GREENBOX EV

User Guide

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Glossary

HTTP   Hyper Text Transfer Protocol
Client-server communication protocol developed for the Web

IP   Internet Protocol
An IP address is an identification number that is assigned to each device connected to a computer network using the Internet Protocol.

Rail DIN   A DIN rail is a standardised 35 mm metal rail widely used in Europe in industrial control equipment in racks.

TCP   Transmission Control Protocol
TCP is a reliable transfer protocol, in connected mode, documented in IETF RFC 793.

TCP/IP   Transmission Control Protocol/Internet Protocol
The TCP/IP suite is a set of protocols used to transfer data over the Internet. It is often called TCP/IP, named after two of its protocols: TCP (Transmission Control Protocol) and IP (Internet Protocol), which were the first protocols defined.

Ethernet   Ethernet (also known as "IEEE 802.3") is a data transmission standard for a LAN based on the following principle: all machines in the Ethernet network are connected to the same communication line, consisting of cylindrical cables.

RJ45   An RJ45 connector is a physical interface often used to terminate twisted pair cables. "RJ" comes from the English "Registered Jack" which is a part of the Code of Federal Regulations in the United States. It has eight electrical connector pins.

S0   Output of a water, gas, electricity meter or any other device capable of providing a number of pulses proportional to the physical quantity measured.

DHCP   Dynamic Host Configuration Protocol (DHCP) is a network protocol whose role is to ensure the automatic configuration of the IP parameters of a station, in particular by automatically assigning it an IP address and subnet mask.

Introduction

The GreenBox EV (Ethernet version) is a housing intended for real-time monitoring and supervision of one or more pulse meters (maximum 3) with an S0 output.

The information gathered by the housing is sent via Ethernet cable to a storage server to allow real-time monitoring of the physical quantities measured.

Configuring a GreenBox EV can be performed locally via a web browser or remotely via a server. Installing a GreenBox EV is easy thanks to its low space requirement and the 35 mm DIN rail compatible housing.

Examples of compatible meters:
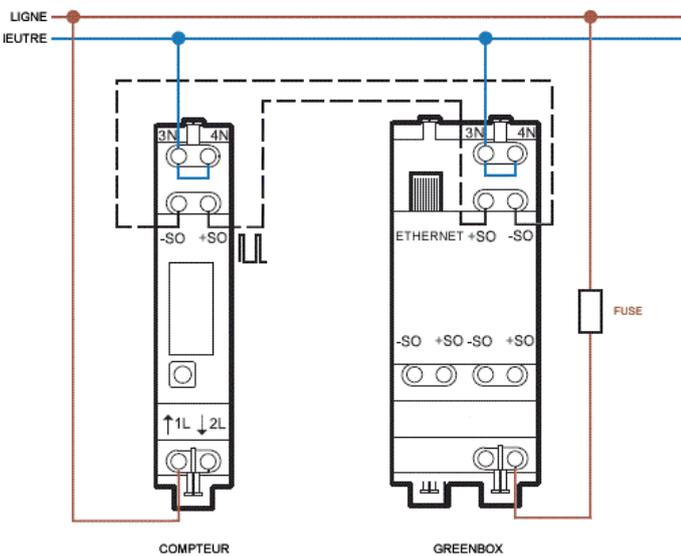
Electric meters:

- 7E.23.8.230.00x0 (Finder)
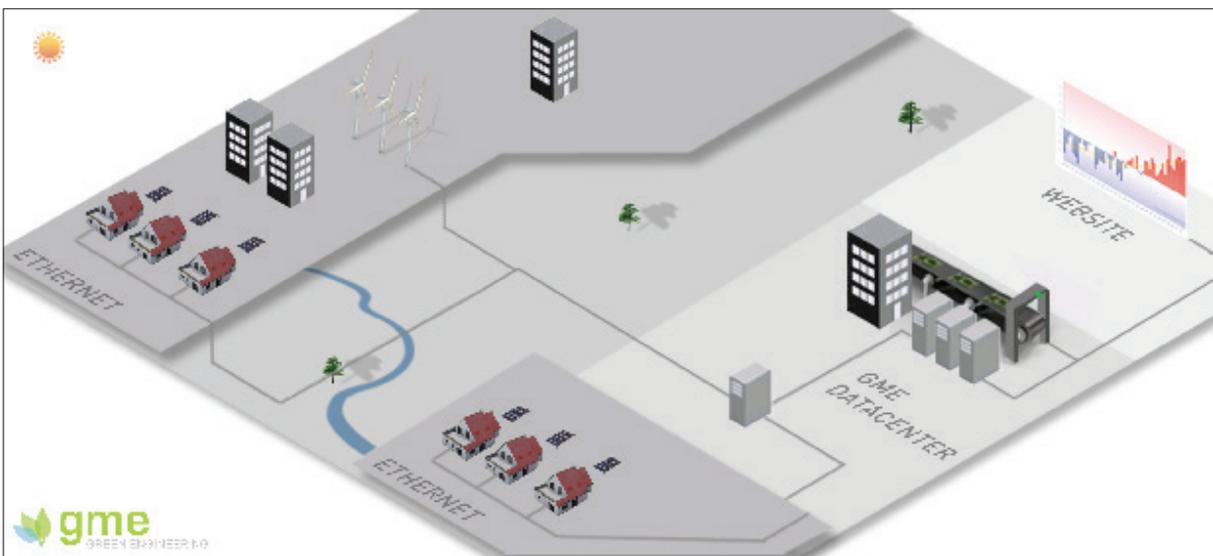- Socomec Countis E02
- Inepro PRO1D
- Carlo Gavazzi EM23

Gas meters:

- 200CFGM Gas Meter

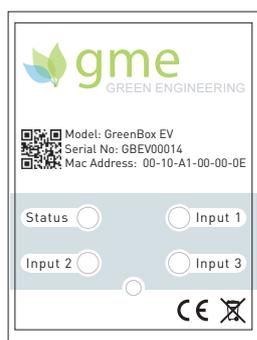Water meters:

- Lorentz ETKI

General Operation

GreenBox continuously collects all the data from the meters and enables monitoring in real time of the physical quantities measured.

Packaging

Content

The delivery must always contain a Green-Box EV equipped with its external fuse.

Identification label

Model

You can identify the GreenBox by its type label located on the front of the housing.

Model: GreenBox Model
Serial No.: Serial number
Mac Address: MAC address of the Green-Box

The 2D bar code corresponds to the serial number of the product.

You can find the version number of the software on the GreenBox configuration web page.

Safety instructions

You must observe all the safety instructions in this manual.
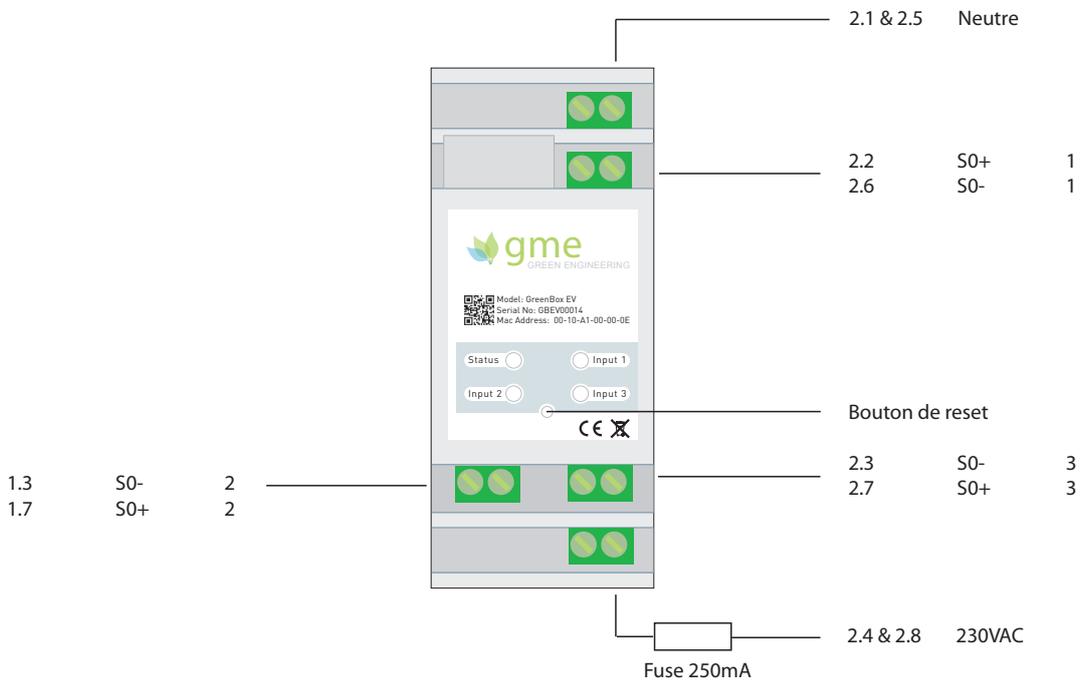
Failure to follow these instructions may result in damage to the equipment and pose a danger to people.

Damage may be caused to the GreenBox by electrostatic discharge (ESD). GreenBox Installation work must be carried out solely by a qualified electrician and it is mandatory to install the protection fuse.

G.M.Electronics can not be held liable for damage of any kind, direct or indirect, resulting from improper handling or installation by the GreenBox installation engineer.

Technical Specifications

Overview of GreenBox EV

2.1 & 2.5	Neutre	
2.2	S0+	1
2.6	S0-	1

Model: GreenBox EV
Serial No: GBEV00014
Mac Address: 00-10-A1-00-00-0E

Status   Input 1
Input 2   Input 3

Bouton de reset

2.3	S0-	3
2.7	S0+	3

1.3	S0-	2
1.7	S0+	2

2.4 & 2.8   230VAC

Fuse 250mA

Specifications			
Power supply voltage UN		VAC	110/230
Frequency		Hz	50/60
Power absorption		W	0.66
S0 inputs			3
Degree of protection			IP20
Fastening			DIN-rail 35 mm (EN 60715)
Housing width		mm	35
Operating temperature		°C	-30 à +85
Approval			CE, ROHS
Minimum cross-section of a solid cable		mm²	0.5
Maximum cross-section of a solid cable		mm²	4
Ethernet connector			RJ45
Transfer rate		MBits/s	10/100
Setup			Local/Remote
Configuration			Fixed IP/DHCP
Warranty		year	2

Technical Specifications

| Meaning of LEDs		
STATUS LED*	Not lit	The housing is not under power or is defective
	Continuous	The housing is powered and in operation
	Flashing quickly	The GreenBox EV is correctly connected to the local router
	Flashing slowly	The GreenBox EV is connected to the remote server
INPUT 1, 2 and 3 LED	Not lit	Pulse is not present on the corresponding S0 input
	Flashing	Pulses from the electric meter are present on the corresponding S0 input.

* The status LED may flash differently when an engineer presses the reset button. See the ˝Greenbox Reset˝ section for more information.

Installation

DIN rail housing

The GreenBox EV consists of a 35mm DIN rail housing to DIN EN 60715 TH35 standards. The housing is made of grey polycarbonate. Degree of protection of the GreenBox is 20. (IP20)

Size of the opening which faces the enclosure.
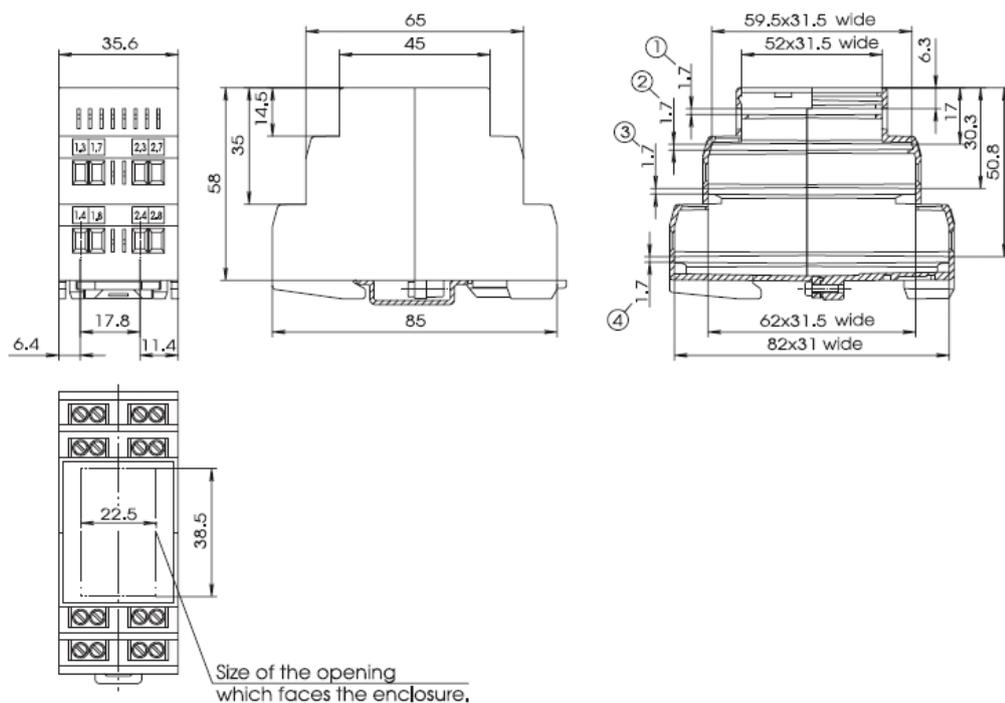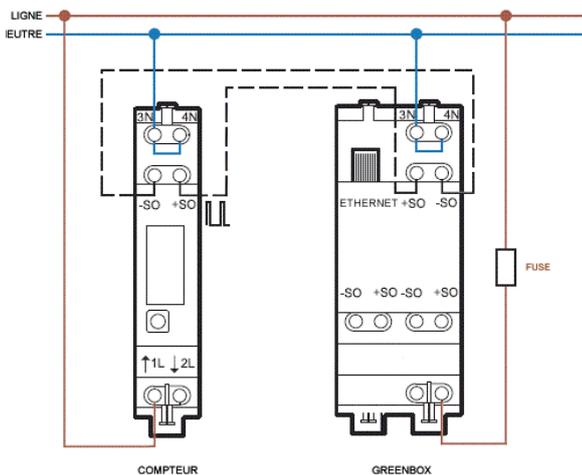
Installation

GreenBox Installation

The GreenBox EV must be placed in an environment that conforms to the points defined in the technical specification table on page 7.

The housing is mounted on the 35mm DIN rail by hooking the two upper lugs onto the rail and clipping the bottom lug.

Connecting to the mains and to the pulse meter

Power supply of the GreenBox EV is compatible with 110 VAC and 230 VAC mains supplies. (Frequency: 50/60 Hz)

The GreenBox EV connects to one, two or three electric meters through S0 terminals.

Example of connection to an electric meter with S0 output

Ethernet connection

To connect the GreenBox to the router, there are two options:

1. You connect the GreenBox directly to the router via an Ethernet cable
2. You use two PLCs (Power Line Communication). In this case, you must connect the GreenBox to the first PLC via an Ethernet cable and connect the second PLC to the router via another Ethernet cable. (The PLCs are not provided with purchase of the GreenBox)

In cases where the router is in DHCP mode, installing the GreenBox is fully automated and no configuration is necessary.

Configuration

Dynamic IP setup via DHCP (default)

By default, the GreenBox EV is configured so that the router automatically it assigns an IP address. In this case, it is not necessary to configure the GreenBox. Just enter the pulse meter information in your installer interface. The GreenBox will at this point be considered functional.

Note that in some more advanced configurations, a firewall may block the transmission of data to the outside. In this case it is necessary to open the firewall 3000 port.

If you want to configure the GreenBox advanced settings, go to the "GreenBox EV Advanced Setup" section on page 10.

Fixed IP Setup

By default, the GreenBox does not have static IP and it is the router that has to assign it one (DHCP mode). However, it is possible to switch to static IP mode on the GreenBox EV by pressing the reset button until the status LED flashes once.

When the GreenBox is in static IP mode, the default IP is: **192.168.0.100**

Two scenarios are possible:

> 1. The IP 192.168.0.100 is suitable for your network configuration and no other operation therefore needs to be performed.

> 2. The GreenBox default IP is not suitable. In this case, you must connect a PC via a fixed IP (e.g. 192.168.0.101) directly to the GreenBox. Then see the "GreenBox EV Advanced Setup" section to configure the desired fixed IP address by modifying the GreenBox IP, Gateway and Netmask fields.

Configuration

GreenBox EV Advanced Setup

The following elements can be configured locally:

1. Remote server IP
2. Remote server port
3. Static IP of the GreenBox
4. Default Gateway
5. Network mask
6. Data transmission interval
7. Starting readings of the meters
8. Pulses per unit of the physical quantity measured

Local Web server access

To access the login page of your local Web server, type the IP address of the GreenBox in your web browser.

If you are in DHCP mode, connect to your router in order to find out the IP address assigned to the GreenBox. You can then enter it in the URL bar of your browser to get to the login page.

If you are in Fixed IP mode, you can connect to the local Web server by typing the GreenBox's default Fixed IP address (192.168.0.100) in the URL bar of your browser or by typing the IP address that you have set yourself.

The GreenBox will ask you to enter a username and password to be able to configure it. **By default, the username and password are admin and admin**.

Configuration

Access to the administration interface

Entering a username and password allows you to access the administration interface below. There you will find three main columns: *Status, Parameters and Meters.*

Status (Status column)

SN: Serial number
MAC : MAC address
Status: indicates whether or not the GreenBox is connected to the remote server
Hardware Version: Hardware version
Software Version: Firmware version

Parameters (Parameters column)

Username and Password: identification codes allowing you to connect to the GreenBox EV web interface.

Server IP and Port: IP and port to which the GreenBox EV data is sent.

GreenBox IP, Gateway and Netmask: Configuring the GreenBox in fixed IP mode

Configuration

Delay between transmissions: time interval in minutes between each data transmission to the server

Initial Index 1, 2, 3: parameter for synchronising the GreenBox with the meter readings taken at the time the GreenBox was installed.

Pulse 1, 2, 3: number of pulses per unit of the physical quantity measured

Meters (Meters column)

The Meters box indicates the number of pulses recorded for each pulse meter connected to the GreenBox EV.

Index 1, 2, 3 to kWh: reading of the meters in kWh. It will be possible to display other units in the next version of the software

GreenBox EV Reset

1. Press the reset button for one second to restart the GreenBox. The status LED turns off and on again.

2. If you wish to change the mode (from DHCP to Fixed IP and vice versa), press the reset button until the status LED flashes once.

3. If you wish to reset the GreenBox default settings, press the reset button until the status LED flashes twice.

4. If you wish to reset the GreenBox default settings and delete the history of pulses recorded in the memory, press the reset button until the status LED flashes three times.

Support

G.M.Electronics website

You will find all the information necessary to contact us on our website www.gmelec-tronics.be.

Recycling

You must recycle your product separately from household waste in compliance with local laws and regulations.

When this product reaches its end of life, bring it to a collection point designated by your local authorities for the recycling of electronic equipment.

Incorrect disposal of electronic equipment by the consumer may be punishable by fines.

The collection and recycling of your product during disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment