessed by applications which do not normally provide access to LDOS system functions.

3. HELPGEN/CMD   This program converts any suitably structured ASCII file into a data file capable of being acted upon by the HELP System.

4. LDOS/HLP   This data file contains help for most of the LDOS library commands and utilities.

5. LBASIC/HLP   This data file contains help for LBASIC commands and functions.

6. Z80A/HLP   This data file contains help for Zilog Z-80 mnemonics which start with the letters "A" through "L". Included information is: flags affected, opcode, timings and definitions of operations.

7. Z80M/HLP   This data file contains the rest of the Zilog Z-80 mnemonics starting with the letters "M" through "X".

8. TECH1/HLP   This is a reproduction of most of the information contained in the Technical section of the LDOS owner's manual . It contains information up to the System Entry Points section .

9. TECH2/HLP   This is the rest of the information contained in the Technical Section of the LDOS owner's manual.

The following conventions are used in this manual:

<>   Encloses literal keyboard characters. <ENTER> is used to signify that the Enter key should be pressed. <BREAK> indicates depression of the Break key.

fs   Refers to a full LDOS standard file specification (filespec).

ds   Refers to an LDOS drive specification (drivespec).

fn   Refers to that part of a filespec which precedes the slash character (filename).

kw   A keyword used to find a specific area of HELP.

p   An optional parameter.

After purchasing the HELP system:

First, make two BACKUPS of the Master Diskette enclosed with the system. These diskettes should be used to generate future backups with the Master held as an ultimate reserve.

For the sake of "elbow room", it may be necessary to copy the files desired to various diskettes. The following chart gives the approximate length of the programs and data files: (The second number is for equivalent 6.1 files.)

File	Help File Length	Source File Length
LBASIC/HLP	24,871 [22,626]	30,208 [29,184] bytes
LDOS/HLP	47,851 [37,963]	57,856 [49,152] bytes
TECH1/HLP	54,498 [40,044]	68,864 [48,640] bytes
TECH2/HLP	50,016 [45,908]	60,672 [55,552] bytes
Z80A/HLP	46,431 [46,842]	62,464 [62,976] bytes
Z80M/HLP	28,834 [29,020]	40,704 [40,960] bytes

The actual HELP system display modules occupy the following space

HELP/CMD	4,044 [4,837] bytes
HELPRES1/CMD	3,569 [3,592] bytes
HELPRES2/CMD	4,409 [4,386] bytes
HELPGEN/CMD	3,674 [3,565] bytes

Distribution of user created files generated by HELPGEN/CMD are subject to the whim of the user, provided Logical Systems, Inc. is acknowledged. All files provided on the Master diskette are copyrighted including both HELP display modules. Those persons wishing to implement the HELP System in any distribution of their own should contact LSI at the address provided, concerning fees and contractual obligations.

HELP/CMD

This will probably be the most common use of the Help System. To obtain HELP from LDOS Ready, type the following:

HELP fn kw (p,p) <ENTER>

Where fn is the database filename to be searched, kw is the keyword desired in that file, and p represents any optional parameters.

For example, at LDOS Ready type:

HELP LDOS LIB <ENTER>

This will now open the file called LDOS/HLP, and display the information filed under the keyword "LIB". The video display will remain until any character generating key is depressed. If there is more information about the keyword than would fit on one screen, pressing a key will cause more information to display and, if necessary, pause repeatedly until the information is exhausted. At that time, the video display is restored and control will be returned to LDOS.

To inspect all the keywords contained within a file, type:

HELP fn <ENTER>

This will list all of the keywords within the named file. If the previous example had been "HELP LDOS <ENTER>", a list of the available keywords would have been displayed. Once again, the display will pause if necessary. After each screenfull of keywords, the prompt "<ENTER>, <BREAK>, or type keyword?" will appear. At this time, if <ENTER> is pressed, the next screenfull of keywords will be displayed. If <BREAK> is pressed, HELP will abort, and control will return to LDOS. A keyword may be entered, and the information relating to that keyword will be displayed.

If the specified keyword was not in the called file, the list of all keywords would display again, to indicate what was available within that file.

The entire command sequence can be entered in either upper or lower case.

To list all of the help files presently available on the system, merely type:

HELP <ENTER>

This will search all drives on line for files ending in the /HLP extension, and list them to the video display. For example,

Help Categories presently on line are:

**Z80A/HLP:1   Z80M/HLP:1   LDOS/HLP:l   LBASIC/HLP:1
TECH2/HLP:3   TECH1/HLP:3**

Press ENTER to exit or enter category

The function of the HELP command may be altered by specifying one or more of the following optional parameters:

P   This parameter sends the output to the *PR device (usually a printer) as well as the video. While using this option, the display will not pause if filled. Since all characters are being sent to the *PR device, no pause is required.

V   This parameter causes the video restoration feature to be cancelled. If not specified, the screen will be returned to the same condition as it was when HELP was invoked, less the help command itself.

B   [5.1 Only] This parameter causes the blink feature to be cancelled. Various characters can be made to flash in the video display by specifying them as blinking characters during creation of the data file. However, if HELP were invoked while in a communications mode, a continuous stream of characters would be sent from the host machine to the terminal. The B parameter alleviates this difficulty.

R   [6.1 Only] This parameter causes the reverse video option to be cancelled. Various phrases can be displayed in a reverse video mode if so specified in the creation of the data file. However, certain terminals utilize the characters involved and unpredictable results can occur while in the communications mode. The R parameter alleviates this difficulty.

S   This parameter causes the Search mode to be entered. Typing:

HELP LDOS D (S)

would cause a listing of all keywords starting with "D" to be displayed rather than the entire list. The potential match should be the left most characters of a keyword. By specifying "DI", all keywords starting with "DI" would be displayed.

Besides use at LDOS Ready, the same command sequence may be employed within LBASIC by utilizing the CMD"exp" function. A user application could be written to invoke help as an operator choice from a menu or command line. For example, CMD"HELP LDOS FILESPEC" might be invoked by the application program if it detected an invalid filespec entry by the operator. HELP requires about 5 K of free memory to function. All system memory guides are followed, and the HELP system will abort if sufficient memory is not available.

Another example of a call from LBASIC might be: CMD"HELP LBASIC LSET" which will function (memory permitting) as described above, and would return control to LBASIC.

HELP/CMD also allows a "global" scan for any on-line keyword. If the keyword "MEMORY" was known, but the file is unknown (or to save typing in the filename), then enter an asterisk (*) followed by the keyword in the help command line. For example,

HELP *MEMORY

would find the first occurrence of the keyword "MEMORY" in any /HLP file. The top of the screen displays the category being scanned while a global search is in progress. If the key is found, the text displays normally. At the end of the text, the prompt "Press <BREAK> to exit or <ENTER> to continue global scan" appears. Pressing <ENTER> will look for the same keyword in another file until all /HLP files have been examined. Upon completion of the scan, or if no match is found, the normal prompt for category selection will appear. Continue as desired by pressing <BREAK> or <ENTER> to return to LDOS Ready or by typing in a category name to obtain the directory for that file.

HELPRES1/CMD or HELPRES2/CMD are similar in execution to HELP/CMD, but are filters that reside in high memory. This is so that applications programs which do not provide system access for LDOS commands MAY be able to call help from within. The difference between programs where HELPRESx/CMD will work and will not depends entirely on the calling program. In order to work, the target program must:

A.   Respect certain LDOS (and good programming) practices by respecting high memory modules. This means that almost any uncomplicated BASIC program would work because the code will not allow memory usage above the HIGH$ limit.

B.   Must not use internal drivers for keyboard or video that cause the existing drivers to be ignored or unpredictable results can occur.

C.   Must allow sufficient memory space for HELPRESx/CMD to function.

D.   As a rule of thumb, generally, any program which allows use of the MINIDOS filter will work with HELPRES.

Unfortunately, LSI does not have the resources to make this determination on the thousands of programs available. It is simply not possible to deduce what logic each programmer utilized. Therefore, it is left up to the user to determine HELP's compatibility with existing software.

Fortunately, no harm can come of experimentation, provided it is not done on the only existing copy of anything.

The difference between HELPRES1/CMD and HELPRES2/CMD is that HELPRES1 is able to display exactly one file and HELPRES2 can display from one through fifteen files simultaneously. Why are both included? HELPRES1/CMD needs 1740 [18561] bytes minimum while HELPRES2 requires 2025 [2127] bytes minimum.

To reside HELP in memory, the LDOS *KI driver MUST be active (LDOS 6.1 always has this active). If it is, type the following:

HELPRESx/CMD (p,p)

at the LDOS Ready prompt, where x is either 1 or 2.

Parameter Functions:

V   The V parameter will turn on or off the video restoration option. When off, screen restoration becomes the responsibility of the interrupted program. Programs such as Scripsit, or EDAS, can redraw the video display quite readily. Others, such as BASIC programs, were probably not written to refresh the screen while operating. Besides inherent program factors, keep in mind that the video refresh option requires an additional block of memory which equals the maximum number of characters contained on the video. For 16x64 screens this would be 1024 bytes, and for 80x24 screens this would be 1920 bytes. Once the V option is selected one way or the other it cannot be changed unless a reset is performed on the *KI device.

IMPORTANT NOTE

THE DEFAULT FOR HELP/CMD HAS THE VIDEO RESTORATION DEFAULTED TO "ON". IN THE INTEREST OF SAVING MEMORY, HOWEVER , THE HELPRES/CMD MODULE ASSUMES THE VIDEO RESTORATION TO BE "OFF". The V parameter will REVERSE the default condition!

B   [5.1 Only] The "B" parameter will specify a maximum
             number of characters to blink per screen. Specifying
             "B=10" would, therefore, allow no more than ten blinking
             characters per screen. In the interest of memory
             management, be advised that each blinking character
             reserved, occupies 3 bytes of memory. A "B=10" will
             occupy 30 more bytes of high memory than having no "B="
             in the command line. A maximum of 255 blinking
             characters may be specified by the B parameter. The
             default option is B=0, so that if no blink option is
             desired the user need not enter the parameter at all.

R   [6.1 Only] Cancels reverse video just as it does for
             HELP/CMD

FILE   HELPRES1/CMD requires a parameter of "FILE=". Unlike
             HELP/CMD, the filter may only look through 1 file at a
             time. To specify the LDOS/HLP file type, HELPRES1
             (FILE-"LDOS"). To change files after the filter is
             loaded, simply type another line at LDOS Ready with a
             different FILE= specified. The HELP filter will
             automatically substitute another file in the same memory
             location. The "FILE=" parameter must be specified for
             the resident module to work. A prompt will be issued
             demanding a file name if none is supplied or if an
             illegal filespec was entered. Entering a non-existent
             file name will abort the load. The FILE parameter may be
             abbreviated by its first letter "F".

FILE   HELPRES2/CMD requires a parameter of "FILE=x", where x
             is a number from 1 through 15. HELPRES2 will then ask
             for each filename. It is also possible to use this
             parameter exactly as is done for HELPRES1. In this case,
             only one file is allowed. The abbreviation is "F".

DISABLE   This parameter is used to cancel the filter. If either
             HELPRES is the last filter appended to the *KI device,
             it will disengage and cease functioning. Furthermore, if
             it is the last high memory module in place, it will
             release the occupied memory. Because of this feature,
             HELPRES should be last. "DISABLE" may be abbreviated
             with "D".

To access the HELP System with HELPRES/CMD active, generate a
<CLEAR><SHIFT><H> from the keyboard. This is accomplished by depressing the
<CLEAR> key, then the <SHIFT> key, and finally the <H> key.

                              In HELPRES1 :
The video will prompt with "filespec Help: <BREAK>,<ENTER> or type keyword".
Enter the keyword sequence desired, and the screen will display the
information. If a non-existent keyword was requested, a list of available
keywords will be displayed. Pressing <ENTER> will either display the file
directory of keywords or continue one in progress. <BREAK> is pressed to
return to the calling program. The video display will not be restored unless
"V" was specified at the command line during start up.

                              In HELPRES2 :
The video will prompt with a "filespec Help: <CLR>,<BRK>,<ENT> or type
keyword". Enter the keyword sequence desired, and the screen will display the
information. If a non-existent keyword was requested, a list of available
keywords will be displayed. Pressing <ENTER> will either display the file
directory of keywords or continue one in progress. <SHIFT><CLEAR> is pressed
to swap the active file with a dormant file. This will cause the "Select New
Category" prompt to appear. If the resident files are forgotten, press <ENTER>
and the list of files specified at start up will display and the "Select"
prompt repeated. Type a category name or press <SHIFT><CLEAR> to return to the
normal prompt. <BREAK> is pressed to return to the calling program from either
keyword or category select. The video display will not be restored unless "V"
was specified at the command line during start up.

Some problems may occur with either resident help system if certain guidelines are not followed.

The resident "helps" work by opening files on the disks. In the interest of shortening code, files are not opened and closed in high memory. Instead, a pointer is kept to the known position on a specific drive of a given file. Therefore, if a diskette containing an opened help data file (/HLP) is removed, it follows that the resident module is now dealing with erroneous information and unpredictable results will surely occur. REMEMBER to DISABLE either HELPRES program before exchanging or removing diskettes.

Because the resident helps are rather large, every effort has been made to make them convenient. Normally, a high memory module can neither be disengaged from the modified device without a RESET of the device, nor can the HIGH$ pointer be re-routed to release the occupied memory without a BOOT. If either HELPRES is used with the "D" parameter then both can be achieved if this filter was the LAST high memory module loaded and/or the LAST device modifier for the Keyboard (*KI).

Placing another filter below HELPRES will circumvent memory release because the lower module would then be unprotected in memory. If the latter condition occurs, HELPRES might unchain itself from the keyboard but still be resident in memory because of the "trap" set by the user.

If at that point, the SAME HELPRES is re-activated, the "trapped" code will re-activate rather than grabbing another swath of memory. If the opposite module is loaded, it will NOT use the same space. To utilize this re-activate feature, proceed as if swapping a file.

If a *KI modifier is loaded after either HELPRES, then it is, of course, impossible to either unchain or release memory.

If it is desired to use another file instead of the file in memory, file swapping occurs as follows. Proceed as if the HELPRES is being used for the first time. It will detect its presence in memory and replace the file used now with the previously used file. However, ALL PARAMETERS except for the single replacement filename will remain as they were from the original installation. Note that HELPRES1 (F="newname") will replace the old file with the current file, but that B or R, and V will not be affected.

HELPRES2 works almost the same way. Only the "active" file (the one currently pointed to which is on the prompt line) can be replaced. To replace a "dormant" file, activate it with <SHIFT><CLEAR> from within the filter and then replace it. Again, other installation conditions (as well as all dormant files) are not affected.

For example, suppose that HELPRES2 is initialized with the files LDOS and LBASIC. When the program is entered the prompt says "LDOS Help" etc. To replace the LDOS file with Z80A type, **HELPRES2 (F="Z80A"),** at LDOS Ready. Now the filter is set for Z80A and LBASIC. To replace LBASIC, enter the program and switch LBASIC to an active state by using the <SHIFT><CLEAR> sequence. Return to LDOS Ready and type the proper command sequence. If large numbers of files are to be replaced, it may be more efficient to disable the resident module and re-initialize it rather than continuously rotating files and returning to LDOS Ready.

The runtime length of each module is approximately:

HELPRES1 1740 bytes + 3 bytes/blink allowance + 1024 bytes w/video restoration
HELPRES2 2025 bytes + blink + video + 41 bytes/file > 1
HELPRES1 1856 bytes + 1920 bytes with video restoration
HELPRES2 2127 bytes + video + 41 bytes/file > 1

HELPGEN/CMD

This module is a text processor which turns a file created under some type of text editor (WordStar, LED, etc.) into a data file which can be used by the HELP System. The file to be processed must be an ASCII file. Some text editors or word processors automatically save in ASCII while others use a non-standard, variable, compressed data storage format. For the latter reason, decoding for HELP is only done on the characters having an ASCII value of less than 128. The maximum destination file allowed is 65,535 bytes.

If "HELPGEN P" is specified at LDOS Ready, an alphabetical list of keywords found in the text file will be sent to the line printer.

The rules concerning creation of a source file to be processed by HELPGEN are as follows:

1.   The first character of the file will be taken to be the first character of the first keyword. If this is a control character such as a carriage return or any other character with an ASCII value of less than 32, the processor will abort. If it is any non-alphanumeric character it will become part of the keyword. Be certain that the first character of the file is supposed to be the first character of the first keyword.

2.   The "keyword" will continue until a carriage return <ENTER> character is encountered. NO other character will terminate a keyword. Thus, if the first sequence of characters were "SYNTAX<ENTER>", the keyword would be "SYNTAX". If the sequence were "LBASIC SYNTAX<ENTER>", the keyword would be "LBASIC SYNTAX". The keywords are used to access the file information as in "HELP LDOS SYNTAX" or "HELP LBASIC LBASIC SYNTAX" in the case of the two examples. The "keyword" should be chosen with this in mind. Alphabetic characters in the keyword will be converted to upper case in the index (HELP LDOS <ENTER> display). A keyword phrase may not exceed video line width less 14 characters. One further point on keyword length. Since the file directory prints a total list of keys for a file, long keys make the video display look sloppy.

3.   Next, type in text as normal. This will become the information which displays when HELP fn kw is invoked. No line should exceed video width. For the most part, type the text exactly as it is desired to appear. A carriage return is not necessary after each line of text, however, remember that in that case, word location may not be the same as in the text editor.

4.   [OPTIONAL 5.1 only] In the case of the LDOS/HLP file, blinking characters are used to signify abbreviations of parameters. Blinking characters provide emphasis for whatever reason desired. To make a character blink, type an ASCII value (127) immediately in front of the character desired. An ASCII 127 can be produced with the LDOS KI driver active by generating a <CLEAR><SHIFT> <ENTER>. On Model I, the character is a block of dots, while in Model III it is a plus mark over an underline

character. When output to the display, this character will be DROPPED from the display and the rest of the line will be moved one position to the left. Keep this in mind if column positioning is desired. Examine the proper use of this feature by observing it in the SAMPLE/TXT file. Many characters may be flashed in any single screen. Keep in mind that too many blinking characters can be aggravating to read. Also, if the text file is to be used in the filter mode, remember that a flashing character requires 3 bytes of memory.

4.   [OPTIONAL 6.1 Only] Reverse Video may be used to provide emphasis. In the case of the LDOS/HLP file, reverse characters are used to signify that part of a parameter which can be used as an abbreviation. Reverse video for one or more characters is specified by typing an ASCII 127 character immediately preceding the first character to reverse, and another ASCII 127 immediately after the last character to reverse. An ASCII 127 is generated by pressing <CLEAR><SHIFT><ENTER>. The character appears as a plus mark on top of an underline.

5.   End text entry for any given keyword's text by typing an ASCII 12. The next group of characters will then be another keyword. End this key with a carriage return and proceed to type more text. If there is no more information to follow, then the ASCII 12 should be the last character of the text file.

6.   [OPTIONAL] If it is desired to have more than one key access the same text ("KEY STROKE MULTIPLY" and "KSM", for example) then type an ASCII value (12) character immediately after the carriage return of the previous keyword. The next sequence of characters will also become a keyword. This process may be used indefinitely. This would allow thousands of keys to access the same information. This is useful to provide for abbreviated keys (SYN and SYNTAX, EXT and EXTENSIONS, etc.), so that HELP LDOS SYN and HELP LDOS SYNTAX would have the same result. (Note that the LDOS/HLP file is done this way.) ASCII 12 is also sometimes called a forced end of page or top-of-form, or form-feed. Refer to the example in the SAMPLE/TXT file.

7.   Repeat steps one through six until the source file is complete. The HELPGEN program compresses out spaces in the text and sorts the keywords automatically so no particular attention to the order of keywords and text need be observed. Because of space compression, source files longer than 65,535 characters can be processed. Average storage saved is about 20%.

8.   Save the text file using an ASCII format. Be sure to specify ASCII, if it is an option on the text editor utilized.

9.   Exit the text editor.

At this point , the text file is ready, and now must be processed for use by the HELP Display system, be it HELP or HELPRESx.

A.   At LDOS Ready, type HELPGEN (or HELPGEN P).

B.   HELPGEN will prompt for the source filespec. This is the ASCII file which was generated in step 8.

C.   HELPGEN will prompt for the HELP filename. Type in up to eight alphanumeric characters with the first character being alphabetic. The file will be ASSIGNED an extension of /HLP. Keep in mind that the name will constantly be used as part of the command line, and that the shorter it is, the easier it will be to use.

D.   If the file exists, a prompt will appear asking permission to overwrite the file. If the response is negative, the system will prompt for the filename again.

E.   Pressing <BREAK> in response to any prompt will abort the sequence.

SAMPLE/TXT is provided on the HELP Generator package to be an example of a proper source text. The user may wish to process this text as is, and then modify it to become familiar with the process. The source texts for the other HELP packages are also available should the user desire to alter or add to them.

Listed below are the error messages which may occur during processing. Any LDOS system errors incurred are explained in the LDOS manual.

Improper Source Filename

A source file which did not meet LDOS filespec standards was entered. A re-prompt for another filespec will occur.

Duplicate Keys Encountered

Two identical keywords were found. No recovery -- system aborts after displaying the duplicate key. Edit the text file and reprocess.

Keyword exceeds maximum allowable length

Be sure that a carriage return was used within the allowable maximum key length (video width less 14 characters). No recovery -- system aborts. Edit the text file and reprocess.

Memory overlap has occurred due to too many keys

The keyword list is too long to fit into available memory. No recovery -- system aborts. In borderline cases, releasing more high memory may help. It may be necessary to divide the source file.

Same Source and destination file

No recovery -- system aborts. Use a different destination filespec.

Null Key Encountered - Prior Key was xxx

A keyword contained no characters, which makes it rather tough to find. The previous key (if any) is displayed to assist in the location of the offender. Normally, this is just a stray carriage return. Edit the source file and reprocess.

Destination File Exceeds 65,535 characters

No recovery -- system aborts. Divide the source and process into two destination files. 64K is the maximum number allowed in the destination file. The source file may be any length because spaces are compressed out.

Appendix A - - Files Included

LDOS HELP - - {Cat #'s L-30-060 (5.1), L-30-061 (6.1)}

```
LDOS/HLP
LBASIC/HLP
HELP/CMD
HELPRES1/CMD
HELPRES2/CMD
```


Technical HELP* - - {Cat #'s L-30-080 (5.1), L-30-081 (6.1)}

```
Z80A/HLP
Z80M/HLP
TECH1/HLP
TECH2/HLP
HELP/CMD
HELPRES1/CMD
HELPRES2/CMD
```
*REQUIRES at least two double density drives.

HELP Generator - - {Cat #'s L-30-070 (5.1), L-30-071 (6.1)}

```
HELPGEN/CMD
HELP/CMD
HELPRES1/CMD
HELPRES2/CMD
SAMPLE/TXT
```


HELP text source* - - {Cat #'s L-31-010 (5.1), L-31-020 (6.1)}

```
Z80A/TXT, Z80B/TXT, Z80C/TXT
Z80D/TXT, Z80E/TXT
TECH1/TXT, TECH2/TXT, TECH3/TXT, TECH4/TXT, TECH5A/TXT
TECH5B/TXT, TECH6/TXT, TECH7/TXT, TECH8/TXT
LDOS1/TXT, LDOS2/TXT, LDOS3/TXT
LBASIC1H/TXT, LBASIC2H/TXT
```

Z80A, B, and C are APPENDed to form Z80A, and Z80D and E form Z80M. TECH1 is concantenated from TECHs 1, 2, 3, 4, and 5A. TECH2 is comprised of 5B, 6, 7, and 8. LDOS is derived by appending LDOS1, 2, and 3. LBASIC comes from BASIC1H and 2H.

*REQUIRES at least two double density drives.

NOTE : On LDOS HELP 6.1 the file BASIC/HLP is substituted for LBASIC/HLP and BASIC1/TXT, BASIC2/TXT are substituted for LBASIC1H/TXT and LBASIC2H/TXT respectively, in the L-31-020 package.

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Directory for HELP file LBASIC

&H	&O	CLOSE	CMD
CMD"*"	CMD"A"	CMD"B"	CMD"D"
CMD"E"	CMD"I"	CMD"L"	CMD"LDOS"
CMD"N"	CMD"O"	CMD"P"	CMD"R"
CMD"S"	CMD"T"	CMD"X"	CVD
CVI	CVS	DEF FN	DEFUSR
EOF	FIELD	GET	INPUT
INSTR	ERRORS	KILL	LBASIC ENTRY
LINEINPUT	LINEINPUT#	LOAD	LOC
LOF	LSET	MERGE	MID$=
MKD$	MKI$	MKS$	NPARMS
OPEN	PRINT#	PRINT# USING	PUT
RESTORE	RSET	RUN	SAVE
SET EOF	TIME$	USR	XPARMS

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file : LDOS

APPEND	ATTRIB	AUTO	BACKUP
BOOT	BUILD	CLOCK	CONV
COPY	COPY23B/BAS	CREATE	DATE
DEBUG	DEBUG D	DEBUG DISK	DEBUG E
DEBUG EXTENDED	DEVICE	DEVICES	DIR
DO	DUMP	EXT	EXTENSIONS
FILES	FILTER	FORMAT	FREE
HITAPE	JL	JOBLOG	
KEY STROKE MULTIPLY		KI/DVR	KILL
KSM	LCOMM	LIB	LINK
LIST	LOAD	LOG	MEMORY
MINIDOS	MINIDOS/FLT	PASSWORDS	PATCH
PDUBL	PR/FLT	PURGE	RDUBL
RENAME	REPAIR	RESET	ROUTE
RS232X/DVR	RUN	SET	SPOOL
SYN	SYNTAX	SYS ALIVE	SYS BASIC2
SYS BLINK	SYS BREAK	SYS BSTEP	SYS DATE
SYS DRIVE	SYS FAST	SYS GRAPHIC	SYS SLOW
SYS Svc	SYS SYSGEN	SYS SYSRES	SYS TIME
SYS TYPE	SYS UPDATE	SYSTEM	TIME
TRACE	TWOSIDE	VERIFY	

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file : Z80A

```
ADC A,S         ADC HL,SS       ADD A,(HL)      ADD A,(IX+D)
ADD A,(IY+D)    ADD A,N         ADD A,R         ADD HL,SS
ADD IX,RR       ADD IY,RR       AND             AND TABLE
BIT B,(HL)      BIT B,(IX+D)    BIT B,(IY+D)    BIT B,R
CALL            CALL C,P        CCF             CP
CPD             CPDR            CPI             CPIR
CPL             DAA             DEC IX          DEC IY
DEC M           DEC RR          DI              DJNZ
El              EX (SP),HL      EX (SP),IX      EX (SP),IY
EX AF,AF'       EX DE,HL        EXX             FLAG CODES
FLAGS           HALT            IM 0            IM 1
IM 2            IN A,(N)        IN R,(C)        INC (HL)
INC (IX+D)      INC (IY+D)      INC IX          INC IY
INC R           INC RR          IND             INDR
INI             INIR            JP              JP (HL)
JP (IX)         JP (IY)         JP C,P          JR
JR C,E          LD (BC),A       LD (DE),A       LD (HL),N
LD (HL),R       LD (IX+D),N     LD (IX+D),R     LD (IY+D),N
LD (IY+D),R     LD (NN),A       LD (NN),DD      LD (NN),HL
LD (NN),IX      LD (NN),IY      LD A,(BC)       LD A,(DE)
LD A,(NN)       LD A,I          LD A,R          LD DD,(NN)
LD DD,NN        LD HL,(NN)      LD I,A          LD IX,(NN)
LD IX,NN        LD IY,(NN)      LD IY,NN        LD R,(HL)
LD R,(IX+D)     LD R,(IY+D)     LD R,A          LD R,N
LD R,R'         LD SP,HL        LD SP,IX        LD SP,IY
LDD             LDDR            LDI             LDIR
```

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file : Z80M

NEG	NOP	OR S	OR TABLE
OTDR	OTIR	OUT (C),R	OUT (N),A
OUTD	OUTI	POP	POP IX
POP IY	PUSH	PUSH IX	PUSH IY
RES B,S	RET	RET C	RETI
RETN	RL S	RLA	RLC (HL)
RLC (IX+D)	RLC (IY+D)	RLC R	RLCA
RLD	RR S	RRA	RRC (HL)
RRC (IX+D)	RRC (IY+D)	RRC R	RRCA
RRD	RST	SBC A,S	SBC HL,SS
SCF	SET B,S	SLA	SRA
SRL	SUB S	UNSIGNED COMPARISONS	
XOR	XOR TABLE		

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file : TECH1

CMD FORMAT	DCB	DCB QR	DCB RAM AREAS
DCB+00	DCB+01,02	DCB+03,05	
DCB+06,07 (MOD1)		DCB+06,07 (MOD3)	
DCT	DCT QR	DCT+00	DCT+01,02
DCT+03	DCT+04	DCT+05	DCT+06
DCT+07	DCT+08	DCT+09	
DEVICE CONTROL BLOCK		DIR QR	DIR+00
DIR+02	DIR+03	DIR+04	DIR+05,12
DIR+13,15	DIR+16,17	DIR+18,19	DIR+20,21
DIR+22,23	DIR+24,25	DIR+26,27	DIR+28,29
DIR+30	DIR+31	DIREC	
DIRECTORY RECORDS		DISK COMMAND FILE FORMAT	
DISK I/O TABLE	DRIVE CODE TABLE		EQUATE1/EQU
EQUATE3/EQU	EXTENDED DIRECTORY RECORDS		FCB
FCB QR	FCB+00	FCB+01	FCB+02
FCB+03,04	FCB+05	FCB+06	FCB+07
FCB+08	FCB+09	FCB+10,11	FCB+12,13
FCB+14,15	FCB+16,19	FCB+20,23	FCB+24,27
FCB+28,31	FILE CONTROL BLOCK		
FILTERS & DRIVERS		FXDE	GAT
GAT QR	GAT+00,5F	GAT+60,BF	GAT+C0,CA
GAT+CB	GAT+CC	GAT+CD	GAT+CE,CF
GAT+D0,D7	GAT+D8,DF	GAT+E0,FF	
GRANULE ALLOCATION TABLE		HASH INDEX TABLE	
HIT	LOAD MODULE FORMAT		MOD1 MEMORY MAP
MOD3 MEMORY MAP		TAPE FILE OBJECT CODE FORMAT	

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file TECH2

```
@ABORT          @ADTSK          @CKDRV          @CKEOF
@CLOSE          @CMD            @CMNDI          @CTL
@DATE           @DEBUG          @DIV            @DODIR
@DSP            @DSPLY          @ERROR          @EXIT
@FEXT           @FNAME          @FSPEC          @GET
@INIT           @KBD            @KEY            @KEYIN
@KILL           @KLTSK          @LOAD           @LOC
@LOF            @LOGER          @LOGOT          @MSG
@MULT           @OPEN           @PARAM          @PAUSE
@PEOF           @POSN           @PRINT          @PRT
@PUT            @RAMDIR         @READ           @REW
@RMTSK          @RPTSK          @RREAD          @RUN
@RWRIT          @SKIP           @TIME           @VER
@WEOF           @WHERE          @WRITE
BYTE I/O PRIMITIVES             CFCB$           DATE$
DAY$            DCT$            DCTBYT          DFLAG$
DIRCYL         DIRRD           DIRWR
DISK FILE HANDLER ROUTINES      DISK FILE HANDLERS
DISK I/O PRIMITIVE NAMES        DISK I/O PRIMITIVES
DIVEA          DODCB$          DOSV$           ERROR 00
ERROR 01        ERROR 02        ERROR 03        ERROR 04
ERROR 05        ERROR 06        ERROR 07        ERROR 08
ERROR 09        ERROR 10        ERROR 11        ERROR 12
ERROR 13        ERROR 14        ERROR 15        ERROR 16
ERROR 17        ERROR 18        ERROR 19        ERROR 20
ERROR 21        ERROR 22        ERROR 23        ERROR 24
ERROR 25        ERROR 26        ERROR 27        ERROR 28
ERROR 29        ERROR 30        ERROR 31        ERROR 32
ERROR 33        ERROR 34        ERROR 35        ERROR 36
ERROR 37        ERROR 38        ERROR 39        ERROR 40
ERROR DICTIONARY                EXDBG$
FILE CONTROL ROUTINES           GETDCT          HIGH$
I/O CONTROL BLOCKS              INBUF$
INTERRUPT PROCESSOR TASK VECTOR STORAGE         INTIM$
INTVC$         JDCB$           JFCB$           JLDCB$
JRET$          KEYBOARD I/O ROUTINES            KFLAG$
KIDCB$         KIJCL$          KISV$           LDRV$
MATH ROUTINES  MFLAG$          MULTEA          OSVER$
OVRLY$         PDRV$           PRDCB$
PROGRAM ENTRY CONDITIONS        PRSV$           RDSECT
RDSSEC         ROM CONTROL ROUTINES             RSELCT
S1DCB$         S2DCB$          S3DCB$          S4DCB$
S5DCB$         SBUFF$          SEEK            SELECT
SFCB$          SFLAG$          SIDCB$          SODCB$
SPECIAL OVERLAY ROUTINES        SPECIAL PURPOSE DISK ROUTINES
SUPERVISORY CALLS               SVC             SYSTEM BUFFERS
SYSTEM CONTROL INFORMATION      SYSTEM CONTROL ROUTINES
SYSTEM ENTRY POINTS             SYSTEM FLAGS
TASK CONTROL VECTORS            TCB$
TIME & DATE ROUTINES            TIME$           TIMER$
UNKNOWN ERROR CODE              VERSEC
VIDEO & PRINTER I/O ROUTINES  WRPROT          WRSECT
WRTRK
```

Press <BREAK>,<ENTER> or type keyword

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Directory for HELP file : BASIC

```
ABS                 ABSOLUTE VALUE    ALTER LINES       ARCTANGENT
ARGUMENT            ARRAYS            ASC               ASCII VALUE
ASSEMBLY SUBROUTINE                   ATN               AUTO
AUTOMATIC LINE NUMBERING              AVAILABLE MEMORY
BRANCH TO SUBROUTINE                  CALL              CANCEL ARRAY
CDBL                CHAIN             CHARACTER STRING
CHR$                CINT              CLEAR             CLOSE
CLS                 COLUMN            COMMAND           COMMON
CONDITIONAL BRANCH                    CONT
CONTINUE PROGRAM    CONTROL KEYS      CONVERT DOUBLE
CONVERT INTEGER     CONVERT SINGLE    COS               COSINE
CREATE SUBSTRING    CSNG              CURRENT RECORD
CVD                 CVI               CVS               DATA
DATA TO RANDOM BUFFER                 DATE$
DECIMAL TO OCTAL    DEF FN            DEF USR
DEFDBL              DEFINT            DEFSNG            DEFSTR
DELETE              DELETE FILE       DIM               DROP FRACTION
EDIT                EFFICIENT MEMORY USAGE              ELIMINATE LINES
END                 END FILE ACCESS   END OF FILE       EOF
ERASE               ERL               ERR               ERROR
ERROR BRANCH        ERROR CODE        ERROR LINE        ERRS$
EXP                 FIELD             FIX               FOR/NEXT
FORCE ERROR         FRE               FUNCTION          GET
GOSUB               GOTO              HEX$              IF/THEN
INKEY$              INP               INPUT             INPUT#
INPUT$              INSTR             INT               KEYBOARD SCAN
KILL                LAST RECORD       LDOS IN BASIC     LEFT$
LEN                 LET               LINE INPUT        LINE INPUT#
LINE PRINT          LINK PROGRAMS     LIST              LLIST
LOAD                LOAD PROGRAM      LOC               LOF
LOG                 LOG BASE E        LPOS              LPRINT
LSET                MATRIX VARIABLES                    MEM
MERGE               MID$              MKD$              MKI$
MKS$                MULTIPLE BRANCH   MULTIPLE BRANCH SUBS
NAME                NATURAL EXPONENT
NATURAL LOGARITHM   NEW               OCT$
ON ERROR GOTO       ON/GOSUB          ON/GOTO           OPEN
OPTION BASE         OUT               OVERLAYS          PACK DOUBLE
PACK INTEGER        PACK SINGLE       PASSING VALUES    PEEK
POKE                POS               POSITIONAL PRINT
PRINT @             PRINT TAB         PRINT USING       PRINT#
PRINTER TAB         PUT               RANDOM
RANDOM FILE BUFFER                    READ              READ MEMORY
READ PORT           READ RANDOM FILE                    READ TIME
READY FILE          REM               RENAME FILE       RENUM
RENUMBER LINES      REPLACE SUBSTRING                   RESTORE
RESUME              RETURN            RIGHT$            RND
ROW                 RSET              RUN               SAVE
SGN                 SIN               SINE              SPACES$
SPC                 SPECIAL CHARACTERS                  SPECIFIED LOOPS
SQR                 SQUARE ROOT       START PROGRAM     STATEMENT
STOP                STR$              STRING LENGTH     STRING$
SUBSTRINGS          SUSPEND EXECUTION                   SWAP
SYMBOLS             SYNTAX            SYSTEM
SYSTEM ERROR CODE                     TAB               TAN
```

Directory for HELP file : BASIC (cont)

TANGENT	TIME$	TROFF	TRON
TRUNCATE	TRUNCATE STRING	UNCONDITIONAL BRANCH	
UNPACK DOUBLE	UNPACK INTEGER	UNPACK SINGLE	USER FUNCTIONS
USR	VAL	VARPTR	VERTICAL TAB
WAIT	WHILE/WEND	WRITE	WRITE MEMORY
WRITE PORT	WRITE PROGRAM TO PRINTER		
WRITE PROGRAM TO SCREEN		WRITE RANDOM	
WRITE SEQUENTIAL	WRITE#		

Directory for HELP file : LDOS

APPEND	ATTRIB	AUTO	BACKUP
BOOT	BUILD	CLICK/FLT	COM/DVR
COMM	CONV	COPY	CREATE
DATE	DEBUG	DEVICE	DIR
DO	DUMP	ERROR	FILTER
FLOPPY	FLOPPY/DCT	FORMAT	FORMS
FREE	HARD DRIVE	HARD FORMAT	JOBLOG
KSM/FLT	LIB	LINK	LIST
LOAD	MEMDISK	MEMORY	PASSWORDS
PATCH	PURGE	REMOVE	RENAME
REPAIR	RESET	ROUTE	RUN
SET	SETCOM	SETKI	SPOOL
SYN	SYNTAX	SYS ALIVE	SYS BLINK
SYS BREAK	SYS BSTEP	SYS DATE	SYS DRIVE
SYS FAST	SYS GRAPHIC	SYS RESTORE	SYS SLOW
SYS SYSRES	SYS SYSTEM	SYS TIME	SYS TYPE
SYSGEN	TAPE100	TIME	TRSFORM4/CMD
TRSHD4/DCT	VERIFY		

Directory for HELP file : TECH1

CMD FORMAT	DCB	DCB QR	DCB+00
DCB+01,02	DCB+03,05	DCB+06,07	DCT
DCT QR	DCT+00	DCT+01,02	DCT+03
DCT+04	DCT+05	DCT+06	DCT+07
DCT+08	DCT+09	DEVICE CONTROL BLOCK	
DIR QR	DIR+00	DIR+01	DIR+02
DIR+03	DIR+04	DIR+05,12	DIR+13,15
DIR+16,17	DIR+18,19	DIR+20,21	DIR+22,23
DIR+24,25	DIR+26,27	DIR+28,29	DIR+30
DIR+31	DIREC	DIRECTORY RECORDS	
DISK COMMAND FILE FORMAT		DISK I/O TABLE	
DRIVE CODE TABLE	EXTENDED DIRECTORY RECORDS		
FCB	FCB QR	FCB+00	FCB+01
FCB+02	FCB+03,04	FCB+05	FCB+06
FCB+07	FCB+08	FCB+09	FCB+10,11
FCB+12,13	FCB+14,15	FCB+16,19	FCB+20,23
FCB+24,27	FCB+28,31	FILE CONTROL BLOCK	
FILTERS & DRIVERS		FXDE	GAT
GAT QR	GAT+00,5F	GAT+60,BF	GAT+C0,CA
GAT+CB	GAT+CC	GAT+CD	GAT+CE,CF
GAT+D0,07	GAT+D8,DF	GAT+E0,FF	
GRANULE ALLOCATION TABLE		HASH INDEX TABLE	
HIT	LOAD MODULE FORMAT		MEMORY HEADER
TAPE FILE OBJECT CODE FORMAT			

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Directory for HELP file TECH2

@ABORT	@ADTSK	@BANK	@BKSP
@BREAK	@CHNIO	@CKDRV	@CKEOF
@CLOSE	@CMNDI	@CMNDR	@CTL
@DATE	@DCINIT	@DCRES	@DCSTAT
@DEBUG	@DECHEX	@DIRRD	@DIRWR
@DIV16	@DIV8	@DODIR	@DSP
@DSPLY	@ERROR	@EXIT	@FEXT
@FLAGS	@FNAME	@FSPEC	@GET
@GTDCB	@GTDCT	@GTMOD	@HDFMT
@HEX16	@HEX8	@HEXDEC	@HIGH$
@INIT	@IPL	@KBD	@KEY
@KEYIN	@KLTSK	@LOAD	@LOC
@LOF	@LOGER	@LOGOT	@MSG
@MUL16	@MUL8	@OPEN	@PARAM
@PAUSE	@PEOF	@POSN	@PRINT
@PRT	@PUT	@RAMDIR	@RDSEC
@RDSSC	@RDTRK	READ	@REMOV
@RENAME	@REW	@RMTSK	@RPTSK
@RREAD	@RSLCT	@RSTOR	@RUN
@RWRIT	@SEEK	@SEEKSC	@SKIP
@SLCT	@SOUND	@STEPI	@TIME
@VDCTL	@VER	@VRSEC	@WEOF
@WHERE	@WRITE	@WRSEC	@WRSSC
@WRTRK	ERROR 00	ERROR 01	ERROR 02
ERROR 03	ERROR 04	ERROR 05	ERROR 06
ERROR 07	ERROR 08	ERROR 09	ERROR 10
ERROR 11	ERROR 12	ERROR 13	ERROR 14
ERROR 15	ERROR 16	ERROR 17	ERROR 18
ERROR 19	ERROR 20	ERROR 21	ERROR 22
ERROR 23	ERROR 24	ERROR 25	ERROR 26
ERROR 27	ERROR 28	ERROR 29	ERROR 30
ERROR 31	ERROR 32	ERROR 33	ERROR 34
ERROR 35	ERROR 36	ERROR 37	ERROR 38
ERROR 39	ERROR 40	ERROR 41	ERROR 42
ERROR 43	ERROR 63	ERROR DICTIONARY	
FLAGS USED	S0	S1	S10
S100	S101	S102	S103
S104	S11	S12	S13
S14	S15	S16	S17
S18	S19	S2	S20
S21	S22	S24	S25
S26	S27	S29	S3
S30	S31	S32	S33
S34	S35	S4	S40
S41	S42	S43	S44
S45	S46	S47	S49

Directory for TECH2 (CONT)

S5	S50	S51	S52
S53	S54	S55	S56
S57	S58	S59	S6
S60	S61	S62	S63
S64	S65	S66	S67
S68	S69	S7	S70
S71	S72	S73	S74
575	S76	S77	S78
S79	S8	S80	S81
S82	S83	S85	S87
S88	S9	S90	S91
S93	S94	S96	S97
S98	S99	SUPERVISORY CALLS	
SVC	UNKNOWN ERROR CODE		X0
X1	X10	X11	X12
X13	X14	X15	X16
X18	X19	X1A	X1B
X1D	X1E	X1F	X2
X20	X21	X22	X23
X28	X29	X2A	X2B
X2C	X2D	X2E	X2F
X3	X31	X32	X33
X34	X35	X36	X37
X38	X39	X3A	X3B
X3C	X3D	X3E	X3F
X4	X40	X41	X42
X43	X44	X45	X46
X47	X48	X49	X4A
X4B	X4C	X4D	X4E
X4F	X5	X50	X51
X52	X53	X55	X57
X58	X5A	X5B	X5C
X5E	X6	X60	X61
X62	X63	X64	X65
X66	X67	X68	X7
X8	X9	XA	XB
XC	XD	XE	XF

Z80A/HLP and Z80B/HLP have the same keywords as the 5.1 version.