

## TCALL 1.2 the kalkulation program for the PC-1600

Written in Asembler and executable with a memory expansion of at least 32Kb in Slot 1 (memory with MEM 44602 KB).

### Structure:

TCALL occupies the storage area in bank #0 from &80C5 to &EFFF and in bank #1 the range starting from &8100, therefore all are overwritten so far in the memory of lying programs. Thus secure please before. The paper of TCALL consists of 13 columns and 3 lines. Each of the 4 cells can with max. 32 indications to be occupied. Contents of a cell may contain texts, numbers or formulas. On the display always insgesamt 20 cells rack, 4 columns and 5 lines. The line number are to be always seen at the lefthand side of the display. Only the first 8 indications on the display are represented by a cell.

### Operation:

The individual cells become with the cursor (up, down, right left) headed for. With the edge Scrollt reach the display.

Further combinations of keys.

Ctrl+cursor ( scroll complete display )

Shift+Ctrl+Cursortaste ( cursor at the end and/or at the beginning one positions)

CTRL L ( a file loads with indicated names)

CTRL S ( a file with indicated names stores)

CTRL Z ( cell name stores plus contents as printer file)

CTRL H ( cursor Home)

CTRL C ( all cells delete)

CTRL B ( complete computation of all cells with formulas)

CTRL M ( cell notice)

CTRL K ( noticed cell to the place copied at that the cursor is)

RCL key ( announcement and input of a cell)

☐Key ( announcement of the first column and the column names to)

Key MODE ( terminates in each case the current program step)

Key CL ( contents of the current cell deleted)

Key OFF ( switches the computer off in the program)

Key ENTER ( confirmation of an input)

Key BS ( preceding indication deletes again)

Key SHIFT ( switches letter and activates other indications)

Key SML ( switches in small letter mode)

### General input:

All indications over the keyboard of the PC1600 are certified. The indications over the function keys only in connection with the SHIFT key. The input is entered either directly over the keyboard into the cell or with the RCL key in the editor. The editing line is in the lowest display line. The input must be locked with the ENTER key otherwise the text to the cell is not transferred. The editor can be left at any time with the cursor or the MODE key. In the editor the cursor keys can be on the left and on the right used. Here however only indications can be overwritten and not inserted. Around indications to delete only the BS key or the CL key can be used, whereby the BS key deletes the indications individually only at the end. The cursor is marked there with a line under the indications. In the editor the first fixed column and the line letters with the double arrow key can be likewise constantly indicated left beside the RCL key. The work with formula facilitates in the middle in the paper. The computer, in the program, one stays not used, the program switches itself off. With the key BREAK ON can be activated the program at any time again in the same place. With the key MODE can be broken off each operation before the final execution.

### Payment and text input:

In order to have during inputs of numbers also the possibility of giving a notice also to the cell without seeing it however on the display, an indication is additionally inserted.

Behind a number or a formula becomes simple (!) indication set and the notice behind the exclamation mark appears only in the input window. It becomes then itselfable by the key RCL. A cell could look for example in such a way:

100! Contribution life insurance of 2.2.93

or  
= A1+A3/100\*B4! Multi-resisting tax of article 2

Formula input:

Formulas are set with (=) an indication at the beginning. Can be used numbers and formulas or also field variables. Field variables consist of that

Big letters A-M (for the columns 1-13) and numbers of 0 (for the lines). Field variable can access also fields with forms and functions. After manipulation of the ENTER key the hole paper is again calculated and updated.

Some examples of formula input:

= 3\*3+700/14

or  
= A1/100\*15

or  
= A1+B2/C4-M30

Functions:

There are four different functions. Once sum computation, average computation, minimum and maximum computation. The instructions for this look like-followed.

= # SUM (A0:M30) = sum of the hole data field  
= # DIV (A0:M30) = average one value of the hole data field  
= # MIN (A0:M30) = smallest one value of the hole data field  
= # MAX (A0:A13) = maximum value of the hole data field

Hereunder applies the first field variable behind the SUM, DIV, MIN, MAX marks the first left upper corner, and the second field variable marks the latter on the right of cell lying down into then from all these cells, which lie between them, the sum, the average, which is determined smallest value or the biggest value.

Functions can be used also in a formula with field variables and numeric numbers. E.g. =5\*#SUM(A0:A9). In functions, with which the field is more groeer than the range in the program available, the error message "DATENFELD ZU GRO". Such biggest computation fields are to be computed then with several cells.

Mathematical expressions:

6 different mathematical expressions can be used, with a stringer character (dollar character) how follows read:

\$INT (value or formula) = integer (integral)  
\$MOD (value or formula) = module (remainder from number)  
\$LOG (value or formula) = Logarytmus of a number  
\$SQR (value or formula) = square root of a number  
\$DMS (value or formula) = decimal/Sexagesimal (transformation of angles)  
\$ABS (value or formula) = Absolut value of a number

Load and Save:

Load and save happens in the Sharp usual standard. Thus only drive assembly then name with Extension. E.g. S2:KONTO.CLC. Error messages as well as references of the program are indicated in the lowest menu line. The error messages correspond to the operating instructions of the PC1600.

#### Error messages:

Error messages are indicated in two different kinds. Once in the cell. As word "**\* \* ERROR \***". This happens only if in the computing expression or in the formula a mathematical error in the computation arose or to wrong or mathematical indications were not entered. E.g.: = 54+A1+%. Also functions or formulas their own cell call end with "**xx FEHLER xx**".

On the other hand there is a simple check of a formula on its structure. If this error exhibits gives it in the input line a "**SYNTAX FEHLER!**" expenditure. The input remains existing and the errors can be corrected become.

Possible errors are for example cell name as small letter, cell name more bigger than "M", function names those were wrongly written here or not to exist.

#### Computation:

The computation of a data sheet takes place once automatic while the loading of a new paper, with each cell input (end with ENTER) or manually with CTRL B combination of keys. Since the program is written in Z80 code, it can come nevertheless with deeply interlocked formulas and big data sets, to waiting periods. Thus then, request something patience of the computers is not killed. A tip still in things speed. It is accordingly, by programming to use for example more simply, several field variables in a formula for adding, than the instruction # SUM. Thus only with bigger fields it pays from the instruction # SUM to use itself.

#### Notes:

If the computer in the program, which I do not hope, can be killed, it that the old function key allocation is no longer present. This comes because the whole range by the program as buffer for computations is needed. It is copied when starting on another bank. But one can get it again. With CALL &80F3 ENTER one arrives without bank copy in the program. One leaves simply normally the program with MODE and then the key "J". TCALL copied at the end function key range then again there where it actually also belongs.

#### Diskworks and macros:

Around Diskworks from TCALL to activate you must at the end of the program the key "Q" to be pressed. Diskworks must absolutely on RAM disk lie, otherwise an error message appears. From Diskworks also computing sheets can be immediately started with TCALL together. A possible macro allocation, started in DW.CFG, here as example with the key "L".

```
L \31\BLOAD"s2:tcall~\3\~@~
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Programming time approx.. 1 year