SENS'METER

Single Phase meter

REFERENCE AC1301-01

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
- 100A direct connection
- Two module size (35mm)
- Password protected set-up
- Backlighted LCD
- Multi-tariff

Pulse output
The meter provides two pulse outputs. Both pulse outputs are passive type. Pulse output 1 can be set to generate pulses to represent total / import / export kWh or kVarh.
The pulse constant can be set to generate 1 pulse per: 0.001/0.01/0.1/1kWh/kVarh (default is 0.001 export kWh).
Pulse width: 200/100/60ms.
Pulse output 2 is non-configurable. It is fiwed up with active kwh (lmp). The constant is 1000imp/kWh.

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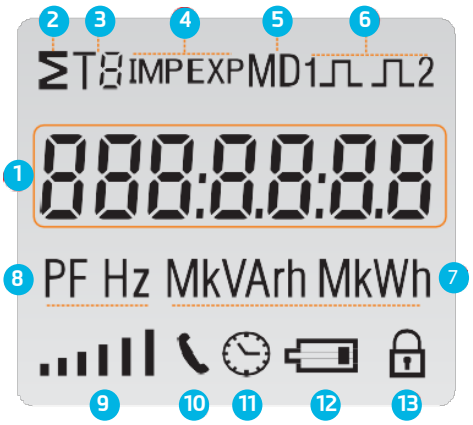
RS485 Serial - Modbus RTU
RS485 serial port with Modbus RTU protocol to provide a means of remotely monitoring and controlling the Unit. Set-up screens are provided for setting up the RS485 port.

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.

4T by RTC
The internal clock circuit of this unit has time automatic, switching function. Calendar, clock and rate can be set and adjustment through RS485, infrared interface. At least 4 tariffs and 10 times segments can be set within a natural day.

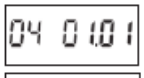
Characteristics



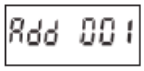
NO	DESCRIPTIONS
1	7 digits used to display measured values or RTC
2	Total value
3	Tariff information
4	Import information, export information
5	Max. demand for power or current
6	Pulse output 1 and pulse output 2
7	Measurements units
8	PF = power factor. Hz = frequency
9	Bar display of power
10	Communication indicator
11	Time information
12	Low battery warning
13	Lock symbol

Initialization Display

All display segments light up, display check

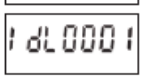


Software version (please check the real software version on the product as the final)

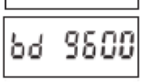


Modbus ID or Mbus primary address

Mbus secondary address (high)



Mbus secondary address (low)



Baud rate

Total kWh

Scroll Display by Buttons

After initialization and self-checking program, the meter display the measured values. The default page is total kWh. If the user wants to check other information, he needs to press the scroll button on the front panel.

The display order by scroll button:

Total active energy.
Example: 70.00kWh

Import (input) active energy.
Example: 50.00kWh

Export (output) active energy.
Example: 20.00kWh

T1 active energy.
Example: 10.00kWh

T2 active energy.
Example: 10.00kWh

T3 active energy.
Example: 30.00kWh

T4 active energy.
Example: 20.00kWh

Total reactive energy.
Example: 10.00kVarh

Import (input) reactive energy
Example: 5.00kVarh

Export (output) reactive energy
Example: 5.00kVarh

T1 reactive energy
Example: 2.00kVarh

T2 reactive energy
Example: 2.00kVarh

T3 reactive energy
Example: 2.00kVarh

T4 reactive energy
Example: 4.00kVarh

Max power demand
Example: 6938W

T1 Max power demand
Example: 0W

T2 Max power demand
Example: 0W

T3 Max power demand
Example: 0W

T4 Max power demand
Example: 0W

Voltage
Example: 229.8V

Current
Example: 30.156A

Active power
Example: 4700W

Reactive power
Example: 4700W

Apparent power
Example: 4811VA

Power factor
Example: 1.000

Frequency
Example: 49.99Hz

Pulse 2 constant
Example: 1000

Modbus address
Example: 001 Mbus primary address

Low bit of MBus secondary address (default 0001)
Example: if the secondary address hight bit is 0000, low this is 0001, that means the integral secondary address is 00 00 00 01

Low bit of MBus secondary address (default 0001)
Example: if the secondary address hight bit is 0000, low this is 0001, that means the integral secondary address is 00 00 00 01

Baud rate
Example: 9600

Date
Format: Day, Month, Year
Example: 1st Jan 2015

Time
Format: Hour, Minute, Second
Example: 00:02:39

Time segment 1
Format: Hour, Minute, Tariff
Example: 00:00, Tariff 1

Time segment 2
Format: Hour, Minute, Tariff
Example: 02:00, Tariff 2

Time segment 3
Format: Hour, Minute, Tariff
Example: 04:00, Tariff 3

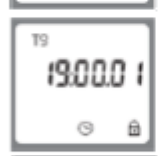
Time segment 4
Format: Hour, Minute, Tariff
Example: 05:00, Tariff 4

Time segment 5
Format: Hour, Minute, Tariff
Example: 07:25, Tariff 1

Time segment 6
Format: Hour, Minute, Tariff
Example: 08:11, Tariff 2

Time segment 7
Format: Hour, Minute, Tariff
Example: 15:40, Tariff 3

Time segment 8
Format: Hour, Minute, Tariff
Example: 17:00, Tariff 4



Time segment 9
Format: Hour, Minute, Tariff
Example: 19:00, Tariff 1

Time segment 10
Format: Hour, Minute, Tariff
Example: 23:00, Tariff 2

Set-up Mode

To get into Set-up Mode, the user needs to press the «enter» button ↵ for 3 seconds

The setting is done correctly

The entering information is wrong.
The operation fails

Password.
To get into set-up mode, it asks a password confirmation. Default password is 1000

Address. For Modbus default ID is 001, range 001-247. For Mbus default ID is 001, range 001-250

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new address value, the used needs pressing the «enter» button to confirm

High bit of Mbus secondary address (default 00 00)

Low bit of Mbus secondary address (default 00 01).

Press the «enter» button, the red part flash. Press the «scroll» button to change the option. After choose the new value, the user needs pressing the «enter» button to confirm the setting.

Baud rate for Modbus: default value is 2400bps, range 1200, 2400, 4800, 9600bps.
Baud rate for Mbus: default valus is 2400bps, range 300, 600, 1200, 2400, 4800, 9600bps.

Press the «enter» button, the red part flash. Press the «scroll» button to change the option. After choose the new baud rate the user needs pressing the «enter» button to confirm

Parity.
Defaut is none. Option None, Even, Odd

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new parity, press the «enter» button to confirm

Pulse Output 1 default kWh. Option kWh/ kVarth/Imp. kWh/Exp kWh/Imp kWh/Exp kVarth

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new Pulse output option press the «enter» button

Pulse constant default 1000
Option: 1000/100/10/1

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new pulse constant option, press the «enter» button

Pulse duration default 100mS
Option: 200/100/60ms

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new pulse duration option, press the «enter» button

Demand integration time default 15 minutes
Option: off (0)/5/10/15/30/60

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new DIT option, press the «enter» button

Automatic scroll time interval default 0S
Option: 0-30S

Press the «enter» button, the first digit flash. Press the «scroll» button to change the value. After choose the new SCRI option, press the «enter» button

Password set-up default 1000

Press the «enter» button, the red part flash.
Press the «scroll» button to change the option.
After choose the new option the user needs pressing the «enter» button to confirm

Date set-up, press the «enter» button to enter the date set-up page

Press the «scroll» button to change the option. After choose the new value press the «enter» button to confirm.
Date format: day, month, year

Time set-up, press the «enter» button to enter the time set-up page

Press the «scroll» button to change the option. After choose the new option the user needs pressing the «enter» button to confirm.
Time format: hour:minute:second

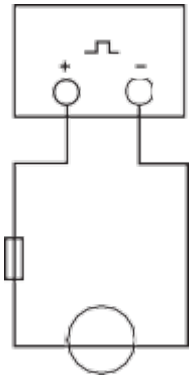
Specifications

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 (lb/lref): 5A Max (lmax): 100A Mini (lmin): 0.25A

Description	Three Phase Meter
Power consumption	<2W/10kVA
Frequency	50 Hz
AC voltage withstand	4 kV for 1 minute
Impulse voltage withstand	6kV-1.2uS wavform
Over current withstand	30 lmax for 0.01s
Display	LCD with backlit
Max. reading	99999.99 kWh

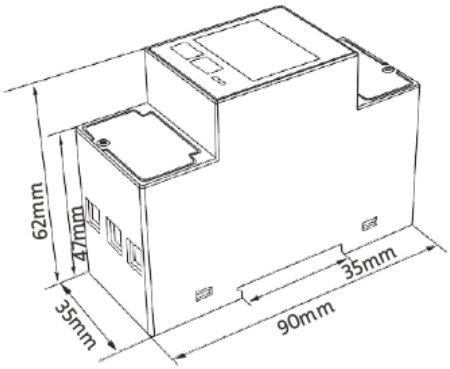
Pulse Output
The pulse output 1 can be set to generate pulses to represent total kWh, total kVarh,import kWh, export kWh,import kVarh, export kVarh.
Constant can be set to 1000/100/10/1 impulse per kwh or Kvarh. Pulse width 200/100/60mS.

Attention: Pulse output must be fec as shown in the wiring diagram below. Scrupulously respect polarities and the connection mode: opto-coupler with potential-free SPST-NO Contact. Contact range: 5-27VCD Max. Current input: 27MADC

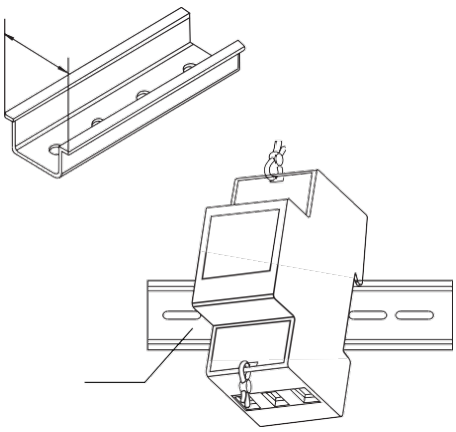


RS485 output for Modbus RTU
The meter provides a RS485 port for remote communication. Modbus RTU is the protocol applied. For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu.
Baud rate: 1200, 2400, 4800, 9600bps.
Parity: None/Even/Odd
Stop bits: 1 or 2
Modbus Address: 1 to 247

Dimensions



Installation & Sealing



Wiring Diagram