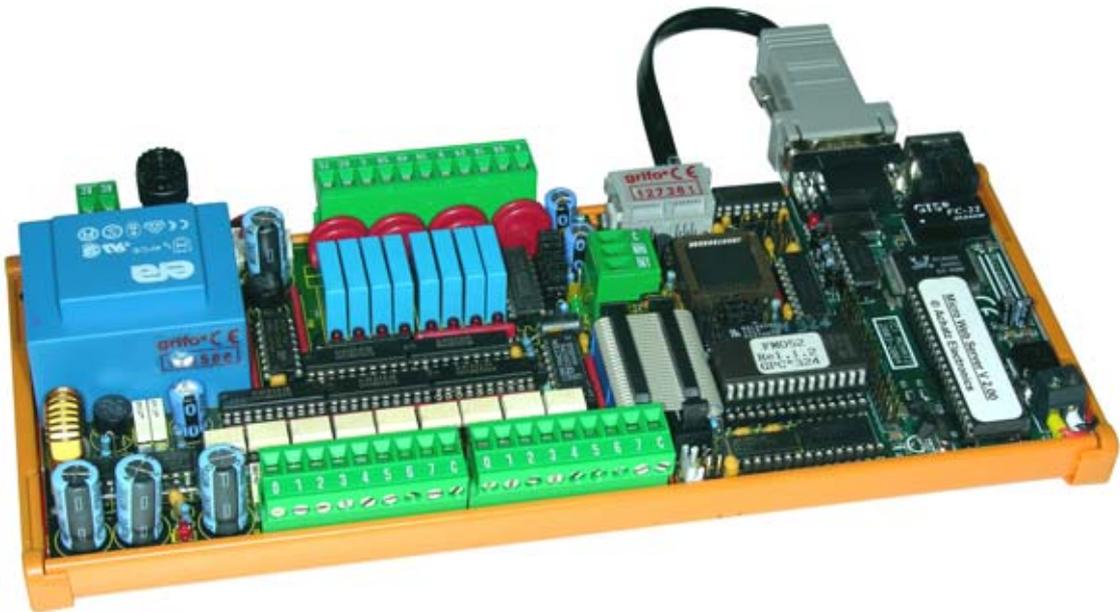


# Tele Web Controller

Telecontrol Module through the WEB

## USER MANUAL



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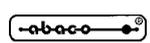
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Tele Web Controller

Rel. 5.00

Edition 27 October 2004

, GPC<sup>®</sup>, **grifo**<sup>®</sup>, are trade marks of **grifo**<sup>®</sup>



# Tele Web Controller

Telecontrol Module through the WEB

## USER MANUAL

Can be driven through **Internet** using a normal **Web Browser** (e. g. Internet Explorer, Netscape, ecc.) from anywhere in the world. Access to all the on-board resources through **Password** protected Web pages. Can manage up to **32** Optocoupled Inputs and **24** Outputs buffered by transistor or relay, visualized by **LEDs** on board. Each signal has its own identification **Label**, that the user can change via Web. Signals status is reported by graphics on the Web page. Optional Web page to manage a **Real Time Clock** backed with Lithium battery. Optional Web page to manage a **Data Logger** that can save data in Excel compatible format. Optional Web page to manage eventual **Black Outs** date and time memorization (available only matched with real time clock). Optional Web page to manage **Analog Inputs**. Connection to internet through on-board **Ethernet** interface. IP address can be changed dynamically, even when the server is working. Wide range of power supply. Development system provided with **IDE**. Powerful programming language **PCode** to optimize **CGI Scripts** and control directly all the hardware interfaces and all the protocols supported. Supported protocols: TCP/IP, BOOTP, SMTP, HTTP, PING, UDP. Wide range of example programs. PicoWeb development software can be used with Win95/98/Win2k and XP. Complete documentation in **PDF** format that explains every detail about installation, development and finalization of application program.

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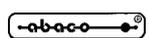
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### IMPORTANT

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

 , GPC® , **grifo®** : are trade marks of **grifo®**.

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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**.



Pins of Modules are not provided with any kind of ESD protection. They are connected directly to their respective pins of microcontroller. Modules are affected by electrostatic discharges. Personnel who handles Modules is invited to take all necessary precautions to avoid possible damages caused by electrostatic discharges.

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 etc. installation 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.

The devices can't be used outside a box. The user must always insert the cards in a container that respect the actual safety normative. The protection of this container is not threshold to the only atmospheric agents, but specially to mechanic, electric, magnetic, etc. ones.

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.



## FIRMWARE VERSION

The present handbook is reported to the firmware installed on **Tele-Web**.

The firmware name is Tele Web Controller, so this manual describes version 1.0 of Tele Web Controller.

In addition, this manual describes the basic version of the firmware, that is the version without the several options like Real Time Clock, data logger, analog inputs, etc.

The working of the several options is described in specific manuals delivered only when the option itself is purchased.

## GENERAL INFORMATION

**Tele-Web** by **grifo**<sup>®</sup> is a hardware structure that allows to drive through Internet an Input/Output peripheral module type **grifo**<sup>®</sup> ZBR or ZBT using a common Web Browser.

Just assigning **Tele-Web** an IP address makes possible to reach it from anywhere in the world through the network, regardless of the distance.

The module is made of three components enclosed in a plastic container that allows to mount on standard Omega rail DIN 46277-1 and 46277-3.

Tele-Web can be optionally provided with a Real Time Clock capable to manage date and time, and that can memorize timestamps of eventual black outs.

In addition, local SRAM can be used as a circular stack to make a data logger (optional), that can memorize events (e.g. status of inputs and outputs, etc.) with timestamp at a regulable frequency and even save the memory content to the PC in a Excel compatible format.

There is also an option to feature eight analog inputs, that can be read through the Web interface and can be managed by the data logger.

Peripheral modules are provided with relays outputs (ZBR) or NPN transistor outputs (ZBT) in a variable number according to the model, and optocoupled inputs, also these in a variable number according to the model.

Overall features of union **Tele-Web** are:

- Can be driven through **Internet** using a normal **Web Browser** (e. g. Internet Explorer, Netscape, ecc.) from anywhere in the world.
- Access to all the on-board resources through **Password** protected Web pages.
- Can manage up to **32** optocoupled **inputs** and **24 outputs** buffered by transistor or relay, visualized by **LEDs** on board.
- Each signal has its own identification **Label**, that the user can change via Web. Signals status is reported by graphics on the Web page.
- Optional Web page to manage a real time **clock** backed with Lithium battery.
- Optional Web page to manage a **Data Logger** that can save data in Excel compatible format. - Optional Web page to manage eventual **Black Outs** date and time memorization (available only matched with real time clock).
- Optional Web page to manage **Analog Inputs**. Connection to internet through on-board **Ethernet** interface.
- IP address can be changed dynamically, even when the server is working.
- Wide range of power supply. Development system provided with **IDE**.
- Powerful programming language **PCode** to optimize **CGI Scripts** and control directly all the hardware interfaces and all the protocols supported.
- Supported protocols: TCP/IP, BOOTP, SMTP, HTTP, PING, UDP. Wide range of example programs.
- PicoWeb development software can be used with Win95/98/Win2k and XP.
- Complete **documentation** in **PDF** format that explains every detail about installation, development and finalization of application program.

Here follows a description of the board's functional blocks, with an indication of the operations performed by each one. To easily locate such section on verify their connections please refer to figure 1.

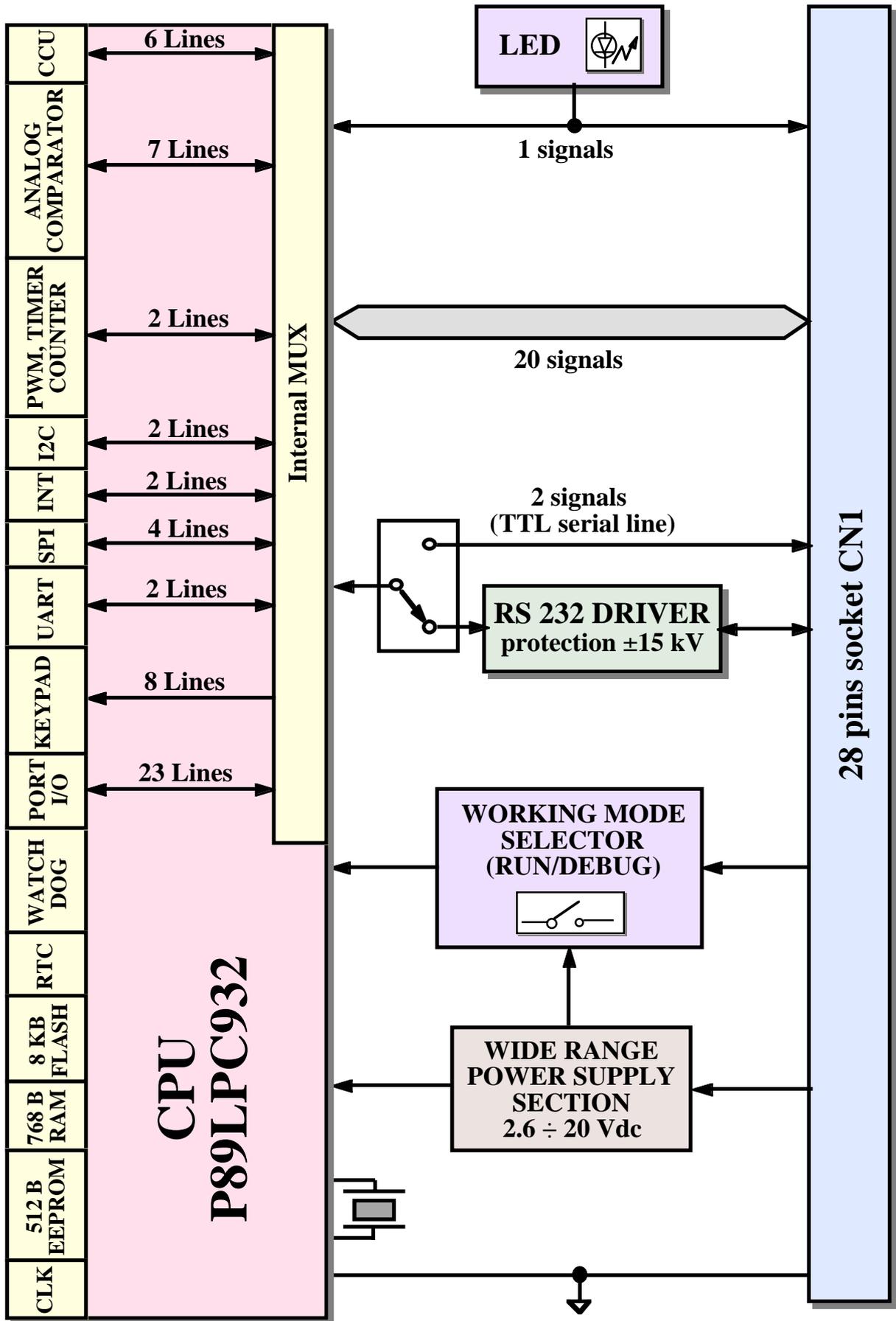


FIGURE 1: BLOCKS DIAGRAM

## **INTERNET INTERFACE**

Internet interface is module Micro Web Server, a real HTTP server based on the resources of a microcontroller and capable to connect to any local network or router through the Ethernet interface. This module features several on board resources, for a complete description please refer to the Micro Web Server.

In detail, RS 232 interface of Micro Web Server is used to communicate to **GPC**<sup>®</sup> control card and to reach the resources of other peripheral modules.

## **OUTPUT SECTION OF ZBR**

This section can feature 4, 8, 16 or 32 latched output signals, according to the model ordered. Each output signal is visualized through a LED and controls a 3 A relay, normally open, provided with MOV 24 Vac noise suppressor.

These signals can be completely driven by the icons on the commands Web page, which also show the outputs status using a different color.

Clicking on the icon of a signal complements its status.

## **OUTPUT SECTION OF ZBT**

This section can feature 4, 8, 16 or 32 latched output signals, according to the model ordered. Each output signal is galvanically isolated, visualized through a LED and controls a not continuous 4 A Open Collector 45 Vdc Darlington Transistor, provided with suppression diode.

These signals can be completely driven by the icons on the commands Web page, which also show the outputs status using a different color.

Clicking on the icon of a signal complements its status.

## **INPUT SECTION OF ZBT AND ZBR**

This section can feature 8, 16, 24 or 32 input signals, according to the model ordered.

Each input signal is galvanically isolated by type NPN optocouplers and visualized through a LED. Above mentioned optocouplers must be supplied through a tension +Vopto generated by on board supply section.

Different status of each input is indicated using different colors.

## **POWER SUPPLY SECTION**

**Tele-Web** features an efficient power supply circuitry that can accept a wide range of input tensions and generates the required +5 Vdc voltage to supply output and logic sections in every load condition and also generates the +Vopto voltage required by the Input optocouplers.

Please refer to ZBx manual for further information.

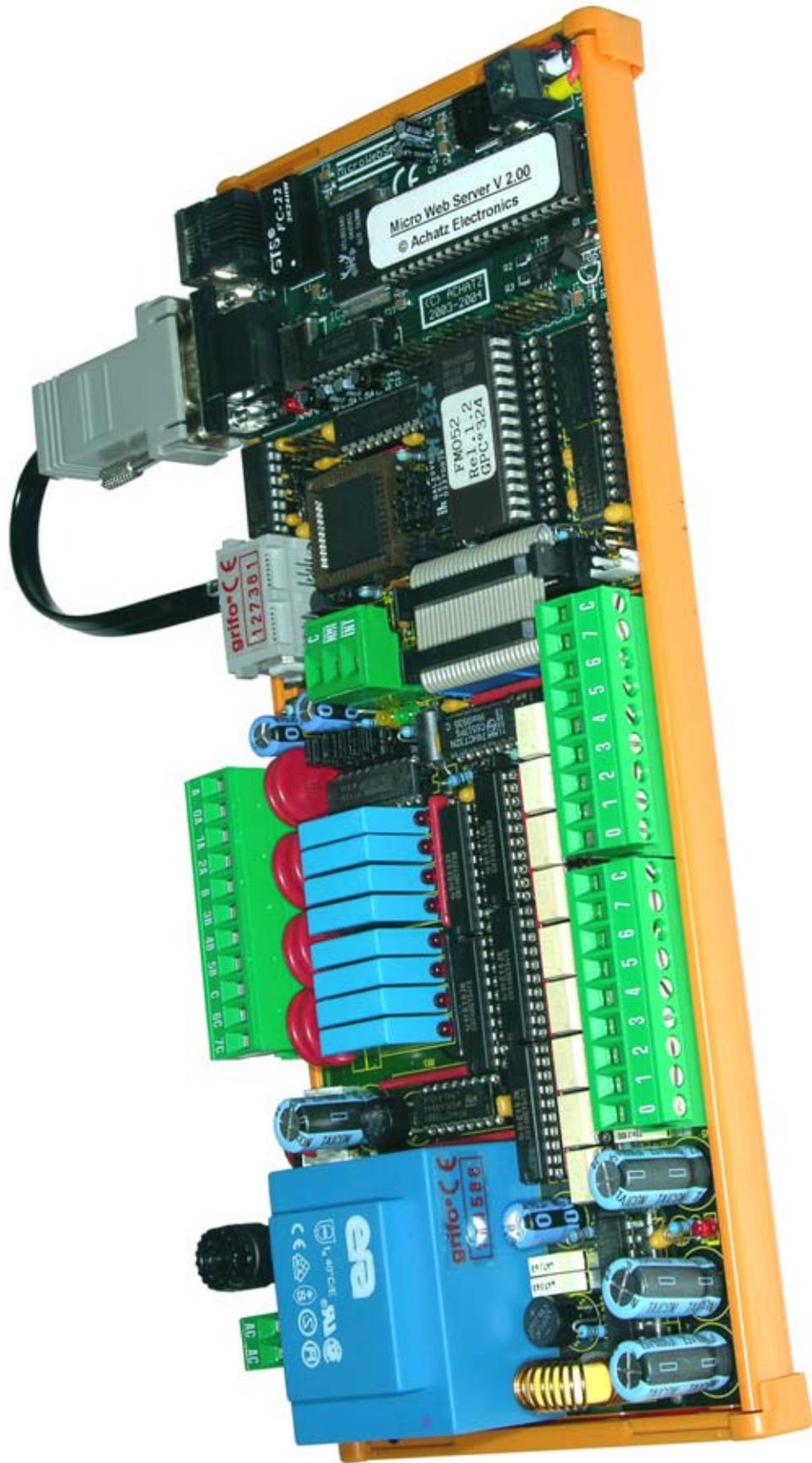


FIGURE 2: PHOTO OF TELE WEB

## TECHNICAL FEATURES

### GENERAL FEATURES

|                            |   |
|----------------------------|---|
| <b>On board resources:</b> | 1 Ethernet interface 10 Mbit/sec<br>from 4 to 24 digital transistor or relays outputs<br>from 8 to 32 optocoupled inputs<br>1 Real Time Clock (optional)<br>8 analog inputs for A/D converter (optional)                    |
| <b>Memories:</b>           | 2 KBytes FLASH EPROM for code (on TWC)<br>502 Bytes RAM for user data (on TWC)<br>502 Bytes EEPROM for user data (on TWC)<br>32 KBytes serial EEPROM for code and HTML (on TWC)<br>24 KBytes RAM for data logger (optional) |
| <b>CPU:</b>                | on <b>GPC</b> <sup>®</sup> , depends on the model ordered (*)<br>on TWC, Atmel 90S8515  |
| <b>Clock frequency:</b>    | on <b>GPC</b> <sup>®</sup> , depends on the model ordered<br>on TWC, 8 MHz  |

### PHYSICAL FEATURES

|                           |   |
|---------------------------|---|
| <b>Size:</b>              | 72 x 155 x 109 mm + length of ZBx (**)  |
| <b>Weight:</b>            | 260 g + weight of ZBx (**)  |
| <b>Connectors:</b>        | CON1: plug 8 ways 90 degrees for Ethernet 10BaseT<br>X3: D-type 9 ways 90 degrees for RS 232<br>CN3A: D-type 9 ways 90 degrees for RS 232<br>CN3B: D-type 9 ways 90 degrees for RS 232<br>several quick release screw terminal connector (**) |
| <b>Temperature range:</b> | from 0 to 50 centigrad degrees  |
| <b>Relative humidity:</b> | 20% up to 90% (without condense)  |

(\*) For further information, please refer to manual of **GPC**<sup>®</sup> ordered

(\*\*) For further information, please refer to manual of ZBx ordered

**ELECTRIC FEATURES**

|                                 |  |      |
|---------------------------------|--|------|
| <b>Power supply:</b>            | depends on ZBx ordered                                     | (**) |
| <b>Current consumption:</b>     | 5 mA + <b>GPC</b> ® consumption (*) + ZBX consumption (**) |      |
| <b>Analog inputs range:</b>     | optional feature, depends on <b>GPC</b> ® ordered          | (*)  |
| <b>Analog inputs impedance:</b> | optional feature, depends on <b>GPC</b> ® ordered          | (*)  |

(\*) For further information, please refer to manual of **GPC**® ordered

(\*\*) For further information, please refer to manual of ZBx ordered

## INSTALLATION

This chapter describes the hardware and software structure and all the steps to take for connecting it to the network, configure the PC and become operational.

### **MATERIAL REQUIRED**

**Tele-Web** is made of three modules, all included in delivery:

- Micro Web Server; this module is the interface to Ethernet network, in addition it runs the TCP/IP stack and the HTTP server, it also stores HTML pages and images
- **GPC**<sup>®</sup>; this is the bridge between Micro Web Server and peripheral module, it runs the proper telecontrol firmware (read the inputs, sets the outputs, etc.)
- ZBR/ZBT; this is the peripheral module featuring optocoupled inputs and relay or transistor NPN (or PNP) outputs in a variable number, according to the model

This additional material not included in delivery is also required:

- Power supply cable
- 10BaseT type 5 Ethernet cable (straight or crosslink, ask the network administrator)
- Serial line plug cable to connect the PC (**grifo**<sup>®</sup> listing code CCR.plug9F)

### **POWER SUPPLY**

To supply the structure, it is enough to connect CN2 of ZBx peripheral module to the power supply source.

According to the ZBx model and its configuration, power supply source can be quite different. Please refer to ZBx manuals for further information.

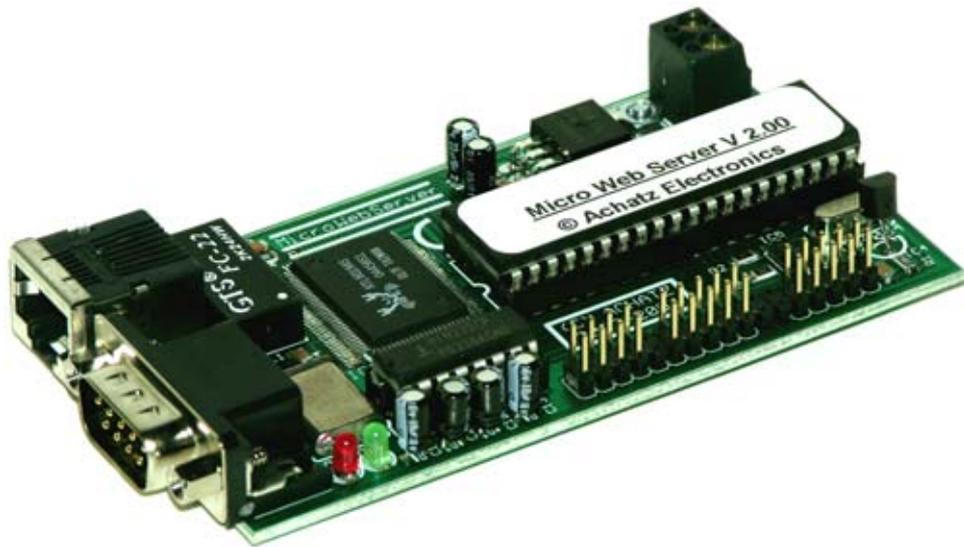


FIGURE 3: SNAPSHOT OF MICRO WEB SERVER

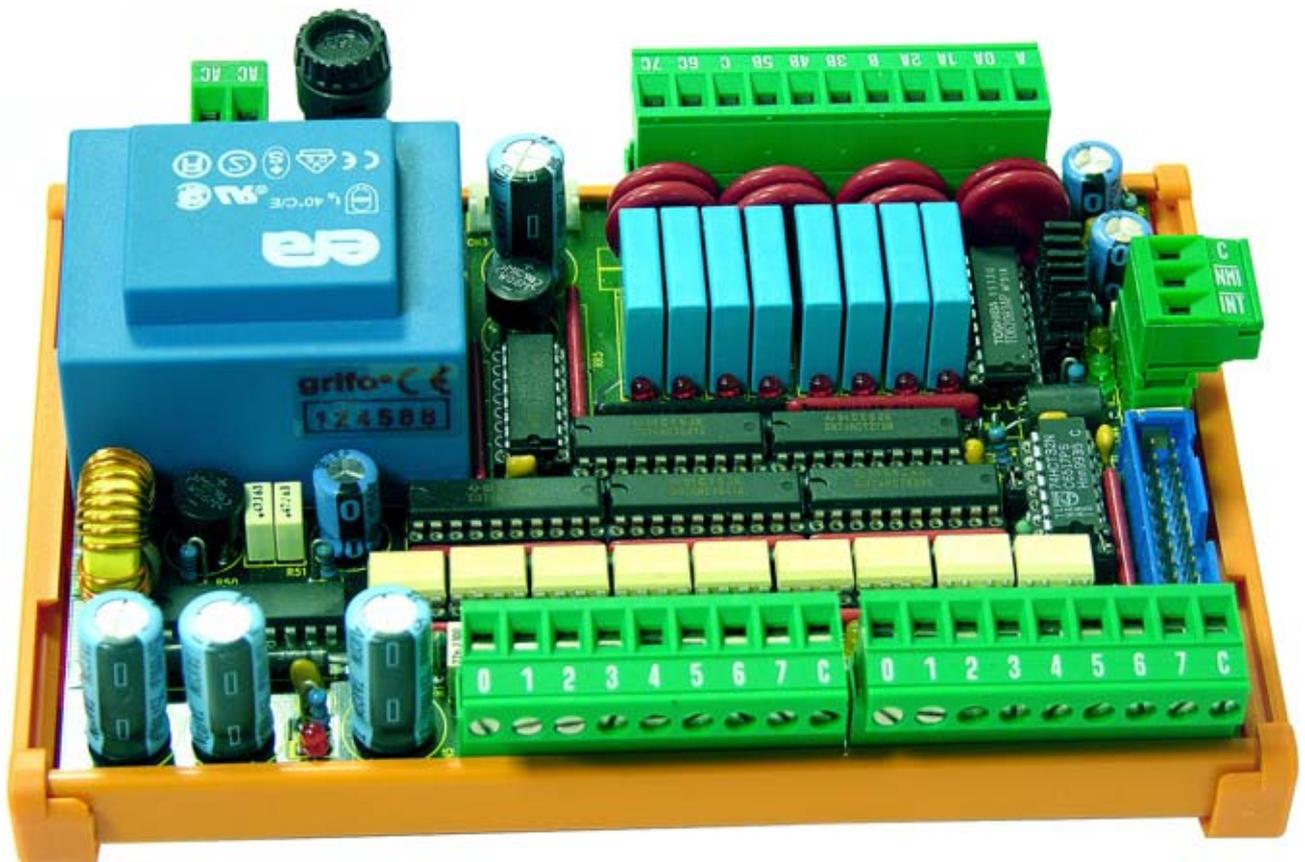


FIGURE 4: SNAPSHOT OF ZBR 168

## SOFTWARE INSTALLATION

**Tele-Web** includes the complete delivery of Micro Web Server, shown in figure 5.

This delivery includes the Micro Web Server development CD and the sources of Tele Web Controller firmware (TWC11.c, TWC11.mak, TWC11.pwp, IP plus all the files with \*.htm and \*.gif extension). To install the basic development system, it is enough to unzip the content of file pwdev.zip, that can be found in the Micro Web Server development CD, into a folder.

**NOTE:** The resulting pathname must not contain space characters.

Example: unzip into the folder C:\pwdev\ is OK.

unzip into the folder C:\Web Software\ is wrong.

In the rest of the manual, the selected folder for software installation is C:\pwdev\.

After unzipping, to complete the installation, the following commands must be typed in a DOS window or in the commands prompt:

```
C:>set PWDEV=C:\PWDEV  
C:>set PATH=%PATH%;%PWDEV%\bin
```

Whenever the DOS window or the commands prompt is closed, the previous commands must be typed again.

For greater comfort, the commands can be written in a batch file.

## LOW LEVEL CONFIGURATION

**Tele-Web** is delivered already configured and ready to work.

The low level configuration allows to specify:

- Which ZBR/ZBT peripheral module is used
- The password to access the system

The final user may want to change the low level configuration to modify the system password.

To change other elements of the low level configuration may lead to system malfunctions.

Please remark that any change to the configuration is immediately reversible, except the labels deletion.



FIGURE 5: MICRO WEB SERVER COMPLETE DELIVERY

**TO ENTER THE LOW LEVEL CONFIGURATION:**

1. Connect the serial line of **Tele-Web** (connector plug CN3A of **GPC®** module) to a terminal emulator or to a PC disconnecting the serial cable and connecting a plug serial cable (code of **grifo®** listing CCR.plug9F)
2. On the PC, start a terminal emulator and configure it for 19200 Baud, 8 bit of data, 1 stop bit, no parity
3. Switch off supply of **Tele-Web**
4. Enable low level configuration (see next table)
5. Supply **Tele-Web**
6. From the screen that appears on terminal emulator, select A
7. Type old password
8. Type new password
9. Exit from menu
10. Switch off supply of **Tele-Web**
11. Enable normal working mode (see next table)
12. Disconnect the plug cable to the PC, reconnect the cable already present before and supply the **Tele-Web**

| GPC®<br>CARD | Enable configuration mode | Enable normal working mode |
|--------------|---------------------------|----------------------------|
| GPC®<br>324D | J1 Open                   | J1 Connected               |

**FIGURE 6: LOW LEVEL CONFIGURATION**

**ZBX MAPPING ADDRESS**

To make the ZBx module reachable from the tele control firmware it is essential that its address on **ABACO®** I/O BUS is the correct one for the **GPC®** module used.

For further information about **ABACO®** I/O BUS and about mapping addresses please refer to the manuals of **GPC®** and ZBx modules used.

Table of correct addresses is:

| GPC®<br>CARD | Base Address<br>of ZBx | JAddr Jumpers group   |
|--------------|------------------------|-----------------------|
| GPC®<br>324D | 00H                    | All jumpers connected |

**FIGURE 7: ZBX MAPPING ADDRESS**



**FIGURE 8: SNAPSHOT OF A GPC® 324D**

## HIGH LEVEL CONFIGURATION

Before proceeding here, assure to have taken all the steps described in the paragraph “Software Installation”.

High level configuration allows to set the IP address of Web interface.

In order to do this, it is essential to connect CON1 of Micro Web Server to the Ethernet local network through an appropriate cable and obtain a free IP address.

If specialized personell is managing the network, ask the network administrator.

IP address is assigned executing the SETIP command in the DOS window or command prompt of a PC connected to the same network of **Tele-Web** and changing the content of the file called IP in the sources folder of Tele Web Controller.

For example, if the free IP obtained is 192.168.168.123, the command to type is:

```
SETIP 0:1:2:3:4:5 192.168.168.123
```

While in the file called IP just replace “192.168.168.123” to the address already present.

In the same DOS window or command prompt, to make the **Tele-Web** visible to the PC, type:

```
ROUTE ADD 192.168.168.123 <Address of PC>
```

Being, like in the previous example, the address of **Tele-Web** 192.168.168.123.

To obtain the address of PC, you may execute the utility winipcfg and find the address of Ethernet adapter or ask the network administrator.

This latter command must be retyped whenever the DOS window or a command prompt is closed.

After doing this, the command:

```
PING 192.168.168.123
```

should receive a response from the **Tele-Web**.

In this case, the system is ready for working.

## UTILIZATION

### LOGIN

Before any other operation, server authentication is required (login).

Assuming 192.168.168.123 as the IP assigned to the **Tele-Web**, run the preferred browser (e.g. Internet Explorer, Opera, Netscape, etc.) and type in the address box:

http://192.168.168.123.

By default, no password is set in the system as it is delivered.

**Tele-Web** responds with the page shown in figure 9, type the password (if present) in the specific text box or press immediately the button if no password is set.

**NOTE:** For further information about how to set the password, please refer to paragraph “LOW LEVEL CONFIGURATION”.

If the (optional) password is typed correctly, **Tele-Web** enables the commands page, from which it is possible to control all the features of the application described in the paragraph “GENERAL INFORMATION”.

If the password is not typed correctly, the **Tele-Web** enters in a idle mode for about one minute, during which any command is ignored.

This way, illegal access attempts are heavily obstructed.



FIGURE 9: LOGIN

## OUTPUT COMMANDS

Entering the commands page, it is possible to control the status of transistor or relays outputs and optocoupled inputs of ZBR/ZBT module.

Commands page is shown in figure 10, it is automatically updated every 5 seconds.

If the peripheral module installed is not ZBR/ZBT 168, you may see a different number of inputs and outputs respect to figure 10.

Each signal features a 31 characters long label printed near the icon that shows the signal status.

When delivered, **Tele-Web** has all the labels set to a null string, to set them please refer to paragraph “LABELS MANAGEMENT”.

When an output is enabled (relay contact closed or transistor conducting), this fact is indicated painting in red its label and showing the image stored in the file called “on.gif”.

By default, the image shows the writing “ON”.

When an output is disabled (relay contact open or transistor not conducting), it is indicated showing the image stored in the file called “off.gif”.

By default, the image shows the writing “OFF”.

To modify the images “on.gif” and “off.gif” please refer to paragraph “PERSONALIZATIONS”.

To complement the status of an output, it is enough to click on the corresponding icon.

So, clicking on the icon of an output enabled, this will be disabled, and viceversa.

## INPUT COMMANDS

Entering the commands page, it is possible to control the status of transistor or relays outputs and optocoupled inputs of ZBR/ZBT module.

Commands page is shown in figure 10, it is automatically updated every 5 seconds.

If the peripheral module installed is not ZBR/ZBT 168, you may see a different number of inputs and outputs respect to figure 10.

Each signal features a 31 characters long label printed near the icon that shows the signal status.

When delivered, **Tele-Web** has all the labels set to a null string, to set them please refer to paragraph “LABELS MANAGEMENT”.

When an optocoupled input is enabled (contact closed), this fact is indicated painting in green or yellow (whether the bit belongs to a high byte or not) its label and showing the image stored in the file called “on.gif”.

By default, the image shows the writing “ON”.

When an input is disabled (contact open), it is indicated showing the image stored in the file called “off.gif”.

By default, the image shows the writing “OFF”.

To modify the images “on.gif” and “off.gif” please refer to paragraph “PERSONALIZATIONS”.



FIGURE 10: COMMANDS PAGE OF ZBx 168



FIGURE 11: LABELS MANAGEMENT

## LABELS MANAGEMENT

Clicking the link “Change signals names” you may access the signals names management page. Modules ZBR/ZBT of grifo® feature up to 24 relays or transistor outputs and up to 32 optocoupled inputs.

The page shows all the 56 signals and their names even if the hardware used does not feature them because the firmware manages all the names in any case.

To change the name of a signal, just click on it with the mouse (as in figure 12), write the new name in the textbox and press the button.

The result will be immediately visible in this page and in the commands page.

## REAL TIME CLOCK MANAGEMENT (OPTIONAL)

An optional version of grifo® **Tele-Web** features a Real Time Clock backed by a Lithium battery and capable to manage day, month, year, hour, minutes and seconds.

Management of time is performed through a comfortable specific Web page available only for who orders this option and described in detail in a specific manual.

Shortly, the above mentioned Web page allows to read and set date and time and to save or load such settings to/from a file on the PC.

## DATA LOGGER MANAGEMENT (OPTIONAL)

An optional version of grifo® **Tele-Web** features a data logger that uses the GPC® module local memory backed by a Lithium battery.

This option can be ordered together with the previous one, to make possible to store a timestamp matched with other data.

Management of data logger and ring buffer memory content is performed through a comfortable specific Web page available only for who orders this option and described in detail in a specific manual.

Shortly, the above mentioned Web page allows to get and set the sampling frequency and the presence of a timestamp, to reset or to read the content of the memory and to save or load such settings to/from a file on the PC.

In detail, content of memory can be saved in a Excel compatible format, with cell names decidable by the user.

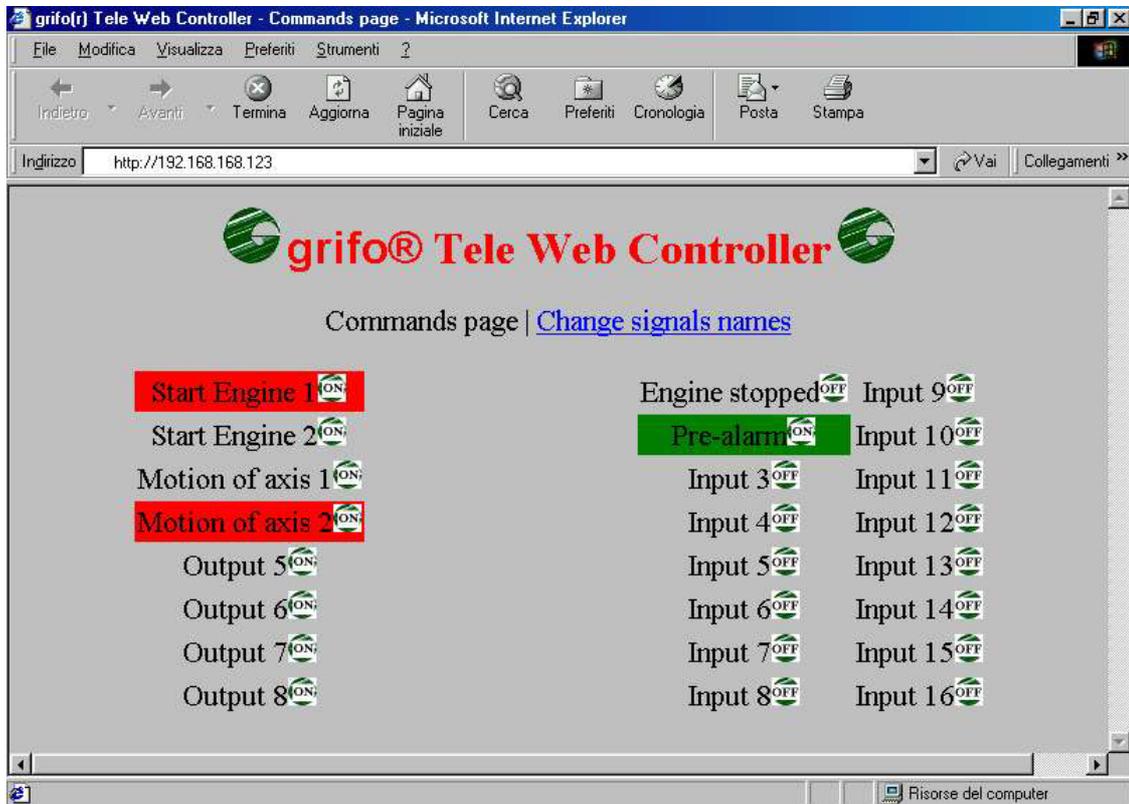


FIGURE 12: CHANGE SIGNALS NAMES

## ANALOG INPUTS MANAGEMENT (OPTIONAL)

An optional version of **grifo® Tele-Web** features eight analog inputs.

Management of analog inputs is performed through a comfortable specific Web page available only for who orders this option and described in detail in a specific manual.

Shortly, the above mentioned Web page allows to read the inputs, to enable or disable the saving of the inputs to the (optional) ring buffer memory and to save the contents of this memory in a Excel compatible format, with cell names decidable by the user.

## PERSONALIZATIONS

To personalize the **Tele-Web**, a good knowledge of C programming language, of Micro Web Server scripting language PCode and **grifo®** hardware is required.

If you want a custom firmware in short times, please contact **grifo®** directly through our Web sites <http://www.grifo.it> or <http://www.grifo.com>.

Before continuing, instructions described in paragraphs “SOFTWARE INSTALLATION” and “HIGH LEVEL CONFIGURATION” must be followed.

To make any kind of changes to the content of HTML pages or to the behaviour of firmware it is essential to recompile the software project.

Software project is made of two modules:

- **GPC®** software module: it is written in C using the compiler  $\mu\text{C}/51$ ; this part of firmware receives commands through the **GPC®** RS 232 serial line (connector CN3A) and manages outputs, inputs and all other features
- Micro Web Server software modul: it is written in PCode and compiled using the software development tools of Micro Web Server (please refer to chapter “SOFTWARE INSTALLATION”); it manages the Internet interface of the system, user commands and Web response pages

The compilation procedure is beyond the purposes of this manual, please refer to Micro Web Server specific documentation for further information.

The user can easily change some graphic elements of the project, following paragraphs give some information about this purpose.

Changing the behaviour of the firmware is more complex and requires a deep study of the project and of the development system, in specific of the following files:

- PDF document pwproj.pdf, in sub-folder /docs of Micro Web Server installation folder
- PDF document pw1\_pcode.pdf, in sub-folder /docs of Micro Web Server installation folder
- Source code of Micro Web Server software module: TWC11.pwp
- Source code of **GPC®** software module: TWC11.c

The first two files contain detailed instructions on how to make a Micro Web Server software project and to write PCode scripts.

Other two files contain several comments that explain how the modules work, allowing to understand and so to change their behaviour.

Further information about compiler  $\mu\text{C}/51$  can be found at: <http://www.wickenhaeuser.de>.

Further information about Micro Web Server firmware development system can be found at: <http://www.picoweb.net> and <http://www.achatz.nl>.

## PERSONALIZATION OF ICONS

**Tele-Web**, in the basic version without options, uses three icons:

1. To show the status ON of an input or an output, the corresponding image is *on.gif*
2. To show the status OFF of an input or an output, the corresponding image is *off.gif*
3. To show that an input or an output is not available, the corresponding image is *na.gif*

To personalize them, just replace these images with the ones you want **without changing their names**, and to recompile the project.

## PERSONALIZATION OF HTML PAGES

**Tele-Web**, in the basic version without options, uses three Web pages:

1. TWCMain.htm for login
2. TWCCommands.htm for commands management
3. TWCLabels.htm for labels management

All the elements of HTML language (tags) can be changed by an HTML experienced user, **without changing the files names**.

In specific, name enclose in back-quotes (for example: ``list_labels.cgi``) are required for the project correct working and must never be changed.

For further information, please refer to PDF documents pwproj.pdf and pw1\_pcode.pdf, in subfolder /docs of Micro Web Server installation folder.

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