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VEXEN ESM3100DM Three Phase RS485 Modbus Energy Meter Instructions

ES3100D-Mod
Three Phase RS485 Modbus Energy Meter

Contents

Safety Instructions

Information for your own safety

This manual does not contain all of the safety measures for operation of the equipment(module,device),because special operating conditions, and local code requirements or regulations may necessitate further measures. However,it does contain information which must be read for your personal safety and to avoid material damages.This information is highlighted by a warning triangle and is represented as follows, depending on the degree of potential danger.

⚠️ **Warning**

This means that failure to observe the instruction can result in death, serious injury or considerable material damage.

⚠️ **Caution**

This means hazard of electric shock and failure to take the necessary safety precautions will result in death,serious injury or considerable material damage.

Qualified personnel

Operation of the equipment (module, device) described in this manual may only be performed by qualified personnel. Qualified personnel in this manual means person who are authorized to commission, start up, ground and label devices,systems and circuits according to safety and Regulatory standards.

Use for the intended purpose

The equipment (device, module) may only be used for the application specified in the catalogue and the user manual,and only be connected with devices and components recommended and approved by SIA "Pawbol Baltic".

Proper handling

The prerequisites for perfect, reliable operation of the product are proper transport, proper storage, installation and assembly, as well as proper operation and maintenance. When operating electrical equipment, certain parts of this equipment automatically carry dangerous voltages. Improper handling can therefore result in serious injuries or material damage.

- Use only insulating tools.

- Do not connect while circuit is live (hot).

- Place the meter only in dry surroundings.

- Do not mount the meter in an explosive area or expose the meter to dust, mildew and insects.

- Make sure the used wires are suitable for the maximum current of this meter.

- Make sure the AC wires are connected correctly before activating the current/voltage to the meter.

- Do not touch the meter connecting clamps directly with your bare hands, with metal, blank wire or other

  material as you may get an electrical shock.

- Make sure the protection cover is placed after installation.

- Installation, maintenance and reparation should only be done by qualified personnel.

- Never break the seals and open the front cover as this might infiuence the functionality of the meter, and will avoid any warranty.
- Do not drop, or allow physical impact to the meter as there are high precision components inside that may break.

Introduction

The ES3100D-Mod is digital three phase 4 wire energy meter with a white back-lighted LCD screen for perfect reading. The unit measures and displays active energy (kWh) and power (W), imported and exported. A resettable partial energy is provided, so the user can easily check the import energy and export energy during a certain period.
ES3100D-Mod supports max.100A direct connection, saves the cost and avoid the trouble to connect external CTs, giving the unit a costeffective and easy operation. Built-in interfaces provides pulse and RS485 Modbus RTU outputs. Configuration is password protected.

Technical Data

Nominal voltage(Un)	230V/400V AC(3~)
Operational voltage	80%~120% Un
Insulation capabilities	
– AC voltage withstand	4KV for 1 minute
– Impulse voltage withstand	6KV-1.2/50μS
Basic current (Ib)	10A
Maximum rated current (Imax)	100A
Operational current range	0.4% Ib~Imax
Over current withstand	30Imax for 0.01s
Operational frequency range	50Hz
Internal power consumption	≤ 2W/10VA/phase
Pulse output flash rate (LED)	1000imp/kWh
Pulse output rate(Terminal)	1000imp/kWh
Display	LCD with backlit
Max. Reading	9999999kWh

Performance criteria

Operating humidity	≤ 90%
Storage humidity	≤ 95%
Operating temperature	-25°C – +55°C
Storage temperature	-40°C – +70°C
Active energy accuracy	Class 1 IEC 62053-21
Protection against penetration of dust and water	IP51
Insulating encased meter of protective class	II
Warm up time	6S
Mechanical environment	M1
Electromagnetic environment	E2
Degree of pollution	2

Rs485 Output for Modbus RTU

The meter provides a RS485 port for remote communication. Modbus RTU is the protocol applied.
For Modbus RTU, the following RS485 communication parameters can be configured from the Set-up menu:
Baud rate 1200,2400, 4800, 9600
Parity none (default)/odd/even
Stop bits 1 or 2
RS485 network address nnn – 3-digit number, 001 to 247
Modbus™ Word order Hi/Lo byte order is set automatically to normal or reverse. It cannot be configured from the set-up menu.
Note:For Modbus protocol, please contact sales SIA "Pawbol Baltic" representative for assistance or go to
www.eastrongroup.com

Dimensions
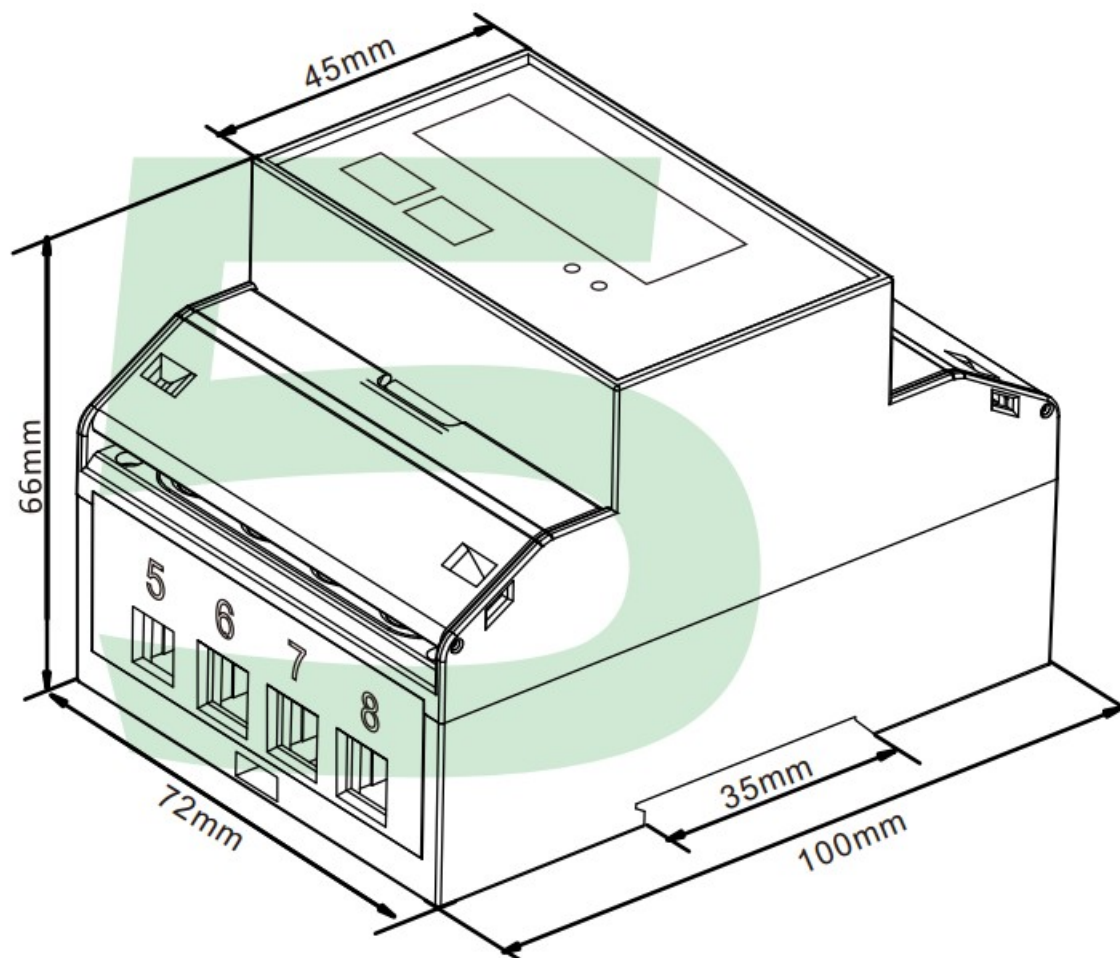
Height	100mm
Width	72mm
Depth	66mm

Operation

Initialization display
When the meter is powered on, it will initialize and do self-checking:

Full Screen

$T8$ Total | Min dmd ☏
Imp Exp
0↩
888.8.8.8
L1 L2 L3 ⫩ ⋒
A h kWh

Software Version

02 01.00

Pulse Constant

C 1000

Total Active Energy(kWh)

Total
000069.8
kWh

Total=Import+ Export

Max read:9999999 kWh

After the self-checking program, the meter display will show the total active energy (kWh)

Scroll display

Scroll Display by Button

There are two buttons on the front panel.

⟳	>Scroll the display for data checking. >Changing option at Set-up mode >Exit the Set-up mode
↵	>Set-up mode entry >Confirmation

Set-up Mode

To get into Set-up Mode, the user needs to press the "Enter" button ↵ for 3 seconds.

Total
000 434.3 kWh

→

Imp
000 365.0 kWh

↓

Exp
000069.3 kWh

←

Total
0← 000 178.5 kWh

↓

Imp
0← 000 155.1 kWh

→

Exp
0← 000023.4 kWh

↓

Imp
00000 W

←

Total
00000 W

↓

Exp
00000 W

→

Add 001

↓

PtrY n

←

bd 9600

↓

C 1000

→

02 01.00
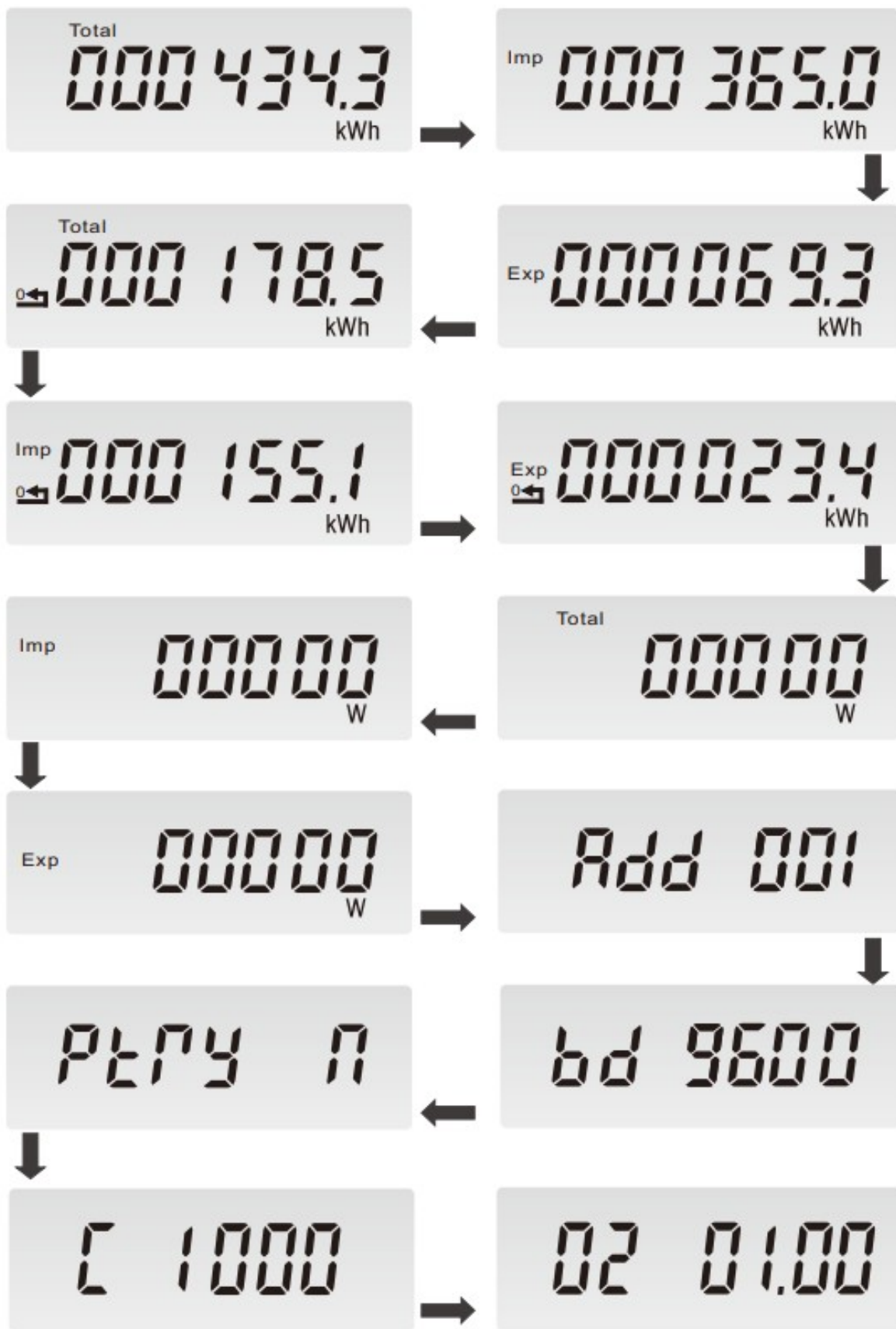
Page	Display	Descriptions
1	PASOOOO	**Password** To get into Set-up mode, it asks a password confirmation. Default password: 1000 Use [O] and [↵] to enter correct password.
2	ERR	The entering information is wrong. The operation fails.
3	Add 001	Keep pressing [↵] for 3 seconds, the current selection will flash, use [O] and [↵] to change the Modbus address. Options: 1~247 Keep press [↵] for 3s to confirm the selection.
4	bd 9600	Keep pressing [↵] for 3 seconds, the current selection will flash, use [O] and [↵] to change the Baud rate. Options: 1200, 2400,4800,9600 (default) Keep press [↵] for 3s to confirm the selection.
5	PtrY n	Keep pressing [↵] for 3 seconds, the current selection will flash, use and to change the Parity. Options: EVEN, ODD,NONE (default) Keep press [↵] for 3s to confirm the selection.
6	PASOOOO PASOOOO	Use [O] to select the Password option. Keep pressing [↵] for 3 seconds, the current selection will flash, use [O] and [↵] to enter the new password. The range is from 0001 to 9999. Keep press [↵] for 3s to confirm the selection.

Keep pressing button [O] to exit the set-up mode.

Wiring Diagram
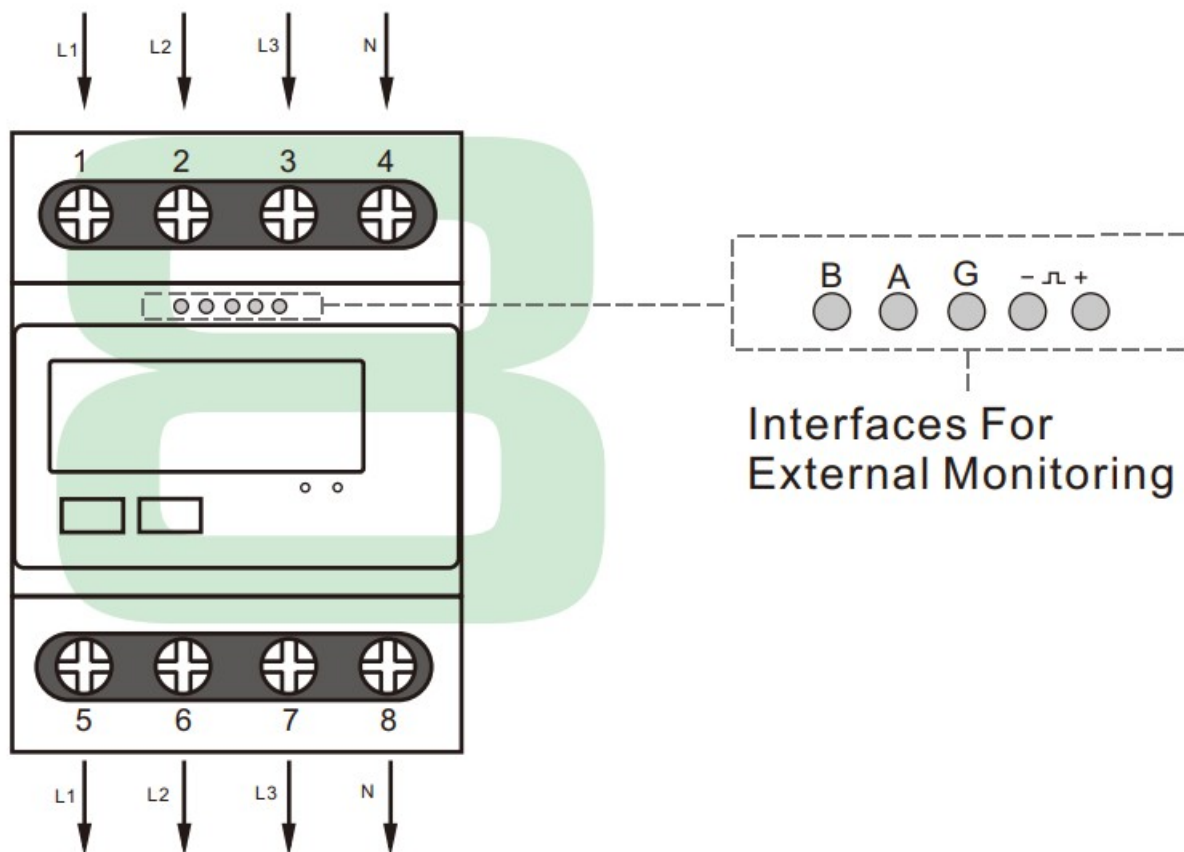
1/5 : L1 IN/OUT
2/6: L2 IN/OUT
3/7: L3 IN/OUT
4/8: Neutral

SIA "Pawbol Balc"
Add: Katlakalan iela 9, Riga, Latvija, LV-1073
Tel: +371-62006800
Email:**info@pawbol.lv**

Documents / Resources

VEXEN ESM3100DM Three Phase RS485 Modbus Energy Meter [pdf] Instructions
ESM3100DM Three Phase RS485 Modbus Energy Meter, ESM3100DM, Three Phase RS485 Modbus Energy Meter, RS485 Modbus Energy Meter, Modbus Energy Meter, Energy Meter, Meter

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