

OB115-MOD

Single Phase Multi-function  
Energy Meter



VIEW & BUY  
ONLINE



# OB115-MOD

Single phase  
Multi-function  
energy meter

# USER MANUAL

## Benefits and Main Features

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## MAIN FEATURES AND BENEFITS

Energy meter with serial Modbus interface 333 mV CT ac output  
Solid core sensor and open core sensor, 333 mV ac input 100A.

- MID approved with module "B" and "D" certification.
- Bidirectional energy metering 1 DIN modules, 230V AC 50Hz/120V AC 60Hz.
- Solid-core sensor & open-core sensor, 330mV ac input 100A.
- Display of Voltage, Ampere, kW, PF, Hz, +kWh, -kWh, ΣkWh.
- Total energy usage can be calculated via 5 different modes.
- Display Modbus RTU Interface data: Baud rate, Modbus ID and parity.
- The key setting parameters are valid.
- S0 pulse output, transmission of measured values via pulses.
- LCD display with green backlight.
- Accuracy class B according to EN50470-3 Accuracy class 1 according to IEC62053-21.
- The meter is intended to be installed in a mechanical environment 'M1,' with shock and vibrations of low significance, as per 2014/32/EU directive and should be installed in electromagnetic environment 'E2,' as per 2014/32/EU directive.



18mm



Security  
Sealing



Import/Export  
Energy Measuring



Multi-Measurements



S0 Output:  
Programmable

## 1 METER SPECIFICATION

### VOLTAGE/CURRENT INPUTS:

|                                            |                              |
|--------------------------------------------|------------------------------|
| <b>Nominal voltage(v):</b>                 | 230V AC                      |
| <b>Voltage range:</b>                      | (120-275)V                   |
| <b>Power consumption:</b>                  | 0.5W 2VA                     |
| <b>Primary Current(A):</b>                 | 100A                         |
| <b>Second input(mV):</b>                   | 333mV (Primary current=100A) |
| <b>RS485 cable:</b>                        | AWG18                        |
| <b>Terminal flexible 1xmm<sup>2</sup>:</b> | 0-2.5mm <sup>2</sup>         |

### GENERAL DATA:

|                        |            |
|------------------------|------------|
| <b>Frequency (Hz):</b> | 50 or 60Hz |
| <b>Accuracy:</b>       | B          |

### MECHANICAL:

|                  |        |
|------------------|--------|
| <b>Material:</b> | ABS+PC |
| <b>Weight:</b>   | 100g   |

### ENVIRONMENTAL:

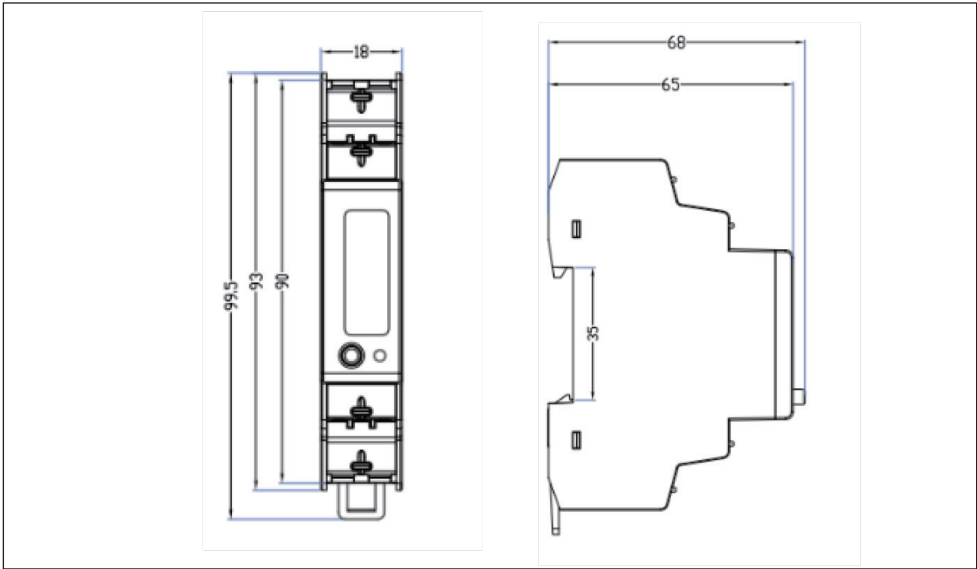
|                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| <b>Operating temperature:</b> | -25°C~+55°C                                             |
| <b>Storage temperature:</b>   | -40°C~+70°C                                             |
| <b>Humidity:</b>              | 75% yearly average, 95% on 30 days/year, non-condensing |

### DIMENSIONS:

|                     |      |
|---------------------|------|
| <b>Width (mm):</b>  | 18   |
| <b>Height (mm):</b> | 99.5 |
| <b>Depth (mm):</b>  | 68   |



2 DIMENSIONS



3 MAIN FUNCTION

3.1 MEASURING FUNCTION

Meter can measure import active energy, export active energy, total active energy. Import reactive and export reactive energy available through interface.

3.2 ELECTRICITY PARAMETERS MEASUREMENT

Measured parameters from mains:

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| <b>Voltage:</b>                 | 0.5% of range maximum                                                       |
| <b>Current:</b>                 | 0.5% of nominal FS solid-core sensor<br>1.0% of nominal FS open-core sensor |
| <b>Frequency:</b>               | 0.2% of MID-frequency                                                       |
| <b>Power factor:</b>            | 1.0% of unity (0.01)                                                        |
| <b>Active power(W):</b>         | ± 1.0% of range maximum                                                     |
| <b>Reactive power(var):</b>     | ± 2.0% of range maximum                                                     |
| <b>Apparent power(VA):</b>      | ± 1.0% of range maximum                                                     |
| <b>Active energy(kWh):</b>      | Class B EN50470-3                                                           |
| <b>Reactive energy (kvarh):</b> | ± 2.0% of range maximum                                                     |

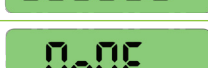
## 3.3 DISPLAY FUNCTION

When the power on, the smart meter will initialise and do self-checking.

|   |                                                                                   |                                                |
|---|-----------------------------------------------------------------------------------|------------------------------------------------|
| 1 |  | Full screen<br>It will last for 3 seconds      |
| 2 |  | Software version<br>It will last for 3 seconds |

Smart Meter has two statuses: scroll display status and button press display. When pressing the button, will display total active energy, import active energy, export active energy, voltage, current, active power, frequency, power factor, Modbus ID, baud rate, parity, software version.

## 3.3 LCD CONTENT

|    |                                                                                     |                             |
|----|-------------------------------------------------------------------------------------|-----------------------------|
| 1  |    | Total active energy         |
| 2  |   | Import active energy        |
| 3  |  | Export active energy        |
| 4  |  | Voltage (V)                 |
| 5  |  | Current (A)                 |
| 6  |  | Active power(W)             |
| 7  |  | Frequency                   |
| 8  |  | Power factor (PF)           |
| 9  |  | Modbus ID                   |
| 10 |  | Baud rate (default 9600bps) |
| 11 |  | Parity (default:None)       |
| 12 |  | Software version            |

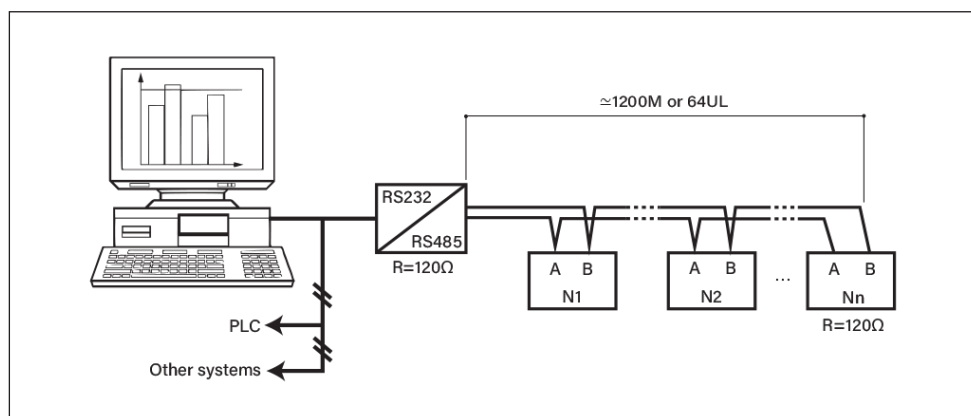
## 3.5 COMMUNICATION FUNCTION

The meter provide RS485 port for remote communication. Communication parameters can be selected from the set mode.

RS485 communications transfer rates allow selected at 1200bps, 2400bps, 4800bps, 9600bps, 19.2kbps, 38.4kbps, 115.2kbps, **default is 9600bps**.

Parity: None/Even, default is None. Modbus address: 001-255, default is 001.

The max quantity of meters on one RS485 Modbus is 64 units, the longest communication distance is 1.2km.



## 3.6 PULSE OUTPUT FUNCTION

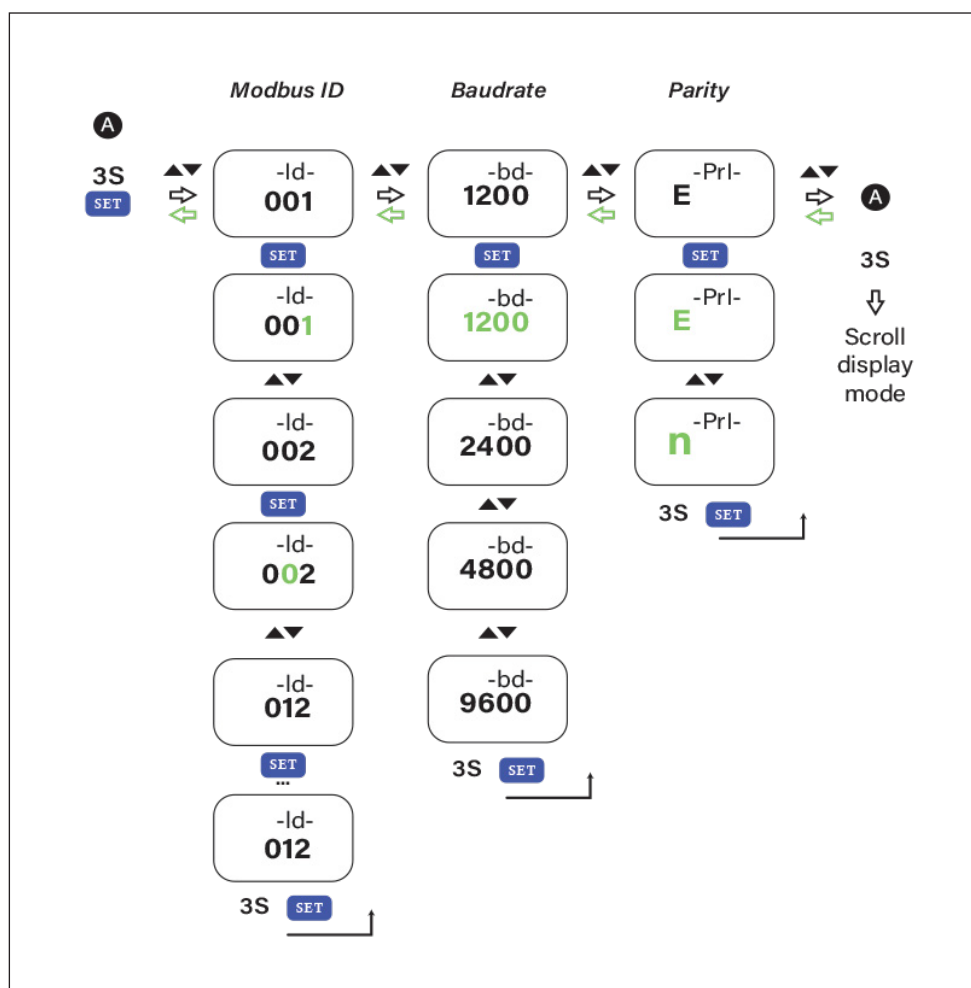
The meter has two pulse outputs. Both outputs are passive type. Pulse output 2 is configurable. Constant can be select: 0.001/0.01/0.1/1 imp/kWh, default is 1imp/kWh.

Pulse width: 60/100/200ms. Pulse output 1 is a fixed value and the constant is 1000 imp/kWh.

## 3.7 CHANGE DEFAULT SETTINGS VIA BUTTONS

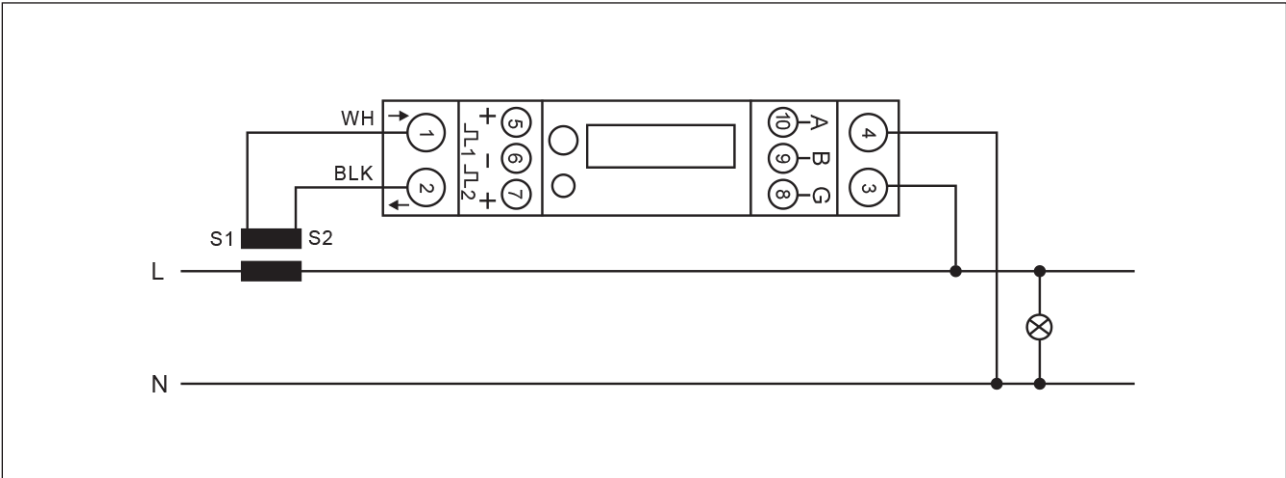
After a long press (3 seconds) on SET button in the scroll display, the Set-up screen will appear.

**Steps:**



| GENERAL   | UNIT | DEFAULT | RANGE         |
|-----------|------|---------|---------------|
| MODBUS ID | /    | 001     | 001---254     |
| BAUD RATE | bps  | 9600    | 1200---115200 |
| PARITY    | /    | None    | None, Even    |

4 WIRING DIAGRAM



|        |                                                                                                         |
|--------|---------------------------------------------------------------------------------------------------------|
| 1/2    | CT in & Out                                                                                             |
| 3/4    | Phase/Neutral                                                                                           |
| 5/6    | S01 1000imp/kWh                                                                                         |
| 7/6    | bps                                                                                                     |
| 8/9/10 | RS485 Communication<br>contact TX/RX ( + ) Terminal<br>10 TX/RX ( - ) Terminal 9<br>G485 ( ) Terminal 8 |

5 REGISTER MAP

5.1 INSTANTANEOUS VALUES

| NO. | COMMENTS       | R/W | COMMAND | BYTES | TYPE | ADDRESS   | UNITS  |
|-----|----------------|-----|---------|-------|------|-----------|--------|
| 01  | Voltage        | Y/N | 03/04   | 4     | F32  | 0002/0010 | 0.1V   |
| 02  | Frequency      | Y/N | 03/04   | 4     | F32  | 0004/004E | 0.01Hz |
| 03  | Current        | Y/N | 03/04   | 4     | F32  | 0006/0052 | 0.01A  |
| 04  | Active power   | Y/N | 03/04   | 4     | F32  | 0008/0092 | 0.1W   |
| 05  | Apparent power | Y/N | 03/04   | 4     | F32  | 000A/00D2 | 0.1VA  |
| 06  | Reactive power | Y/N | 03/04   | 4     | F32  | 000C/0112 | 1var   |
| 07  | Power factor   | Y/N | 03/04   | 4     | F32  | 000E/0152 | 0.001  |

## 5.2 TOTAL ENERGY ACCUMULATOR

| NO. | COMMENTS               | R/W | COMMAND | BYTES | TYPE | ADDRESS        | UNITS                                                                       |
|-----|------------------------|-----|---------|-------|------|----------------|-----------------------------------------------------------------------------|
| 08  | Import active energy   | Y/N | 03/04   | 4     | F32  | 0160/0800      | range: 0~999.999<br>~1000~9999.99<br>~10000~99999.9<br>~100000~999999<br>~0 |
| 09  | Import reactive energy | Y/N | 03/04   | 4     | F32  | 0162/0A00      |                                                                             |
| 10  | Reserve (default 0)    | Y/N | 03/04   | 4     | F32  | 0164           |                                                                             |
| 11  | Export active energy   | Y/N | 03/04   | 4     | F32  | 0166/0900      |                                                                             |
| 12  | Export reactive energy | Y/N | 03/04   | 4     | F32  | 0168/0B00      |                                                                             |
| 13  | Total active energy    | Y/N | 03/04   | 4     | F32  | 016A/0700/0618 |                                                                             |

## 5.3 COMMUNICATION PARAMETER

| NO. | COMMENTS       | R/W | COMMAND  | BYTES | TYPE | ADDRESS | VALUE                                                                                                                          |
|-----|----------------|-----|----------|-------|------|---------|--------------------------------------------------------------------------------------------------------------------------------|
| 14  | Modbus ID      | Y/Y | 03/04/10 | 2     | U16  | 0524    | 01~FF 01(default)                                                                                                              |
| 15  | Baudrate       | Y/Y | 03/04/10 | 2     | U16  | 0525    | 04B0 = 1200bps<br>0960 = 2400bps<br>12C0 = 4800bps<br>2580 = 9600bps<br>4B00 = 19.2kbps<br>9600 = 38.4kbps<br>BBBB = 115.2kbps |
| 16  | Parity Setting | Y/Y | 03/04/10 | 2     | U16  | 0526    | 00 = None<br>(default)<br>01 = Even                                                                                            |

## 5.4 PRODUCTION DATA AND IDENTIFICATION

| NO. | COMMENTS                                                   | R/W | COMMAND  | BYTES | TYPE  | ADDRESS | UNITS                                                                                                                                         |
|-----|------------------------------------------------------------|-----|----------|-------|-------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 17  | Serial number                                              | Y/Y | 03/04/10 | 4     | U32   | FF00    |                                                                                                                                               |
| 18  | Manufacture code                                           | Y/Y | 03/04/10 | 4     | ASCII | FF02    | ASC Char 53 48 46 51                                                                                                                          |
| 19  | Type code                                                  | Y/Y | 03/04/10 | 2     | U16   | FF04    | 0115 (default)                                                                                                                                |
| 20  | Hardware version                                           | Y/Y | 03/04/10 | 2     | U16   | FF05    | 0002 (default)                                                                                                                                |
| 21  | Software version                                           | Y/Y | 03/04/10 | 2     | U16   | FF06    | 0001 (default)                                                                                                                                |
| 22  | Reference voltage                                          | Y/N | 03/04    | 2     | U16   | FF07    | 00E6 (default)                                                                                                                                |
| 23  | Power factor                                               | Y/N | 03/04    | 2     | U16   | FF08    | 0064 (default)                                                                                                                                |
| 24  | SO1 constant                                               | Y/N | 03/10    | 2     | U16   | FF09    | 03E8 (default)                                                                                                                                |
| 25  | SO2 output mode                                            | Y/Y | 03/04/10 | 2     | U16   | FF0A    | 00 Active energy 01<br>Reactive energy                                                                                                        |
| 26  | SO2 pulse<br>output constant                               | Y/Y | 03/04/10 | 2     | U16   | FF0B    | 00=0.001kWh/ imp<br>01=0.01kWh/ imp<br>02=0.1kWh/imp<br>03=1kWh/imp                                                                           |
| 27  | SO2 pluse width                                            | Y/Y | 03/04/10 | 2     | U16   | FF0C    | 00=60ms<br>01=100ms<br>02=200ms (default)                                                                                                     |
| 28  | Active energy<br>measurement<br>Method<br>combination code | Y/Y | 03/04/10 | 2     | U16   | FF19    | 01 Total=Import only<br>04 Total=Export only<br>05 Total=Import+Export<br>(default)<br>06<br>Total=Export-Import<br>09<br>Total=Import-Export |

## 6 DECLARATION OF CONFORMITY

We, Owen Brothers Metering UK Ltd. Ensure and declare that apparatus:

Single phase multi-function energy meter:

**OB115-Mod**

EU Notified Body 0598

UK Notified Body 0120

Satisfy the appropriate requirements of the directive 2014/32/EU with the following standards: EN 50470-1: 2006, electricity metering equipment (AC) part 1: General requirements, tests and test conditions. Metering equipment (class indexes A, B and C) and EN 50470-3: 2006, electricity metering equipment (AC) part 3: Particular requirements - static meters for active energy (class indexes A, B and C).

## 7 TECHNICAL SUPPORT

### Technical Support/Sales:

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**Email:** SUPPORT: support@owen-brothers.com  
SALES: sales@owen-brothers.com

[www.owen-brothers.com](http://www.owen-brothers.com)

