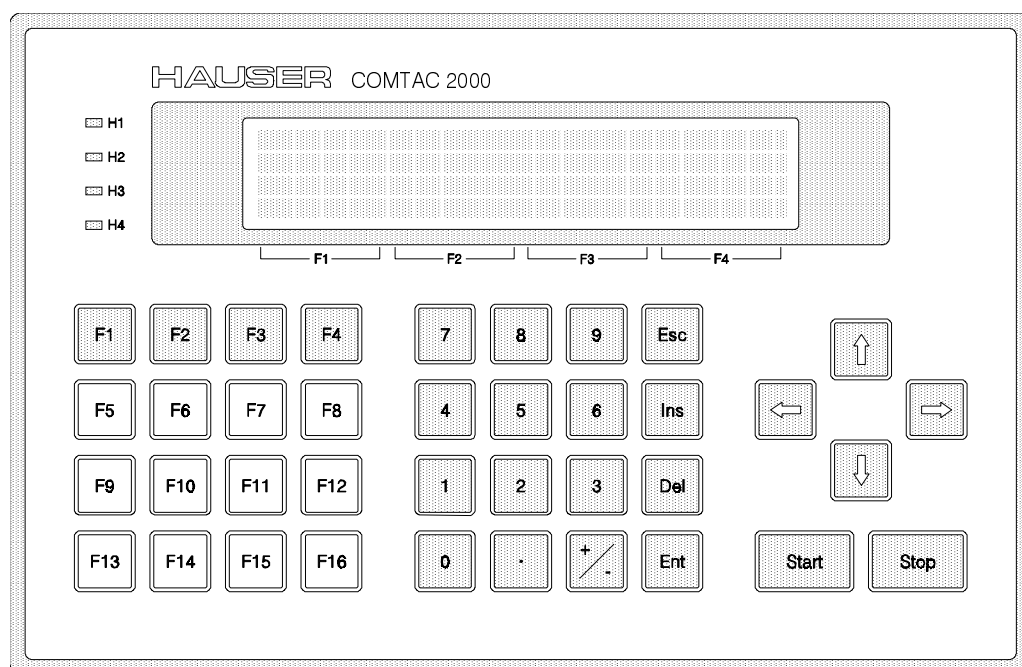


Operating Instructions

COMTAC Programming Tool



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HAUSER
We automate motion



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COMTAC Programming Tool

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1. Function overview

The Hauser programming tool "COMTACPT" for PCs includes the following functions:

- ◆ COMTAC file administration
- ◆ COMTAC parameter editor
- ◆ Macro editor
- ◆ Communication of programs and data (PC → COMTAC or COMTAC → PC) with the DOS commander
- ◆ Interface configuration at the PC
- ◆ Help function

The special purpose of the programming tool is to develop BASIC programs for COMTAC.

Program name: COMTACPT

Files of the programming tool

CGAEGA.CFG, HKC.CFG: Graphic driver

CTCVSN.DFT: BASIC reference table

COMTACPT.EXE: Main program

CTCLIST.EXE, CTCTOK.EXE, CTCXFER.EXE:

Help programs

CM1.SYS, CM2.SYS: Device driver

Directory CTC_HELP: Files for the help functions.

Attention: the directory name for the help functions should not be changed.

2. Initial operation

- ◆ Open an existing directory or create a new one to store the programming tool.
- ◆ Create a sub-directory with the same name as used on the disk.
- ◆ Copy the disk contents including the sub-directory on the PC.

Important: The directory on the PC should have the same directory partition as on the disk !

- ◆ Link COMTAC with the PC.

To do so a device driver for COM1 or COM2 has to be installed:

- ◆ If COM1 is used as interface to COMTAC the following instruction has to be written in the config.sys file of your PC: DEVICE=C:\...\CM1.SYS.

- ◆ If COM2 is used as interface to COMTAC then the following instruction has to be written in the config.sys file of your PC: DEVICE=C:\...\CM2.SYS.

As directory choose the created directory in which the files "CM1.SYS" and "CM2.SYS" are stored.

Now restart the computer!

- ◆ Connect COMTAC with the PC:

- ◆ Cable: SSK1/.. (RS232 cable)

- ◆ PC connection: COM1 or COM2

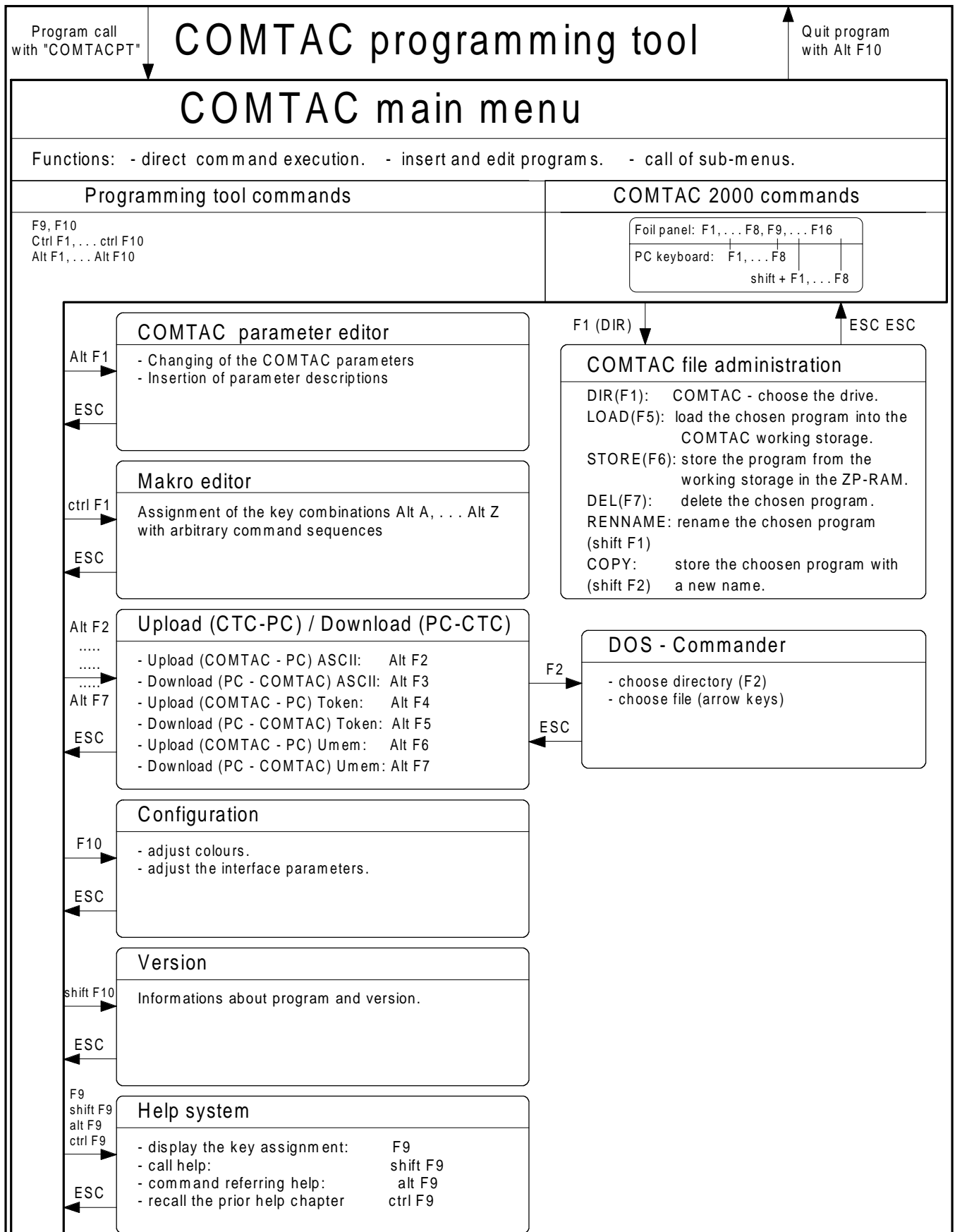
- ◆ COMTAC connection: X4 (RS232/1)

- ◆ Switch on the COMTAC.

- ◆ Start the programming tool from the created directory with "COMTACPT".

The screen now shows the COMTAC main menu.

3. Menu overview for the COMTAC programming tool



4. Functions of the programming tool

4.1 Working with the programming tool

After starting the Hauser programming tool the main menu is on the screen, in which:

- ◆ sub-menus can be called-in,
- ◆ BASIC commands can be executed directly (insert the command and terminate with ENTER),
- ◆ a program can be created (insert the commands with line numbers and terminate with ENTER), e. g.:

```
10
INPUT A
20 PRINT A*2
```

- ◆ programs and commands can be edited
(see command description chapter "Programming").

Manual keyboard entry is transmitted to COMTAC via the serial interface. COMTAC interprets the input and returns it to the PC. The emulator program receives the returned signs and displays them on the PC monitor.

4.2 Function key assignment

Display the assignment of the function keys with F9. The following screen appears:

Function Keys and Edit Keys

Key		S H I F T	C T R L	A L T
F1	DIR	RENAME <F9>	Macro-Editor	Ct.<>- Editor
F2	LIST	COPY <F10>		UPLOAD ASCII
F3	RUN	FORMAT <F11>		DOWNLOAD ASCII
F4	PSTEP	AUTO <F12>		UPLOAD Token
F5	LOAD	RENumber<F13>		DOWNLOAD Token
F6	STORE	DISP <F14>		UPLOAD Umem
F7	DELeTe	ENABLE <F15>		DOWNLOAD Umem
F8	STOP/CONTINUE	DISABLE <F16>		
F9	Function-Keys	HELP-Function	OLD-HELP-Page	WORD - HELP
F10	Configuration	Version	RESET COMTAC	Exit Program

Edit-Function	Key	Edit-Function	Key	Edit-Function	Key
CHAR INSERT	INS	LINE START	HOME	CURSOR UP	↑
CHAR DELET	DEL	LINE END	END	CURSOR DOWN	↓
LINE INSERT	Ctrl_I	TEXT START	PgUp	Display Time	Ctrl_U
LINE DELETE	Ctrl_Y	TEXT END	PgDn		
LINE ERASE	Ctrl_E	CURSOR LEFT	<-	DATA-TEXT-Editor	Ctrl-
PAGE ERASE	Ctrl_P	CURSOR RIGHT	->		PgUp

CANCEL with [ESC] !

4.3 Important special functions and their call

◆ Display the function key assignment

Call: key [F9]
Function: display of a table which shows the assignment of the HOST-PC keys.

Return: key [ESC]

◆ Display of the version number

Call: key [SHIFT]-[F10]
Function: version number display of the COMTAC programming tool as well as the time and date of the PC clock.

Return: arbitrary key

◆ Changing the attribute colours and RS232 parameters (configuration)

Call: key [F10]
Function: the attribute colours can be changed as desired. Also the parameters of the serial interface can be adjusted for communication of the HOST-PC with the COMTAC.

The selection of the possible adjustments is available via the arrow keys (→←).

Alterations will be stored in a CFG file.

Return: key [ESC]

◆ COMTAC and program reset (RES-TERM. / COMTAC)

Call: key [CTRL]-[F10]
Function: reset of COMTAC and program.
Return: not necessary

◆ Program termination (Exit Program)

Call: key [ALT]-[F10]
Function: program will be terminated. Return to DOS.
Return: all keys except [Y]

◆ Call the help function (HELP-Function)

Call: key [SHIFT]-[F9]
Function: the first help chapter of the integrated COMTAC manual will be displayed on the screen.
Return: key [ESC] or [BACKSPACE]

◆ Call an old help chapter (OLD-HELP-Page)

Call: key [CTRL]-[F9]
Function: the last activated help chapter will be displayed on the screen.
Return: [ESC]

◆ Call the syntax help (WORD - HELP)

Call: key [ALT]-[F9]

Function: display of the help chapter which is related to the command where the screen cursor is placed under.

The command has to be separated with blanks (not the beginning of the line)

If there is no help chapter which relates to the given word the first help chapter will be displayed.

Return: [ESC]

◆ Store COMTAC program as ASCII-File (UPLOAD ASCII)

Call: key [ALT]-[F2]

Function: the BASIC program of the COMTAC working storage will be stored as ASCII file on a storage medium of the HOST-PC.

For the file selection the Hauser DOS commander is available.

Attention: use this function only in the COMMAND mode.

Return: [ESC]

◆ Load ASCII-File in the COMTAC WORKING STORAGE (DOWNLOAD ASCII)

Call: key [ALT]-[F3]

Function: a COMTAC-BASIC program which has been stored in the PC as a ASCII file will be loaded in the COMTAC working storage. A program of the working storage will be deleted with this function.

For the file selection the Hauser DOS commander is available.

Attention: call this function only in the main menu.

Return: [ESC]

◆ Store COMTAC program as TOKEN file (UPLOAD Token)

Call: key [ALT]-[F4]

Function: the BASIC program of the working storage will be stored as a Token file on a storage medium of the PC.

For the file selection the Hauser DOS commander is available.

Attention: program CTCXFER is necessary to execute this function.

Attention: call this function only in the main menu.

Return: [ESC]

◆ Load TOKEN file into the COMTAC working storage (DOWNLOAD Token)

Call: key [ALT]-[F5]

Function: the COMTAC-BASIC program which has been stored as Token file in the PC will be loaded in the working storage of the COMTAC. A program of the working storage will be deleted with this function.

For the file selection the Hauser DOS commander is available.

Attention: program CTCXFER is necessary to execute this function.

Attention: call this function only in the main menu.

Return: [ESC]

5. COMTAC parameter editor

Call: key [ALT]-[F1]

Function: editor to process the COMTAC parameters.

The first time you call the parameter editor all parameters will be loaded in the PC. This takes some time. For the next

call of the parameter editor no additional parameter reading will be initiated.

Termination: key [ESC]

ATTENTION: Alterations which are not done with the parameter editor will NOT be listed (e.g.: if the value of a parameter will be changed directly with the CT. command; this will not be registered with a later call of the parameter editor. The old value will still be displayed)

Explanations to the display fields:

◆ Ct.

the marked field describes the chosen parameter.

◆ Value

this field displays the present value of the parameter.

◆ Menu

Display of the possible commands

◆ Parameter - Description

Description of the chosen parameter.

The PARAMETER descriptions can be edited and will be stored in the CWBESCHR.HLP file (sub-directory: CTC_help).

◆ Messages

Display of a request or message for the user.

Description for the command keys:

◆ [ARROW UP], [ARROW DOWN]

choose PARAMETER.

◆ [HOME]

choose PARAMETER 0.

◆ [END]

choose last PARAMETER.

◆ [PgUp]

scroll up with tens steps.

◆ [PgDn]

scroll down with tens steps

◆ [Ent]

change parameter.

The new value will be read via the COMTAC and displayed.

Then the PARAMETER notation can be changed if desired.

◆ [ESC]

Quit the PARAMETER editor with [ESC].

6. Macro editor

With the macro function of the program the special keys [ALT]-[A] up to [ALT]-[Z] can be programmed with arbitrary texts or commands.

For example: the command DIR R can be programmed on macro key [ALT]-A. Herewith the contents of the COMTAC drive R can be displayed by pressing key [ALT] and key [A] simultaneously.

Notice that the length of a text is restricted to 255 characters per key.

With the macro editor the macros can be programmed or modified.

The editor is available with pressing the key combination [CTRL]-[F1]. With that a list will be displayed with the available macro keys and their present content.

With shifting the cursor bar the macro keys will be chosen.

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If the contents of a macro key should be changed press key [ENTER].

Now the content of this macro key could be changed in a window. Terminate the input with [ENTER].

Quit the macro editor with key [ESC].

Alterations will be stored in the MACRO.HLP file in directory ..\CTC_help, they are available with the next program start.

ATTENTION: If a macro assignment needs a CR this can be achieved by the extension ^M.

The extension is needed if a command e.g. DIR A should be executed without pressing the key [ENTER].

In the editor the string would look as follows (e.g.: for [ALT]-[Z])

DIR R^M

^M corresponds with CR (pressing [ENTER])

7. UPLOAD / DOWNLOAD

7.1 General to UPLOAD / DOWNLOAD functions

The UPLOAD / DOWNLOAD functions offer different possibilities to store and load BASIC programs or data on a storage medium (disk, hard disk) of the PC:

- ◆ Transfer to COMTAC as text file (ASCII).
The file then will be translated line-wise from COMTAC and stored with this format (as Token file) in the COMTAC.
 - ◆ Load from COMTAC as text file (ASCII).
The file will be re-translated line-wise from COMTAC and transmitted in this format (as BASIC file) to the PC.
 - ◆ Transfer to COMTAC as translated file (Token file).
The file has to be in a Token file format.
 - ◆ Load from COMTAC as translated file (Token file).
- ➡ The loading and transferring of translated files (Token files) is faster than ASCII files.
- ◆ Transfer of a data text field to COMTAC.
 - ◆ Loading of a data text field from COMTAC.

Use the main menu to call one of these functions!

7.2 UPLOAD ASCII:

A program of the COMTAC working storage will be re-translated and stored as text file in the PC.

7.3 DOWNLOAD ASCII

This is the load function for BASIC-ASCII program files. A chosen file will be translated and loaded into the working storage of COMTAC. If a file is chosen which contains no COMTAC-BASIC program problems can occur.

A program of the working storage of COMTAC will be deleted with the execution of this routine!

7.4 UPLOAD Token:

A program of the COMTAC working storage will be stored in the PC as Token file.

7.5 DOWNLOAD Token:

A chosen Token file will be loaded in the COMTAC working storage.

➡ For the functions UP/ -DOWNLOAD ASCII and UP/ -DOWNLOAD Token programs CTCXFER, CTCTOK and CTCLIST have to be available.

7.6 Operation of the UPLOAD / DOWNLOAD functions

The operating is the same for all storage resp. load functions and is restricted to the file selection or the file name and the starting of a function.

- ◆ The INPUT of a file name follows the pressing of key [F1].
Now a file can be named:
e.g.: 'C:\BASIC\PROGRAM.BAS' or 'PROGRAM.BAS'
optional drive and path can also be inserted. If no drive and path will be inserted the present chosen directory will be accessed.
- ◆ The SELECTION of a file name follows the pressing of key [F2]
The integrated Hauser-DOS-Commander will be started to facilitate the file selection.
- ◆ The STARTING of the single UPLOAD\DOWNLOAD function will be started by pressing key [ENTER].
- ◆ Quit the UPLOAD \DOWNLOAD function with pressing key [ESC] .

IMPORTANT!

With an UPLOAD function an already existing file will be overwritten. There is no automatic backup via a *.BAK - file as safe guard against data loss.

7.7 DOS-Commander

The Hauser DOS-Commander offers a comfortable file selection.

The following functions are additional available:

- ◆ drive resp. sub-directory change [F2].
- ◆ renaming of a file or directory [F6].
- ◆ preparing of a sub-directory [F7].
- ◆ deleting of files or directories [F8].

The call of the DOS-Commander in the UPLOAD\DOWNLOAD mode is initiated with pressing key [F2].

- ◆ Cursor keys: With the cursor keys the file or sub-directory can be selected.
- ◆ [HOME]: Selection of the 1. directory listing.
- ◆ [END]: Selection of the last directory listing.
- ◆ [F2]: change path and/or drive.
- ◆ [F6]: rename file or sub-directory.
- ◆ [F7]: preparing a sub-directory .
- ◆ [F8]: deleting a file or a sub-directory without listings.
- ◆ [ENTER]: select file and quit DOS-Commander.
If the chosen listing is a sub-directory it will be changed in this sub-directory.
- ◆ [ESC]: quit DOS-Commander without having chosen a file.

8. Configuration of the colours and the RS232 parameters

Call: key [F10]

Function: with the configuration routine the displayed colours and the interface parameters can be changed.

Choose the point which should be changed with the cursor keys [ARROW UP] resp. [ARROW DOWN].

With the cursor keys [ARROW LEFT] resp. [ARROW RIGHT] the value or colour can be changed.

If you do not like the changed adjustment the prior values can be re-adjusted with key [A].

Key [D]: activation of the predefined standard values.

Terminate: terminate the configuration routine with key [ESC].

Alterations are stored in one of the CFG files.

9. Help system

The Hauser programming tool is provided with an extensive help function.

During the BASIC programming with the emulator program informations can be requested via single commands or command groups.

1. Display table of content with key [SHIFT]-[F9]

The chapters will be called by the selection of the corresponding letter.

2. Recall the last help chapter which has been terminated with ESC. Key [CTRL]-[F9]

3. Word corresponding help [ALT]-[F9]

If you need informations about a COMTAC BASIC command during programming, position the cursor under the corresponding word which has to be separated with blanks from other words (not the beginning of the line). With the word help function [ALT-F9] the desired chapter can be displayed.

Quit the help function with key [ESC].

10. Error correction

1. Problem: the program is truncated right after the start with the following error message: [ERROR 1] interface driver "CM1.SYS" or "CM2.SYS" not installed

Cause: no listing in the CONFIG.SYS file.

Solution: list CMx.SYS driver in the CONFIG.SYS file and "reboot" the computer.

Cause: CMx.SYS driver could not be found because of a incorrect path.

Solution: correct the listing in the CONFIG.SYS file.

general: <lw> <path> CMx.SYS

e.g.: c:\COMTAC\cm1.sys

2. Problem: the following error message appears after the program start : File not found

Cause: not all files have been copied in the sub-directory CTC_HELP or the sub-directory CTC_HELP does not exist.

Solution: check installation; repeat if necessary.

3. Problem: the following message appears after the program start: Emulation waits for COMTAC answer

Cause: connection HOST-COMTAC not correct.

Solution: check connection (cable) COMTAC and HOST interface (see "Start up").

Cause: wrong configuration in the *.CFG file or wrong interface adjustment at the COMTAC.

Solution: delete *.CFG file; restart program or set the COMTAC-RS232/1 parameters with program "Menu" to their default values (see COMTAC Command Description).

4. Problem: During operation no manual keyboard input are transmitted to the COMTAC.

Cause: the control code Xoff (Ctrl - S) has been transmitted to COMTAC. With that the interface driver transmits no more signs to COMTAC.

Solution: reset terminal and COMTAC with key Ctrl - F10.

11. Appendix: Operation of the programs CTCLIST and CTCTOK

11.1 Conditions to CTCLIST and CTCTOK

The help programs CTCLIST and CTCTOK have the following function:

- ◆ **CTCTOK**: translates ASCII files in Token files.
Use: convert ASCII files in Token files before transmitting because Token files will be far faster transmitted to COMTAC as ASCII files .
- ◆ **CTCLIST**: translates Token files in ASCII files .
Use: to display a Token files.

11.2 The program CTCLIST

With program **CTCLIST** COMTAC-BASIC Token files can be converted on the PC in ASCII files

Use **CTCLIST** also to get a program listing. With the different options the appearance of a listing can be changed.

call **CTCLIST** as follows:

CTCLIST *Infile* [*Outfile*] [*P*[*n*] [*S*]] [*C*] [*L*] [*V*Version] [*?*]

(write details in square brackets only if necessary.)

All informations should be separated with blanks.

Infile name of the BASIC program file which should be converted in the ASCII size .

Outfile name of the desired output file. If there is no Outfile command the output occurs via the screen.
"PRN" identifies the printer.

/P[*n*] effects the splitting of the listing in pages of *n* lines. For every page the page feed forward and heading with page number, program name and writing date of the program will be printed.
Standard value for *n* is 66. This mode fits for the output to the printer.

/C counts lines and commands and yields the numbers at the end of the listing. Commentaries are not counted as commands.

/L generates also lines which are larger then 80 symbols. It is not possible to download such lines with the COMTAC programming tool in the operation mode "Download ASCII" in the COMTAC !
/L has to be entered if the generated ASCII file should be further processed from the programs CTCTOK or COMTACPT!

/VVersion has to be entered if the program is originated from an other BASIC version as the default version. CTCLIST than reads file "CTCVSN.*version*" instead of syntax file "CTCVSN.DFT".
With e.g. "/V30" file "CTCVSN.30" will be used.

Examples:

CTCLIST MEINPROG.BAS prints the program listing of MEINPROG.BAS on the screen.

CTCLIST MEINPROG.BAS LISTE.TXT prints the program listing of MEINPROG.BAS in file LISTE.TXT.

CTCLIST STEUER.BAS LPT1 /P lists STEUER.BAS on a printer with page feed forward and page heading.

CTCLIST NEUBAS.XYZ /V23 lists NEUBAS.XYZ with using syntax file "CTCVSN.23".

CTCLIST HAUPT.ASP | MORE lists HAUPT.ASP and passes on the listing as input file to program MORE which then will be called.

11.3 The program CTCTOK

CTCTOK is the counter part to **CTCLIST**. It converts files from the ASCII format in the token format .

CTCTOK will be called as follows:

CTCTOK [*I*]*Infile* [*O*]*Outfile* [*V*version] [*H*] [*Q*]

(write details in square brackets only if necessary.)

Infile is the name of the ASCII program file which should be converted into the ASCII format .

Outfile is the name of the desired output file.

VVersion have to be entered if the program is originated from an other BASIC version as the default version. CTCLIST than reads file "CTCVSN.*version*" instead of syntax file "CTCVSN.DFT".

With e.g. "/V30" file "CTCVSN.30" will be used.

Examples:

CTCTOK MEINPROG.TXT LISTE.BAS converts the ASCII file MEINPROG.TXT in the token file LISTE.BAS.

CTCTOK /IMEINPROG.TXT /OLISTE.BAS

equivalent

CTCTOK /OLISTE.BAS /IMEINPROG.TXT

equivalent

CTCTOK MEINPROG.TXT LISTE.BAS /V22 same as above but with the use of syntax file "CTCVSN.22"