

GET 80

Grifo® Editor Terminal - 80 family

Rel. 3.3

CARATTERISTICHE GENERALI

GET80 (Grifo® Editor Terminal **80** family) is used with **GDOS 80** operating system, which is executed on the target card and it can edit a program, transfer program from P.C. to target card, transfer program from target card to P.C. and test program directly on board.

It has two main possibilities: to edit application programs developed by user and to manage an intelligent terminal emulation mode. Deeping last feature, **GET 80** manages all console function, as a simple terminal, and moreover it uses P.C. devices (hard disk, floppy disk, printer, etc.) as target card resource. Moreover the program has two utilities, the first one manages user defined strings that can be saved and transmitted to target card, to minimize P.C. keyboard use and to speed develop phase. The second **GET80** utility manages the EPROM image creation with the developed application program or generally it creates an EPROM image with a user defined ROM DISK.

GET80 is an easy to use program provided with high level user interface including on line help, menus, colour identification, dialog boxes, function keys, mouse management, etc. It is completely based on MS DOS functions and it can be executed with version ≥ 3.3 or as a WINDOWS DOS shell program.

REQUIREMENTS

Below are described the **GET80** fundamental features regarding P.C. resource use:

- Personal Computer:** IBM or compatible.
- Monitor:** Colour or Black and White.
- Printer:** Parallel CENTRONICS interface on LPT1.
- RAM memory:** 640 KBytes minimum.
- Operating system:** MS-DOS Ver. 3.3 or later, or Windows 3.11, 95, 98, ME
- Mass memory drive:** Drive A to C in any MS DOS format and size
- Serial line:** One RS 232 line (COM 1÷4) following V24 specifications.
- Mouse:** Microsoft compatible with its software driver installed.

The user must always remember that the P.C. executing **GET80** program is an indispensable system only during application program develop and debug phase, in fact target card can work alone or with its serial line connected to any other device. Naturally this external device must use the same physical, logical and electric protocol described in this manual.

DISTRIBUTION DISKS

The **GET80** program is normally saved inside the disk with the **GDOS 80** operating system of the selected and used card. The disk contains all the working software and some utility programs and documentation files. It is divided in some directories to simplify and to better organize the complete structure. As recommend in the chapter "HOW TO START" all the files of all the directory must be copied into a single work directory. Furthermore please remember that all the file with **.G80** extension are **GDOS 80** executable program that can be executed on the target card.

A brief description of the distribution disk files and directories is below reported; for further info on their use and meaning, please refer to **GDOS 80** manual:

Main root:

It contains the **GDOS 80** most frequently used programs, or on the other hand the main working structure:

GET80.EXE	->	Interaction program for GDOS 80 , executed on P.C.
GET80.HLP	->	On line help file of GET80.EXE program.
DOS2GDOS.COM	->	File format transformation program, executed on P.C.
DIR.G80	->	Utility program executed on target card to obtain a disk files list.
ERA.G80	->	Utility program executed on target card to delete a file.
REN.G80	->	Utility program executed on target card to rename a file.
COPY.G80	->	Utility program executed on target card to copy a file.
FORMAT.G80	->	Utility program executed on target card to format a target card drive.
LEGGIMI.ITA	->	Last minute documentation changes (Italian version)
README.ENG	->	Last minute documentation changes (English version)

Z80_EMUL directory :

It contains a powerfull and comfortable program executed on P.C., under MS DOS control, that emulates the CP/M operating system and the Z80 microprocessor.

Z80MU.EXE	->	It is a CP/M operating system simulation program for P.C. It can execute all the GDOS 80 command files but the accepted file name extension is .COM instead of .G80 (to execute .G80 programs under Z80MU control, they must be simply renamed). For example it is important to improve experience on available programming languages. Z80MU is provided of on line help and shows on P.C. monitor the command list and their proper syntax.
-----------	----	---

ROM_DISK directory :

It includes the files and programs used to save in EPROM or FLASH EPROM the user application program; this directory contents vary according to acquired **GDOS 80** version (**GDOS** or **FGDOS**) and some of the following files will be available:

GDO???XX.BIN	->	GDOS 80 operating system binary image for GPC® ??? card, version XX. It must be used to create the final work EPROM and it is available only in GDOS 80 EPROM version.
--------------	----	---

- GHEX2.COM -> Binary file to HEX Intel file transformation program. It must be used when the used EPROM burner is not capable to load binary files and it is available only in **GDOS 80** EPROM version.
- FGROM.G80 -> Target card FLASH EPROM writing program. It saves a ROM DISK into the FLASH EPROM, it is executed on target card and it is available only in **FGDOS 80** FLASH EPROM version.

SERIAL COMMUNICATION CABLE

If the target card console serial line is used to develop and debug the application program, the console device must be connected properly. The target card console serial line always coincides with the serial line A of the used board and the **GDOS 80** require both the reception and transmission signals (TxD and RxD) and the handshake signals (/CTS and /RTS). So the connection must satisfy the V24 standard rules of C.C.I.T.T.

If the console device clashes with the personal computer, the connection is performed by an overturned dedicated serial cable (DTE <->DCE), described in the following figure:

P.C. Female DB25	DB9		CN? of target card (serial line A)
TxD =	2 3	>----->	RxD
RxD =	3 2	<-----<	TxD
DSR =	6 6	<-----<	RTS
DTR =	20 4	>----->	CTS
GND =	7 5	<----->	GND

SERIAL COMMUNICATION CABLE BETWEEN P.C. AND TARGET CARD

Further information are available in **GDOS 80** manual and **grifo®** can supply a set of cable ready to use with any type of P.C. and card.

HOW TO START

In this chapter are described the first elementary operations necessary to start working with **GDOS 80**. The description assumes that a P.C. is used as a development system, so first of all read the previous chapter "REQUIREMENTS" and check the availability of the described items.

- 1) Read carefully all the received documentation.
- 2) Prearrange the target card with power supply, right jumpers configuration and insert the **GDOS 80** EPROM or FLASH EPROM, if not already done.
- 3) Perform serial connection between target card and P.C. as described in "SERIAL COMMUNICATION CABLE" chapter.
- 4) Turn on the Personal Computer.
- 5) Create a new directory on P.C. hard disk; if P.C. has not hard disk, make a copy of the received disks and go to point **8**.
- 6) Copy the workink software, the programming software and the demo programs in the new directory (see "DISTRIBUTION DISK" chapter).
- 7) Select the created directory as the current directory.
- 8) Install the P.C. development program **GET80.EXE** typing:
...**GET80** /I<ENTER>
and select the right configuration setting for P.C. serial line (COM), baud rate, help language and monitor type. Remember that **GET80** is supplied correctly configured and normally only the COM number must be changed. For further info please read "INSTALLATION" chapter.
- 9) Execute the P.C. development program **GET80.EXE** typing:
...**GET80**<ENTER>
and wait the information window representation.
- 10) Close the information window typing <ENTER> key and then select the "Options|Terminal" menu (<Alt+T>). A clean window appears with the cursor on the high left corner and the following status line on the last monitor row:

F10 Menu | TERMINAL EMULAT. for GDOS80 - GRIFO° Tel. +39-51-892052 |
- 11) Power supply the target card; on P.C. monitor must appear the following presentation and prompt lines:
GDOS - Ver. X.X - Rel. XXX XXX - by GRIFO° 051 892052 Italy

N:ABACO°>
- 12) Work with **GDOS 80** following the information of the "GDOS 80 USE" chapter of the relative manual. For example the direct command, the external utility programs, the programming language, etc. can be executed and tested.

You can type:

N:ABACO°>**VER**<ENTER>

that shows the **GDOS 80** information line.

N:ABACO°>**DIR C:**<ENTER>

that loads the DIR.G80 utility program from current drive = N = ROM DISK and shows the files list saved on the P.C. current directory.

N:ABACO°>**N:DIR N:**<ENTER>

that loads the DIR.G80 utility program from current drive = N = ROM DISK and shows the files list saved on the target card ROM DISK drive N.

N:ABACO°>**N:ZBASIC**<ENTER>

that loads the ZBASIC.G80 programming language from ROM DISK drive N.

- 13) Exit from **GET80.EXE** program and return to MS DOS operating system typing <F10> key and then select the "File|Exit to DOS" option (<Alt+X>).

On this chapter some P.C. monitor representations include the generic symbol X that corresponds to digits and/or characters used for version and release; hereby these indications vary according to target card and **GDOS 80** type.

GET 80 DESCRIPTION

GET80 is an easy to use program provided with high level user interface including on line help, menus, colour identification, dialog boxes, function keys, mouse management, etc. It is completely based on MS DOS functions and it can be executed with version ≥ 3.3 or as a WINDOWS DOS shell program (version 3.11, 95, 98 and ME).

The user must always remember that the P.C. executing **GET80** program is an indispensable system only during application program develop and debug phase, in fact target card can work alone or with its serial line connected to any other device. Naturally this external device must use the same physical, logical and electric protocol described in this manual.

To execute program, the User must type:

...\GET80<ENTER>

directly from MS DOS prompt.

When the program starts, it sets the P.C. hardware and shows an information window. In this window there are: program version number, **Grifo**[®] information (address, phone, etc.) and the user information defined during **Grifo**[®] installation phase. Pressing <ENTER> key or clicking with mouse on "OK" button, the presentation window disappear and the main window is shown on P.C. monitor; the main window has six menus with many options described in the following chapters.

INSTALLATION

Before using **GET80.EXE**, the user must correctly install it. For this reason a configuration option has been added at the program. This option is activated typing:

...\GET80 /I<ENTER>

When it starts a window appears on the screen, asking for six configuration parameter:

- the default serial line (COM) used on P.C. selectable from 1 to 4;
- the default baud rate used for target card communication selectable from 9.6 to 115.2 Kbaud;
- the type of P.C. monitor selectable between color and black & white;
- the help language between Italian and English;
- the user name;
- the company name;

All these six parameter are requested only during first installation, in fact if **GET51.EXE** is already installed only the first four parameters can be inserted; so user and company names can be inserted only during first installation normally made by **Grifo**[®]. The other four parameters are used for **GET80.EXE** configuration and can be changed at any time in a permanent (**GET80/I**) or temporary (**GET80**) way; in any conditions all these configurations must be set according to P.C. and target card features.

During **GET80.EXE** installation, at any time the user can stop the installation with the button "Abort" , or confirm installation with "Install" button.

If **GET80.EXE** is executed without at least one previous installation, it doesn't start and an error message appears, vice versa it starts showing user and company name in the information windows.

EDITOR

GET80.EXE program includes a powerful and versatile editor capable of ASCII files management; these ASCII files can be directly used by **GDOS 80**.

It is provided of all standard editor functions and many other functions that facilitate its use in any condition. Moreover **GET80** editor is a multi window editor where all the functions can be used contemporaneously on many ASCII files.

The editor has only one restriction: it can't manage windows or files bigger than 64K byte; this dimension is rarely necessary in the standard work condition and in any case it can be overcome by opening and by editing more files and windows.

MENUS AND OPTIONS DESCRIPTION

As previously stated, **GET80** has 6 menus and 35 options concerning its operating modes. Here follows a brief description of all these options and in next chapters there are some deepening:

File menu

<i>Option</i>	<i>Key</i>	<i>Function</i>
New	-	Opens a new editor window with the name "Untitled"
Fast Open...	F3	Opens a selected disk file, loads it in memory with fast mode and shows it in the current editor window
Open...	F4	Opens a selected disk file, loads it in memory with standard mode and shows it in the current editor window
Save	F2	Saves current editor window content to a disk file. The disk file name is the same of editor window name.
Save as...	-	Saves current editor window content to a disk file. The disk file name must be setted by user.
Change dir...	Alt+F5	Changes current MS DOS directory.
Dos shell	-	Exits temporarily from GET80 and return to MS DOS operating system. GET80 remains in memory and it is reexecuted with "EXIT" command.
Exit	Alt+X	Stops execution of GET80 and return definitely under MS DOS control.

If the editor window shows some strange characters when a file is opened with "Fast Open" option, the same windows must be closed and then reopen with "Open" option.

Edit menu

<i>Option</i>	<i>Key</i>	<i>Function</i>
Undo	-	Restores, if possibile, the last executed function.
Cut	Shift+Del	Deletes from current editor window the previously selected text and puts it into clipboard.
Copy	Ctrl+Ins	Copies from current editor window the previously selected text and puts it into clipboard.
Paste	Shift+Ins	Copies the clipboard content in the current editor window, starting at actual cursor position.
Clear	Ctrl+Del	Deletes from current editor window the previously selected text, without putting it into clipboard.

Show clipboard - Show an editor window with the clipboard content.

Search menu

Option	Key	Function
Find...	-	Looks for an inserted string inside the current editor window.
Replace...	-	Looks for an inserted string inside the current editor window and if present replaces it with a second string.
Search Again	Ctrl+L	Repeats the last executed "Find" or "Replace" option.

Windows menu

Option	Key	Function
Tile	-	Shows all open editor windows disposing them on monitor rappresentation area. The window size are selected to allows rappresentation of all windows.
Cascade	-	Shows all open editor windows disposing them on monitor rappresentation area. The windows are overlapped and only their frame and name are visible.
Size/Move	Ctrl+F5	Resizes and/or moves the current editor window.
Zoom	F5	Sets current editor window size to maximum dimension.
Next	F6	Moves current editor window to next open window.
Previous	Shift+F6	Moves current editor window to previous open window.
Close	Alt+F3	Closes the current editor window.

Options menu

Option	Key	Function
Terminal	Alt+T	Activates the intelligent terminal emulation mode. For further information, please refer to "TERMINAL EMULATION" chapter.
Reset Terminal	Ctrl+Home	Clears the terminal emulation window and resets serial communication with target card.
Serial Port...	-	Selects P.C. serial line and baud rate, in a momentary manner.
Video	-	Selects P.C. monitor colour between colour and black & white, in a momentary manner.
Help	F1	Open the main on line help window.
Help Language	-	Selects the GET80 on line help language between Italian and English.
Information...	-	Shows the information window about GET80 program.

Utility menu

Option	Key	Function
GROM...	-	Executes the GROM utility that generates the binary image of the EPROM with user application programs and files.
String Editor...	-	Edits the 10 user strings used to develop the application program.
Save strings	-	Saves the 10 user strings on GET80.FST file; this file will be automatically loaded every time GET80 is executed, to restore the user strings contents.
Send strings...	-	Transmits the contents of one of the 10 user strings to target card, through terminal emulation mode.

In the previous options description, the letters that activate the options in a fast way are written with a bold style; this fast selection is performed simply by opening menu and pressing the letter, without using the arrow keys. The indication "Key" is referred to the key, or keys combination, that select the option immediately, even without opening the menu. The indications "..." following the name of some options, means that the option needs other data requested by a specific dialog box (files name, string to find, directory to select, etc.). When a mouse is available, the options selection is really faster and more comfortable, in fact the User has nothing to press on P.C. keyboard.

For further information about options and menus functionality, please read carefully the **GET80** on line help messages.

TERMINAL EMULATION

The intelligent terminal emulation feature of **GET80**, manages all the P.C. hardware resource and make them available to the used target card. In this way it is possible to directly use hard disk, floppy disks, printer, keyboard and monitor with the software executed on target card, through **GDOS 80** operating system.

The communication with remote card is performed through one of P.C. serial line (COM) with standard connection described in chapter "SERIAL COMMUNICATION CABLE" and with the physical protocol described in "TECHNICAL FEATURES" chapter of **GDOS 80** manual.

When the "Options|Terminal" option is selected, the actual serial line is setted with the actual baud rate and after a clean window is represented with cursor positioned in the upper left corner and with a status line on the last row (number 25). With actual serial line and actual baud rate are denoted the respective parameters selected by user (with "Option|Serial port" option), initially set at the default value defined by **GET80.EXE** installation. To speed the terminal emulation use it is convenient to install or reinstall it properly.

During terminal emulation execution the characters received from target card are displayed on P.C. monitor, while the keys pressed on P.C. keyboard are transmitted to target card. The communication is controlled with a specific logical protocol that manages also file transfer in a transparent mode for the user. This protocol is based on hardware handshakes to arrange fast communication with any type of P.C. The hardware handshake use is enabled or disabled by a flag saved in **GDOS80 IOBYTE EXTENSION** (see proper chapter), with the following correspondence:

IOBYTE EXTENSION.7 = 1 -> Hardware handshake enabled

IOBYTE EXTENSION.7 = 0 -> Hardware handshake disabled

During the communication with **GET80**, the hardware handshake must be enabled and for this reason **GDOS 80** sets this flag, by default. If the developed application program can't manage these handshakes (i.e. the target card serial line A is connected to other systems as modem, terminal, network, etc.) the same application program must disable the handshake flag.

All the programs developed with **GDOS 80** can take advantage of the terminal emulation features described in the following paragraphs, obtaining many facilitations in the user interface code development; many programming languages are supplied already configured for **GET80** terminal emulation.

The terminal emulation works in a full asynchronous mode in confront of target card that executes **GDOS80**; for this reason no power on/off procedure must be followed for both the systems.

N.B. From **MS DOS** operating system it is possible to execute **GET80** and to automatically enable the terminal emulation; this result is obtained with the following syntax:

...\b>GET80 /T<ENTER>

Terminal emulation commands

When terminal emulation is enabled only a subset of the 35 **GET80** options are available. These options are selected by proper hot keys or in the standard mode typing <F10> key and then using menus. The list of terminal emulation available options is:

- File|Change dir...
- File|Dos shell
- File|Exit to DOS
- Options|Editor
- Options|Reset Terminal
- Options|Serial Port
- Options|Video
- Otions|Help
- Options|Help Language...
- Options|Information...
- Utility|GROM...
- Utility|Strings Editor...
- Utility|Save strings
- Utility|Send string...

Some of these options open a dialog box that is temporarily shown upon the terminal emulation window.

Terminal emulation special key

The **GET80** terminal emulation translates the special P.C. keyboard keys (arrows, Ins, Del, etc.) and transmit the proper **GDOS 80** standard code to the connected target card.

KEY	CODE	HEX CODE
UP arrow	05	05
DOWN arrow	24	18
LEFT arrow	19	13
RIGHT arrow	04	04
Page UP	18	12
Page DOWN	03	03
Home	17,82	11,52
End	17,67	11,43
Insert	22	16
Delete	07	07

GET80 TERMINAL EMULATION SPECIAL KEYS CODE

This features is really important especially when programming language with an integrated editor (i.e. PASCAL) is used, in fact you can move inside the application program in a fast and intuitive manner.

Terminal emulation control sequence

GET80 terminal emulation mode, recognizes some of the standard ADDS Viewpoint control sequences, when received from selected serial line. These sequences are listed in the following table:

COMMAND	ASCII CODE SEQUENCE	BYTE CODE SEQUENCE
Cursor Home	SOH	01
Cursor Left	BS	08
Cursor Right	ACK	06
Cursor Down	LF	10
Cursor Up	SUB	26
Carriage Return	CR	13
Carriage Return + cursor down	GS	29
Cursor position (with offset=32)	ESC,Y,row,column	27,89,row,column
Clear screen	FF	12
Clear Line	EM	19
Clear to end of line	ESC,K	27,75
Clear to end of page	ESC,k	27,107
Cursor off	ESC,P	27,80
Cursor line style	ESC,M	27,77
Cursor block style	ESC,Q	27,81
Attribute type setting	ESC,0,attribute	27,48,attribute
Set attribute	SO	14
Reset attribute	SI	15
Audible BELL	BEL	07

GET80 TERMINAL EMULATION CONTROL SEQUENCES

The row and column values can vary respectively in the range 0÷23 and 0÷79 and they must be defined with an offset of 32. Therefore if the desired new cursor position is row 10, column 20, the following command sequence must be transmitted by target card:

27,89,42,52.

About representation attributes recognized by GET80 terminal emulation, only a subset of ADDS Viewpoint standard attributes are managed:

ATTRIBUTE	ASCII CODE	BYTE CODE
Normale	@	64
Half intensity	A	65
Reverse	P	80

GET80 TERMINAL EMULATION REPRESENTATION ATTRIBUTES



USER STRING

Starting from 2.4 version of **GET80** the user strings management has been added to speed and to facilitate the user application program development phases. The user strings are 10 strings with a maximum length of 70 characters, that can be edited at any time and then used in the terminal emulation mode, in place of commands typed on the keyboard. It is convenient that the user strings are those most frequently used during develop phase, in fact their main purpose is to reduce keyboard typing and consequently the develop time.

The strings can be permanent saved in **GET80.FST** file, saved on **GET80.EXE** directory; when **GET80** starts it checks if this file exist and if it does, the **GET80.FST** is loaded and the user strings became available for any operations. The user strings modifications are permanently saved on the file, only after the proper save command; if the save command is not executed all modifications are lost when you exit from **GET80**.

The user string management is available in three different **GET80** parts, as below described:

"Utility/Strings Editor..." option:

By selecting this option, an editor window is displayed; this window includes 10 input string lines (for max 70 chr string insertion), 10 enter code sending boolean icons (to add carriage return code at the end of the strings), an "OK" push button (to confirm the currently inserted data and set them into the 10 user strings), a "Save" push button (to confirm the currently inserted data and save them on **GET80.FST** file), a "Cancel" push button (to discard the currently modified data) and an "Help" push button (to open on line help window).

"Utility/Save Strings" option:

This option saves the current 10 user strings on **GET80.FST** file as the previous described "Save" push button. At the end of save operation a window that reports the operation result is displayed and if user strings are saved successfully every time **GET80** is executed the current user strings will be loaded and restored.

"Utility/Send string..." option:

This option transmits the contents of one of the 10 user strings to target card, connected to **GET80** terminal emulation. A submenu is displayed with the 10 user strings list and the user can select which one must be transmitted together with the eventual carriage return code. A more comfortable way to transmit a user string is to press the <Alt+x> keys combination directly from terminal emulation window, where x coincides with user message number. In this way, this two keys pressure physical is the same as all the user string characters pressure.

When you are working with **GDOS 80**, one of the most frequently used operating mode, is: edit the application program source with **GET80** editor, enter the terminal emulation mode, with the selected programming language load the application program, translate it, compile it and execute it, etc. Every described operation performed in the terminal emulation mode, requires many keys pressure and during debug phase these operations are repeated many times, until the application program is completely tested. For this reason the **GET80** user strings are really comfortable, in fact they substitute the develop commands and so they notably reduce the keyboard use, with a big time save results. For example, when ZBASIC is used, the PRGAPP.ZBA development phase can use the

following user strings list:

String 1 = N:ZBASIC	with Carriage Return
String 2 = LOAD* C:PRGAPP.ZBA	with Carriage Return
String 3 = SAVE C:PRGAPP.ZBT	with Carriage Return
String 4 = NEW	with Carriage Return
String 5 = RUN C:PRGAPP.ZBT	with Carriage Return
etc.	

GROM

Starting from 2.4 version of **GET80** the binary **GDOS80** EPROM image generation has been added. This EPROM contains the application programs and files developed by the user through the selected programming language and tools and its use is completely described, in "GROM: PROGRAMMING EPROM" chapter of **GDOS 80** manual and/or inside On line help, activated through **F1** key.