

User's Manual

for X-RWU devices



Warnings and Precautions

-Install the module only as described in this manual, don't violate the rules showed. Before using it, verify limits of applicability.

- Before supplying it, check that the connections correspond to those described on the manual. In addition, before beginning any maintenance, disconnect the electrical connections of the device.

- Don't modify the feature and the module, as: making holes on the case, replacing its accessories with other coming from unknown manufacturers not described on the manual's list, because this operation may compromise the protection degree, causing also a malfunction and a damage of the instrument. In addition, don't modify the layout of the internal components.

- For any calibration and maintenance of the internal circuit, contact Energy Team. In case of malfunction or fault, send the device and include a precise description about the fault.

- Don't expose the module to temperature ranges outside those reported on the data-sheet. Don't install it in sites with strong vibrations, corrosive gases, excessive dirt or high humidity. Use it only in the operating limits.

- Always supply it using the voltage reported on the data-sheet and also check the power supply status. Pay attention to accidental overvoltage on the input or output terminals because it can damage the galvanic insulation.

ATTENTION !

During the installation operation, DON'T place the input (or output) signal cables near devices such as: Transformers, Engines, Inverters, Switchboards, capacitor banks, UPS groups and other devices which can generate electromagnetic noise. In addition, DON'T twist them and DON'T place them near cables carrying high currents and voltages.

NOTE:

This manual is part of the product and therefore must be carefully preserved.

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INTRODUCTION

By means of this Datalogger Multifunction device, it's possible to monitor, store and manage the state of a plant, including alarms, analogic sizes, process and environmental temperatures, measurements through other generic meters.

Thanks to the wide allocation of options offered by the system, it's possible to: take the information acquired by the network of X-RWU devices (until to a maximum number of 500) by using GSM/GPRS modem or the connection to Ethernet Network, by enabling the equipment after inserting the LAN board, or exploit the RS485 communication Bus supplied in the X-RWU, or by using all the available communication vectors.

In addition, it's possible to read a temperature value and receive via e-mail or SMS (maximum 8 different addresses) an alarm notice if the threshold programmed is exceeded or if a plant condition is changed.

This instrument can check thousands of devices in the plant, both in the industrial and in the tertiary sector, in order to ensure the normal working.

It acquires on 8 digital channels states and alarms. The user can configure accurately all the parameters, set delay times, program digital logics to switch ON or OFF the 4 output channels.

In addition, it's also possible to acquire sizes from other meters such as: Electrical energy, Gas, Water, Steam, then store the values until a maximum of 250 days in the file stored (historical archive).

All these functions make the product the most versatile in the category. By coupling it with a reliable and practical Software for data supervision and WEB publication, make this tool the most reliable, modular and integrated solution on the market.

X-RWU MULTIFUNCTION MEASURING INSTRUMENT

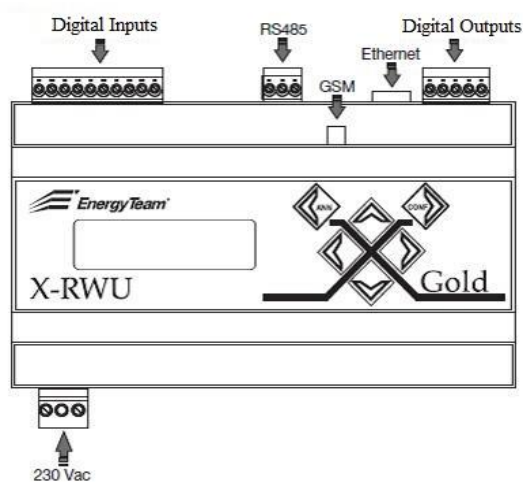
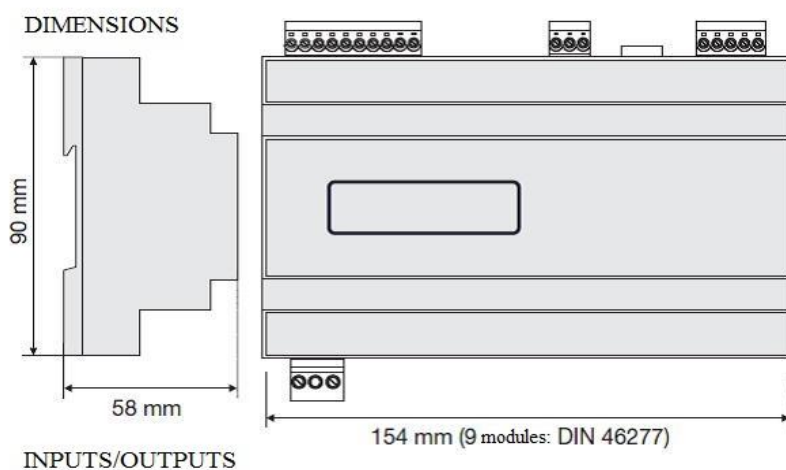


OPTIONS			
XM2	Mod.A Bridge 232/485 Mod.B Bridge USB/485	XM10	Mod. Room Temperature interface
XM4	Mod. Gsm/Gprs Modem	XM11	Mod. Temperature and humidity interface
XM5	Mod. Ethernet	XM15	Mod. Relé Load interface
XM7	Mod. Yearly programming timer	XM18	Load control
XM8	Mod.1 Galvanic-insulated analog channel	XM-UPS	Micro UPS
XM9	Mod. Interface PT100-500	ES3	Supervision Software

- Graphic display with settable character size.
- 6-key keyboard with buzzer.
- Clock and Calendar.
- Container DIN 46277 (9 Modules).
- Removable terminals to make assembly easier.
- RS-185 Communication Port.
- 1 Mb Internal Flash-Memory.
- 4 Digital outputs "Optomos" (100mA – 24Vdc).
- 8 Digital Inputs, 12 Vdc self-powered.
- Configurability of each channel.
- Expansion and modularity (memory, digital inputs, GSM/GPRS modem, Ethernet, e-mail, quality of supply).

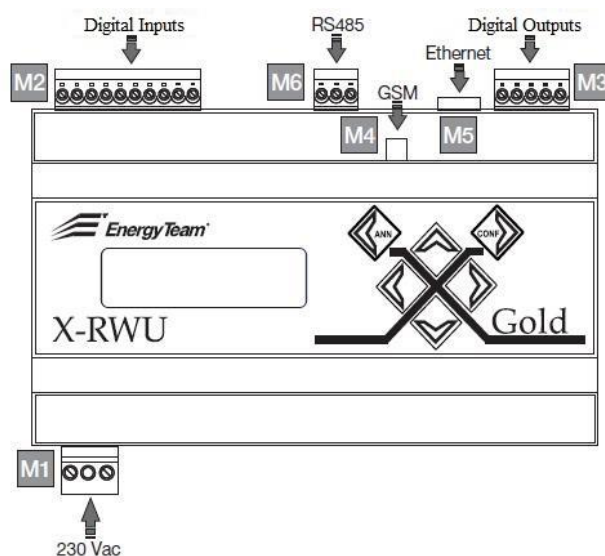
TECHNICAL FEATURES

Power Supply	Units of measure
Voltage	100 ÷ 250 Vac 100 ÷ 350 Vdc
Frequency	50 ÷ 60 Hz
Consumption	5 VA
General	Units of measure
Nr. 8 Digital Inputs	
Frequency digital Inputs	10 Hz Max.
Nr. 4 Optomos Outputs	100 mA 24 VDC
Protection degree	IP 20
Weight	400 grams.
Dimensioni LxHxW 9 DIN modules	154x90x58 mm.
Display	Graphic
Working temperature	-10 °C + 55 °C
Relative humidity	95% without condensation.



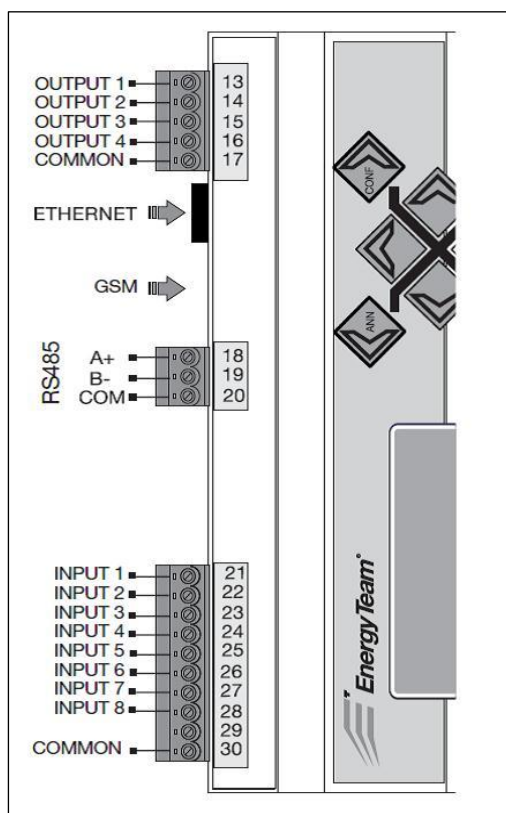
WIRING SCHEMES

TERMINAL STRIPS FOR DIGITAL INPUTS/OUTPUTS AND CABLE SECTIONS

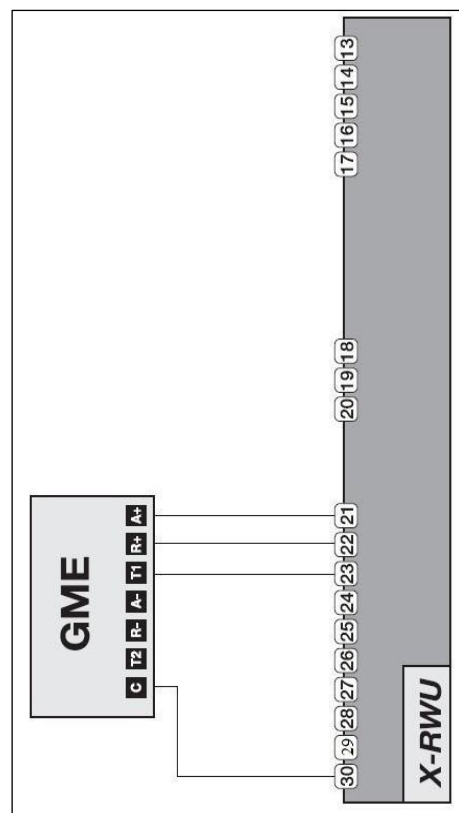


M1	Power Supply. Maximum cable section: Ø 2 mm ² (16 AWG).
M2	Digital Inputs. Maximum cable section: Ø 0,75 mm ² (18 AWG).
M3	Digital Outputs. Maximum cable section: Ø 0,75 mm ² (18 AWG).
M4	GSM aerial. SMA connector.
M5	LAN Ethernet. RJ45 connector.
M6	RS-485. Maximum cable section: Ø 0,75 mm ² (18 AWG); Cable: BELDEN 9841.

SERIAL I/O CONNECTIONS



GME USER (WITH ES BOARD)

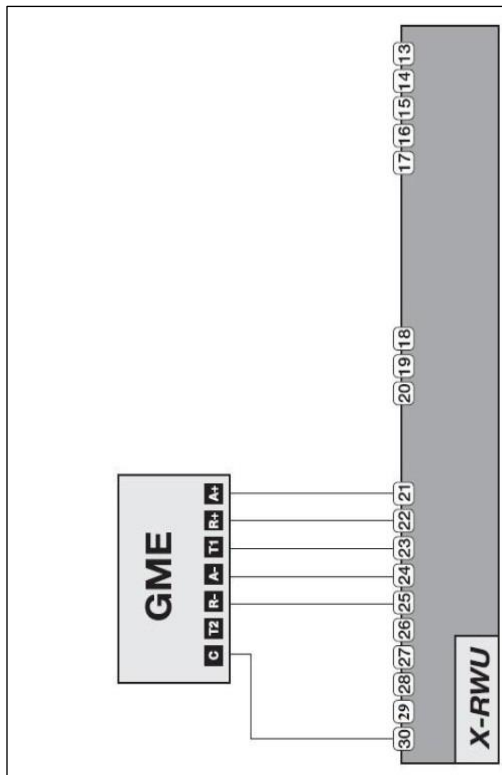


NOTE:

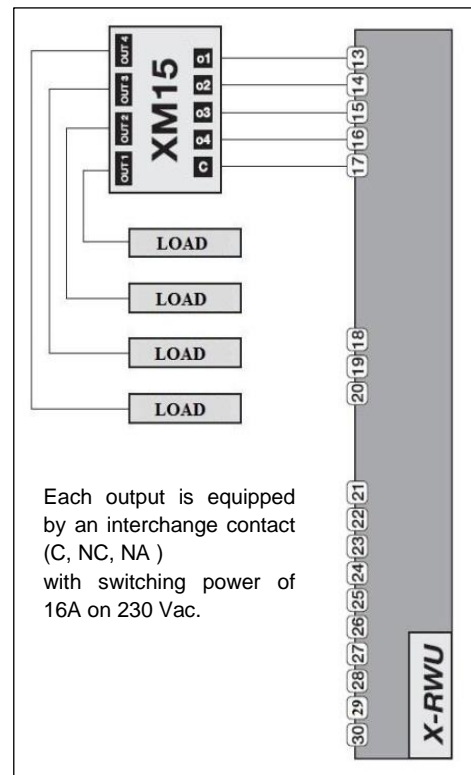
1 - When connecting X-RWU to modules as: XM8, XM9, XM10, XM11 (as shown in the following page), each X-RWU can supply maximum 2 modules. When you need to connect more than two modules, you must connect them to an external power supplier, with Output Voltage +12 Vdc.

2 - When connecting a 2 wires probe to a XM9 module, connect the wires A+ and A- and bridge A+ with M+, as well A- with M- . When connecting a 3 wires probe, connect the wires having the same color between A+ with M+ and the remaining to A- . Then, bridge A- with M- .

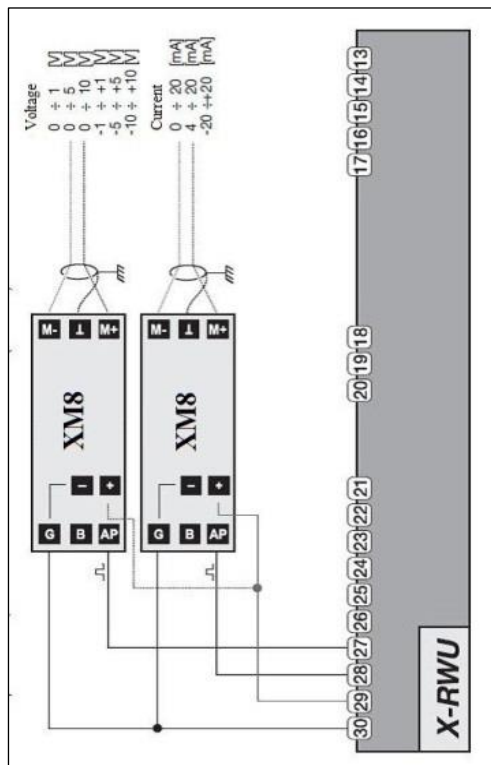
GME USER, SELF-PRODUCER (WITH ES BOARD)



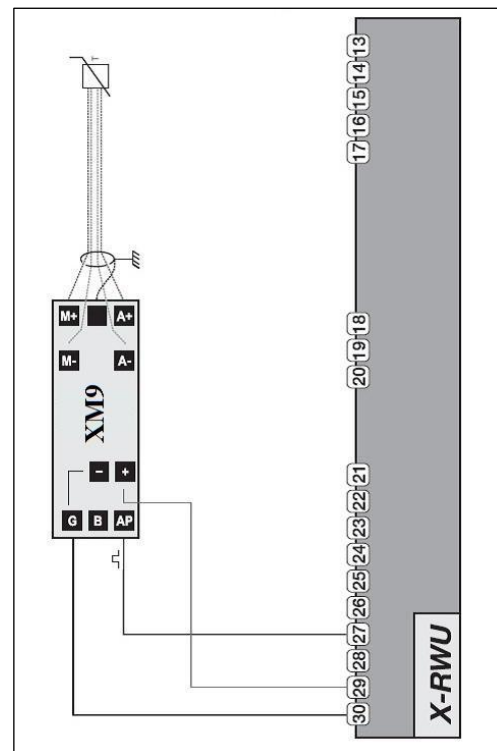
LOAD MANAGEMENT



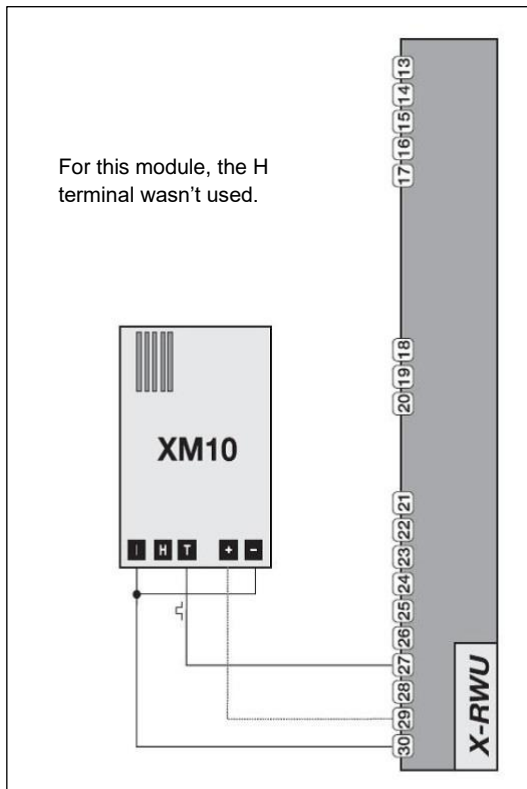
ANALOG SIGNAL ACQUIRING



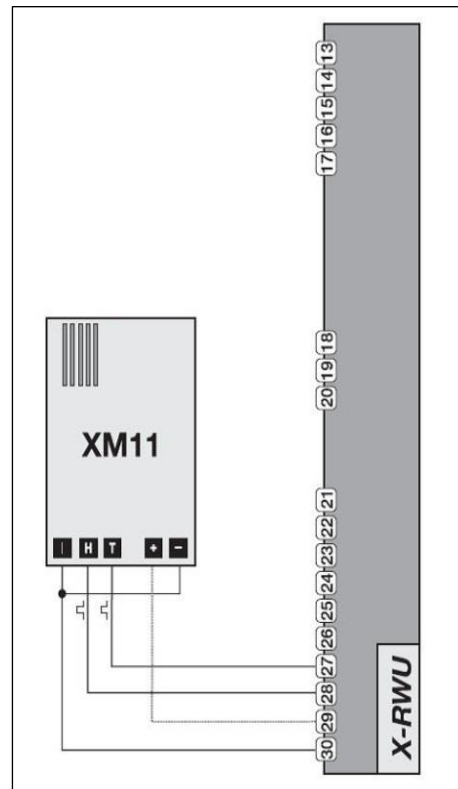
TEMPERATURE ACQUIRING, THROUGH PT100, 500, 1000



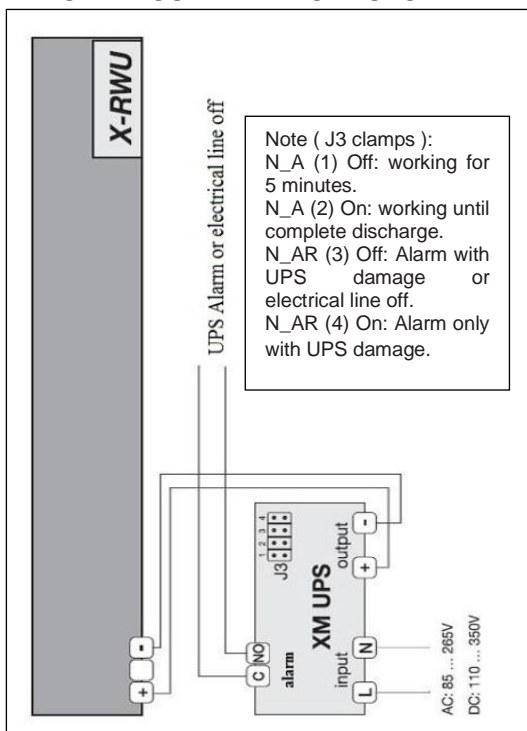
ENVIRONMENTAL TEMPERATURE ACQUIRING



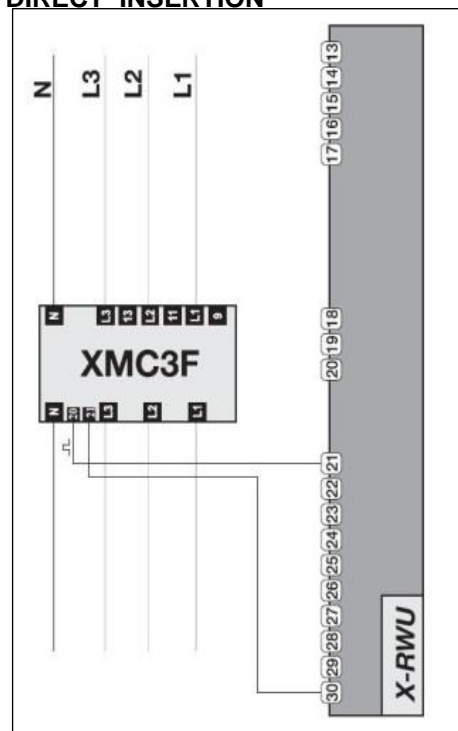
HUMIDITY AND ENVIRONMENTAL TEMPERATURE ACQUIRING



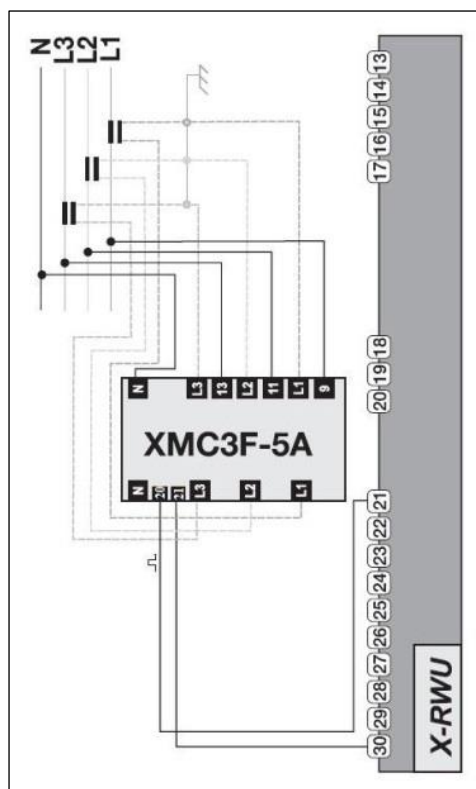
POWER SUPPLY FROM UPS



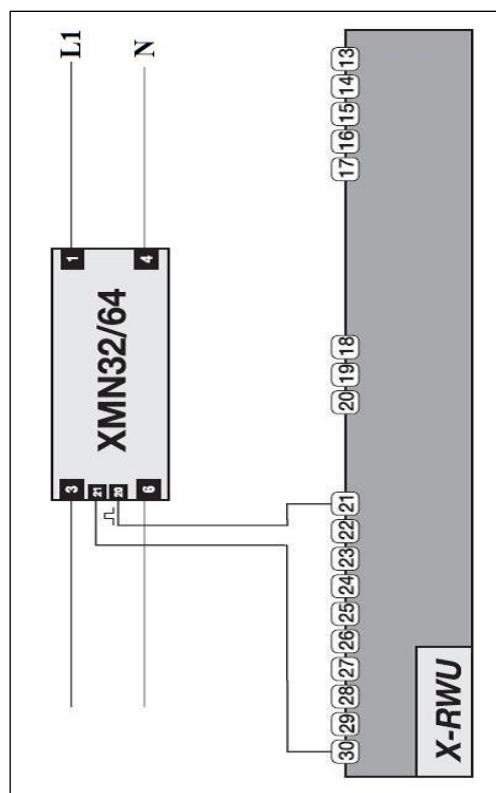
4-WIRES THREE-PHASE METER. DIRECT INSERTION



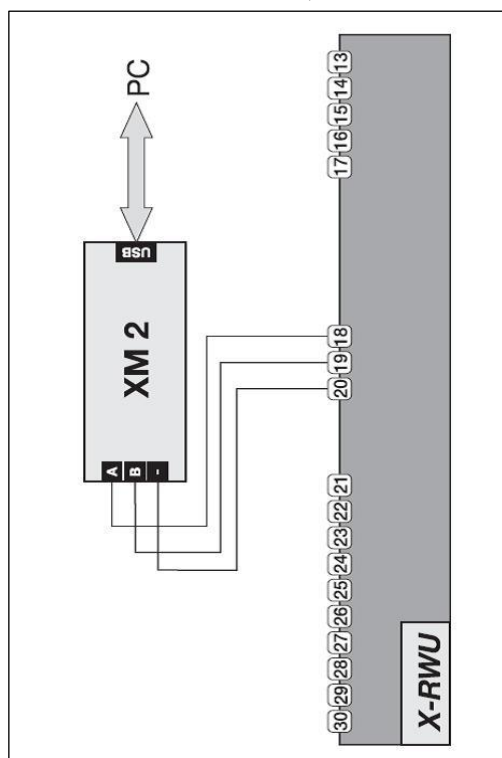
4-WIRES THREE-PHASE METER. INDIRECT INSERTION



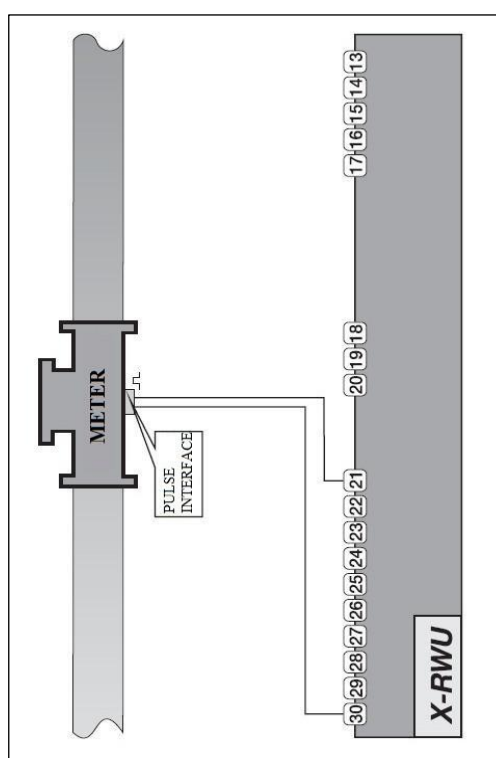
2-WIRES SINGLE-PHASE METER. DIRECT INSERTION



INTERFACING TO PC, VIA USB



METER FOR WATER OR GAS



MAIN CONTENTS TO PROGRAM X-RWU BY KEYBOARD

<u>Main menu</u> Standard setup	Date and time setting Modification of PIN for SET-UP protection 485-Modality ETPRO Address MODBUS Address RS-485 speed	11 12 13 13 13 13
<u>Main menu</u> Alarm setup	Alarm setting Pulse output setting	13 14
<u>Main menu</u> Digital inputs	Digital input setting	15
<u>Main menu</u> Device status	Time, data, battery status and Temp. device Expansions, Serial Number and Firmware Info about interruptions and re-start Options installed ETPRO and ModBus Addresses	16 16 16 16 17
<u>Main menu</u> Support	Information about the manufacturer GPRS, Coverage	17 17

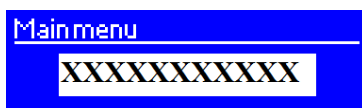
CONCISE MANUAL FOR PROGRAMMING X-RWU THROUGH KEYBOARD



To allow the device to perform the measurements, it's necessary to set:

- DATE
- TIME

After switching on the device, regardless of what the display shows, it is necessary to bring the device back to the MAIN MENU by using the LEFT button.



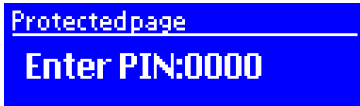
From any point of the main menu go to the STANDARD SETUP screen by using the UP and DOWN keys.

1. SETUP STANDARD

1.



From the initial screen press the RIGHT key to enter:



Press CONF and enter the default code 1234, using the UP key.

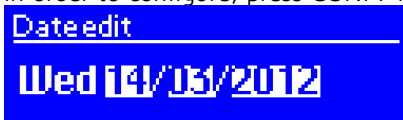
After setting the desired numerical value move to the second digit using the RIGHT button, continue until the entire code has been entered, then press CONF.

DATE SETTING

Enter the date configuration page:



In order to configure, press CONF. The numbers are highlighted:



Press RIGHT to go to the portion to modify, which will be the only one highlighted.

Use CONF to enable the possibility to modify the value within the selected period and use the UP and DOWN keys to modify the date with the correct one; when the 2 digits of the period have been modified, confirm by pressing CONF.

Repeat the operation until the entire date is set. After entering the final date press RIGHT until the following screen is displayed:



To confirm definitively the date, press CONF: if the operation has been carried out correctly, the display without the highlighted periods will appear:



TIME SETTING

IMPORTANT NOTE:

Always enter (regardless the period) only the solar time and never the day-light saving time, the device adjusts the time according to the time of the year indicated.

After setting the date move with the DOWN key to the following screen:

Time edit
15:06:09 winter time

As for the date, press CONF and the following screen will be displayed:

Time edit
15:06:25 winter time

Then press RIGHT and select the time as showed below:

Time edit
15:06:25 winter time

Press CONF and enter the correct time, confirming it by pressing CONF; then move onto the minute digits with RIGHT button and repeat the operation up to the seconds.

After confirming the seconds press RIGHT again until the three periods are displayed as in the screen below.

Time edit
15:06:25 winter time

To confirm definitively the time press, CONF: if the operation has been carried out correctly, the display without the highlighted periods will appear:

Time edit
15:06:29 winter time

MODIFICATION OF SET UP PROTECTION PIN

Use the DOWN key, the last page displayed allows you to modify the PIN to access to different SET UP.

Setup protection PIN
1234 (0000..9999)

Press CONF to set the new PIN, use the RIGHT and LEFT keys to move between the fields and use UP and DOWN keys to choose the new figure. Confirm by pressing CONF.

485 MODALITY

Every device without expansions (GSM/GPRS or ETH boards) must be left in the standard SLAVE configuration. Use CONF to change modality. Set MASTER or MODBUS using UP and then confirm the selected modality with CONF. Configure in MASTER modality all those devices that will also include the GSM/GPRS expansions or the ETH board.

NOTE: It isn't possible to connect more than one MASTER device to the network. The devices with MODBUS protocol must be configured in MODBUS modality. It is necessary to have the option and the relating SW ES3 to use it.

ETPRO ADDRESS

To connect the various SLAVE devices in the network, each one has to have a different address. The limit of the main network is 250 units. Use CONF to enter in the measurement function and use UP and DOWN keys to set the desired value, to confirm by pressing CONF.

If the 250 units of the main line are exceeded, it is possible to enable through the sub-network, other 250 addresses.

It is necessary to have the option and the relating SW ES3, to be able to use it.

MODBUS ADDRESS

As for ETPRO but only for devices in MODBUS modality.

It is necessary to have the option and the relating SW ES3, to be able to use it.

RS-485 SPEED

The available speeds are 2400, 4800, 9600, 19200, 38400 and 57600. Considering the enormous quantity of data, we suggest starting from 9600. With the BRIDGE option, and with only X-METER devices connected, it's possible to set the speed of 19200. The other options that can be set are available for further implementations.

It is necessary to have the option and the relating SW ES3, to be able to use it.

2. ALARM SETUP

2.



Function useful to set the Output Alarm/Pulses X-RWU gold (4 Channels).

In order to enter this function, insert the PIN number (1234 as default), then press CONF.

Each of the 4 Outputs in the X-RWU Gold can be configured either as a pulse output, or as an alarm; but this is only possible by programming the device through the Software ES3, optional. Instead, when operating by keyboard, the 1 and 2 Outputs (clamps 13 and 14) are settable as alarms, while the 3 and 4 Outputs (clamps 15 and 16) are settable as pulse size.

ALARM SETTING

Press the key CONF to select the size useful for alarm setting. Possible options are the pulse inputs from 1 to 8.



This is an example of screen, showing a selected size, as described above.

When programming the alarm concerning the size set, press the key DOWN to reach the page showing the Low threshold for Alarm 1:



Within this page, you must set the limits of the operative range for the alarm. By pressing CONF you get the access to option to modify the parameters, through the RIGHT key for selecting the value you want to change and, by means of the keys UP and DOWN, change this value. Then press CONF to store the new value.



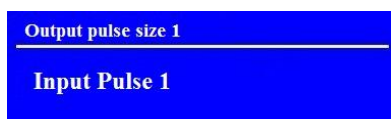
Use the key DOWN to choose the other parameter determining the range in which the alarm must work.



In order to set the desired value and set the value of high threshold, use the same procedure as described above. In this example, we have showed a working range from 1.100 as low threshold to 3.300 as high threshold.

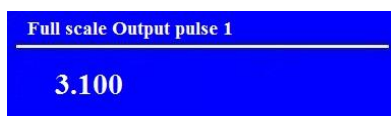
PULSE OUTPUT SETTING

Continuing in the alarm menu, you can set the Outputs as Pulse sizes.



To configure the Input-1 as a pulse Input, select it as shown in the picture, then press CONF.

Press the DOWN key to set the parameters of the full-scale (example: 0 pulses when the power is 0, and 3000 corresponding to full-scale value selected; the pulse frequency is 5 Hz).



Use the described keys to scroll the values..

Press the DOWN key to set the second pulse output.

By means of DOWN key it's also possible to enter page for programming the type of alarm threshold, here's the available ones: Internal range; External range; Minimum (hysteresis); Maximum (hysteresis).

External range: Alarm starts when the value of high threshold is exceeded, or when the value goes down below the Low threshold (Example: when the value is over 3.300 or under 1.100).

Internal range: Alarm starts when the value is within the interval from the Low threshold and the high threshold (example: if the value is over 1.100 and under 3.300 the alarm starts).

Minimum (hysteresis): Alarm starts when the value is under the minimum threshold and it stays always in ON status until the maximum threshold isn't exceeded (example: alarm starts when the value is under 1.100 and stays in ON status until the value 3.101 isn't exceeded).

Maximum (hysteresis): Alarm starts when the value exceeds the high threshold and it stays always in ON status until the value goes down under low threshold (example: alarm starts and stays always in ON status when, from 3.300, the value goes down to 1.100, only when the value goes down to 1.099 the alarm switches OFF).

3. DIGITAL INPUTS

3.



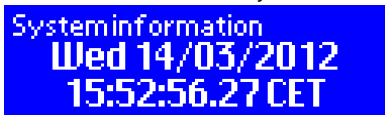
For the configuration, it's necessary to have the option and the relating SW ES3.

4. DEVICE STATUS

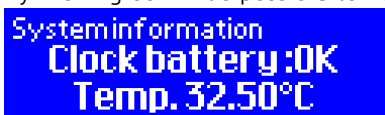
4.



Use UP and DOWN keys to check the date and time of the instrument:



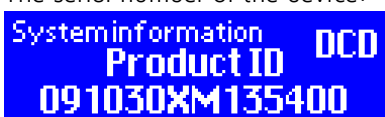
By moving down it's possible to verify the state of the battery and the internal temperature of the device:



The availability of the expansions and which functions are enabled:



The serial number of the device:



The installed Firmware version:

Systeminformation
FW Version
XMeter 1.1.40

The installed Firmware version:

Systeminformation
FW Version
XMeter 1.1.40

The alarm status:

Systeminformation
Alarm status
0 0 0 0 0 0 0

The information about the last re-start, the last switch-off and the cause of the re-start:

Systeminformation
Last restart
14/03/2012 14:42:01

Systeminformation
Last shutdown
08/03/2012 15:21:24

Systeminformation
Restart cause
Power outage

The information about the options installed:

Systeminformation
Installed Options
X1 X3 X6 X14

The information about the state of the GPRS signal:

System Information
Signal GPRS
CSQ:14 (-85dBm)

ETPRO and MODBUS Addresses:

Systeminformation
ETPRO address
000:001

Systeminformation
MODBUS address
001

It's necessary to have the option and the relating SW ES3, to be able to use it.

5. SUPPORT

5.

Main menu
Support

From this screen of the main menu, press RIGHT to display the information relating our web site, at the web site @ to contact us, our telephone number for assistance, with an additional space where it's possible to set the name of the power distributor used.

GENERIC STANDARD FOR A CORRECT RECEPTION OF THE GSM/GPRS SIGNAL

Insert the aerial when the device is OFF and position it (the aerial) as far as possible from the device, to position it on the most convenient point for a correct reception of the GSM signal.

Supply the device to start the system initialization. At the end of the check, the following message is displayed:



Wait _____
GPRS Initialization

When the signal is correctly received, the message changes as follows:



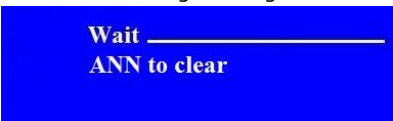
Wait _____
GPRS OK

If the signal is absent, this message is displayed:



Wait _____
GPRS Error

Then the message changes as follows:



Wait _____
ANN to clear

In this case, press ANN to go back to Main Menu.

Switch OFF the power supply of the device, move the aerial to a more favorable position for receiving the signal; then switch ON the device and check if the message " GPRS OK " is displayed.

Instead, if the signal is absent again, put the X-RWU device in a different side, where the signal is present or require the aerial as described at the point " 2 " on the following paragraph.

HOW TO CHECK THE PROPER PRESENCE OF THE GSM/GPRS SIGNAL FROM X-RWU DISPLAY

From main menu, press the RIGHT key to move into:



Main menu
Device status

Then press UP and DOWN keys to move onto the screen as shown:



System Information
Signal GPRS
CSQ:14 (-85dBm)

By means of this function it's also possible to display the quality of the GPRS signal in the side where the device is installed. Minimum condition that guarantees a reliable signal are 3 bars displayed.

NOTE:

1 - The screening which shows the GPRS signal is displayed for 45 seconds, then it lights OFF. If you want to display it again, press CONF: this function enables another cycle of 45 seconds.

2 - When the aerial was put in the best position for receiving the signal and, after checking, the signal isn't correctly received, it's possible require a directive aerial. This new aerial, if oriented to direction of the signal source o radio link, makes possible a gain of 12 dBm, equivalent to an increase in gain of a bar displayed.

3 - This new aerial is equipped by a cable 5 meters long.

HOW TO DISPLAY THE NUMBER OF THE GSM SIM

Scrolling this menu with the UP and DOWN keys, it's possible to display the telephone number of the GSM SIM Card inserted, as shown in this example:



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.

CALIBRATION CERTIFICATE

Firmware version: _____

Option enabled and checked successfully: _____ ☐ Yes ☐ No

_____ ☐ _____ ☐ No

_____ ☐ _____ ☐ No

_____ ☐ _____ ☐ No

General checking completed successfully: _____ ☐ Yes ☐ No

Date

Signature

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