SUPERLEX

FOR THE HP 71 COMPUTER

TITAN SOFTWARE COMPANY

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INTRODUCTION

The Superlex File is a set of BASIC keywords that will solve a variety of conversion problems. It also contains keywords that you can use to control the AC and ALARM annunciators, quick contrast and display scroll control, lowercase string conversion, a running clock keyword and more.

When the lex file is loaded into your HP-71 Computer these keywords become available for programs or keyboard use.

Installing the Convert Lex File

To use the additional keywords supplied by this file it must be resident in your HP-71 Computer. Load it as you would any other file as per the Owner's Manual instructions.

Some general things to remember about lex files are:

The lex file must be in the machine to utilize its keywords.

If the file is removed and a program containing keywords from it is run, an error will result when the line containing the keyword is encountered.

With the file not in place, a program line containing keywords can be viewed (or edited) but the keyword will not appear. Instead you will see a line similar to that below.

110 DISP XFN820xx(A) (xx is the particular keyword number)

When the lex file is back in the computer the program will run normally. For more information on Lex files consult the HP-71 Owner's Manual, sections 8 and 9.

How To Use The Keywords

This manual assumes that you are familar with the operation of your HP-71 Computer. It also assumes you know how to create, edit, store, and run programs.

Many of the keywords in this lex file follow the same syntax. This manual will not show a syntax diagram for each word. Instead the keywords that are the same will be illustrated by one syntax diagram and then some examples of various ways to use them.

The following page contains a complete list of all the keywords and their function.

```
ACR2SQM    acres to square miles
ATM2PSI    atmospheres to pounds per square inch
CAC        clear AC annunciator
CALM       clear ALARM annunciator
CC2CI      cubic centimeters to cubic inches
CF2CM      cubic feet to cubic meters
CI2CC      cubic inches to cubic centimeters
CLOCK      display running clock
CM2CF      cubic meters to cubic feet
CM2IN      centimeters to inches
CN2FH      centigrade to fahrenheit
DATE2JUL   calendar date to julian date
DIFDAYS    number of days between dates
DOFW       calendar date to day of week
FH2CN      fahrenheit to centigrade
FT2M       feet to meters
FT2NM      feet to nautical miles
FT2SM      feet to statute miles
GAL2LTR    U.S. liquid gallons to liters
HI         high contrast
HMS        decimal hours to hours, minutes, and seconds
HR         hours, minutes, and seconds to decimal hours
IN2CM      inches to centimeters
JUL2DATE   julian date to calendar date
KG2LBM     kilograms to pound mass, avoirdupois
KM2LY      kilometers to lightyears
KM2SM      kilometers to statute miles
LBM2KG     pound mass, avoirdupois to kilograms
LO         low contrast
LTR2GAL    liters to U.S. liquid gallons
LWRC$      uppercase to lowercase
LY2KM      lightyears to kilometers
ME         medium contrast
M2FT       meters to feet
ND         no display delay and scroll
NM2FT      nautical miles to feet
NM2SM      nautical miles to statute miles
PSI2ATM    pounds per square inch to atmospheres
REV$       reverse a string
SAC        set AC annunciator
SALM       set ALARM annunciator
SD         standard (default) display delay and scroll
SM2FT      statute miles to feet
SM2KM      statute miles to kilometers
SM2NM      statute miles to nautical miles
SQM2ACR    square miles to acres
WKEY$      wait for a key
```

The syntax of all the conversion keywords in this file is the same for e
One example syntax diagram will be used for all of the these keywords.

Several of the keywords require special format for input. They will be c

In the following example we will use the keyword SM2KM (statute miles to
kilometers). All the conversion keywords can be used in the same manner.

Syntax:

SM2KM(X)

Where X is any Real numeric expression.

Examples:

        DISP SM2KM(Y/15)   A=SM2KM(SQR(H))

        IF SM2KM(W*P+4) > 15 THEN GOTO 120

        A$=STR$(SM2KM(S))

We can also nest one conversion factor inside another to obtain a
new conversion. For example, to convert nautical miles to
kilometers:

        SM2KM(NM2SM(X))

Where X is the numeric expression representing nautical miles.

HMS

The keyword HMS converts decimal hours into hours, minutes, and seconds. The input can be any Real numeric expression representing decimal hours. For example, 3.9 hours. To convert this to hours, minutes and seconds type (all examples assume STD display format in effect):

HMS(3.9) <endline>

The result being 3.54. The format of the result is hh.mmss where hh is the hour value, mm is the time in minutes, and ss is the time in seconds.

Let's try a couple more examples:

HMS(3.99) <endline> gives 3.5924 which reads:

3 hours, 59 minutes, and 24 seconds.

HMS(18.52417) <endline> gives 18.3127012 which reads:

18 hours, 31 minutes, 27 seconds, and 12 thousands of a second.

Any digits following the seconds will be fractions of a second.

HR

The keyword HR converts time in hours, minutes, and seconds into decimal hours. The input can be any Real numeric expression representing time in the format hh.mmss where hh is the time in hours, mm the time in minutes, and ss the time in seconds. For example 3 hours and 54 minutes; to convert this to decimal hours type (all examples assume STD display format):

HR(3.54) <endline>

The result is 3.9.

To convert 3 hours, 59 minutes, and 24 seconds to decimal hours type:

HR(3.5924) <endline> gives 3.99

Any digits entered after ss will be treated as fractions of a second. Convert 18 hours, 31 minutes, 27 seconds, and 12 thousands of a second.

HR(18.3127012) <endline> gives 18.52417.

ADDITIONAL EXAMPLES

Here are some more examples of ways to use the conversion keywords. Note that the keywords can also be used in the CALC mode as well as in programs or the keyboard. All of the keywords are classified as functions and are IF.....THEN.....ELSE legal.

```
PRINT CC2CI(X/R)

PRINT "LIGHTYEARS=";KM2LY(C)

Z=M2FT(SIN(Q/E))

IF A THEN LTR2GAL(X1) ELSE LTR2GAL(X2)

PRINT HMS(TIME/60/60)

Z=KM2LY(SM2KM(NM2SM(D)))

W=CI2CC(P)

S=LY2KM(VAL(C$))

D=NM2SM(X)
```

The following keywords control the display anunciators:

SAC set AC anunciator, also sets flag -57

CAC clears AC anunciator, also clears flag -57

SALM set ALARM anunciator, also sets flag -60

CALM clear ALARM anunciator, also clears flag -60

The above keywords can be used in programs or from the keyboard. They will not function in CALC mode.

Example:

IF S>Y+A THEN SALM

The next group controls the display:

HI sets display contrast to High

ME sets display contrast to Medium

LO sets display contrast to Low

SD sets display delay and scroll to default

ND sets display delay and scroll to 0

The above can be used in programs or from the keyboard but not in CALC mode.

The following keywords perform calendar functions:

DATE2JUL(X)

Given a calendar date X this function returns the julian number for that date. The date must be >= OCT 15.5, 1582 and is entered in the form:

YYYY.MMDD where YYYY is the year, MM is the month, DD is the day. fractions of a day may be used as another digit following DD.

Examples:

DATE2JUL(1985.0120) gives 2446085.5 as the julian date.

DATE2JUL(1846.10234) DATE2JUL(D)

JUL2DATE(X)

Given a julian date X this function returns the calander date in the form YYYY.MMDD. The julian date must be >=2299161. Its usage is similar to that of DATE2JUL.

Both of these keywords will generate errors if illegal dates are used (that is before the start of the Gregorian Calendar). Both can be used in CALC mode.

DIFDAYS(X,Y)

Given two calendar dates X and Y this function returns the number of days between them. Both dates must be >=Oct 15.5, 1582. They must be in the usual form YYYY.MMDD.

DOFW(X)

Given a calendar date this function returns the day of the week as an integer.

0-Sunday, 1-Monday, etc. The date must be greater than Oct 15.5, 1582. Also for accurate results use OPTION ROUND POS. Rounding errors may occur with other settings.

The following keywords are string functions.

LWRC$ converts upercase letters to lowercase letters

The above keyword is similar to UPRC$ (see reference manual) it only acts on letters. Other characters will remain unchanged.

Examples:

LWRC$('HELLO 2 YOU') returns 'hello 2 you'

LWRC$(A$) LWRC$(X$[1,3])

REV$ reverses a string

Example:

REV$('HELLO') returns 'OLLEH'

The above keywords can be used in programs or from the keyboard but will not function in CALC mode.

WKEY$

This keyword when encountered in a program will halt it and wait for a key to be pressed. It will then return the key and resume program execution. It returns a string character.

Example:

DISP "Input Yes or No" @ K$=WKEY$

In the above example a 'Y' or 'N' could be entered as a response and then K$ could be tested for which character was entered. Notice also that an INPUT statement is not needed because WKEY$ will halt the program and preserve the display.

CLOCK

This keyword displays a running clock. Pressing any key will terminate the clock display. It can only be executed from the keyboard and is not programmable.

If you have any questions regarding this software please write:

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