

ES3100D-Mod

Three Phase RS485 Modbus Energy Meter



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 repair should only be done by qualified personnel.
- Never break the seals and open the front cover as this might influence 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 cost-effective and easy operation. Built-in interfaces provides pulse and RS485 Modbus RTU outputs. Configuration is password protected.

Technical Data

Specifications

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

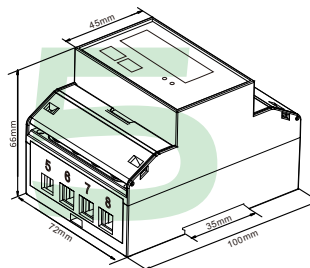
Rs485 Output for Modbus RTU

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 SIA "Pawbol Baltic" sales representative for assistance

Dimensions



Height	100mm
Width	72mm
Depth	66mm

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Operation

Initialization display

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

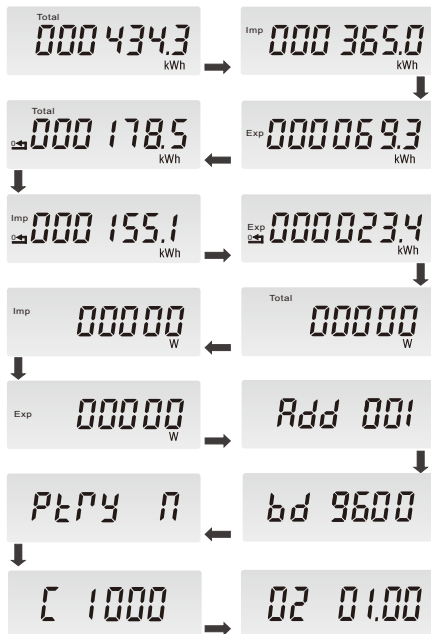


After the self-checking program, the meter display will show the total active energy (kWh)

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

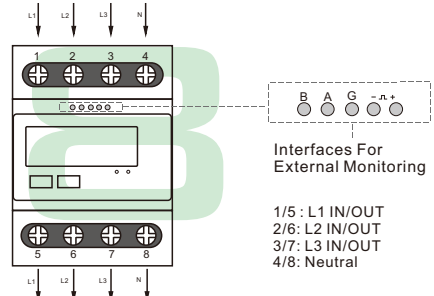
To get into Set-up Mode, the user needs to press the "Enter" button

for 3 seconds.

Page	Display	Descriptions
1		Password To get into Set-up mode, it asks a password confirmation. Default password: 1000 Use and to enter correct password.
		The entering information is wrong. The operation fails.
2		Keep pressing for 3 seconds, the current selection will flash, use and to change the Modbus address. Options: 1~247 Keep press for 3s to confirm the selection.
3		Keep pressing for 3 seconds, the current selection will flash, use and to change the Baud rate. Options: 1200, 2400,4800,9600 (default) Keep press for 3s to confirm the selection.
4		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.
5		Use to select the Password option. Keep pressing for 3 seconds, the current selection will
6		flash, use and to enter the new password. The range is from 0001 to 9999. Keep press for 3s to confirm the selection.

Keep pressing button to exit the set-up mode.

Wiring Diagram



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