

EMM.630 100A SERIES

Three Phase Multifunction Din Rail Energy Meter



DIN RAIL SMART METER FOR SINGLE AND THREE PHASE ELECTRICAL SYSTEMS

UserManual v1.0

1. Introduction

This document provides operating, maintenance and installation instructions. These units measure and display the characteristics of single phase two wires (1p2w), three phase three wires (3p3w) and three phase four wires (3p4w) networks. The measuring parameters include voltage (V), frequency (Hz), current (A), power (kW/kVa/kVar), import, export and total Energy (kWh/kVarh). The units can also measure Maximum demand current and power, this is measured over preset periods of up to 60 minutes.

These units are max 100A direction operated and do not need to connect with external current transformers (CT). Built-in pulse, RS485 Modbus RTU/Mbus outputs. Configuration is password protected.

1.1 Unit Characteristics

The EMM.630 100A series meters have five models: EMM.630-Pulse, EMM.630-Standard, EMM.630, EMM630-Mbus, EMM.630-MT.

Model	Measurement	Output	Tariff
EMM.630-Pulse	kWh/kVarh, kW/kVar, kVA, P.F, PF, dmd, VA, THD, etc.	pulse	no
EMM.630-Standard	kWh/kVarh	pulse/Modbus	no
EMM.630	kWh/kVarh, kW/kVar, kVA, P.F, PF, dmd, VA, THD, etc.	pulse/Modbus	no
EMM.630-Mbus	kWh/kVarh, kW/kVar, kVA, P.F, PF, dmd, VA, THD, etc.	pulse/Mbus	no
EMM.630-MT	kWh/kVarh, kW/kVar, kVA, P.F, PF, dmd, VA, THD, etc.	pulse/Modbus	4 tariffs 10 segments

Two pulse output indicate real-time energy measurement. An RS485/Mbus output allows remote monitoring from another display or a computer.

1.2 RS485 Serial-Modbus RTU

*Not for EMM630-Pulse and EMM630Mbus

RS485 serial port with Modbus RTU protocol to provide a means of remotely monitoring and controlling the Unit. Set-up screens are provided for setting up the RS485 port.

1.3 Mbus

*For EMM630-Mbus only

This uses an Mbus port with EN13757-3 protocol to provide a means of remotely monitoring and controlling the Unit. Screens are provided for setting up the RS485 port. Set-up screens are provided for setting up the Mbus port.

1.4 Pulse output

Two pulse outputs that pulse measured active and reactive energy. The constant of pulse output 2 for active energy is 400imp/kWh (unconfigurable), its width is fixed at 100ms. The default constant of configurable pulse output 1 is 400imp/kWh, default pulse width is 100ms. The configurable pulse output 1 can be set from the set-up menu.

2. Start Up Screens

	The first screen lights up all display segments and can be used as a display check.
	Software version information
	The interface performs a self-test and indicates the result if the test passes.

*After a short delay, the screen will display active energy interface as follows:

	Total active energy in kWh.
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3. Measurements

The buttons operate as follows:

	Selects the Voltage and Current display screens. In Set-up Mode, this is the "Left" or "Back" button.
	Select the Frequency and Power factor display screens. In Set-up Mode, this is the "Up" button.
	Select the Power display screens. In Set-up Mode, this is the "Down" button.
	Select the Energy display screens. In Set-up mode, this is the "Enter" or "Right" button.

3.1 Voltage and Current

*Not for EMM.630-Standard.

Each successive press of the button selects a new parameter:

	Phase to neutral voltages.
	Current on each phase.
	Phase to neutral voltage THD% of 2nd to 19th.
	Each phase Current THD% of 2nd to 19th.

3.2 Frequency and Power Factor and Demand

*Not for EMM.630-Standard

Each successive press of the button selects a new range:

	Frequency and Power Factor (total).
	Power Factor of each phase.
	Maximum Power Demand.
	Maximum Current Demand.

3.3 Power

*Not for EMM.630-Standard

Each successive press of the button select a new range:

	Instantaneous Active Power in kW.
	Instantaneous Reactive Power in kVar.
	Instantaneous Volt-Amps in kVA.
	Total kW, kVarh, kVA.

3.4 Energy Measurements

Each successive press of the button selects a new range:

	Import active energy in kWh.
	Export active energy in kWh.
	Tariff 1 active energy Tariff 2 active energy Tariff 3 active energy Tariff 4 active energy *For EMM630-MT only
	Total active energy in kWh.
	Import reactive energy
	Export reactive energy

	Tari ff1 reactive energy Tari ff2 reactive energy Tari ff3 reactive energy Tari ff4 reactive energy *For EMM.630-MT only
	Total reactive energy
	date Year/month/day. 1st,Jan,2000 (default) *For EMM.630-MT only
	Time Hour/minute/second Example:00:02:16 *For EMM.630-MT only

*The parameters of date and time can only be setted via RS485 communication.

4. Set Up

To enter set-up mode, press the button for 3 seconds, until the password screen appears.

	Setting up is password-protected so you must enter the correct password (default '1000') before processing.
	If an incorrect password is entered, the display will show: PASS Err

To exit setting-up mode, press repeatedly until the measurement screen is restored.

4.1 Set-up Entry Methods

Some menu items, such as password, require a four-digits number entry while others, such as supply system, require selection from a number of menu options.

4.1.1 Menu Option Selection

- Use the and buttons to scroll through the different options of the set up menu.
- Press to confirm your selection
- If an item flashes, then it can be adjusted by the and buttons.
- Having selected an option from the current layer, press to confirm your selection. The SET indicator will appear.
- Having completed a parameter setting, press to return to a higher menu level. The SET indicator will be removed and you will be able to use the and buttons for further menu selection.
- On completion of all setting-up, press repeatedly until the measurement screen is restored.

4.1.2 Number Entry Procedure

When setting up the unit, some screens require the entering of a number. In particular, on entry to the setting up section, a password must be entered. Digits are set individually, from left to right. The procedure is as follows:

- The current digit to be set flashes and is set using the and buttons
- Press to confirm each digit setting. The SET indicator appears after the last digit has been set.
- After setting the last digit, press to exit the number setting routine. The SET indicator will be removed.

4.2 Change Password

	Use the and buttons to choose the change password option.
	Press the to enter the change password routine. The new password screen will appear with the first digit flashing.
	Use and to set the first digit and press to confirm your selection. The next digit will flash.
	Repeat the procedure for the remaining three digits.
	After setting the last digit, SET will show.

Press to exit the number setting routine and return to the Set-up menu. SET will be removed

4.3 DIT Demand Integration Time

*Not for EMM.630-Standard

This sets the period in minutes over which the current and power readings are integrated for maximum demand measurement. The options are: 0, 5, 8, 10, 15, 20, 30, 60 minutes.

	From the set-up menu, use and buttons to select the DIT option. The screen will show the currently selected integration time.
	Press to enter the selection routine. The current time interval will flash.
	Use and buttons to select the time required.
	Press to confirm the selection. SET indicator will appear.

Press to exit the DIT selection routine and return to the menu.

4.4 Supply System

The unit has a default setting of 3Phase 4wire (3P4).

Use this section to set the type of electrical system.

	From the set-up menu, use and buttons to select the system option. The screen will show the currently selected power supply.
	Press to enter the selection routine. The current selection will flash.
	Use and buttons to select the required system option: 1P2 (W), 3P3 (W), 3P4 (W).
	Press to confirm the selection. SET indicator will appear.

Press to exit the system selection routine and return to the menu. SET will disappear and you will be returned to the main set-up Menu.

4.5 Backlit set-up

Backlit lasting time is settable, default lasting time is 60minutes

	If it's setted as 5, the backlit will be off for 5 minutes if there is no more further operation.
	Press to enter the selection routine. The current time interval will flash. The options are: 0 (always on), 5, 10, 30, 60, 120

Press and to select the time interval. Then press to confirm the set-up.

4.6 Pulse Output

This option allows you to configure the pulse output 1. The output can be set to provide a pulse for a defined amount of energy active or reactive. Use this section to set up the pulse output for:

Toal kWh/Total kVarh
Import kWh/Export kWh
Import KVarh/Export KVarh

	From the set-up menu, use and buttons to select the Pulse output option.
	Press to enter the selection routine. The unit symbol will flash.
	Use and buttons to choose kWh or kVarh.

On completion of the entry procedure, press to confirm the setting and press to return to the main set up menu.

Warnings

Important Safety Information is contained in the Maintenance section. Familiarize yourself with this information before attempting installation or other procedures. Symbols used in this document:

- Risk of Danger: These instructions contain important safety information. Read them before starting installation or servicing of the equipment.
- Caution: Risk of Electric Shock

