

DFWEB: interface module between Domino bus and Ethernet network with Web-Server function

DFWEB module has been developed to be used in all applications of **Domino** system where it is required to control the domotic system through a LAN or Internet connection, without difficult configuration procedures; for this kind of applications, in association with the specific program for the development of graphical maps, DFWEB module is very user-friendly.

To use DFWEB module, *BDGraph upgraded to the latest available version* is required; this can be freely downloaded from the web site www.duemmegi.it. DFWEB interfaces directly to the **Domino** bus, therefore it is not required any additional controller; this allows to realize a very inexpensive domotic system at the state of the art.

DFWEB module can operate in two different modes: in the first one it acts as a "bridge" between a local Ethernet network and **Domino** system, while in the second operating mode it can be used as complete WEB-Server, with web pages that can be created by the user.

DFWEB module allows to manage the majority of the **Domino** bus variables, like:

- status of the digital inputs
- status and command of real outputs
- value of the analog inputs (e.g. temperature)
- setting of analog outputs (e.g. dimmer)
- status and command of virtual points
- system clock

DFWEB module features a 2-way terminal block for the connection to power-supply in the range 9 to 24V=; the module can be however supplied, inside certain limits, by the bus itself. Another 2-way terminal block allows the connection to the **Domino** bus. On the opposite side, the module features an Ethernet connector for the connection to the LAN.

Three LEDs on the front panel show the operating status of the module: the green LED is on when the module is supplied, while the yellow and the red LEDs report more complex information (for more details see the "LEDs meaning" paragraph).

A little hole on the front panel allows accessing to the Reset button; for more details see the related paragraph. DFWEB module is housed in a 4M DIN standard module.

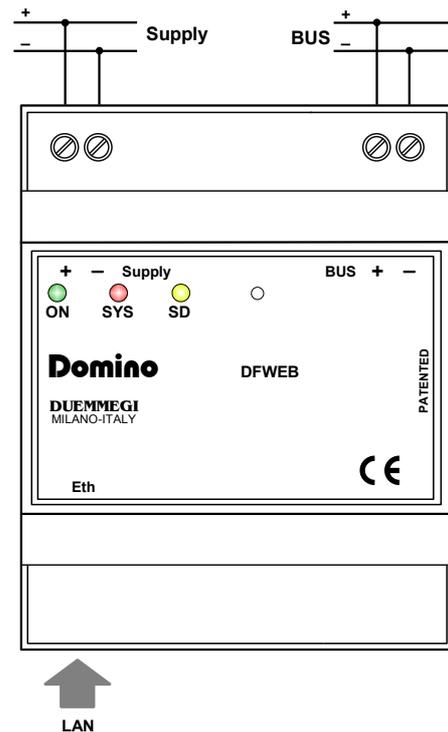
As said above, the development of the maps to be loaded into DFWEB module is supported by the specific tool named BDGraph; for details about the development of maps, see the related manual "Graphical Maps".

WARNING: the present technical sheet is applicable to **DFWEB module with firmware upgraded to the latest available release.**



Module Connection

The connections for the proper operation of DFWEB module are shown in the next schematic diagram.



As shown in this schematic diagram, DFWEB module must be connected to a dc power supply in the range 9 to 24V. After that it is necessary to connect the module to the Ethernet network and to **Domino** bus.

If the total amount of installed **Domino** modules and DFP-W2 power supplies allow this, it is possible to supply DFWEB module directly by the bus.

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The possibility to use this last method essentially depends on:

- the number of DFPW2) installed in the system
- the number of modules installed in the system
- how many DFWEB modules have to be installed
- the bus extension

As known, a single DFPW2 module, in a **Domino** system, can supply up to 50 “generic” modules about (in other words the classics input and output modules of the **Domino** family).

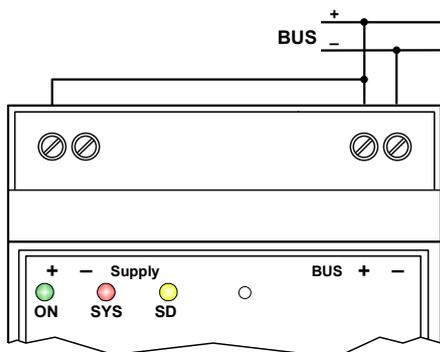
DFWEB module has a “weight”, from the point of view of the current consumption, equal to 15 “generic” modules. For instance, in a plant with 32 **Domino** generic modules and a single DFPW2 power supply, it will be possible to install as maximum:

$$(50 \text{ modules} - 32 \text{ modules}) / 15 = 1.2 = 1 \text{ DFWEB}$$

If 2 DFWEB have to be installed, in this same example, another DFPW2 module must be installed.

Take in account that this rule to determine how many DFWEB can be supplied by the bus does not consider the length of the bus itself, the section of the cable used for the bus and the location of DFPW2 modules. Remember that DFPW2 module features a LED reporting the overload condition; for details refer to the technical sheet of DFPW2 module.

To supply the DFWEB module by the bus, execute the connections shown in the following schematic diagram.



WARNING: for the connection to an Ethernet HUB, a straight cable category 5 must be used, whereas for the direct connection to a PC a cross cable is needed (both these cables are not provided).

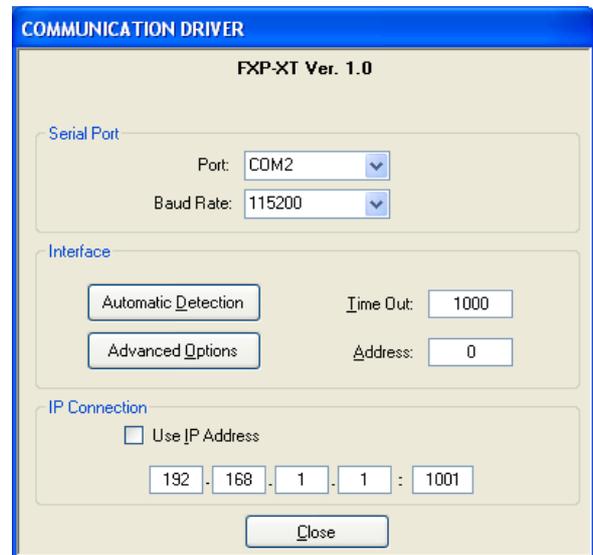
Operation

DFWEB module has been developed to be directly connected to the **Domino** bus; a very simple configuration of the module is required to make fully operating the module.

As said above, DFWEB module can be used in two ways, as bridge (interface between **Domino** bus and Ethernet) or Web-Server.

DFWEB: bridge mode

By means of the bridge operating mode, it is possible to make all operations allowed by the programming and diagnostics Tools (BDGraph, DCP IDE), within the limit of actions on the bus modules; it is therefore possible to read and program the equations of the modules, read the input modules, set the clock modules, and so on. These tools can be therefore used through the local network (LAN) or through Internet (in this case a VPN has to be enabled, or anyway the router must be set in a proper way) after having entered the IP address assigned to DFWEB in the opening communication window used for the connection; in this way it will be possible to interact with **Domino** system from any location in the world (see “Configuration and setting up”).



The bridge modality is MONO-CLIENT, therefore DFWEB allows the access to only one user at a time (although at the same time with Web-Server users).

DFWEB: Web-Server mode

By means of this modality it is possible to upload into DFWEB a series of customized WEB pages that have been created through the proper Tool BDGraph *release 8.0.4 or higher*. Through this modality, DFWEB module allows the interfacing to a common Web-browser (Firefox, Internet Explorer, Safari, Opera, etc.); to navigate across the WEB pages, a password will be required (even if this is optional). The pages loaded by the browser and stored inside the DFWEB memory, can be created and customized as desired. About the development of these pages, see the “Graphical Maps” manual.

Web-Server modality is MULTI-CLIENT; it is possible the simultaneous access to a maximum of 4 users (plus one user in bridge mode).

It is also possible to use 5 different login/passwords, each one with its own credentials; it is possible to set username and password for an Admin user and 4 different usernames and passwords for the other users. It is possible to differentiate, in this way, the maps for each user and therefore the controls that each user can perform.

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LEDs meaning

Three LEDs (green, red and yellow) on the front panel of DFWEB show the operating status of DFWEB module. The green LED shows the power on condition; the red LED features the function of System LED (SYS) and it offers a visual signaling and flashing with different duration depending on the module operating status; the next table lists these modes:

Red LED	On [sec]	Off [sec]
Domino bus connected	0.1	1.9
Domino bus not connected	1.9	0.1
Internal failure	0.9	0.1
Wrong MAC address	Fixed ON	-----
SD-Card not present	0.5	0.5
Reset in progress	0.1	0.1

If a polling is running through the bridge mode, the flashing of red LED is fast and irregular. In the case of firmware upgrading of the main microcontroller, the red LED will flash with "dimming" effect. During the firmware upgrading of the secondary microcontroller, the red LED will flash according to the "bus connected" condition, and then it will flash according to the "internal failure" condition.

The yellow LED (SD) shows the access to the SD-card memory and it flashes in irregular mode when a client is connected in Web-Server mode.

Reset button

A little hole on the front panel allows the access to the Reset button; this button must be used only in the case of effective needing and it has the following functions:

Reset of the module: while the module is powered, push and hold down the button; when the Red LED starts to flash quickly (after 2 seconds about) release the button.

Restoring of default parameters: while the module is powered, push and hold down the button; after 2 seconds about the Red LED starts to flash quickly. The flashing continues for 3 seconds about, after that the flashing slows down; after further 10 seconds, the Red LED return to flash quickly. At this time release the button and the default parameters (IP address, password, etc.) will be restored.

Configuration and setting up

After having properly connected the DFWEB module, several simple configuration procedures must be executed in order to make the module well operating.

To access to the configuration panel of the DFWEB module it is possible to use any browser (FireFox, Internet Explorer, Google Chrome, etc.).

WARNING: to modify the settings and the configuration of DFWEB module, it is necessary to access as administrator.

Step 1: users and password configuration

In the address bar of the browser enter the following:

http://192.168.1.253/webpass.htm

(192.168.1.253 is the default IP address). A window asking for user name and password will be shown; the default ones for the administrator access are:

username: *admin*

password: *admin*

It is a good practice, first of all, to change the administrator and users login/password before to use the module.

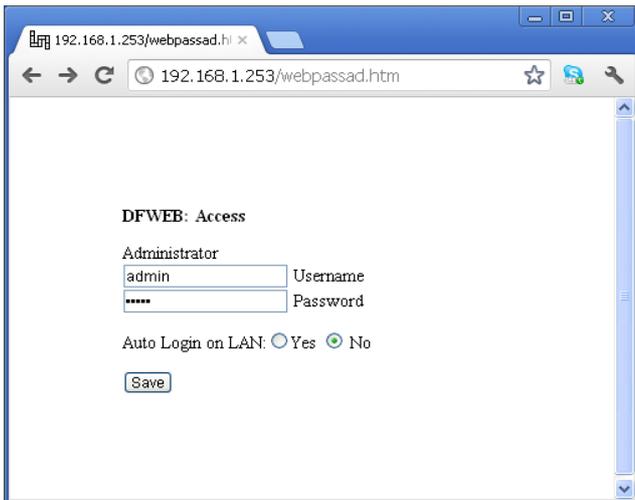
User names and passwords, as the other parameters, can be modified in any moments according to the requirements.

The configuration page for passwords configuration is the following:



It is possible to enable or disable the Auto login of each user in the event of a LAN connection: in practice for which the user has enabled the Auto Login, when connected to the LAN, will no longer provide the login credentials. However, using a remote connection, the login credentials are always required. To enable or disable the Auto Login is necessary, following the selection of user from the previous window, select Yes to enable Auto Login, or No to disable Auto Login. If each user have selected Yes for this option, the DFWEB module proceed with the following hierarchy: user 1, user 2, user 3, user 4, Administrator. Taking the example of the admin user, the configuration window of the Auto Login option will be as follows:

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For each saving the following page will be shown:

DFWEB updated successfully!
[IP Configuration](#)
[Passwords](#)
[Reset DFWEB](#)

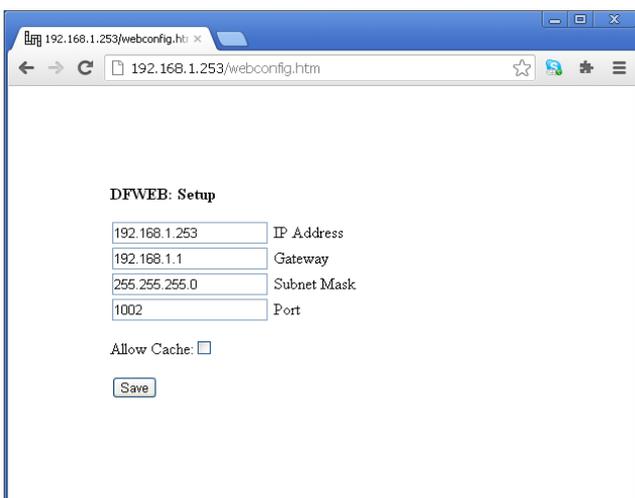
To proceed with users configuration, select Passwords, otherwise select Reset DFWEB to make operating the new settings. Otherwise select IP Configuration to proceed with the network parameters configuration described in the following.

Step 2: IP configuration and web parameters

After the configuration of the passwords it is possible to access to the configuration page. In the address bar of the browser enter the following:

<http://192.168.1.253/webconfig.htm>

The configuration page looks like the following:



It is possible, in this configuration page, setting the wanted parameters for IP address, Gateway, Subnet Mask, and Port. The previous picture shows the default values.

Change these parameters as required and then press the Save button; in this way the following page will appear :

DFWEB updated successfully!
[IP Configuration](#)
[Passwords](#)
[Reset DFWEB](#)

Select Reset DFWEB to make operating the new settings; the next message will appear:

DFWEB: Resetting ... (Redirecting to home page in 5 seconds)

A new login request will appear after 5 seconds.

Step 3: uploading of html pages

For the uploading of html pages (the user Web site), as mentioned in the Graphical Maps manual, it is necessary to enter in the address bar of the browser the following (assuming to have assigned the IP address 192.168.1.253 to DFWEB module):

<http://192.168.1.253/webupload.htm>

The upload page looks like the following:



To upload the user's Web pages, push the button "Browse" and select the .BIN file previously created on your computer (see Graphical Maps manual); at this time push the "Upload" button.

If an error occurs during the upload, the following message will be shown:



Information Pages

Entering the following address (supposing that DFWEB IP address is 192.168.1.253):

http://192.168.1.253/webinfo.htm

it is possible to show any parameters of DFWEB module, as shown in the following picture.

WARNING: the access to information page of DFWEB module is granted only to Administrator.

This page shows all assigned settings, and the firmware version of DFWEB (respectively for primary and secondary microcontroller, both 1.0 in the example of the following picture); from this page it is not possible to modify any parameters.

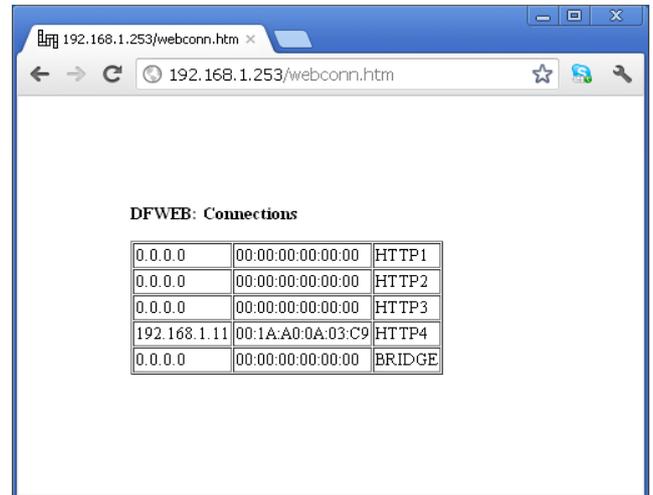


Clicking on IP Configuration it is possible to go back to the configuration page of DFWEB module (.../webconfig.htm).

Connected Users Info

It is possible to monitor the connected users both in Web-Server and in Bridge modality: in the address bar of the browser enter the following:

http://192.168.1.253/webconn.htm



As shown in the previous screen-shot, the first 4 lines report the IP address of the connected users in Web-Server modality, and the fifth-line reports the connected user in Bridge modality.

WARNING: the access to the connected users page is granted only to the Administrator.

Diagnostics

In the address bar of the browser enter the following:

http://192.168.1.253/webdiag.htm

in this way it is possible to show the SD-CARD status, the bus status and the list of fault modules (if any). The related screen-shot is the following:



WARNING: the access to diagnostic page is granted only to the Administrator.

Logout

To close the connection with DFWEB module, however optional operation, it is necessary to execute the logout from the module entering in the browser bar the following address:

<http://192.168.1.253/weblogout.htm>

A message confirming the logout will be then shown.

Remote Reset

If unexpected events occur, causing the blocking of DFWEB module, it is possible to use a special command to execute the RESET of the module from a remote location (through the network); this RESET is similar to the hardware reset of module. In the browser bar enter the following address:

<http://192.168.1.253/webreset.htm>

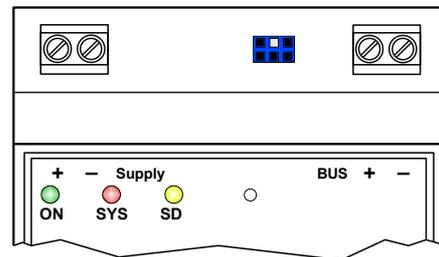
WARNING: the reset of DFWEB module is granted only to the Administrator. Each time that a change has been made to the configuration parameters, it is necessary, to be operative, to RESET the module.

Firmware Updating

DFWEB module features 2 microcontrollers; the procedure for the update is different for the two cases and will be described in the following. Of course only the microcontroller out of date must be updated (it is not required to always update both microcontrollers).

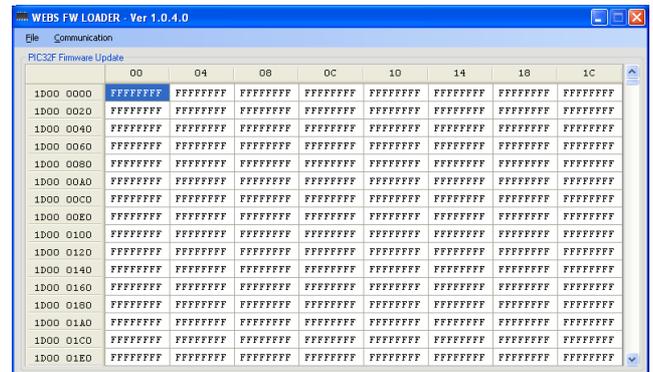
Update of the main microcontroller

Use the program (provided together to BDGraph) **BootWEBS upgraded to the latest available version.** This last one must be connected via RS232 using the special cable CVXT to DFWEB module by means of the **6-way blue connector** (see the following figure); this connector is locate under the terminal cover on the top side, that must be removed with the help of a little screwdriver.



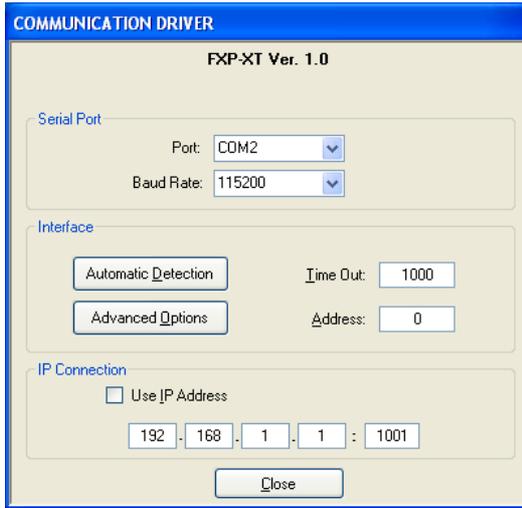
DFWEB module must be supplied (through the terminal block on the left side), while the connection to the **Domino** bus is not required.

Launch the BootWEBS program; the following window will be shown:



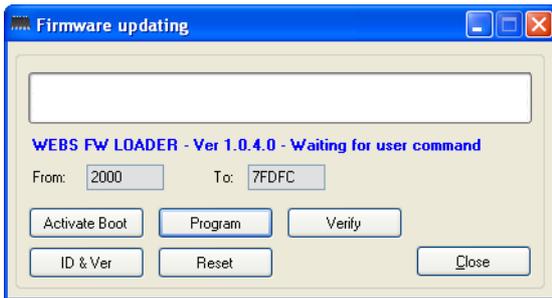
From the menu of the program select **“Communication”**; the following window will be shown. To enable the communication press the button **“Automatic Detection”**; after the detection of the communication, press the button **“Close”**.

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From the main menu of the program select **"File"** and then **"Open"**; in this way the firmware file **DfwebXX.HEX** to be loaded can be selected.

Select **"Communication"**, then **"Program"**; in this way the following window will be shown.



The button **"ID & Ver"** allows to show the current version of the firmware loaded into DFWEB module and the related IP address.

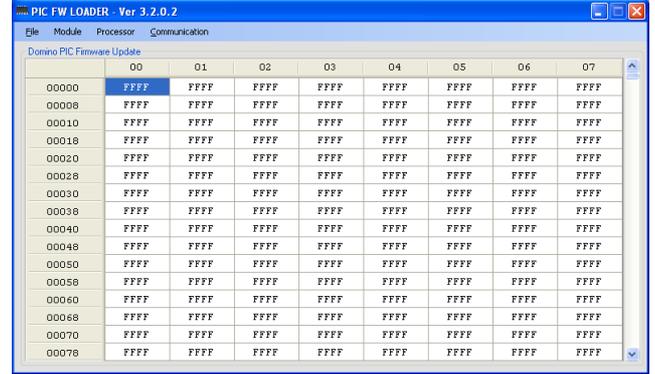
Click on the button **"Activate Boot"**; the red LED on DFWEB will start to blink with "dimming" effect, to advice that the module is ready to receive the new firmware.

Press the button **"Program"** and wait for the end of the procedure. At the end of the update, to start the normal operation of the module, click on the button **"Reset"**, then select **"Close"** to quit the program.

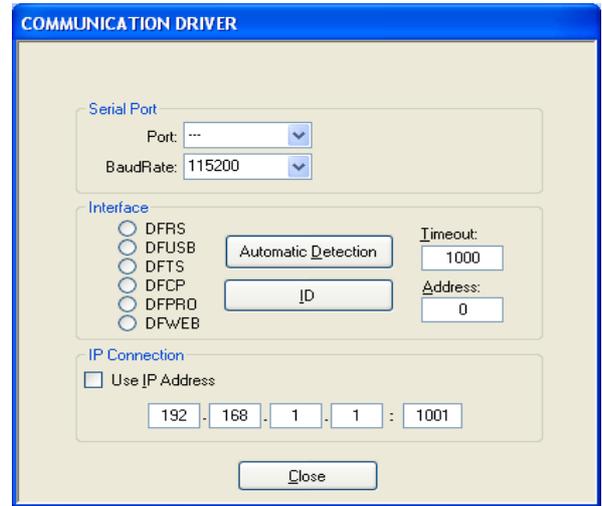
Update of the secondary microcontroller

Use the program **BDBoot** upgraded to the latest available version. This last one must be connected through the RS232 serial port to a **Domino** interface module (e.g. DFRS or DFPRO).

Launch the program BDBoot; the following window will appear:

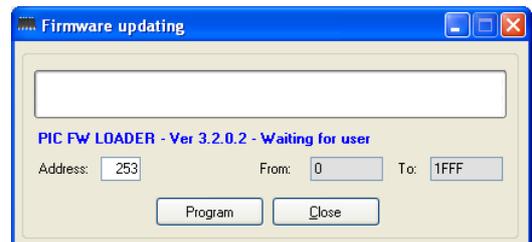


From the menu select **"Communication"**; the following window will be shown. To enable the communication press the button **"Automatic Detection"**; after that press the button **"Close"**.



From the menu **"Module"** select **"DFWEB"**, then from the main menu of the program select **"File"** and then **"Open"**; in this way the firmware file **PhwebXX.HEX** to be loaded can be selected.

Select **"Communication"**, then **"Program"**; in this way the following window will be shown.



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Before to proceed with the update of the secondary micro-controller, the identification number of DFWEB module has to be entered in the **Address** field of the previous figure: the value to be entered is represented by the last 3 digit of the related IP address; for instance, **if the IP address of DFWEB module is 192.168.1.253, the value to be entered will be 253.**

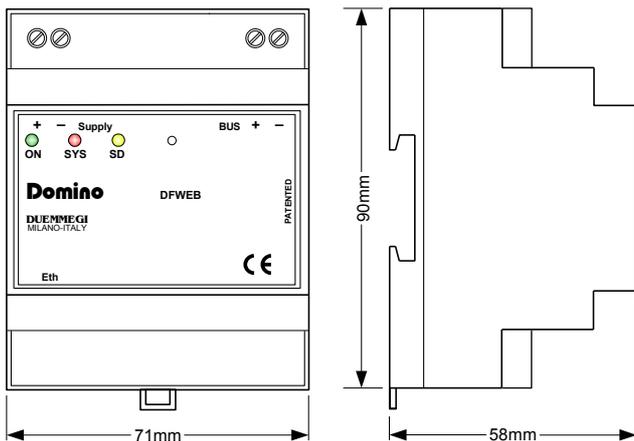
NOTE: DFWEB module does not take any address on the Domino bus; the last 3 digits of the IP address only represent a "identification number" in order to make possible the execution of the FW update via bus and for some other special functions. This means that if a DFWEB with identification number 253, for instance, has been connected to the bus, this does not forbid to install Domino modules with address 253.

Click on the button "Program"; the red LED, at the beginning, will blink according to the "bus connected" condition, and then it will flash according to the "internal failure" condition. At the end of the update procedure, the module will restart the normal blinking on the red LED.

Technical characteristics

Power Supply	9 ÷ 24V SELV or by Domino bus
MAX current consumption	175mA @ 9V 75mA @ 24V
Ethernet interface	10/100BaseT Ethernet
Housing	DIN standard 4M per guida DIN
Operating temperature	-5 ÷ +50 °C
Storage temperature	-20 ÷ +70 °C
Protection degree	IP20

Outline dimensions



Correct disposal of this product



(Waste Electrical & Electronic Equipment)
(Applicable in the European Union and other European countries with separate collection systems). This marking on the product, accessories or literature indicates that the product should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources. Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Installation and use restrictions

Standards and regulations

The design and the setting up of electrical systems must be performed according to the relevant standards, guidelines, specifications and regulations of the relevant country. The installation, configuration and programming of the devices must be carried out by trained personnel.

The installation and the wiring of the bus line and the related devices must be performed according to the recommendations of the manufacturers (reported on the specific data sheet of the product) and according to the applicable standards.

All the relevant safety regulations, e.g. accident prevention regulations, law on technical work equipment, must also be observed.

Safety instructions

Protect the unit against moisture, dirt and any kind of damage during transport, storage and operation. Do not operate the unit outside the specified technical data.

Never open the housing. If not otherwise specified, install in closed housing (e.g. distribution cabinet). Earth the unit at the terminals provided, if existing, for this purpose. Do not obstruct cooling of the units. Keep out of the reach of children.

Setting up

The physical address assignment and the setting of parameters (if any) must be performed by the specific softwares provided together the device or by the specific programmer. For the first installation of the device proceed according to the following guidelines:

- Check that any voltage supplying the plant has been removed
- Assign the address to module (if any)
- Install and wire the device according to the schematic diagrams on the specific data sheet of the product
- Only then switch on the 230Vac supplying the bus power supply and the other related circuits

Applied standards

This device complies with the essential requirements of the following directives:

- 2004/108/CE (EMC)
- 2006/95/CE (Low Voltage)
- 2002/95/CE (RoHS)

Note

Technical characteristics and this data sheet are subject to change without notice.