

SENS'METER

Three Phase meter

REFERENCE AC1302-01




Application

The bi-directional measurements make the meter suitable for active and reactive energy and power monitoring applications, and also perfect for solar PV measurements. With a RS485 Modbus port, the meter is easy for remote communication with Webdyn gateways. The multi-function helps you to count the energy consumed in different time periods.

Security Advice-Caution

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

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

 Caution: Risk of Electric Shock

Characteristics

- Bi-directional measure and display
- Multi-function measurements
- Two Pulse outputs
- RS485 Modbus / M-bus

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.

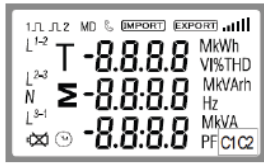
RS485 Serial - Modbus RTU

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.

Mbus

This unit has an Mbus serial port protocol to provide a means of remotely monitoring and controlling the unit. Set-up screens are provided for setting up the Mbus port.

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.



Total active energy in kWh.

Measurements



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.

Each successive press of the button selects a new parameter:



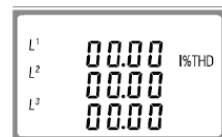
Phase to neutral voltages.




Phase to neutral voltage THD% of 2nd to 19th.








Current on each phase.








Each phase Current THD% of 2nd to 19th.




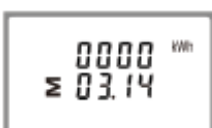


Each successive press of the  button selects a new range:


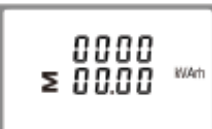

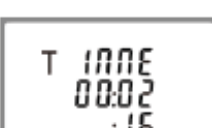
	Frequency and Power Factor (total).
	Power Factor of each phase.
	Maximum Power Demand.
	Maximum Current Demand.

Each successive press of the  button selects a new range:

	Instantaneous Active Power in kW.
	Instantaneous Reactive Power in kVar.
	Instantaneous Volt-Amps in KVA.
	Instantaneous Volt-Amps in KVA.

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
	Total active energy in kWh.
	Import reactive energy
	Export reactive energy

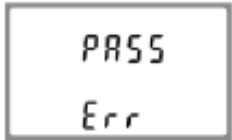
	Tariff 1 reactive energy Tariff 2 reactive energy Tariff 3 reactive energy Tariff 4 reactive energy
	Total reactive energy
	date Year/month/day. 1st,Jan,2000 (default)
	Time Hour/minute/second Example: 00:02:16

Set Up

Each successive press of the  button selects a new parameter:



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.

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.

Menu option selection

1. Use the  and  buttons to scroll through the different options of the set-up menu.
2. Press  to confirm your selection.
3. If an item flashes, then it can be adjusted by the  and  buttons.
4. Having selected an option from the current layer, press  to confirm your selection. The SET indicator will appear.
5. 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.
6. On completion of all setting-up, press  repeatedly until the measurement screen is restored.

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:


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

Change password






Use the  and  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
presse  to confirm your selection. The next digit will flash



Repeat the procedure for the remaining three digits

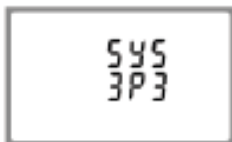


After setting the last digit, SET will show

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

SUPPLY SYSTEM

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).

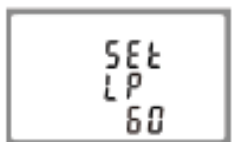


Press to confirm the selection. SET Indicator will appear

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.

BACKLIT SET-UP

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



If it's set as 5, the backlit will be off in 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.

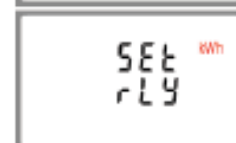
PULSE OUTPUT

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:

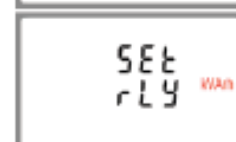
- Total kWh/Total kvarh
- Import kWh/Export kWh
- Import KVarh/Export KVarh



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 to choose kWh or kvarh

On completion of the entry procedure, press to confirm the setting and press to return 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:



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PULSE RATE

Use this to set the energy represented by each pulse. Rate can be set to 1 pulse per dFt/0.01/0.1/1/10/100 kWh/kVarh.



It shows 1 pulse = 10kWh/kVarh. From the set-up menu, use **MOD/PPAGE** and **P** buttons to select the pulse rate.



Press **E** to enter the selection routine. The current setting will flash. When it's dFt (default), it means 2.5Wh/Varh.

Use **MOD/PPAGE** and **P** buttons to choose pulse rate. On completion of the entry procedure, press **E** to confirm the setting and press **V/A/ESC** to return to the main set up menu.

PULSE DURATION

The pulse width can be selected as 200 (non-MID version meters only), 100 (default) or 60ms.



It shows pulse width of 100ms. From the set-up menu, use **MOD/PPAGE** and **P** buttons to select the pulse width option.



Press **E** to enter the selection routine. The current setting will flash.

Use **MOD/PPAGE** and **P** buttons to choose pulse rate. On completion of the entry procedure, press **E** to confirm the setting and press **V/A/ESC** to return to the main set up menu.

COMMUNICATION

There is RS485/Mbus port can be used for communication Modbus RTU protocol. For Modbus RTU, parameters are selected from front panel.



The range is from 001 to 247. From the set-up menu, use **MOD/PPAGE** and **P** buttons to select the address ID.



Press **E** button to enter the selection routine. The current setting will be flashing



Use **MOD/PPAGE** and **P** buttons to choose Modbus address (001 to 247)

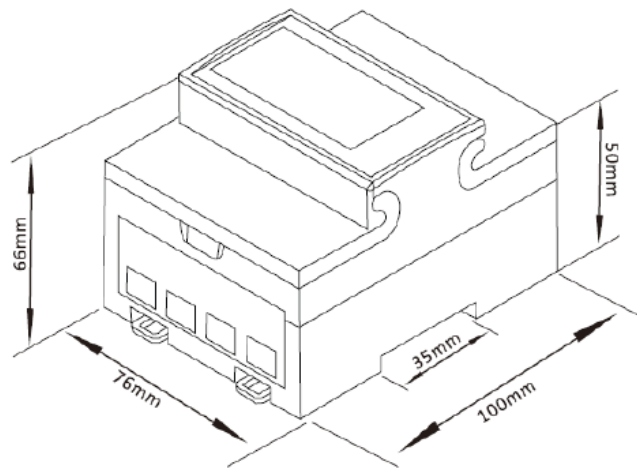
On completion of the entry procedure, press **E** button to confirm the setting and press **V/A/ESC** button to return the main set-up menu.

Specifications

Description	Three Phase Meter
Operating temperature	-25 to +55°C
Storage temperature	-40 to +70°C
Relative humidity	0 to 95% (non-condensing)
Installation category	CAT II
Voltage	AC: 230V Range: 176-276V AC
Current	Base (Ib/Iref): 5A Max (Imax): 100A Mini (Imin): 0.25A

Description	Three Phase Meter
Power consumption	<2W/10kVA
Frequency	50 Hz
Phase to neutral voltage	100 to 289V
Voltage between phases	173 to 500V
Interfaces	RS485, pulse output x 2
Display	LCD with backlit
Max. reading	99999.99 kWh

Dimensions



Wiring Diagram

