

## OB115-Mod-DO Single phase 1 module energy meter With Modbus & DO output



**Owen Brothers Metering UK Limited**

### Benefits and Main Features

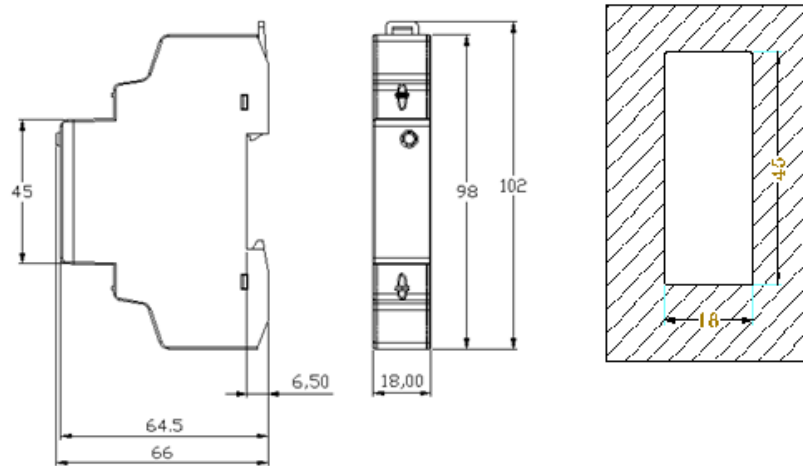
- MID approved with module "B" and "D" certification.
- Bidirectional energy metering 1 DIN modules, 230V AC 50Hz.
- Transformer connected meter, CT ratio can be set by communication
- Display of Voltage, Ampere, kW, PF, Hz, +kWh, -kWh,  $\Sigma$  kWh
- Total energy usage can be calculated via 5 different modes.
- Display Modbus RTU Interface data: baud rate, Modbus id, Parity
- Reactive power and reactive energy available through interface
- 1 DO output, use as Modbus controlled output.
- LCD display, 5 integer 1 decimal
- Clear green backlight display
- Accuracy class B according to EN50470-3  
accuracy class 1 according to IEC62053-21
- Memory back-up (EEPROM)
- 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.

**1 Meter specification**

<b>Type of measurement</b>	Voltage,Ampe,kW,PF,Hz,+kWh,-kWh,ΣkWh
<b>Voltage/current inputs</b>	
Nominal Voltage(v)	230V AC
Voltage range	(120-275)V
<b>Current(A)</b>	
- Iref	5A
-Itr	0.5A
-Imax	6A
-Imin	0.25A
-Ist	20mA
Current terminals flexible 1×mm <sup>2</sup>	0-6mm <sup>2</sup>
RS485 cable	AWG18
Terminal flexible 1×mm <sup>2</sup>	0-2.5mm <sup>2</sup>
<b>General data</b>	
Frequency (Hz)	50 or 60Hz
Accuracy	Cl.1

LED constant	1000
Number of digital outputs	1
Type	Alarm type ,Relay output, 5A 250VAC
<b>Mechanical</b>	
Material	ABS+PC
Weight	120g
<b>Environmental</b>	
Operating temperature	-25°C - +55°C
Storage temperature	-40°C - +70°C
Humanity	75% yearly average,95% on 30 days/year, non-condensing
<b>Dimension</b>	
Width (mm)	18
Height (mm)	104.5
Depth (mm)	88

## 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:

Voltage	0.5% of range maximum
Current	0.5% of range maximum
Frequency	0.2% of MID-frequency
Power factor	1.0% of unity (0.01)
Active power(W)	± 1.0% of range maximum

Reactive power (VAr)	± 2.0% of range maximum
Apparent power(VA)	± 1.0% of range maximum
Active energy(kWh)	Class B EN50470-3
Reactive energy (kvarh)	± 2.0% of range maximum

### 3.3 Display function








When powered on, the smart meter will initialize and conduct a self-check.



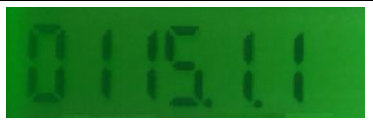

1		Full screen It will last for 3 seconds
2		Software version It will last for 3 seconds

The Smart meter has dual display status: cycle display and button press display. When pressing the button, it will display total active energy, import active energy, export active energy, voltage, current, active power, frequency, power factor, Modbus id, baud rate , parity

### 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 (example: 1200bps)
11		Parity (default: None)
12		Software version
13		DO status (example: OFF)

### 3.4 Communication Function

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

RS485 communications transfer rates allow selected at 1200bps, 2400bps, 4800 bps ,9600bps.,19200bps, default is 9600bps.

Parity: None/Even, default is None.

Modbus address: 001—255, default is 001

The max quantity of meters on one RS485 main bus is 64 Units, the longest communication distance is 1.2Km.

### 3.5 DO output function

The meter has 1 independent digital output. Use as Modbus controlled output .DO type:

5A,250V AC.

Terminal 6 and 7 is DO contact.

### 3.6 Programming

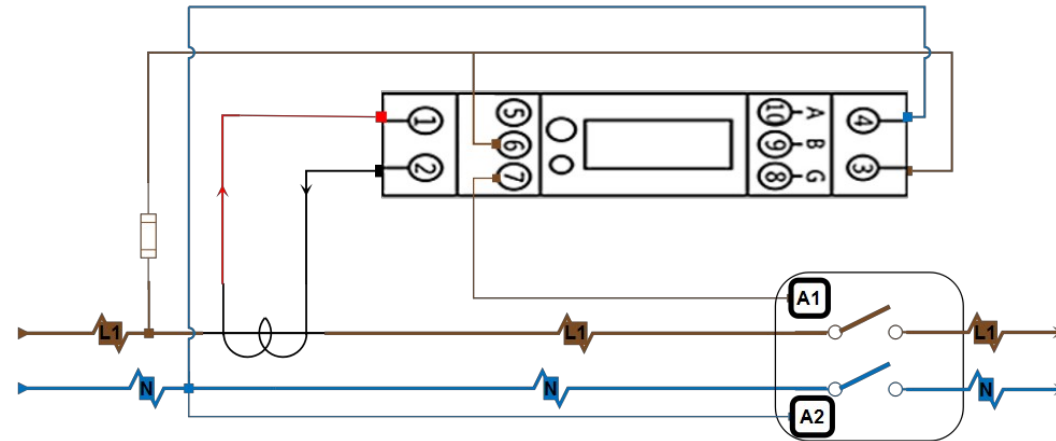
By holding the keys "SET" pressed for at last 3 sec., starts menu programming mode.LCD will show



The user can program the meter parameter by sending command via RS485 port

### 4 Wiring Diagram

The diagram is meter controls the contactor off and on remotely



1/2	Current in &Out
3/4	Phase/ Neutral
7/6	DO Configurable
8/9 /10	RS485 Communication contact
	TX/RX(+) Terminal 10
	TX/RX(-) , Terminal 9
	G485 (⊥) Terminal 8

## 5 Register map

### Instantaneous values

No	Comments	Command	R/W	Bytes	Starting address
1	Voltage	04	Y/N	4	0002/0010
2	Frequency	04	Y/N	4	0004/004E
3	Current	04	Y/N	4	0006/0052
4	Active power	04	Y/N	4	0008/0092
5	Apparent power	04	Y/N	4	000A/00D2
6	Reactive power	04	Y/N	4	000C/ 0112
7	Power factor	04	Y/N	4	000E/0152

### Total energy accumulator

No	Comments	Command	R/W	Bytes	Starting address
8	Import active energy	04	Y/N	4	0160/0800
9	Import reactive energy	04	Y/N	4	0162/0A00
10	Reserve (default 0)	04	Y/N	4	0164
11	Export active energy	04	Y/N	4	0166/0900
12	Export reactive energy	04	Y/N	4	0168/0B00
13	Total active energy	04	Y/N	4	016A/0700/0618

### Production data and identification

No	Comments	Command	R/W	Bytes	Starting address
14	Serial number	03/10	Y/Y	4	FF00
15	Manufacture code	03/10	Y/Y	4	FF02 (SHFQ ASCII)
16	Type code	03/10	Y/Y	2	FF04
17	Hardware version	03/10	Y/Y	2	FF05
18	Software version	03/10	Y/Y	2	FF06

19	Reference voltage	03	Y/N	2	FF07
20	Reference current	03	Y/N	2	FF08
21	Active energy measurement type	03/10	Y/Y	2	FF19 01 : Total=Import 04: Total=Export 05: Total=Import+Export 06: Total=Export-Import 09: Total=Import-Export
22	Modbus id	03/10	Y/Y	2	0524
23	Baud rate Hex(04B0) 1200bps Hex(0960) 2400bps Hex(12C0) 4800bps Hex(2580) 9600bps Hex(4B00) 19.2kbps	03/10	Y/Y	2	0525
24	Network Parity Stop 0000 None parity 0001 Even parity	03/10	Y/Y	2	0526

Any questions, please contact:

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**Appendix:**

**EU Type Examination Certificate**

