

### 3. CALCULATOR

Press <C> to get the next menu:

Arithmetic Functions Units Statistics Clear Help

#### 3.1 ARITHMETIC

Press <A> to get the next menu:

+ - \* / SQRT X^2 Memory Help

The mathematical operations are apply on the number in the Output/Input display. The <Memory> switch to the next menu:

+ M - M \* M / M C M R M X M Help

- The first four menu items apply on the Memory display
- C M - Clear memory
- R M - Recall memory to the Output/Input display
- X M - Exchange the numbers between the Memory and the Output/Input displays

#### 3.2 FUNCTIONS

Press <F> and the next menu will appear:

Calc\_func Edit\_func Help

##### 3.2A <E>dit\_func

Press <E> to get the next menu:

1\_Func 2\_Func 3\_Func 4\_Func 5\_Func 6\_Func 7\_Func Help

- 1\_Func - One variable function
- The rest are 2 to 7 variables functions

When we choose one of these options a table of the relevant functions appears. Using the menu we can scroll through the functions table and edit or add names, functions and to give a one line or a full description document for the function. The variables names should be the following:

- 1\_func - The variable name is OUT or T, for example the function @SIN(X) should be written as @SIN(OUT) or @sin(T)
- Other - The variable names are RG1, RG2, RG3 ... RG7 or A, B, C, D, E, F and G, for example the function  $x^2+y^3+z^4$  should be written as: +RG1^2+RG2^3+RG3^4 or +A^2+B^3+C^4

We recommend using the RG1.....RG7 and the OUT unless the function occupies more than 240 characters.

Press <1> to get the next screen:

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Down Up Right Left Next Previous Edit  
Move one cell down [ESC] - Previous menu

|    | A       | B         | C            | D | E      |
|----|---------|-----------|--------------|---|--------|
| 1  | =====   |           |              |   |        |
| 2  | Units   |           | Output/Input |   | Memory |
| 3  | =====   |           |              |   |        |
| 4  | None    |           | 0.00         |   | 0.00   |
| 5  | =====   |           |              |   |        |
|    | L       | M         | N            | O | P      |
| 1  | sin(x)  | COSH(X)   |              |   |        |
| 2  | COS(X)  | TANH(X)   |              |   |        |
| 3  | TAN(X)  | CTANH(X)  |              |   |        |
| 4  | ASIN(X) | SECH(X)   |              |   |        |
| 5  | ACOS(X) | CSCH(X)   |              |   |        |
| 6  | ATAN(X) | ASINH(X)  |              |   |        |
| 7  | SEC(X)  | ATANH(X)  |              |   |        |
| 8  | CSC(X)  | ACTANH(X) |              |   |        |
| 9  | COT(X)  | ASECH(X)  |              |   |        |
| 10 | ASEC(X) | ACSCH(X)  |              |   |        |
| 11 | ACSC(X) |           |              |   |        |
| 12 | ACOT(X) |           |              |   |        |
| 13 | SINH(X) |           |              |   |        |

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This is a sample of the 1 variable functions in the table. Using the first six menu items the user can scroll through the functions, edit the names or add new function names. The user can scroll and fill the table all the way to row 8192 in 5 columns.

Press <E> to get the next prompt:

Input the new function name -

The user can type a new function name and press the ENTER key or just press the ENTER for no changes. The next prompt and screen appear:

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Type the function -

|   | A           | B | C            | D | E      |
|---|-------------|---|--------------|---|--------|
| 1 | =====       |   |              |   |        |
| 2 | Units       |   | Output/Input |   | Memory |
| 3 | =====       |   |              |   |        |
| 4 | None        |   | 0.00         |   | 0.00   |
| 5 | =====       |   |              |   |        |
|   | Q           |   |              |   |        |
| 1 | @SIN(C4)    |   |              |   |        |
| 2 | @COS(C4)    |   |              |   |        |
| 3 | @TAN(C4)    |   |              |   |        |
| 4 | @ASIN(C4)   |   |              |   |        |
| 5 | @ACOS(OUT)  |   |              |   |        |
| 6 | @ATAN(OUT)  |   |              |   |        |
| 7 | 1/@COS(OUT) |   |              |   |        |
| 8 | 1/SIN(OUT)  |   |              |   |        |

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9  1/@TAN(OUT)
10 @ACOS(1/OUT)
11 @ASIN(1/OUT)

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This is the functions table, the program is now in the Lotus EDIT mode, the user can edit or add a function and than to press the ENTER key or just to press the ENTER key for no changes. The user can define a spreadsheet which will be retrieved when he chooses the <c>alculate option by typing the keyword FN followed by the a file name which holds a spreadsheet (like FNC:\LOTUS\CHECBOOK.WK1). When the user uses the <c>alculate option the spreadsheet C:\LOTUS\CHECBOOK.WK1 will be retrieved and will replace the current program. This way the user can use this program as a file manager for all his scientific and engineering spreadsheets.

#### IMPORTANT

All LOTUS rules apply here, the function should be written as a LABEL (with a prefix like "'") and than the + or - sign or the @ character. The program stores the functions on a separate file FORMULAS.WK1 as LABELS. When the user chooses the <c>alculate option the program deletes the prefix and the label becomes a formula.

The user can insert 240 character long functions from the keyboard. To enable the user to calculate functions with number of variables higher than 7, in the case of 7 variable functions, the user can define functions with any number of variables (less or equal than 7). For example: a 10 variables function can be calculated by splitting it to 7 and 3 variables functions in the same table. Then calculate the first and put the result in the memory, and than calculate the second function and add the result to the memory to get the final result.

Now the description screen appears:

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Description -

|   | A     | B | C            | D | E      |
|---|-------|---|--------------|---|--------|
| 1 | ===== |   |              |   |        |
| 2 | Units |   | Output/Input |   | Memory |
| 3 | ===== |   |              |   |        |
| 4 | None  |   | 0.00         |   | 0.00   |
| 5 | ===== |   |              |   |        |

V

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1  This function calculates the sine of the output number
2  This function calculates the cosine of the output number
3
4
5
6
7
8
9
10
11

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The program has two description modes:

1. One line description: type the description and press ENTER or just press ENTER for no changes and you are back in the edit menu.
2. Full document description: type FN followed by the file name you want to assign to the description file like: FNC:\LOTUS\CHECBOOK.WK1 which means that the file is CHECBOOK.WK1 located at drive C: in the LOTUS subdirectory (the .WK1 extension. can be omitted). The program will switch to EDIT mode where the user can type the description document. To move through the description file press the DOWN key. Don't press the ENTER key unless you are finished typing. The ENTER key exits the EDIT mode. The program can view only 76 character long lines, therefore start a new line after typing 76 characters in the previous line.

Note:

If a description file is already exists and you press the ENTER key only, the program retrieves the description file.

\*\*\*\*\* WARNING \*\*\*\*\*

Since the program is now in the EDIT mode the Lotus keys are operative, however the user is strongly advised to use ONLY the UP, PGUP, DOWN and PGDN keys to scroll between the lines, the program will not allow scrolling to the sides by hiding all the columns except the current column. Trying to unhide the columns MAY destroy the program code. For example: if by mistake you have pressed the "/" key press ESC to get back to the READY mode and then press F2 to enter EDIT mode or just continue to type, or press ENTER to exit the description mode.

Type FNCHECBOOK (the file name is CHECBOOK) and press ENTER, the next menu appears:

Down Up Next Previous Edit Save

Using the first 4 menu items the user can scroll through the description.

Press <E> to enter the EDIT mode, when you are finished editing or typing the description file press ENTER to return to the previous menu.

Press <S> to save the description file, the next prompt appears:

File name (press ENTER for no changes) -

Type the file name or press ENTER for no changes (CHECBOOK).

As we mentioned earlier if a description file is already exists and you press the ENTER key only the program retrieves the file.

3.2B <C>alc\_func

Press <C> to brings the next menu:

1\_Func 2\_Func 3\_Func 4\_Func 5\_Func 6\_Func 7\_Func Help

Choosing one of the menu items brings the relevant functions table.  
Press <1> to get the next screen:

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| Down<br>Move one cell down | Up      | Right     | Left | Next         | Previous | Calculate | Help                  |
|----------------------------|---------|-----------|------|--------------|----------|-----------|-----------------------|
|                            |         | A         | B    | C            | D        | E         | [ESC] - Previous menu |
| 1                          | =====   |           |      |              |          |           |                       |
| 2                          |         | Units     |      | Output/Input |          | Memory    |                       |
| 3                          | =====   |           |      |              |          |           |                       |
| 4                          | None    |           |      | 0.00         |          | 0.00      |                       |
| 5                          | =====   |           |      |              |          |           |                       |
|                            | L       | M         | N    | O            | P        |           |                       |
| 1                          | sin(x)  | COSH(X)   |      |              |          |           |                       |
| 2                          | COS(X)  | TANH(X)   |      |              |          |           |                       |
| 3                          | TAN(X)  | CTANH(X)  |      |              |          |           |                       |
| 4                          | ASIN(X) | SECH(X)   |      |              |          |           |                       |
| 5                          | ACOS(X) | CSCH(X)   |      |              |          |           |                       |
| 6                          | ATAN(X) | ASINH(X)  |      |              |          |           |                       |
| 7                          | SEC(X)  | ATANH(X)  |      |              |          |           |                       |
| 8                          | CSC(X)  | ACTANH(X) |      |              |          |           |                       |
| 9                          | COT(X)  | ASECH(X)  |      |              |          |           |                       |
| 10                         | ASEC(X) | ACSCH(X)  |      |              |          |           |                       |
| 11                         | ACSC(X) |           |      |              |          |           |                       |
| 12                         | ACOT(X) |           |      |              |          |           |                       |
| 13                         | SINH(X) |           |      |              |          |           |                       |

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The first 6 menu items control the cursor (highlight) movement. The <Calculate> item calculates the functions. In all cases the program prompts the user to insert the values for RG1 to RG7 depends on the number of variables.

REMEMBER:

1. In the case of 7\_func the user can define functions with less than 7 variables, for example: if the user wants to calculate 2 variables function he needs to give values for RG1 and RG2 and to press only the ENTER key when the prompt asks for RG3.
2. If instead of a function the program finds the keyword FN at the beginning of the function string the program will retrieve the spreadsheet with the file name follows the FN keyword.