

NG-Gateway

Gateway to acquire, store and send data

USER'S MANUAL FOR NG-GATEWAY EQUIPMENT
(PREVIOUS CODE: ETIG-1)

NG-Gateway (previous code: ETIG-1)

Requests for any specific information on the product and/or on relating options not contained in the synthetic manual, may be sent to our web site: www.energyteam.it, section "CONTACTS", sending an @mail to the "TECHNICAL AREA" indicating the specific request.

Energy Team reserves the right to make the modifications it deems necessary without having to give any prior notice.

CONTENTS

Introduction ----- 4

Conformity ----- 5

Gateway to acquire, store and send data to Server ----- 6

Options ----- 6

Specifications ----- 7

Advantages ----- 7

Dimensions ----- 8

Technical data ----- 8

Inputs/Outputs and relative cable sections ----- 9

Programming by Keyboard ----- 10

Communication ----- 10

Setting ----- 13

PIN entry ----- 13

System setting ----- 13

Port setting ----- 15

General safety regulations ----- 19

Warranty ----- 19

Disposal ----- 19

INTRODUCTION

Ideal equipment to acquire and store data from various measuring instruments as: electrical energy, gas, water, steam, heat, etc and send the acquired measurement to one or more server set for energetic measurement publication.

Small size, easy to install and configure, quick in Wi-Fi/ ETHERNET/GPRS connectivity. In addition, the high number of manageable channels and the high memory of the Gateway make it an unique product in the international scene.

Next to the new generation analyzers manufactured by Energy-Team, it becomes the essential solution for all the operators active in the energy efficiency world, with Companies involved in certification and energy consulting (ESCO, diagnosis, audit, ISO 50001).

CONFORMITY

Applied Standards

- EN 55011(Class A)
- EN 61000-4-2
- EN 61000-4-3
- EN 61000-4-4
- EN 60204-1
- EN 61000-4-5
- EN 61000-4-6
- EN 61000-4-11

GATEWAY TO ACQUIRE, STORE AND SEND DATA TO SERVER



OPTIONS

GSM/GPRS	GSM/GPRS communication module, provided with SIM and with remotable aerial
WI-FI	Wi-Fi communication module, with remotable aerial

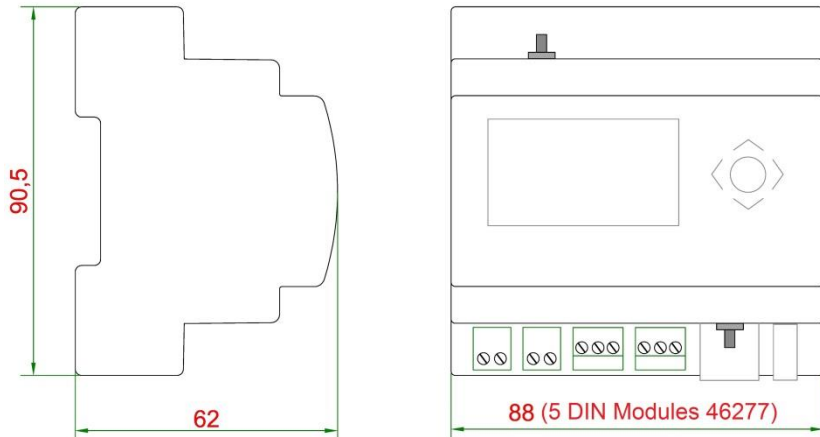
SPECIFICATIONS

- System able to control tens of sensors and up to 1600 measurements, through 2 insulated lines RS-485
- Memory: 8 GB, it can store up to 1600 channels for more 5 years of data.
- Connectivity: ETHERNET, Wi-Fi (optional) and GPRS (optional) (Power Over Ethernet not supported).
- Integrated Web Server for system configuration
- Data consultation through integrated Web server (optional)
- In addition to remote configuration, the display and the cursor allow the user to set and consult the parameters locally, without the aid of PC
- Automatic export of measurements and transmission to FTP/FTPS server
- Acquisition of instantaneous data from other system tools (Scada, Plc, Bms) via TCP Modbus protocol
- Simultaneous communication through Wi-Fi, Ethernet and GPRS
- Management and recording of any physical size (electricity, gas, water, temperature, etc.), using appropriate sensors
- Protocol conversion from TCP-Modbus to RTU-Modbus, with advantage to allow independent use of 2 RS-485 serials
- Double LAN/RS-485 converter. In this modality is possible the independent use of 2 RS-485 serials, through TCP connection
- Housing for DIN rail 46277 (5 Modules)

Advantages:

This module costs like any other average multi-function device, but it has higher initial features: its small size allows an easy installation within an electrical panel; color display with different font sizes for faster consultation.

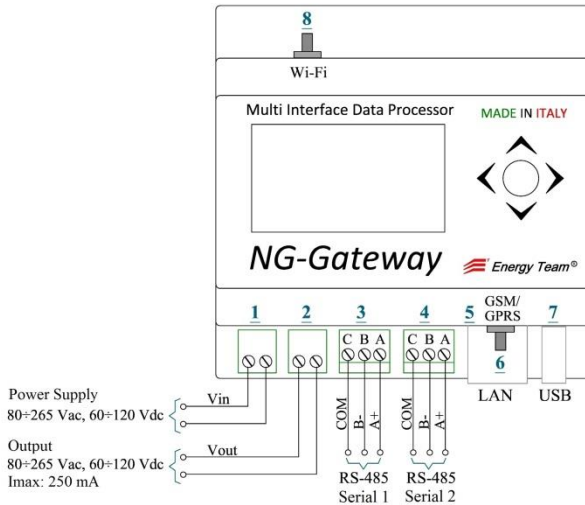
DIMENSIONS



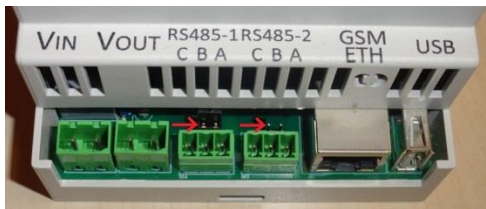
TECHNICAL DATA

General	References
Protection degree	IP20
Weight	200 g
Maximum dimensions LxHxW	88x90,5x62 mm
Working temperature	-10 °C ÷ +55 °C
Display	Backlit graphic LCD, RGB
Relative humidity	95% without condensation
Power supply	
Power supply (Vin)	80 ÷ 265 Vac; +60 ÷ +120 Vdc
Auxiliary power-supply output (Vout) (to supply other modules)	80 ÷ 265 Vac; +60 ÷ +120 Vdc Maximum Current: 250 mA
Frequency	50 ÷ 60 Hz
Consumption	10 W
Interfaces	
Nr. 2 RS-485 (galvanically insulated)	Modbus and ETPRO Protocol, LAN / RS-485 Converter
Nr. 1 LAN	10/100 Mb/s
Nr. 1 USB	Tipo: 2.0 Host
GSM/GPRS Outlet (Optional)	Quadriband: 850/900/1800/1900 MHz, with remotable aerial
Wi-Fi Outlet (Optional)	with remotable aerial

INPUTS / OUTPUTS AND RELATIVE CABLE SECTIONS



1	Power Supply Maximum cable section: $\varnothing 2 \text{ mm}^2$ (16 AWG)
2	Auxiliary power-supply output (to supply other modules) Maximum cable section: $\varnothing 2 \text{ mm}^2$ (16 AWG)
3 4	RS-485 Interfaces (independent and insulated between them). Maximum cable section: $\varnothing 0.75 \text{ mm}^2$ (18 AWG) - <i>Belden 9841</i>
5	LAN Interface
6	GSM/GPRS Interface (outlet for remotable aerial)
7	USB Interface
8	Wi-Fi Interface (outlet for remotable aerial)



In the picture:
Jumper for insertion of
"termination resistor", useful
to create the fictitious load.

CONCISE MANUAL TO PROGRAM NG-GATEWAY THROUGH KEYBOARD



Jog positions:



After turning on the instrument, wait a time interval of 120 seconds to get started. The main screen displayed shows the information as: Name Client, configuration number and serial number



Through Jog button, click DOWN to scroll two remaining screens: SYSTEM, where it's possible to see the actual date and hour with Software version; and LICENCE which shows the conversion mode set (ex: ETH-RS485) with indications about the license.

Click again DOWN to return to main screen. These 3 sub-screens, shown as default, refer to item "System Information" in the main menu.

To access main menu, click LEFT by means of Jog.

COMMUNICATION

From main menu, click repeatedly DOWN or UP until the "Communication" screen is displayed.

Always by means of Jog button, click RIGHT to access a sub-menu which shows all the communication parameters set. Click repeatedly DOWN or UP to scroll all the screen of the sub-menu. Let's describe these screens:

LAN

When displayed, click RIGHT to check the LAN parameters set: IP address of the instrument, Gateway address, Subnet mask:

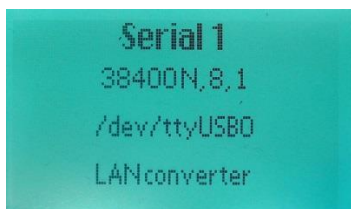


Click UP or DOWN to display alternately the screen above shown and another screen which displays the MAC address of the Network board. At last, click LEFT to return to communication sub-menu.

SERIALS

To check the parameters of the serial ports enabled. Click RIGHT to display the screen concerning to Serial port RS-485 (1), where the name and a track of path LINUX are shown.

Click again RIGHT to display the complete screen with: data speed in bit/s (ex: 38400); length (in bit) of the data packet (ex: 8) and parity bit (ex: 1); with the enabled function of LAN/RS-485 conversion.



Click UP or DOWN to display the next screen:



Let's describe the parameters displayed:

Tcp Port: Address of the communication port in the computer, to which the instrument is connected.

IP: Ip address of the instrument.

RX e TX: These parameters show respectively the number of data packets received and transmitted by the port, updated every 5 seconds.

At last, click LEFT to return to main screen concerning the Port 1.

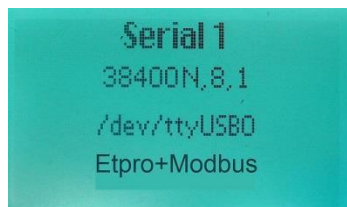
Click DOWN to display the next screen concerning the Port 2. By using the same procedure described for Port 1, check the parameters set.

At last, click LEFT to return to screen "SERIALS" in the Communication menu.

BUS

In correspondence to this screen, click RIGHT to access into menu which shows all the BUS protocols set, with their parameters. These can be scrolled by clicking UP or DOWN.

For each screen showing the interested protocol, click RIGHT to display the parameters set. For example: if the Etpro+Modbus protocol was set on the serial port RS-485 (1), this screen will be shown:



Let's describe the parameters:

Data speed in bit/s (ex: 38400)

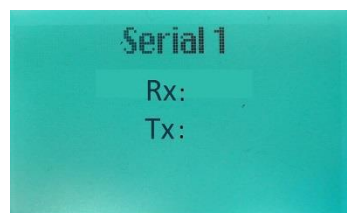
Length in bit of the packet (ex: 8)

Stop bit (ex: 1)

Address path: (ex: /dev/ttyUSB0)

Protocol set: (ex: Etpro+Modbus)

Click UP or DOWN to display the next screen:



RX e TX: These parameters show respectively the number of data packets received and transmitted by the port, updated every 5 seconds.

Click LEFT to return to menu concerning the Protocols set and repeat the procedure for the others. At last, click again LEFT to return to item "BUS" in the communication menu.

GSM

When this screen is displayed, click RIGHT to check if the GSM transmission mode is enabled. These parameters are shown:



Mode:

Disabled if this mode isn't set.
Enabled if it's set and working.

Signal: Index about signal strength 0÷70.

Click LEFT to return to main screen "GSM".

WIFI

If the Wi-Fi communication mode is enabled, click RIGHT to display the screen which shows the set parameters of the instrument's LAN board:



IP: IP address of the instrument

GW: Gateway address

NET: Subnet mask

After, click DOWN to display the screen which shows the information about the signal:



Quality: Index about the signal quality.

Signal: Index about signal strength 0÷70.

Click again DOWN to display the screen showing the system status and the Wi-Fi mode used:



MAC: MAC address of the instrument's Network board

Status: It alerts about the system status: "Up" if the Wi-Fi mode is enabled and working, "Down" if it's switched off or if there's no communication.

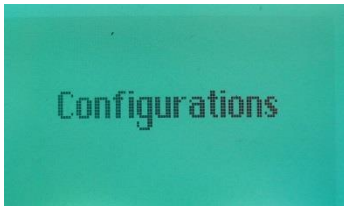
SSID: The type of protocol and therefore the protection used.

Click LEFT to return to main screen "WIFI".

Click again LEFT to exit from the Communication menu and return to main menu.

CONFIGURATION

From main menu, click UP or DOWN to scroll the various screens until to display the following:



By clicking RIGHT, is requested the PIN code to access the configuration menu:

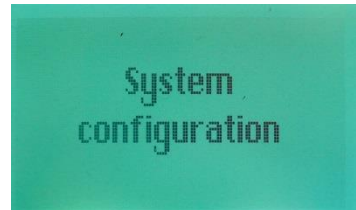


PIN entry

Press the Jog button. The cursor is lighted on the 1ST digit. Then, click UP to enter a progressive number from 0 to 9, or DOWN to proceed in the opposite direction, from 9 to 0. When entered, click RIGHT to move to 2ND digit and repeat the described procedure. The same procedure for 3RD and 4TH digit (Default PIN is 0000).



At last, press Jog. If PIN code is correct, the message "Access allowed" will be displayed, followed by the screen:

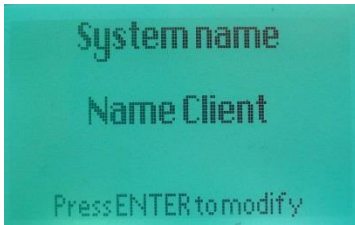


Click RIGHT to access the menu concerning the system configuration, then click UP or DOWN to scroll the various screens for each of which we describe the meaning and the setting mode:

SYSTEM NAME

To assign a name to the system. If the name isn't assigned, the message "Name Client" is displayed. To change it:

Press JOG button, a cursor lights on the 1ST letter:



Click repeatedly UP or DOWN to enter the desired letter. When entered, click RIGHT to move to 2ND digit and repeat the procedure. In the same way repeat the procedure also for the remaining digits. At last, press Jog (equivalent to Enter) to save the name.

Then click UP to access to the next screen.

LANGUAGE

To select the system language. Press Jog to enable the function, then UP or DOWN to select the desired language. At last, press again Jog to confirm.

Then click UP to access to the next screen.

TIME ZONE

To set the time zone of the Country where the instrument is located.

Press Jog to enable the function, then UP or DOWN to select the Country (or the continent) with the town corresponding to the interested time zone (ex: Europe/Rome). Press again Jog to confirm.

Then click UP to access to the next screen.

PIN

To change the PIN code.

Press the Jog button. The cursor is lighted on the 1ST digit. Then, click UP to enter a progressive number from 0 to 9, or DOWN to proceed in the opposite direction, from 9 to 0. When entered, click RIGHT to move to 2ND digit and repeat the described procedure. The same procedure for 3RD and 4TH digit.



At last, press Jog to save the new PIN.

Then click UP to access to the next screen.

LCD CONTRAST

To set the LCD display contrast. Press Jog to enable the function, then click UP or DOWN respectively to increase and decrease the contrast. At last, press again Jog to confirm.

Then click UP to access to the next screen.

ACTIONS:

To select eventual actions set (ex: switching off, restarting or other). Press Jog to enable the function, then click UP or DOWN to select the desired function as: "Nothing" to exit without any modification, or "Restart the system" to switch off and restart automatically the instrument.

At last, click LEFT to return to main screen "System configuration", in the Configuration menu.

PORT CONFIGURATION

In the Configuration menu, click UP or DOWN to scroll the screens corresponding to communication serial ports, here described:

Serial 1

To configure the RS-485 (1) serial port. Click RIGHT to access the first configuration screen:



Press Jog (equivalent to Enter) to enable the change. Through the UP and DOWN cursors, scroll the various functions until to display the interested one in the followings:

Disabled: To disable the port.

Modbus Tcp Gateway:

To enable the communication through Modbus-Tcp protocol.

Datalogger:

To enable the reading and data storage function of the instrument.

LAN Converter:

To enable the communication between RS-485 and LAN, then the conversion of protocols between these two modes.

At last, press Jog to confirm the selected function.

Then, from the screen above shown (Serial 1), click RIGHT to access to a second menu for serial port configuring; this menu

shows the parameters of the data packet. First, this screen (about the speed) is displayed:



Click UP or DOWN to scroll the various screens in the menu, until to display the interested one. Now, let's describe these screens:

SPEED

Press Jog (Enter) to enable the change. Then click UP or DOWN to select the speed in bit/s among:

1200; 2400; 4800; 7200; 14400; 19200; 38400; 57600; 115200.

At last, press Jog to confirm.

PARITY

Press Jog to enable the change. Then, click UP or DOWN to select the Parity to assign to data packet, among:

Even; Odd; None and others eventually set.

At last, press Jog to confirm.

DATA BIT

Press Jog to enable the change. Then click UP or DOWN to select the length in bit of the data packet.

At last, press Jog to confirm.

BIT STOP

Press Jog (Enter) to enable the change. Then, click UP or DOWN to select the stop bit, between 1 or 2.

At last, press Jog to confirm.

SAVING

Press Jog (Enter) to enable the change. Then, click UP or DOWN to select the interested function among the followings:

Save: to save the setting.

Back to the changes: to return into menu and complete eventual changes.

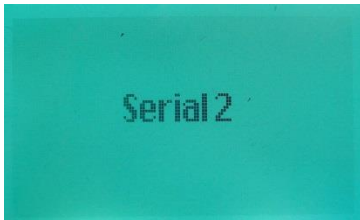
Delete changes: to exit without saving the changes.

At last, press Jog to confirm.

Then, click twice LEFT to return to first screen "Serial 1", (the screen shown in the previous page, at the beginning of the paragraph).

Serial 2

Click DOWN to reach the screen of the second port:

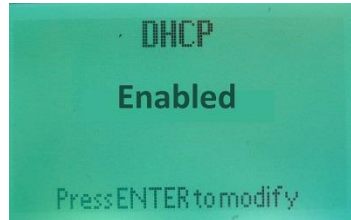


All the configuration procedure is the same described in "Serial 1".

WI-FI

From configuration port menu, click UP or DOWN to scroll the various screens, until to display the WIFI screen.

Then, click RIGHT to display the next screen concerning the DHCP protocol, which allows the automatic assignment of the IP address to the module:



Press Jog (Enter) to enable the change. Then, click UP or DOWN to select:

Disabled: to disable the automatic assignment of the IP address and enter it manually.

Enabled: automatic assignment of the IP address.

Click RIGHT to access to a second configuration menu. In this menu, click UP or DOWN to scroll the various screens described below:

IP:

To enter manually the IP address. Press Jog (Enter) to enable the change.

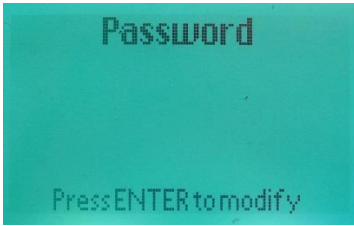
The procedure for entering the digits is the same described at [Page 13](#) (the paragraph concerning PIN entry). Make reference to this paragraph for the mode.

At last, press again Jog to confirm

PASSWORD:

To enter the password allowing the access to Wi-Fi communication.

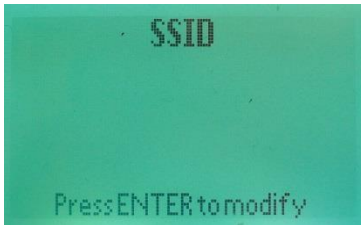
Press Jog (Enter) to enable the change.



The procedure to enter the letters is the same described at [Page 14](#) for entering the System Name. Make reference to this paragraph for the mode.

At last, press again Jog to confirm

SSID

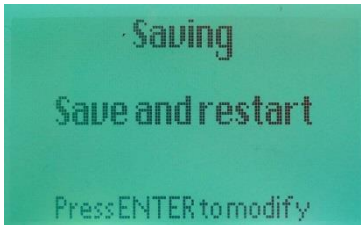


To assign the name to Wi-Fi network. Press Jog to enable the change.

The procedure to enter the letters is the same described at [Page 14](#) for entering the System Name. Make reference to this paragraph for the mode.

At last, press again Jog to confirm.

SAVING



Press Jog to enable the change. Then click UP or DOWN to select the interested function among the followings:

Save: to save the setting.

Save and restart: to save the setting and restart automatically the instrument.

Delete changes: to exit without saving the changes.

At last, press again Jog to confirm

GATEWAY

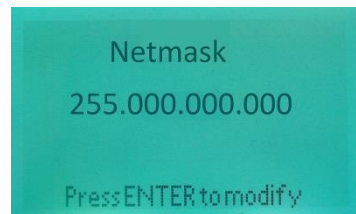


To enter the Gateway address .

The procedure to enter the digits is the same described at [Page 13](#) for entering the PIN code. Make reference to this paragraph for the mode.

At last, press again Jog to confirm.

NETMASK



To enter the subnet mask.

The procedure to enter the digits is the same described at [Page 13](#) for entering the PIN code. Make reference to this paragraph for the mode.

At last, press again Jog to confirm.

Click twice LEFT to return to first menu for configuring ports, which screen is labeled: "WIFI".

LAN

Click UP or DOWN to reach the screen about LAN configuration:



All the LAN configuration procedure, included screen, addresses and ways, is the same described in the paragraph WI-FI (from Page 16). Therefore, make reference to the above described.

GSM



In the last screen about GSM option, there aren't configurations to be set. If the internal board is installed, the activation state and the signal strength are displayed.

GENERAL SAFETY REGULATIONS

- The NG-Gateway device must be used by specialized and qualified personnel only.
- Disconnect device from mains and all terminals before opening the container.
- Caution: device powered at 265 Vac and 120 Vdc.
- Do not use in presence of water.
- Strictly comply with the indications and diagrams in this manual when connecting the device.

WARRANTY

Energy Team guarantees that the supplied products are free from defects and suitable for use. If any malfunction occurs and these are due to manufacturing defects, E.T. will respond within the terms and modalities foreseen by General Conditions of Supply, with particular reference to articles 5B (terms and duration), 1C (limits), 5D (other warranties). Whatever operation or manumission made by third parties not expressly authorized determines in each case the immediate termination of the warranty.

DISPOSAL



WASTE OF ELECTRICAL AND ELECTRONIC EQUIPMENT (WEEE)

Don't dispose among generic waste but collect separately for recycling and disposal operations according by law.

Energy Team S.p.A.

Via della Repubblica, 9, 20090 Trezzano sul Naviglio (MI)

P +39 02 40405033 - F. +39 02 48405035 - E info@energyteam.it - PEC

pec@pec.energyteam.it - W www.energyteam.it

Ref. 083_ma Doc. PT/08-51 Rev. 1 Del: 18/07/2017 Released by: Luigi Gramegna

Approved by: Maurizio Bianchi