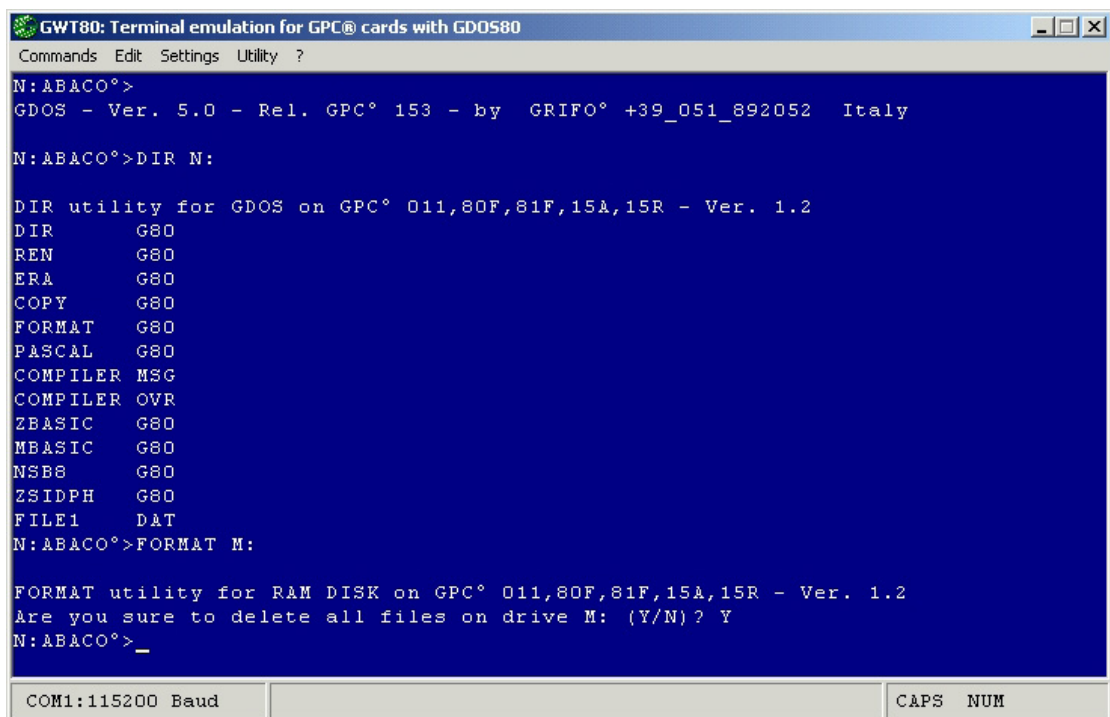


GWT 80

grifo® Windows Terminal Z80 family

USER MANUAL



```
GWT80: Terminal emulation for GPC® cards with GD0580
Commands Edit Settings Utility ?
N:ABACO>
GDOS - Ver. 5.0 - Rel. GPC® 153 - by GRIFO® +39_051_892052 Italy

N:ABACO>DIR N:

DIR utility for GDOS on GPC® 011,80F,81F,15A,15R - Ver. 1.2
DIR      G80
REN      G80
ERA      G80
COPY     G80
FORMAT   G80
PASCAL   G80
COMPILER MSG
COMPILER OVR
ZBASIC   G80
MBASIC   G80
NSB8     G80
ZSIDPH   G80
FILE1    DAT
N:ABACO>FORMAT M:

FORMAT utility for RAM DISK on GPC® 011,80F,81F,15A,15R - Ver. 1.2
Are you sure to delete all files on drive M: (Y/N)? Y
N:ABACO>_

COM1:115200 Baud          CAPS NUM
```

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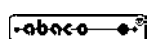
Tel. +39 051 892.052 (a.r.) FAX: +39 051 893.661



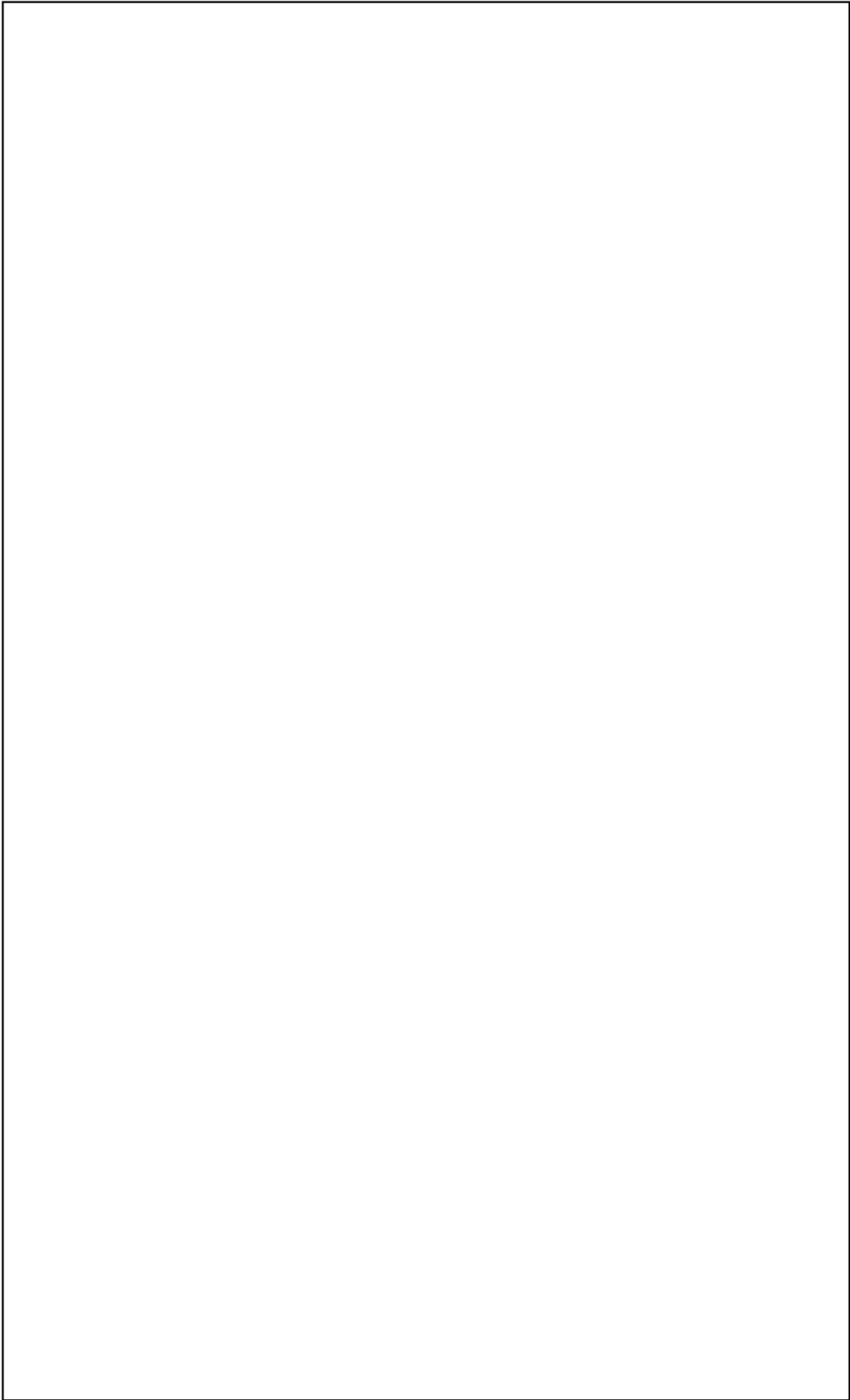
GWT80

Rel. 5.00

Edition 09 March 2005



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GWT 80

grifo® Windows Terminal Z80 family

USER MANUAL

The **GWT80** is used with **GDOS 80** operating system, which is executed on target cards provided of Z80 microprocessors. It allows the user to transfer program from PC to target card and viceversa, execute them to test their functionality.

The program offers some different possibilities as: RS 232 serial communication with target card; a complete terminal emulation; personalization of terminal emulation window according with user preferences; management of files saved on PC; management of printer connected to PC; transmission of strings usefull to reduce the develop time of user application program; production of EPROM binary image with a ROM disk defined by the user; etc.

GWT80 is a follow up version of previous **GET80** program and it is full compatible with this one; the main difference with **GET80** is that **GWT80** can be executed on PC provided of Windows operating system.

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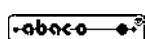
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GWT80

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Edition 09 March 2005



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Although all the information contained herein have been carefully verified, **grifo®** assumes no responsibility for errors that might appear in this document, or for damage to things or persons resulting from technical errors, omission and improper use of this manual and of the related software and hardware.

grifo® reserves the right to change the contents and form of this document, as well as the features and specification of its products at any time, without prior notice, to obtain always the best product.

For specific informations on the components mounted on the card, please refer to the Data Book of the builder or second sources.

SYMBOLS DESCRIPTION

In the manual could appear the following symbols:



Attention: Generic danger



Attention: High voltage



Attention: ESD sensitive device

Trade Marks

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Other Product and Company names listed, are trade marks of their respective companies.

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INTRODUCTION

The use of these devices has turned - **IN EXCLUSIVE WAY** - to specialized personnel.

This device is not a **safe component** as defined in directive **98-37/CE**.

The purpose of this handbook is to give the necessary information to the cognizant and sure use of the products. They are the result of a continual and systematic elaboration of data and technical tests saved and validated from the manufacturer, related to the inside modes of certainty and quality of the information.

The reported data are destined- **IN EXCLUSIVE WAY**- to specialized users, that can interact with the devices in safety conditions for the persons, for the machine and for the environment, impersonating an elementary diagnostic of breakdowns and of malfunction conditions by performing simple functional verify operations , in the height respect of the actual safety and health norms.

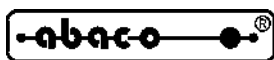
The informations for the installation, the assemblage, the dismantlement, the handling, the adjustment, the reparation and the contingent accessories, devices, installation, etc. are destined - and then executable - always and in exclusive way from specialized warned and educated personnel, or directly from the **TECHNICAL AUTHORIZED ASSISTANCE**, in the height respect of the manufacturer recommendations and the actual safety and health norms.

To be on good terms with the products, is necessary guarantee legibility and conservation of the manual, also for future references. In case of deterioration or more easily for technical updates, consult the **AUTHORIZED TECHNICAL ASSISTANCE** directly.

To prevent problems during card utilization, it is a good practice to read carefully all the informations of this manual. After this reading, the user can use the general index and the alphabetical index, respectly at the begining and at the end of the manual, to find information in a faster and more easy way.

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VERSION

This handbook make reference to **GWT80** version **1.01.0** and following ones. The validity of the information contained in this manual is subordinated to the software release number, and the user must always verify the correct correspondence between the notations. The software version number is shown in the information window that can be displayed through a proper command.



GENERAL INFORMATION

The **GWT80** (**Grifo® Windows Terminal 80** family) is used with **GDOS 80** operating system, which is executed on target cards provided of Z80 microprocessors and derivatives. Thanks to a standard PC, it can completely manage the develop and debug phase of the user application program in a fast, efficient and comfortable way.

In detail any **GWT80** users can use the PC as a develop system for the target card. The available operations start with the transfer of developed program from PC to target card, and go on with the test of program, directly on selected hardware. Then the user carry on by detecting and solving any errors (syntax, logic and execution bugs) and finally he saves the obtained program on the non volatile memories, installed on target card that becomes autonomous and embedded. If it is required the **GWT80**, and the PC that execute it, can be used even after the final installation for many different purposes, as: transfer of collected or required data, update of working parameters, production of printed reports, user interface management, etc.

The availability of some utilities speeds up the program use and lets the user perform many operations in a intuitive, immediate and comfortable manner. So it is not necessary to have a specific knowledge on all the selected products, and in this way, the complete develop time of the user application program is drastically reduced.

GWT80 is a follow up version of previous **GET80** program and it is full compatible with this one; the main difference with **GET80** is that **GWT80** can be executed on PC provided of Windows operating system.

The program **GWT80** includes many functionalities that can be briefly described in the following list:

- easy **installation** of the program with simple questions on destination folder;
- selection of working **language**;
- communication with remote cards provided of **GDOS 80 romated operating system**;
- **RS 232 serial communication** with target card;
- management of possible **additional interfaces** for RS 232 communication, available on PC;
- **terminal emulation** complete of many commands and attributes;
- personalization of terminal emulation window according with user preferences, for **dimension, text colour, background colour**, etc.
- management of **files** saved on PC as files of **GDOS 80** operating system;
- fast selection of the **working folder** on PC;
- management of **printer** connected to PC;
- transmission of **presaved strings** usefull for reduce the develop time of user application program;
- production of **EPROM** binary image with a **ROM disk** defined by the user;
- **automatic saving** of the **performed settings** and their mantainement after re-execution;
- **fast recall mode** for the most frequently used commands, through mouse;
- suitable for **Windows 9x** operating systems and following ones.

Inside this manual there is a description of all the **GWT80** features, sufficient for its right use. It is strongly suggested the reading also of **GDOS 80** manual where are described the concernig components and working modalities; these last are used in the following paragraphs assuming that the user knows them closely.

REQUIREMENTS

Below are described the fundamental features that must be available on the PC that executes **GWT80**:

Personal Computer:	IBM or compatible
RAM memory:	≥ 24 MBytes
Hard disk:	≥ 8 MBytes free
Operating system:	Windows 95 Windows 98 Windows ME Windows 2000 Windows XP
Video card:	≥ 640x480 pixels, 65536 colours
Monitor:	Colour
Mouse:	Microsoft compatible, correctly managed by used PC and operating system
Serial line:	RS 232, following V24 specifications, orrectly managed by used PC and operating system (COMx)

The following resources are optional in fact they are necessary only when specific operations are performed by the user:

Printer:	Any model correctly managed by used PC and operating system
Mass memory disk:	Any type of hard and/or removable disk, with any support media and any format, correctly managed by used PC and operating system

In the previous description the indication "correctly managed by used PC and operating system" refers to the device in object that must be previously installed. This installation includes both hardware and software configurations as defined by the manufacturing company. In other words the **GWT80** have no dedicated software driver for these devices, but it uses those already available in the operating system.

CONTROL CARD

As before described, **GWT80** is the counter-party for PC of the operating system **GDOS 80**, executed on the Z80 control cards included in **grifo**[®] industrial group. Actually the Z80, and derivates, based cards are: **GPC**[®] 80F, **GPC**[®] 81F, **GPC**[®] 011, **GPC**[®] 15A, **GPC**[®] 15R, **GPC**[®] 153, **GPC**[®] 183, **GPC**[®] 154, **GPC**[®] 184, **GPC**[®] 150, etc.

Please remind that for a correct use of the selected control card it must be properly configured, as described in **GDOS 80** user manual, and connected to PC as described in the following paragraphs. The remote control card is not absolutely necessary for **GWT80** execution but it is anyway indispensable for many of its functionalities.

NOTE:

In this manual it is used the terms **target card** for a general reference to **grifo**[®] hardware structure, above described.

DISTRIBUTION

The program **GWT80** is supplied in the following modalities:

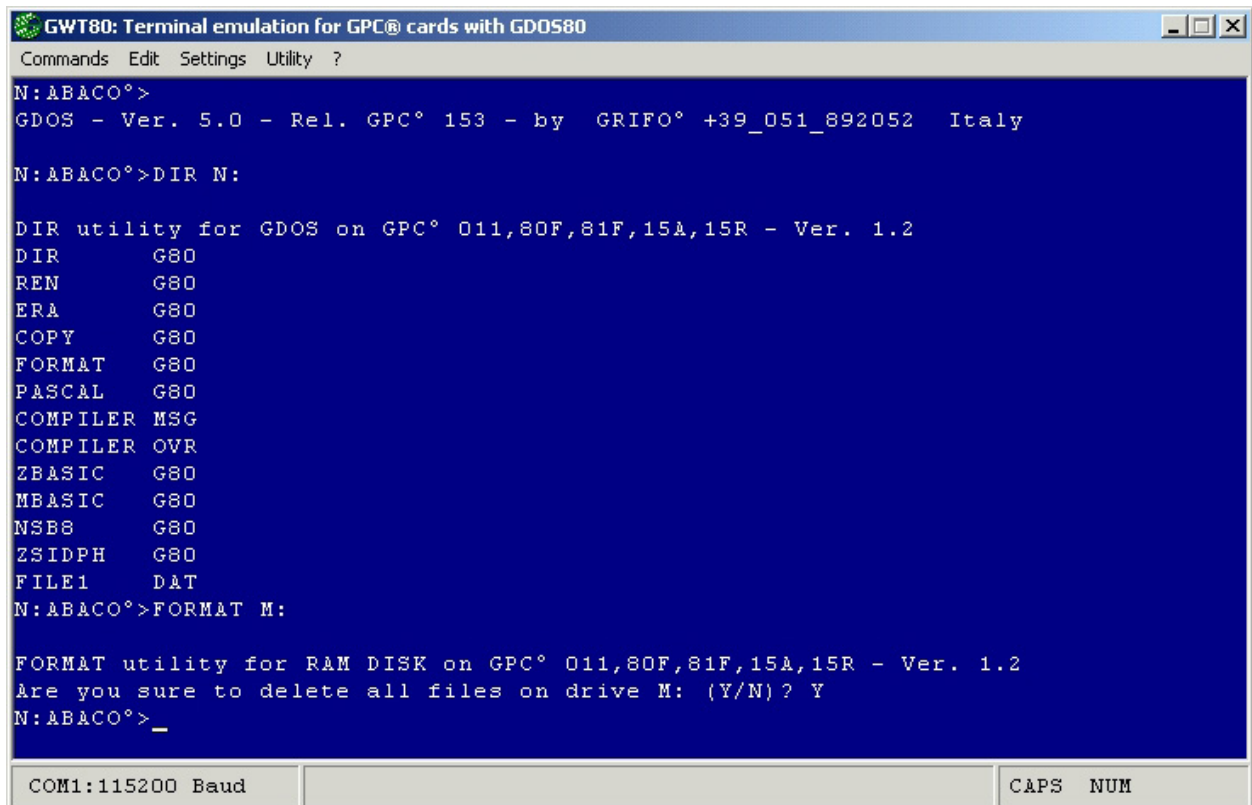
- on **grifo**® CD received during the first delivery of hardware products;
- on **grifo**® internet web site at the addresses:

Link: [Home | Software-Programs and Upgrades | GWT80 |](#)

URL: http://www.grifo.com/PUB/FILE/Grifo/GWT/INST_GWT80.EXE

URL: http://www.grifo.it/PUB/FILE/Grifo/GWT/INST_GWT80.EXE

Without care of the used distribution mode, the GWT80 is always supplied in a single compact auto-extracting file, named INST_GWT80.EXE, where are available all the necessary parts, including documentation. Further information on installation and use of the distributed file are reported in the following paragraphs.



```
GWT80: Terminal emulation for GPC® cards with GD0580
Commands Edit Settings Utility ?
N:ABACO>
GDOS - Ver. 5.0 - Rel. GPC® 153 - by GRIFO® +39_051_892052 Italy
N:ABACO>DIR N:
DIR utility for GDOS on GPC® 011,80F,81F,15A,15R - Ver. 1.2
DIR      G80
REN      G80
ERA      G80
COPY     G80
FORMAT   G80
PASCAL   G80
COMPILER MSG
COMPILER OVR
ZBASIC   G80
MBASIC   G80
MSB8     G80
ZSIDPH   G80
FILE1    DAT
N:ABACO>FORMAT M:
FORMAT utility for RAM DISK on GPC® 011,80F,81F,15A,15R - Ver. 1.2
Are you sure to delete all files on drive M: (Y/N)? Y
N:ABACO>_
```

COM1:115200 Baud CAPS NUM

FIGURE 1: WORKING WINDOW WITH GDOS 80

RS 232 SERIAL CONNECTION

All the features of **GWT80** can be successfully used only when the user has performed an RS 232 serial connection between PC and target card. This connection, in addition to traditional communication signals, requires also two handshake; these signals regulate the traffic when the connected systems have notably different performances. This choice ensures that the communication is always right with any PC, any operating system and any target card, in a transparent way for the user.

The serial connection must be performed through a proper cable, detailed described in **GDOS 80** manual, and summarized in the following figure:

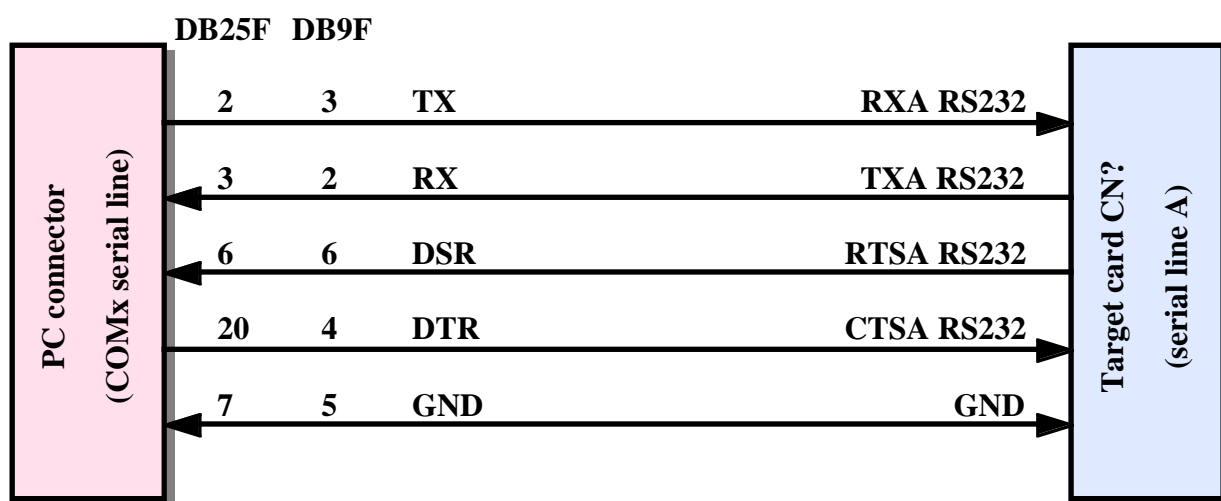


FIGURE 2: SERIAL CABLE BETWEEN PC AND TARGET CARD

The figure 1 describes the connection between the standard serial connectors of PC and the connector available on target card; on the last are not indicated the connector pin numbers, nor the connector type in fact they change according with used cards. However both pin numbers and connector type can be found on the target card technical manual.

According with used PC and used target card, the serial connection can require some communication accessories that must be added to RS 232 serial cable. These accessories simplify the complete link, as illustrated in the following figure that describes all the possible and typical connection mode:

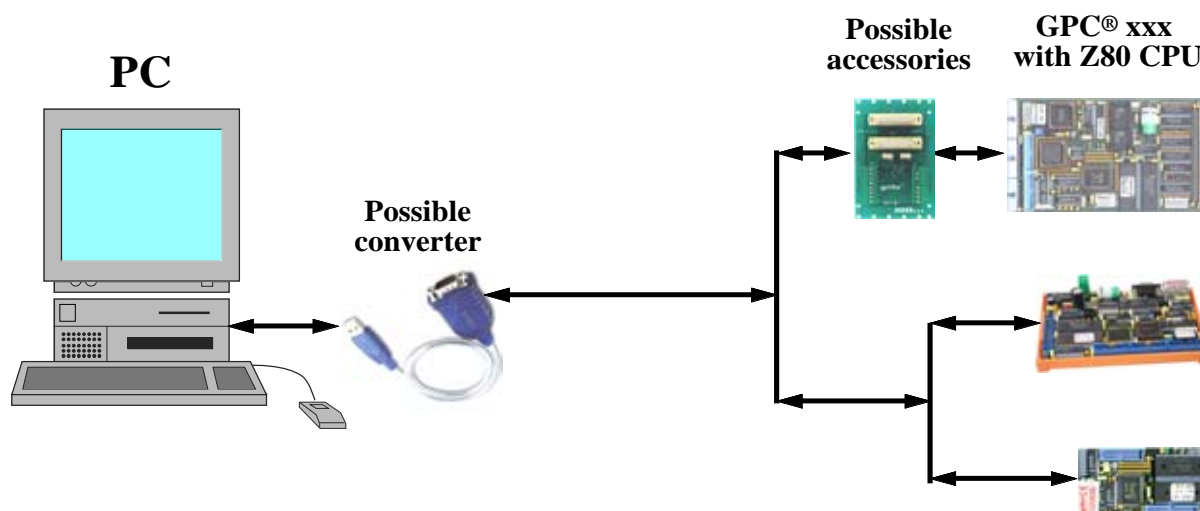


FIGURE 3: SERIAL CONNECTION DIAGRAM

The possible converter coincide with a device that, once added to used PC, supply a complete RS 232 serial line, compliant to V24 normative; among these devices we can remind the USB <-> RS232 converters, the ETHERNET <-> RS232 converters, the multi I/O cards with additional RS232 lines, etc. Naturally **GWT80** can use these additional serial lines only if they are correctly installed either for hardware and software aspects, as defined by the manufacturing company. It is important to underline that in the previous figure some elements, as the just described converters and the accessories connected to target card, are not essential for **GWT80** execution but they are an interesting and alternative connection choice.

If the user doesn't want to realize the described connection, or he wants to save time, **grifo®** can supply a set of cables and accessories that are ready to use with any type of card and PC:

Target card	Connector	Accessories codes	Serial cables codes
GPC® 80F	CN2	FLT 16+16; NCS 01	CCR 25+25 or CCR 25+9
GPC® 81F	CN1	FLT 16+16; NCS 01	CCR 25+25 or CCR 25+9
GPC® 15A	CN4	FLT 16+16; NCS 01	CCR 25+25 or CCR 25+9
GPC® 011	CN6	-	CCR 25+25 or CCR 25+9
GPC® 15R	CN7	-	CCR 9+25 or CCR 9+9
GPC® 153	CN3A	-	CCR.PLUG25F or CCR.PLUG9F
GPC® 154	CN3A	-	CCR.PLUG25F or CCR.PLUG9F
GPC® 183	CN7A	-	CCR.PLUG25F or CCR.PLUG9F
GPC® 184	CN3A	-	CCR.PLUG25F or CCR.PLUG9F
GPC® 150	CN7	FLT 16+16; NCS 01	CCR 25+25 or CCR 25+9

FIGURA 4: ACCESSORIES FOR TARGET CARD CONNECTION

The table describes for all the target cards, the connector where is available the serial line A used for PC communication, the possible accessories and finally the serial cable that directly, or indirectly through the accessories, performs the connection described in figure 1. The numeric suffixes in the cables codes, denote the female D connector type for PC (25 or 9 pins), according with the used standards.

HOW TO START

In this chapter are described the operations necessary to start working with **GWT80** software tools. In detail it is reported the correct sequence of operations that must be executed by the user, first to install the program, and then to perform the first fundamental step with the target card.

PRELIMINARY OPERATIONS

- 1) Read carefully all the received documentation.
- 2) Prearrange the target card (power supply, right jumpers configuration, etc.) and insert the **GDOS 80** EPROM or FLASH EPROM, if not already done.
- 3) Perform serial connection between target card and PC as described in previous paragraph **RS 232 SERIAL CONNECTION**.
- 4) Turn on the Personal Computer.
- 5) If a serial converter is used, then perform all the operations described in the documentation of the same product, and check its functionality.

INSTALLATION

- 6) Once found or downloaded the single compact auto-extracting file **INST_GWT80.EXE** from one of the distribution system, execute it with a simple double click on its icon.
- 7) At this point the installation program starts and first of all it shows a presentation window and then, when the *Next >* button has been pushed, it shows a window with the *License Agreement*. The user must read the information reported in this window (remind that both Italian version at the beginning, and English version at the end, are available) and then reject or accept them to proceed.
- 8) By pushing the *Next >* button the installation program is closed if the user has not accepted the license, viceversa it shows the following window that let the user select the *Destination Folder* of **GWT80**. Normally it is suggested the default folder *C:\Programmi\Grifo(r)\GWT80* but the user can easily modify it with the *Change...* push button; in this circumstance it is displayed a typical selection window that allows also to create new folders (see figure 5). In case the user has already installed **GDOS 80** software tools, he can conveniently select the same folder, obtaining a complete working structure in a single point of PC.
- 9) Once the installation folder has been selected, press again the *Next >* button to show the following window. This schedules a summary with the selected folder and some information on used PC: if the performed selections are not right the user can correct them by pressing the *< Back* button, viceversa he can start the real installation, by pushing the *Install* button.

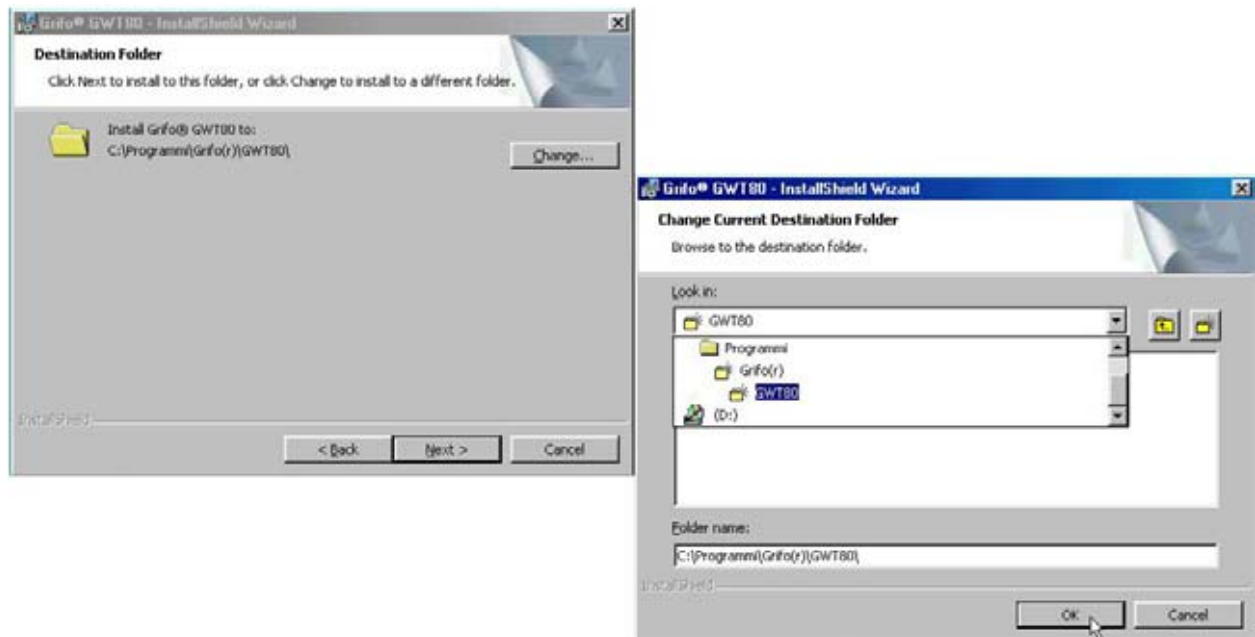


FIGURE 5: SELECTION WINDOWS FOR INSTALLATION FOLDER

- 10) During installation are shown some windows with respective progress bar that inform about the execution of the current phase and at the end (normally after few seconds) it is displayed another window with the installation results.

In the centre of this window it is available the selection of the automatic launch of **GWT80** at the exit of installation program: disable this option and then exit by pressing the *Finish* button (see figure 6).

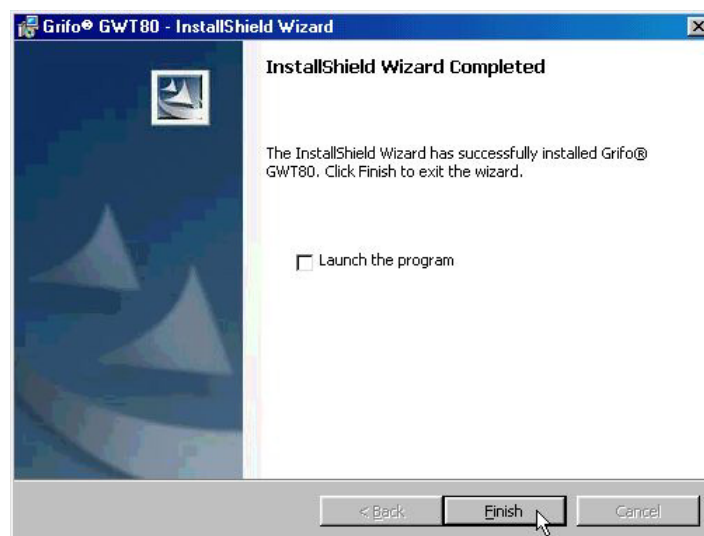


FIGURE 6: INSTALLATION RESULT WINDOW

- 11) The **GWT80** installation program prepares the executable file in the folder selected at point 8, and additionally it creates the links inside the *Start* menu of Windows, for the program and the two user manuals (Italian and English). It is suggested to check the presence of these links inside the path *Start / Program / Grifo® / GWT80 /*
- 12) If the point 10 has been successfully executed, and all the links described in point 11 are available, the installation of **GWT80** is correctly executed and the program is ready to be launched.

EXECUTION AND FIRST USE

- 13) Run the program **GWT80** by simply using the fast link in the start menu of Windows: *Start / Program / Grifo® / Gwt80 / GWT80*. At this point the program starts and initially it shows a presentation windows for few seconds and then the main window.
- 14) After its first execution, **GWT80** is configured with the English language that can be anyway selected by the command *Settings / Language / English*.
- 15) Open the window for the PC serial line configuration through the proper command *Settings / Serial Port...*, and on this select the line connected at point 3 and the maximum baud rate available on the target card. In the default terms it is selected the line *Direct to COM1* and the *115200* baud, that are valid setting for the majority use conditions. Once verified and/or modified these settings, close the window with the *✓OK* button.
- 16) Now the displayed main window is those shown in figure 7, with the bottom status row that can be different according to settings performend in point 15 and current keyboard status.

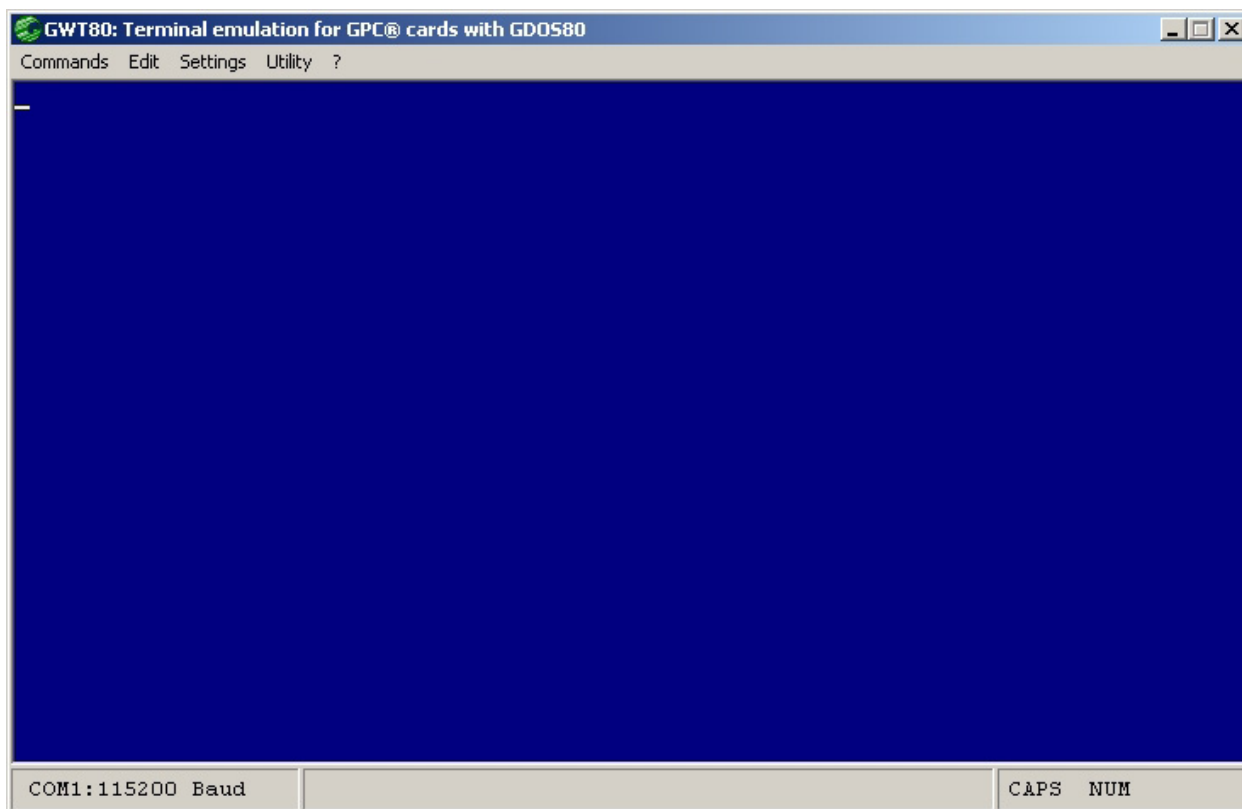


FIGURE 7: MAIN WINDOW

- 17) Supply power to target card: immediately after this operation inside the **GWT80** window must appear an indication relative to **GDOS 80** executed on the target card, followed by the operating system prompt:

GDOS - Ver. X.X - Rel. XXX XXX - by GRIFO° 051 892052 Italy

N:ABACO°>

The absence of the described representation is caused by a wrong serial connection while a representation with strange characters is caused by a wrong Baud rate setting. Both these possible problems must be solved by re-executing the points 15÷17 until the representation coincides with those reported.

- 18) Work with **GDOS 80** following the information of the GDOS 80 USE chapter, of the relative user manual. In this phase it can be executed and tested the direct commands, the external utility programs, the programming languages, etc.
For example the following commands can be supplied:

N:ABACO °>VER<Enter>

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

N:ABACO °>N:DIR N:<Enter>

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

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 current folder, of the hard disk PC.

N:ABACO °>N:PASCAL<Enter>

that loads the PASCAL.G80 programming language from ROM disk drive N.

Also for this point the incorrect execution of the commands above described is caused by a wrong serial connection, especially for the handshake signals; in this specific condition it is suggested to test the connection cable described in figure 2.

- 19) Whenever the size of **GWT80** window is too big or too small for the monitor area, currently selected on PC monitor, it is necessary to properly resize it by the options *Settings / Character / <size>*. By default the selected size is *Medium* that is the best arrangement for all the users, as described in following chapters.
- 20) To exit from **GWT80** program and return to Windows operating system, type the keys *Alt F4* or the dedicated command *Commands / Exit*.

On this chapter some PC 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.

GWT80 DESCRIPTION

GWT80 is an easy to use program provided with high level user interface including help, menus, colour identification, dialog boxes, fast recall keys, mouse management, etc. It is completely based on Windows functions and it can be executed with any version \geq Windows 95 of this popular operating system.

It manages some fundamental aspects:

- the emulation of an intelligent terminal that supports all console functions, as a standard terminal, and moreover it uses PC devices (hard disk, floppy disk, mass memory disks, printer, etc.) as target card resource. So the card can save and retrieve data and programs on these devices, even if they aren't directly connected to target card;
- some user defined strings that can be saved on PC and then transmitted to target card, to minimize PC keyboard use and to speed up development phase of user application program;
- the creation of the binary image file to program an EPROM with the developed application program. Thanks to this features the user can prepare an EPROM image with a defined ROM disk where data, program, messages, utilities, etc can be saved. All can be done in a very fast and comfortable mode, even without detailed knowledge of the physical addresses of the memory;
- the possibility to copy the text shown in the emulation window and then paste to any other program that requires it.

Please note that PC executing **GWT80** program is an indispensable system during develop and debug phase of application programs, but it can be useful also after the final installation for many different purposes, as: transfer of collected or required data, update of working parameters, production of printed reports, user interface management, etc. Any way, when the application program development is complete, the target card can work alone without **GWT80** and PC.

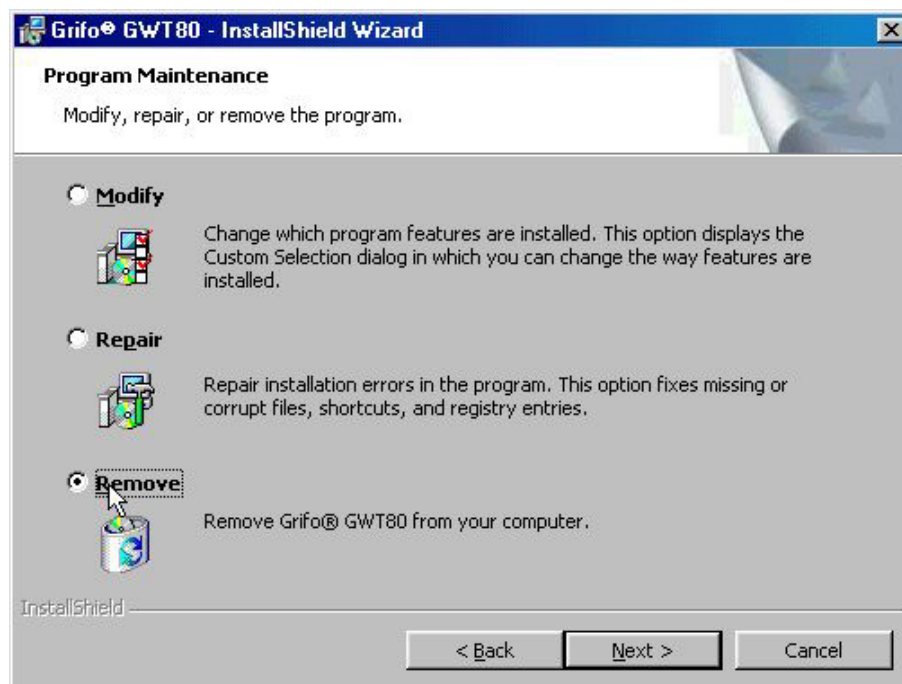
INSTALLATION, DEINSTALLATION

Before using **GWT80** the user must correctly install it. For this reason a specific program has been developed, as described in homonymous paragraph of HOW TO START chapter.

The reverse operation that removes the program can be performed through the dedicated manager of the operating system, by executing the following steps:

- execute the installation manager placed in *Start / System settings / Control panel / Install applications*;
- select the application *Grifo® GWT80* from the displayed list;
- press the *Add/Remove...* button and wait that the installation and deinstallation window is displayed;
- press the *Next >* button;
- in the *Program Maintenance* window that is shown at this point, select the *Remove* option and then press the *Next >* button (see figure 8);
- confirm the removal of **GWT80** by pushing the *Remove* button;
- during the disinstallation are shown some windows with respective progress bar that inform about execution of the current phase and at the end (normally after few seconds) it is displayed another window with the results;
- press the *Finish* button to close the deinstallation program.

Normally the installation of **GWT80** must be done only one time and so it is not necessary to remove and reinstall it; the unusual conditions that may require the reinstallation are the variation of the installation folder or the availability of a new **GWT80** version.

**FIGURE 8: DEINSTALLATION WINDOW**

DOCUMENTATION

At the end of **GWT80** installation also two user manuals, in Italian and English, are installed too. In detail the English document coincides with this manual that you are reading and it is supplied under the PDF format, that can be read with the well know and free of charge Acrobat Reader program. The last, if not already available on used PC, must be previously installed.

Inside the start menu of Windows: *Start / Program / Grifo® / Gwt80 / ...* are placed two links to the just described manuals and to read it, it is sufficient select those defined *User Manual*, relative to English language.

When necessary, the supplied manual could be printed, obtaining a manual on paper that could be more practical and fast to consult. In fact its pagination provides a cover, the index, the chapters subdivision and the appendix: it is sufficient to print all pages in front and rear mode and to staple them on the left side.

EXECUTION

As specified in previous chapter the **GWT80** program can be simply executed by using the fast link placed in the start menu of Windows, from the installation program:

Start / Program / Grifo® / Gwt80 / GWT80

This link can't be modified but the user can freely create other links and place them where he prefers, as for example in the **GDOS 80** work directory, on the desktop, on Windows application bar, inside start menu of Windows, etc.

At this point the **GWT 80** starts and it performs the following operations:

- Shows a presentation window with the name of the program, for some seconds.
- Checks the availability of **GWT80.SET** file that saves the settings for **GWT80** and if it exists it is acquired.
- Defines the initial settings of the program with the acquired values or with the default ones. These last are those used after the first execution or, more commonly, when the proper file is not available and they have the following values:

Current folder	=	the folder where GWT80 is saved and executed
Selected COM Port	=	COM1
Baud Rate	=	115200
Language	=	English
Character	=	Medium
Background color	=	Dark blue
Text color	=	Light gray
User strings	=	None

FIGURE 9: DEFAULT SETTINGS

- Initializes the serial port defined in the initial settings and shows the result in the first box on the left of the bottom status line: if the operation is correctly executed in this box is displayed the information *COMx: xxxxxx Baud* viceversa it is displayed the error message *COM not available*.
- Shows the terminal emulation window completely clear, that coincides with the main window of **GWT80**, described in figure 7. On the same windows there are also five drop down menus that provided of many options, that are detailed described in the following paragraphs.
- At this point the **GWT80** shows a blinking underlined cursor in the up left corner of the main window, and it starts the management of all its processes as: terminal emulation, the user command from menu options, the utilities, and anything else. If the target card is waiting for communication, immediately after in the shown window will be added the visualization of this card.

PROGRAM DEVELOPMENT AND EDITOR

The **GWT80** is normally used during the develop and debug phases of the user application program; so the user must repeatedly elapse between the write and correction phase of the program source and the test and problems research phase of the same program.

The program test and possible problems research (debug) is completely submitted to chosen software development tools, or in other words, to the programming languages coupled with **GDOS 80** operating system as the BASIC compiler (**CBZ80**), BASIC interpreter (**NSB8**), PASCAL compiler (**PASCAL80**), C compiler (**HTC80**), etc.

The write and correction phase of the program source (editor) is on the contrary to any Windows program capable to generate an ASCII text file as NOTEPAD2, WORDPAD, BORLAND PASCAL, VISUAL BASIC, VISUAL C, NOTEPAD, etc. Some of these are furthermore able to manage colour coding of the source, a multiwindows editor, autoident functions, powerful find and replace commands, etc. Any ASCII editor can be used with no limits, in fact:

- **GWT80** converts all the files used by target cards in files with length multiple of 128 bytes, as required by **GDOS 80** operating system;
- **GWT80** maintains the files normally closed and, when necessary, they are used in shared mode to allow that the file are contemporaneously opened by editor program.

TERMINAL EMULATION

The intelligent terminal emulation feature of **GWT80**, manages all the PC hardware resource, and make them available to the used target card. In this way it is possible to directly use removable disks, hard disk, printer, keyboard and monitor directly with the software executed on target card, through **GDOS 80** operating system.

The communication with remote card is performed through one of PC serial line (COM x) with the connection described in chapter SERIAL COMMUNICATION CABLE, and with the physical protocol described in TECHNICAL FEATURES chapter of **GDOS 80** user manual, that are briefly summarize in the paragraph RS 232 SERIAL CONNECTION of this manual.

When the program is executed it sets the selected serial port with the selected baud rate and then it shows the terminal emulation window. On this window are displayed all the characters received from target card, while the key pressed on PC keyboard are transmitted to target card, by using a specific logic protocol that manages also file transfer. This logic protocol is completely transparent for the user and it uses hardware handshakes to arrange fast communication, and different response time, of the numerous PCs in circulation.

With selected serial port and selected baud rate are denoted the last values chosen by the user through the option *Serial Port...* of menu *Settings*, that initially coincide with the default settings listed in figure 9.

The management of the hardware handshakes of the target card serial line is enabled or disabled by a flag saved in IOBYTE EXTENSION (see proper paragraph in **GDOS80** manual), with the following correspondence:

IOBYTE EXTENSION.7 = 1	->	<i>Hardware handshakes enabled</i>
IOBYTE EXTENSION.7 = 0	->	<i>Hardware handshakes disabled</i>

During the communication with **GWT80**, the hardware handshake must be enabled and for this reason **GDOS 80** sets this flag, by default. If the developed application can't manage these handshakes (i.e. the target card serial line A is connected to other systems as modem, terminal, embedded cards, **QTP xxx**, etc.) the same application program must disable the handshake flag.

The performances reached by the terminal emulation both for console visualization and files transfers, are strictly related to used PC, to installed Windows operating system and to possible serial RS 232 converters. To obtain the best speed (and so the shortest development time) we suggest always to use recent PC with recent operating system.

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 development of console and user interface code; moreover many programming languages are supplied already configured for **GWT80** terminal emulation features.

The terminal emulation recognizes either the standard representation commands and many other commands that defines the visualization attributes: with **GWT80** it is easily possible to place and diversify the information displayed on console.

The intelligent terminal emulation works in a full asynchronous mode in confront of target card that executes **GDOS 80**; for this reason no power on/off procedure must be followed for the card nor particular execution/exit of/from **GWT80** program.

TERMINAL EMULATION COMMANDS

The intelligent terminal emulation of **GWT80**, recognizes some commands received from selected serial line, that follow the ADDS Viewpoint standard protocol. These commands are simple characters, or characters sequences, they offer interesting visualization possibilities and they are listed in the following table:

COMANDO	CODE	HEX CODE	ASCII CODE
Cursor Home	01	01	SOH
Cursor Left	08	08	BS
Cursor right	06	06	ACK
Cursor Down	10	0A	LF
Cursor Up	26	1A	SUB
Carriage Return	13	0D	CR
Carriage Return+line feed	29	1D	GS
Absolute cursor position	27 89 row+32 column+32	1B 59 row+20 column+20	ESC Y ASCII(row+32) ASCII(column+32)
Clear page	12	0C	FF
Clear line	25	19	EM
Clear to end of line	27 75	1B 4B	ESC K
Clear to end of page	27 107	1B 6B	ESC k
Cursor off	27 80	1B 50	ESC P
Cursor on: blinking line	27 77	1B 4D	ESC M
Cursor on: blinking block	27 81	1B 51	ESC Q
Attribute type setting	27 48 attribute	1B 30 attribute	ESC 0 ASCII(attribute)
Set attribute	14	0E	SO
Reset attribute	15	0F	SI
Audible BELL	07	07	BEL

FIGURE 10: TERMINAL EMULATION COMMANDS

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 or 1B 59 29 33 Hex

About representation attributes recognized by **GWT80** terminal emulation, are recognized the standard ADDS Viewpoint attributes plus some other, that are normally managed in the writing program. In detail:

ATTRIBUTE	CODE	HEX CODE	ASCII CODE
Normal	64	40	@
Half intensity	65	41	A
Bared	66	42	B
Half intensity+Bared	67	43	C
Invisible	68	44	D
Reverse	80	50	P
Reverse+Half intensity	81	51	Q
Reverse+Bared	82	52	R
Reverse+Half intensity+Bared	83	53	S
Underlined	96	60	'
Underlined+Half intensity	97	61	a
Underlined+Bared	98	62	b
Underlined+Half intensity+Bared	99	63	c

FIGURE 11: TERMINAL EMULATION ATTRIBUTES

When **GWT80** is executed it is automatically selected and used the Normal attribute.

All the developed program can use the described commands and attributes, obtaining many significant easy solutions for the program section that manages the user interface. In this way it is even possible to use the PC that executes **GWT80** as a real console for the operator, and thus developing a single application program for the target card. This last, taking advantage from the described commands and attributes, and from the pseudographic caharacters too, could visualize and acquire any type of information in a clear, fast and intuitive way.

Please remind that the ADDS Viewpoint protocol adopted by **GWT80** is also the standard used and recognized from **QTP xxx** operator panel, produced by **grifo®**. So the user can develop and test the part of his program dedicated to operator interface directly with **GWT80** and, once completed, he can substitute the PC with preselected **QTP xxx**, with no other intervents (except the hardware handshakes that must be disabled, as described in previous paragraph).

TERMINAL EMULATION SPECIAL KEYS

The intelligent terminal emulation of **GWT80** translates some of the special PC keys (arrows, Ins, Del, etc.) and transmit the proper **GDOS 80** standard codes, to the connected target card.

KEY	CODES	HEX CODES	ASCII CODES
Up arrow	05	05	ENQ = Ctrl+E
Down arrow	24	18	CAN = Ctrl+X
Left arrow	19	13	DC3 = Ctrl+S
Right arrow	04	04	EOT = Ctrl+D
Page up	18	12	DC2 = Ctrl+R
Page down	03	03	ETX = Ctrl+C
Home	17 82	11 52	DC1 R = Ctrl+Q R
End	17 67	11 43	DC1 C = Ctrl+Q C
Ins	22	16	SYN = Ctrl+V
Del	07	07	BEL = Ctrl+G

FIGURE 12: TERMINAL EMULATION SPECIAL KEYS

This features is really important especially when programming language with an integrated editor (i.e. **PASCAL80**) is used, in fact you can move inside the application program in a fast and intuitive manner.

USER STRINGS

The **GWT80** includes an interesting utility, named user strings management, that speed and facilitate the user application program development phases. The user strings are 10 strings with a maximum lenght of 30 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 **GWT80.SET** file, saved on the folder where **GWT80.EXE** has been installed; when **GWT80** starts it checks if this file exist and if it does, the **GWT80.SET** is loaded in a dedicated volatile memory area, and the user strings became available for any operations: modification, transmission, visualization, etc. The user can employ the user strings saved in this volatile area by using the favorite manner.

The user string management is available in three different parts of **GWT80** program, as below described:

Command: *Utility / Strings Editor...*

By selecting this option, an *User String Editor* window is displayed; this window includes 10 input string lines (for max 30 characters string insertion), 10 boolean check box for the <Enter> activation (to add carriage return code at the end of the strings), an *OK* push button (to close the editor windows and save the currently inserted data) and a *X Cancel* push button (to close the editor windows and discard the currently modified data). The boolean check box for the <Enter> activation must be used to select if the relative user string is terminated by CR code, when transmitted in terminal emulation mode, or not terminated.

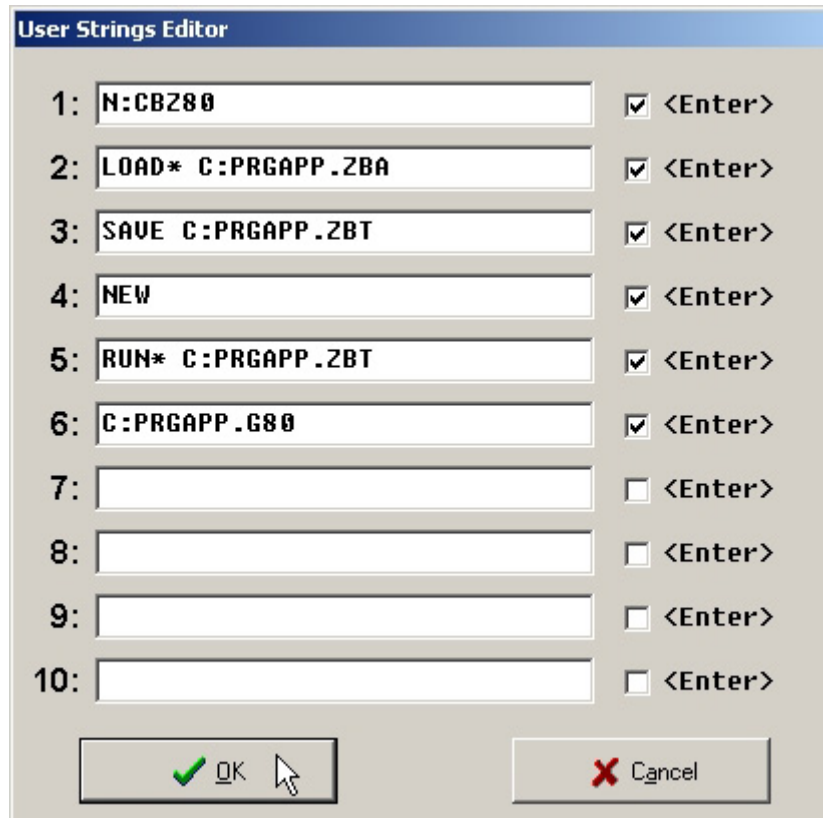
Command: *Utility / Transmit String >*

This option transmits the content of one of the 10 user strings to target card. A submenu is displayed with the list of the already defined user strings and the user can select which one must be transmitted, together with the possible carriage return code. Practically the transmit string command, when activated by mouse or, as described later, by two keys pressure it is equal to the typing of all the user string characters on PC keyboard, including the final CR code.

A faster and more comfortable way to transmit a user string is to press the *Ctrl Fx* keys combination directly from terminal emulation window, where x coincides with user string number, from 1 to 10.

Command: *Right mouse button / Transmit String >*

This option offers the same functionality of previous command but with a faster access through mouse. When the user doesn't remember the association between user string and fast recall keys, he can simply press the mouse right button and then select the required string from the displayed list, or see the relative keys.



Line	String	<Enter>
1:	N:CBZ80	<input checked="" type="checkbox"/> <Enter>
2:	LOAD* C:PRGAPP.ZBA	<input checked="" type="checkbox"/> <Enter>
3:	SAVE C:PRGAPP.ZBT	<input checked="" type="checkbox"/> <Enter>
4:	NEW	<input checked="" type="checkbox"/> <Enter>
5:	RUN* C:PRGAPP.ZBT	<input checked="" type="checkbox"/> <Enter>
6:	C:PRGAPP.G80	<input checked="" type="checkbox"/> <Enter>
7:		<input type="checkbox"/> <Enter>
8:		<input type="checkbox"/> <Enter>
9:		<input type="checkbox"/> <Enter>
10:		<input type="checkbox"/> <Enter>

Buttons: ☒ OK ☐ Cancel

FIGURE 13: EXAMPLE OF USER STRING SETTING

When you are working with **GDOS 80**, one of the most frequently used operating mode, is the editing of the application program source with an external editor and then, through the terminal emulation of **GWT80** and the selected programming language, load, translate, compile, execute, save, etc. the same application program. Every described operation 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 **GWT80** user strings are really important and comfortable, in fact they substitute the develop commands and so they notably reduce the keyboard use, with a considerable time reduction results.

For example, when as programming language is used the BASIC compiler **CBZ80**, to generate the application program **PRGAPP.ZBA**, in the development phase the user strings can be conveniently set as described in figure 13. At this point the user can execute and test his **PRGAPP** application program with a simple and fast pressure of the keys combination *Ctrl F1÷F6*, when required from **GDOS 80** or **CBZ80**.

GROM

The utility **GROM** of **GWT80** prepares the EPROM with the application program developed by the user. The burning of the EPROM, installed on target card, is the final step to obtain a definitive application capable to work alone.

This utility is naturally interesting only for those users that don't use the FLASH EPROM version of the operating system (**FGOS 80**) or for the users that needs big production quantity, where EPROM management is faster and cheaper than FLASH EPROM.

As detailed described in **GDOS 80** user manual, both EPROM and FLASH EPROM are managed by operating system as ROM disk, so data on this memory devices are always organized as files. The EPROM must be burned with a proper external programmer and it can be modified only through a replace or erase and reburn operations; anyway it is necessary an hardware intervent to disconnect and reconnect the EPROM. For this reason, it is a good practise to save the application program in EPROM only when it is completely tested.

On ROM disk, besides application programs, other data can be saved: utility programs, messages files, configuration files and/or any other development programs and programming languages, that speed the development phase.

To carry out the EPROM, in **GWT80** has been provided a specific option named *GROM...* inside the *Utility* menu. It is based on user selections and it produces a binary image file, that can be used to burn the device for the target card. It requires the following steps execution:

- a) Check that all the files to be saved on ROM disk, plus the **GDOS 80** binary file of the used target card, are available on the PC. In fact **GROM** manages all PC drives and directories as loading devices, but it can't use the local drive of target card. If the files are saved on card RAM/ROM disks, please copy them with **GDOS 80** utility programs.
- b) Selects the *Utility / GROM...* options, so as to open the respective dialog box.
- c) The first operation is the selection of the used EPROM size. **GROM** checks that the chosen device size is sufficient to contain all the ROM dis files and if it is not, a proper warning message box is displayed. However, according to ROM disk required space, the user can change the EPROM type (compatibly with target card features) also in a second time, obtaining a cost optimization.

- d) The second operation is the selection of the used target card. In fact **GROM** generates EPROM image for all the cards provided of **GDOS 80** operating system, in **grifo®** industrial set. In detail the selection is reduced to *For GPC® 011* check box that must be enabled when the target card is a **GPC® 011** and disabled for all the other cards.

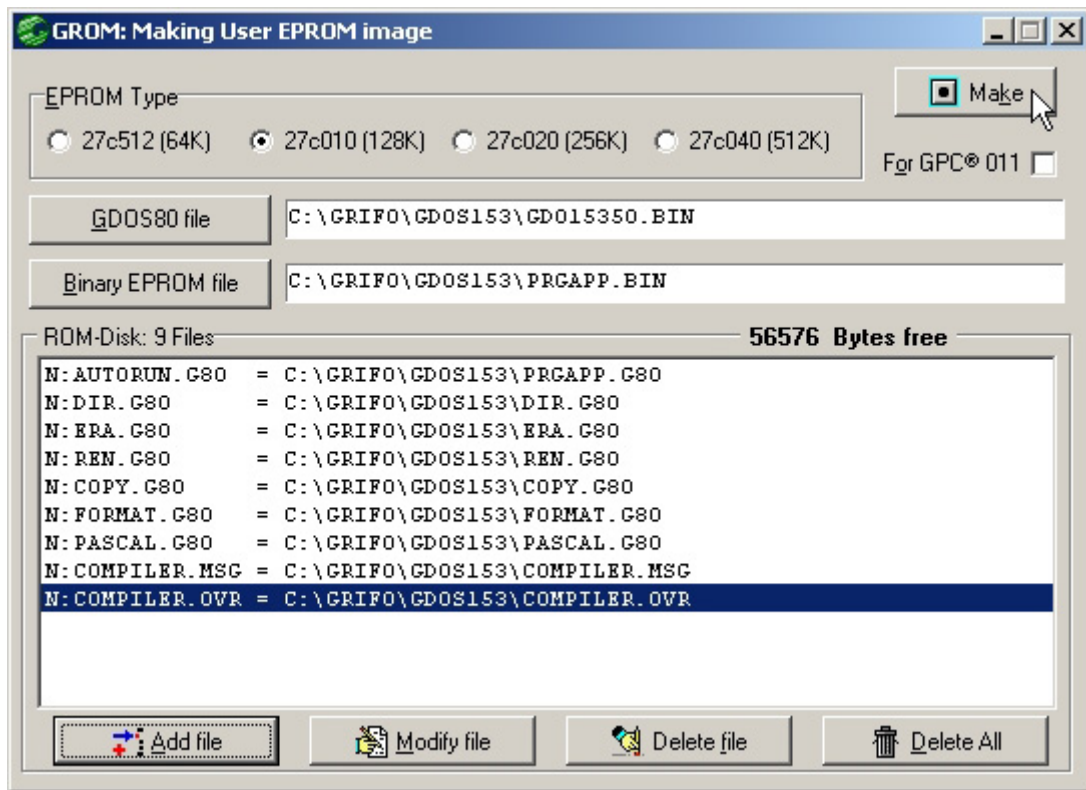


FIGURE 14: GROM WINDOW

- e) Select the binary file containing the **GDOS 80** operating system image for the used target card. This file is saved in ROM_DISK directory of the received disk and it can be chosen through a file selection window associated to *GDOS80 file* button. The file selection windows changes according with used Windows version and it offers all the typical facilitations as: change folders, restriction to selected file types, use of previous settings, shows of enhanced file information, etc. At the end of selection, the file name and path is displayed on the right side of *GDOS80 file* button.
- f) Insert the binary file name, created by **GROM**, containing the EPROM image to burn. It can be chosen through a file selection window associated to *Binary EPROM file* button and at the end of selection, the file name and path is displayed on the right side of the same button. The file selection windows changes according with used Windows version and it offers all the typical facilitations as: change folders, restriction to selected file types, use of previous settings, shows of enhanced file information, etc. The inserted file will have the same dimension of the selected device at point c; the possible not used area is filled with no meaning data (0FF Hex).
- g) Once completed the described steps, the user can start the real phase of ROM disk creation: infact it can be inserted and/or modified the files to save on ROM disk and their relative names. Through the 4 push buttons placed in the bottom of the window, the mouse and some keys of the keyboard, the user can perform the following operations:

Arrows , Pgxx, End, Home keys -> moves the lines that point to the current ROM disk file; this selection can be also done with the vertical scroll bar on the right of *ROM-Disk* window and with the mouse.

Add file push button -> adds a file in ROM disk in the last position of the list;

Modify file push button -> modifies the current ROM disk file;

Delete file push button -> deletes the current ROM disk file;

Delete all push button -> deletes all inserted ROM disk files.

During ROM disk file add and modify operation, firstly is displayed a file selection dialog window and after a second window to insert the file name in ROM disk; this possibility is really usefull especially to save a file with AUTORUN.G80 name on ROM disk starting from a different file name saved on PC disks. The file names selection and insertion modalities are completely described in the program together with ROM disk files number and free ROM disk space information. When free space (that depends on selected EPROM size and files already inserted) is not sufficient for the new file addition, the **GROM** shows a proper status message, as described on point c. An error message is also displayed when it is inserted a file name that is already saved in ROM disk. The ROM disk file list window is composed by 12 rows and it scrolls up and down to visualize all the possible maximum 64 files.

- h) By pushing the Make button all inserted data are confirmed and **GROM** shows a *Making binary EPROM file* window with a scroll bar, a message line and two buttons. The first scroll bar indicates the percentual amount of processed work; the inferior status line shows the currently executed operation and possible errors; the X Cancel button close the window and returns to **GROM** window; finally the Start button really generate the EPROM binary image file. At the end, on the status line, is reported the final operation result and the user, once read this result, can close the window with the ✓ OK button.
- i) At this point the **GROM** window is still opened and it can be closed by using the proper Windows buttons (on the right upper corner). Please remind that inserted data are not lost but maintained and they will be redisplayed when **GROM** is reselected. This features is really comfortable especially when the user must regenerate the EPROM with some file in ROM disk changed or updated; in this case it is sufficient to reopen the **GROM** windows and press the Start button. The ROM disk file list and the other settings of **GROM** are lost only when exiting from **GWT80**.
- j) The user can verify if the file specified on pint **f** has been created and if its size coincides with the EPROM size selected on point c.
- k) Prearrange the personal computer for EPROM programming performing all the necessary operations required by the used EPROM programmer. Normally it must be selected the EPROM manufacturer and type and the loading of a binary file format. The instructions about these predisposition are not reported in this manual but in used programmer documentation.
- l) Burn the file obtained at point **h** on a new EPROM of the previously selected size. As described in previous point the file must be handled as binary file and burned starting from address 00000H.

PRINTER

One of the features of **GWT80** is the management of the printer connected to PC that became available directly for the target card. The use of this resource on the user side occurs at two distinct levels:

- the firmware executed on the target card that firstly sets the IOBYTE data structure of **GDOS 80** (to associate the *logic print device* to the physic *PC printer device*), and then use the comfortable high level instructions of the selected programming language (*write(LST,...)* for **PASCAL80**, *LPRINT....* for **CBZ80**, *printf(...)* for **HTC80**, etc.). In this way it can be directly printed strings, constants, variables, formatted values, etc. and even graphics reports.
- at **GWT80** level the user can decide which printer use, when more than one are available; he can define the selected printer property according with the options provided by its software driver; he can establish the conditions that complete the page; finally he can act on current printer queue to empty or delete it.

When the **GWT80** receive from the target card some information to print, it immediately shows a proper status indication on the bottom row, as illustrated on the following figure:

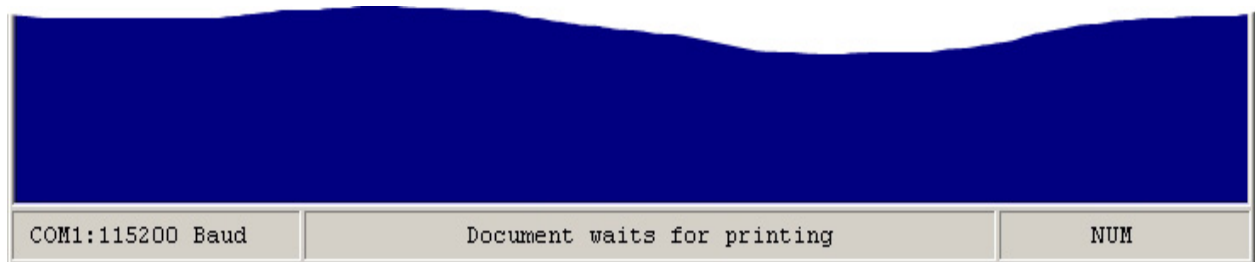


FIGURE 15: STATUS LINE WITH PRINT IN EXECUTION

Moreover, in this phase it is created a print document, named *GWT80 Print*, that is placed in the printer queue of the Windows operating system. This document is inserted with the *Tailing documents* status, that belong until the page is complete, or until the user supply a print command. In detail the conditions that can really print the document (changing the status from *Tailing documents* to *Printing documents*) are the following ones:

Command Commands / Print

It causes the complete transfer of the current print documents to printer.

Page complete

If the option Commands / Print each Page is active, and the **GWT80** has received 60 rows to print, the single complete page is transferred from print document to printer.

End of print character reception

When **GWT80** receives the character 26 = 1AH = EOF it transfers the current print documents to printer.

Filling of Windows printer queue

When the queue managed by the printer software driver is full, the operating system automatically transfers a sufficient number of pages from print document to printer.

The user can check the current print status with a simple click on the proper icon on the Windows application bar; in the displayed Windows there is the document *GWT80 Print* and the relative informations: total pages, printed pages, status, size, etc. placed side by side.

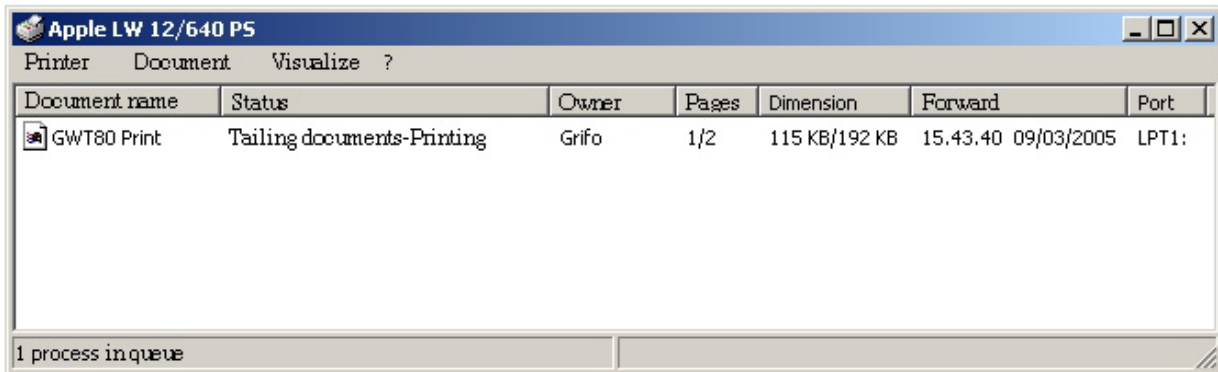


FIGURE 16: PRINTER DRIVER WINDOW

The printer process of **GDOS 80+GWT80** is not suspensive: if the printer is not ready, after a timeout, the same process is interrupted; moreover it is not possible to acquire the current printer status from target card. Viceversa the PC manages the printer errors in a standard way, as established by the used operating system and software driver.

Further information on commands and options of **GWT80** relative to to printer are available in the following chapter.

MENUS AND OPTIONS

In the following paragraphs are briefly described all the drop down menus and relative options, available in **GWT80**. In this chapter, and in all the manual, the letters that activate the options in a fast way are underlined: this fast selection is simply performed by opening the menu and pressing the underlined letter, without using the arrow keys or mouse. The indication "..." following the name of some options, means that the same option needs other data requested by a new specific dialog box (files name, strings, folder to select, etc.). Furthermore the indications ">" signals that another drop down selection list is opened, when the option has been selected. Finally in the drop down menus are used some horizontal lines that divides the options in subgroups, according with the executed functions.

When a mouse is available, the options selection is really simplified, in fact the user has nothing to press on PC keyboard, but only click on required entry. In a second time, when some options will be frequently executed, the fast selection modes from keyboard will become fatally faster and more comfortable.

COMMANDS MENU

The keys combination that open this menu is *Alt C* and the available options are those described in following figure:

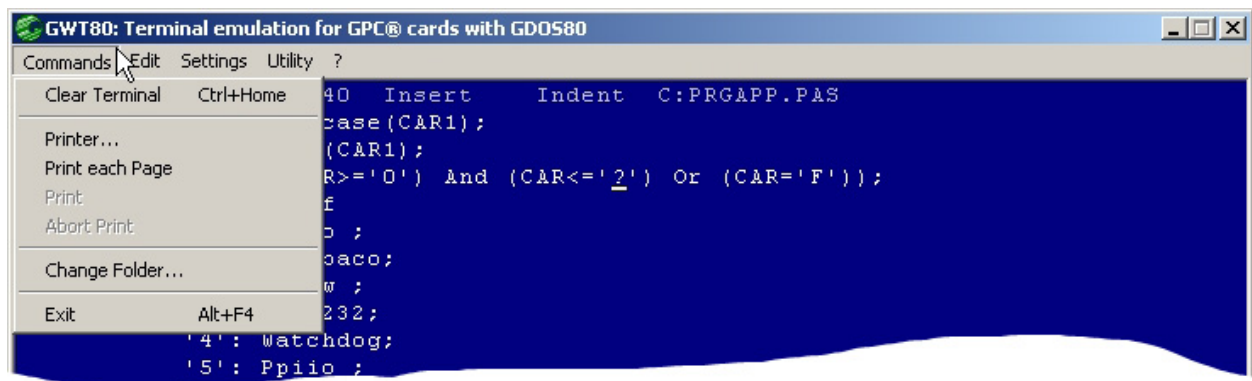


FIGURE 17: COMMAND MENU

Option	Function
<i>Clear Terminal</i>	Clears the terminal emulation window and place cursor in the upper left corner. This command can be used also to verify if the target card is continuously updating a static visualization on console. The command can be activated also through the keys conjunction: <i>Ctrl Home</i> .
<i>Printer...</i>	Selects which printer must be used when more than one are available. Moreover it executes the software driver of the selected printer and so it allows the user to define the possible printer properties (see PRINTER paragraph).
<i>Print each Page</i>	Enables or disables the print in corrispondence of the page complete condition (see PRINTER paragraph).
<i>Print</i>	Causes the immediate and complete print of the current print document (see PRINTER paragraph).

<u>A</u> bort Print	Causes the immediate and complete deletion of the current print document (see PRINTER paragraph).
<u>C</u> hange Folder...	Changes current folder that is the folder used by GWT80 for all the operations concerning files. In detail the current folder is the one used by target card that uses files on PC and the one initially used by GROM files selection window.
<u>E</u> xit	Stops execution of GWT80 and return definitely under Windows control. The command can be activated also through the keys conjunction: <i>Alt F4</i> .

EDIT MENU

The keys combination that open this menu is *Alt E* and the available options are those described in following figure:

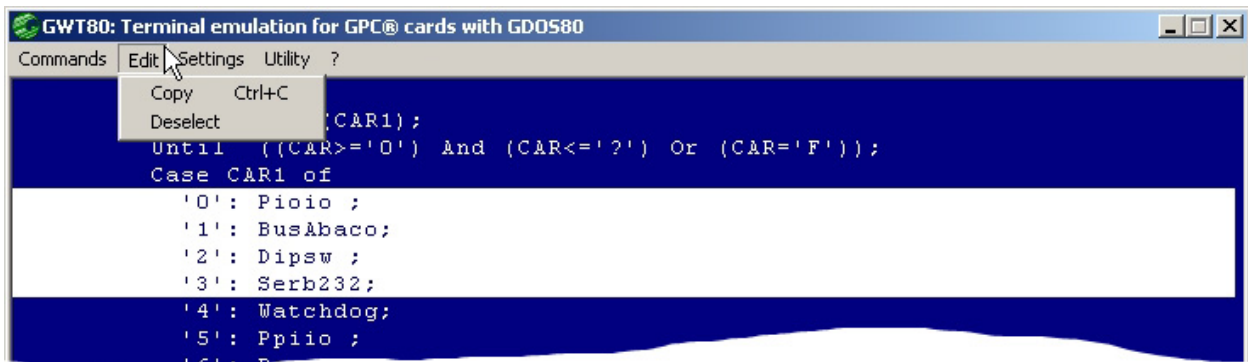


FIGURE 18: EDIT MENU

Option	Function
<u>C</u> opy	Copies the text currently selected inside terminal emulation window into the Windows operating system clipboard. The command can be activated also through the keys conjunction: <i>Ctrl C</i> .
<u>D</u> eselect	Disables the current selection of text inside the terminal emulation window.

Please remind that editor mode available in previous program **GET80** had been completely removed and substitute, as described in PROGRAM DEVELOPMENT AND RDITOR paragraph.

Both the options of Edit menu can be selected only when inside terminal emulation window has been selected some text. This selection can be performed with mouse by clicking its left button on the start point, dragging the mouse towards the end point and, when reached, releasing the same left button. The text so selected is highlighted by a white background colour that facilitate its recognition and location, as shown on figure 18. It is important to remind, that the text selection can occur only when visualization is static, inside terminal emulation window. Infact the reception from target card, of characters that must be displayed, causes the automatic deselection of text.

The copy function is monodirectional, in other words it is only possible to copy text from **GWT80** and then paste it in any external program, capable to use Windows clipboard. However this feature is usefull for many different purpose as: the copy of results displayed by target card on console; the certification of an executed operations sequence; the copy of memories contents of the taget card; etc.

SETTINGS MENU

The keys combination that open this menu is *Alt I* and the available options are those described in following figure:

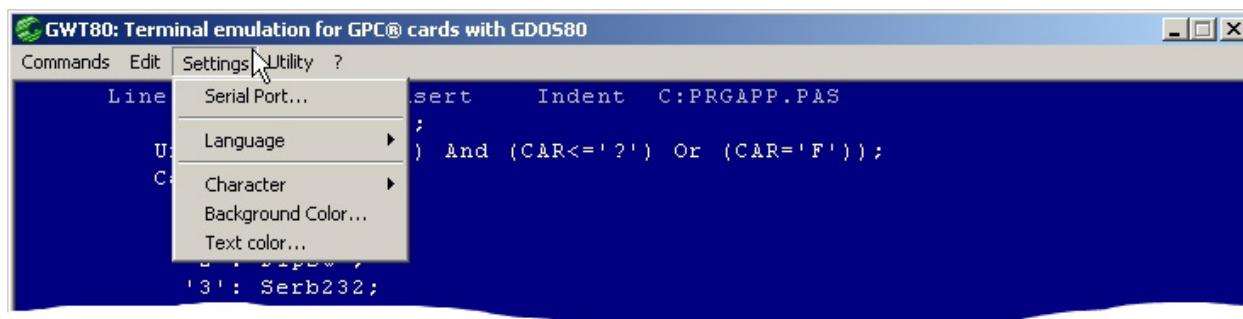


FIGURE 19: SETTINGS MENU

Option	Function
<i>Serial Port...</i>	Opens the homonymous windows for the selection of the PC communication port and baud rate. Among the <i>COM Port selected</i> are listed both the internal and external to PC, but only if they are correctly installed and managed by the used operating system. The <i>Baud Rate</i> must be the same used by target card.
<i>Language</i> >	Shows a drop down list where the user can choose the used language between <i>Italiano</i> and <i>English</i> .
<i>Character</i> >	Shows a drop down list where the user can choose the character size used in the terminal emulation window. In this list are available four different formats (<i>Small</i> , <i>Medium</i> , <i>Large</i> , <i>Very Large</i>) equivalent to characters of increasing sizes. The character size must be selected by the user according with number of pixels displayed on PC, to obtain a visualization of the right dimensions. About GWT80 window dimension it is important remind that: <u>it is always composed by 80x25 characters; it is not provided of Windows maximize button, nor resize handle; so it has a fixed size proportional to selected character size.</u>
<i>Background Color...</i>	Opens a window that allow the selection of background colour of the terminal emulation window. In the displayed <i>Colour</i> window it can be selected among many <i>Base colours</i> , some <i>Customized colours</i> and, if it is necessary, <i>Define customized colours</i> . Please remind that GWT80 manages <u>the representation attributes</u> described in figure 11 and that some of them (those <u>about intensity</u>), acts on selected background colour, <u>by changing it</u> .
<i>Text Color...</i>	Opens a window that allow the selection of text colour of the terminal emulation window. In the displayed <i>Colour</i> window it can be selected among many <i>Base colours</i> , some <i>Customized colours</i> and, if it is necessary, <i>Define customized colours</i> . Please remind that GWT80 manages <u>the representation attributes</u> described in figure 11 and that some of them (those <u>about intensity</u>), acts on selected text colour, <u>by changing it</u> .

UTILITY MENU

The keys combination that open this menu is *Alt U* and the available options are those described in following figure:

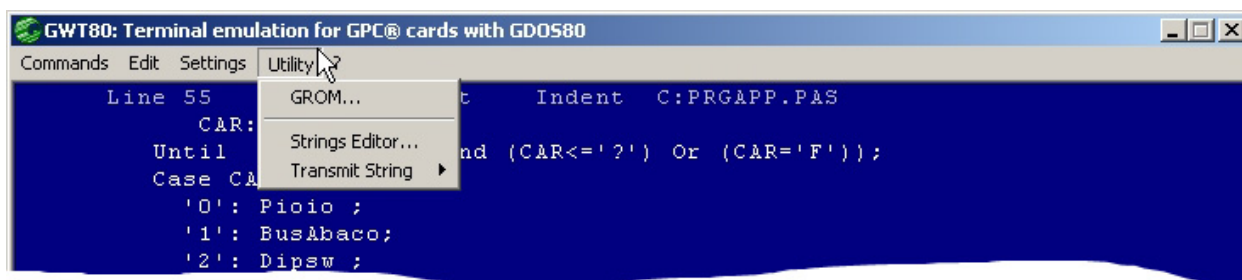


FIGURE 20: UTILITY MENU

Option	Function
<u>G</u> ROM...	Opens the homonimous windows that generates the binary image of the EPROM with user application programs and files, as described in previous paragraph GROM .
<u>S</u> trings <u>E</u> ditor...	Opens the homonimous windows for user strings editor, as described in previous paragraph USER STRINGS.
<u>T</u> ransmit string >	Shows a scroll down selection list with the inserted user strings, numerated from 1 to 10. By selecting one of these strings the GWT80 transmits its contents, to target card, as described in previous paragraph USER STRINGS. The command can be activated also through the keys conjunction: <i>Ctrl Fn</i> , where n coincides with the number of user string to transmit.

? MENU

The keys combination that open this menu is *Alt ?* and the available options are those described in following figure:

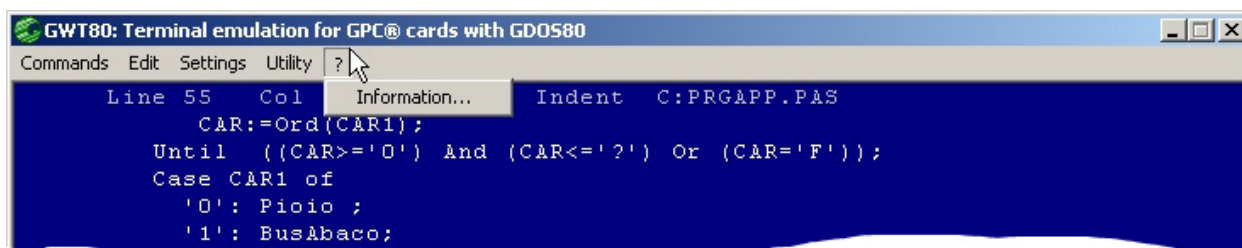


FIGURE 21: ? MENU

Option	Function
<u>I</u> nformation...	Opens the homonimous windows that show all the information about the GWT80 in execution. Among these information are included the program version, the address, phone number, fax number, etc. of grifo company, as described in the following figure. When the windows has been consulted, it can be closed, through the dedicated <i>✓OK</i> push button.



FIGURE 22: INFORMATION WINDOW

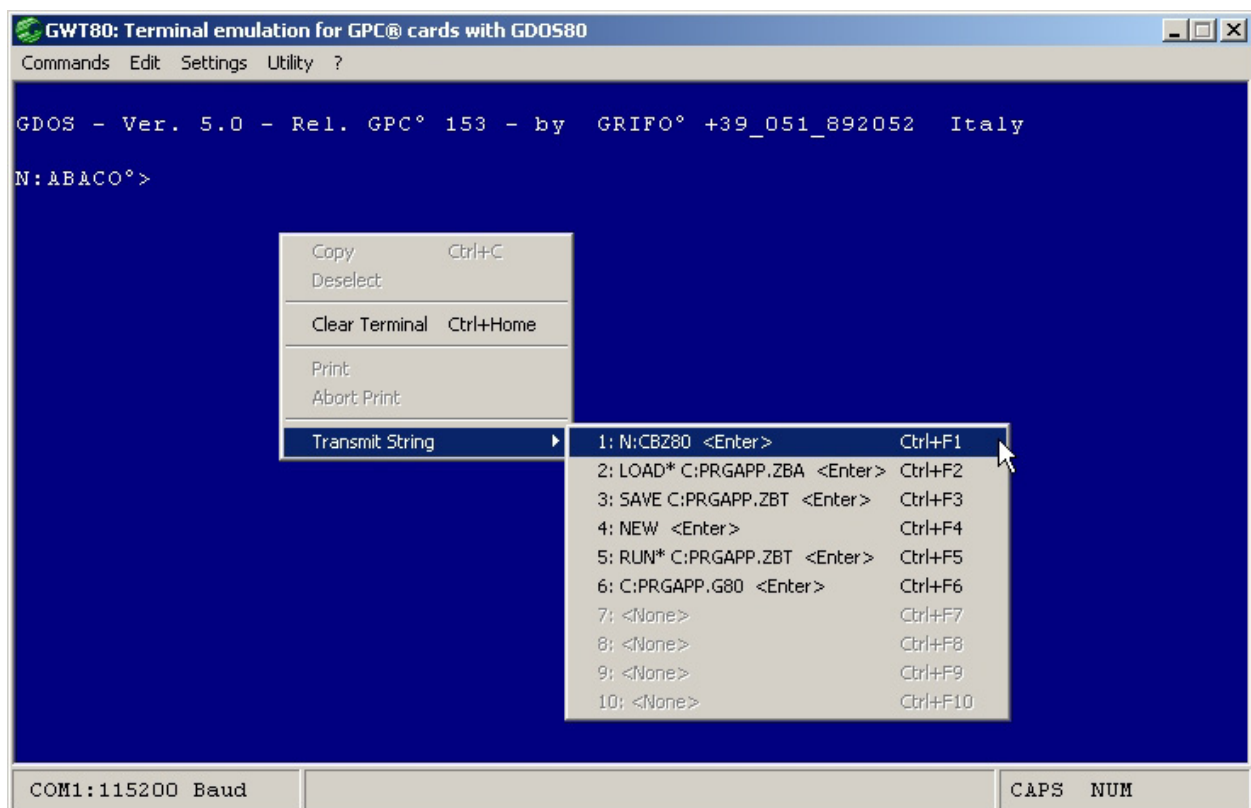


FIGURE 23: FAST COMMAND MENU

FAST COMMANDS

The most frequently used commands of **GWT80** have been grouped and inserted in a drop down menu that can be recalled with a simple click on the right button of mouse. This button is managed only when no other menus are still opened nor when other command windows are shown. Its main function is to allow a fast recall mode for some options, that are already available in traditional menus bar, in order to reduce the execution time especially for the repeated operations.

As described in figure 23, in this menu have been selected the most frequently used options, that are:

<u>C</u> opy		from <u>E</u> dit menu
<u>D</u> eselect		from <u>E</u> dit menu
<u>C</u> lear <u>T</u> erminal		from <u>C</u> ommand menu
<u>P</u> rint		from <u>C</u> ommand menu
<u>A</u> bort <u>P</u> rint		from <u>C</u> ommand menu
<u>T</u> ransmit <u>S</u> tring	>	from <u>U</u> tility menu

Each one of these options is described in previous paragraphs dedicated to relative menus.

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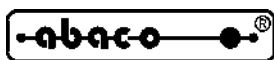
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ITALIAN TECHNOLOGY

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