



OB115-Mod

Single phase Multi-function energy meter



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OB115-Mod

Single phase 1 modular energy meter With Serial Modbus interface 330mV CT ac input

- 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, Σ 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
- S0 pulse output, transmission of measured values via pulses
- LCD display, 5 integer 1 decimal
- Clear green backlight display
- 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

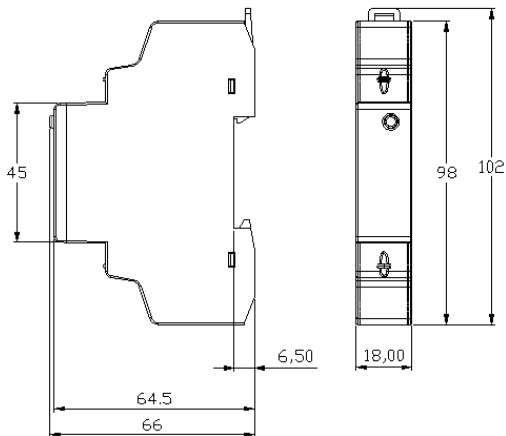
Multi-Measurements

S0 Output :
Programmable

» 1.Meter specification

Voltage/current inputs	
Nominal voltage(v)	230V AC
Voltage range	(120-275)V
Power consumption	0.5W 2VA
Primary Current(A)	100A
Second input(mV)	330mV (Primary current=100A)
RS485 cable	AWG18
Terminal flexible 1xmm ²	0-2.5mm ²
» General data	
Frequency (Hz)	50 or 60Hz
Accuracy	B
» Mechanical	
Material	ABS+PC
Weight	100g
» Environmental	
Operating temperature	-25°C ~ +55°C
Storage temperature	-40°C ~ +70°C
Humidity	75% yearly average,95% on 30 days/year, non-condensing
» Dimension	
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
Current	1.0% of nominal FS open-core sensor
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 the power on, the smart meter will initialize and do self-checking.

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

Smart meter have two status: cycle 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

- 3.4 Lcd content

1	060000 $\frac{\text{kWh}}{\text{h}}$ M	Total active energy
2	040000 $\frac{\text{kWh}}{\text{h}}$ I	Import active energy
3	020000 $\frac{\text{kWh}}{\text{h}}$ t	Export active energy
4	22 V	Voltage (V)
5	149 A	Current (A)
6	3500 W	Active power(W)
7	F 5000 Hz	Frequency
8	PF 100	Power factor (PF)
9	Id 001	Modbus id
10	b09600	Baud rate (default 1200bps)
11	None	Parity (default:Even)

• 3.5 Communication Function

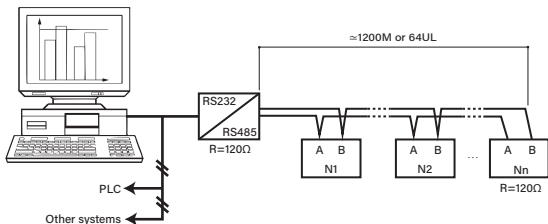
The meter provide RS485 port for remote communication. Communication parameters can be selected from the set mode.

RS485 communications transfer rates allow selected at 1200bps, 2400bps, 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.



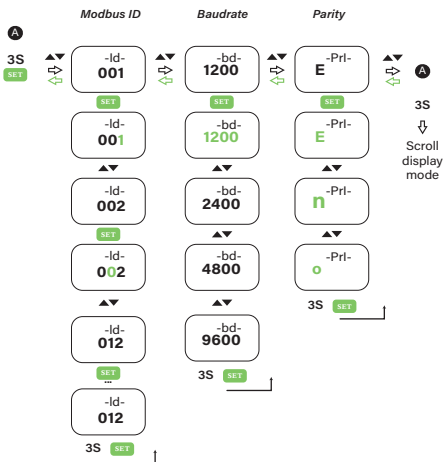
• 3.6 Pulse output function

The meter have two pulse output. 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 output1 is fixed up with total kWh. Constant is 1000imp/kWh.

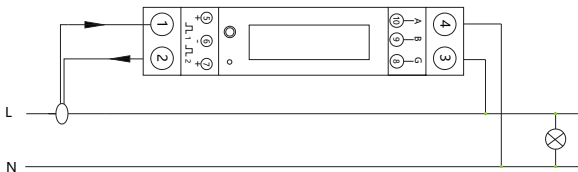
• 3.7 Change Default settings via buttons

After a long pressure (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---9600
Prity	/	None	None,Even,ODD

» 4.Wiring diagram



1/2	CT in &Out
3/4	Phase/Neutral
5/6	S01 1000imp/kWh
7/6	S02 Configurable
8/9/10	RS485 Communication contact TX/RX (+) Terminal 10 TX/RX (-) Terminal 9 G485 (⊥) Terminal 6

» 5.Register map

- 5.1 Function code 04 to read input parameters (00 broadcast id)

No.	Name	R/W	Command	Bytes	Type	Address	Units	Comment	Range
1	Voltage	R	04	4	F32	0x0000	0.1V	/	/
2	Current	R	04	4	F32	0x0006	0.01A	/	/
3	Active Power	R	04	4	F32	0x000C	0.1W	/	/
4	Apparent Power	R	04	4	F32	0x0012	0.1VA	/	/
5	Reactive Power	R	04	4	F32	0x0018	1VAR	/	/
6	Power Factor	R	04	4	F32	0x001E	0.01PF	/	/
7	Frequency	R	04	4	F32	0x0046	0.01Hz	/	/
8	Import active energy	R	04	4	F32	0x0048	kWh	/	0-9999.99-99999.9-999999-0
9	Export active energy	R	04	4	F32	0x004A	kWh	/	0-9999.99-99999.9-999999-0
10	Import reactive energy	R	04	4	F32	0x004C	kvarh	/	0-9999.99-99999.9-999999-0
11	Export reactive energy	R	04	4	F32	0x004E	kvarh	/	0-9999.99-99999.9-999999-0
12	Total power demand	R	04	4	F32	0x0054	0.1W	5 min total kW dmd	/
13	Maximum total power demand	R	04	4	F32	0x0056	0.1W	Total kW dmd Peak	/
14	Import power demand	R	04	4	F32	0x0058	0.1W	5 min import kW demand	/
15	Maximum Import power demand	R	04	4	F32	0x005A	0.1W	+kW dmd Peak	/
16	Export power demand	R	04	4	F32	0x005C	0.1W	5 min export kW demand	/
17	Maximum Export power demand	R	04	4	F32	0x005E	0.1W	-kW dmd Peak	/
18	Current demand	R	04	4	F32	0x0102	0.01A	5 min current dmd	/
19	Maximum Current demand	R	04	4	F32	0x0108	0.01A	Current dmd Peak	/
20	Total active energy	R	04	4	F32	0x0156	kWh	/	0-9999.99-99999.9-999999-0
21	Total reactive energy	R	04	4	F32	0x0158	kvarh	/	0-9999.99-99999.9-999999-0

- 5.2 Function code 10 to set holding parameter
function code 03 to read holding parameter (00 broadcast id)

No.	Name	R/W	Command	Bytes	Type	Address	Default	Comment	Range
22	S01 pulse width	R/W	03/10	4	F32	0x000C	Float (42C80000)	Milliseconds: 60, 100 (default) or 200, 0: One stop bit and no parity, default	/
23	The network port parity/stop bits	R/W	03/10	4	F32	0x0012	Float (00000000)	1: One stop bit and even parity. 2: One stop bit and odd parity. 3: Two stop bits and no parity.	/
24	Modbus ID	R/W	03/10	4	F32	0x0014	Float (3F800000)	Modbus id (default: 001)	001--247
25	Baudrate	R/W	03/10	4	F32	0x001C	Float (40000000)	Baudrate 0: 2400 baud 1: 4800 baud 2: 9600 baud (default) 5: 1200 baud	120-1960
26	CT	R	03/10	4	F32	0x0032	Float (42C80000)	CT Primary current	/
27	S01 output mode	R/W	04	4	F32	0x0056	Float (40800000)	01: Import active energy 02: Import + export active energy 04: Export active energy, (default) 05: Import reactive energy 06: Import + export reactive energy 08: Export reactive energy	/
28	Reset Max demand	W	10	2	U16	0x0564	/	\$02: Reset max demand values, Other: non-active	/
29	Display time in cycle statue	R/W	03/10	2	U16	0xF900	3S	\$00: Always display Total kWh, Other: all parameters each screen display time	0-30S
30	S01 output constant	R/W	03/10	2	U16	0xF910	\$01	\$00: 0.001kWh/imp \$01: 0.01kWh/imp \$02: 0.1kWh/imp \$03: 1kWh/imp	/
31	Active total energy measurement type	R/W	03/10	2	U16	0xF920	\$02	\$01: Total=Import \$02: Total=Import+Export \$03: Total=Import-Export	/
32	Rective total energy measurement type	R/W	/	2	U16	0xF930	\$02	\$01: Total=Import \$02: Total=Import+Export \$03: Total=Import-Export	/
33	Meter Serial Number	R	03	4	U32	0xFC00	/	/	/
34	Meter code	R	03	2	U16	0xFC02	\$0020	/	/
35	Meter Software Version	R	03	2	U16	0xFC03	\$0204	/	/

» 6.Declaration of Conformity

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

Single phase multi-function energy meter:
OB115-Mod

EU-type examination certificate SGS0332
Identification number of the 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

Any questions, please contact:
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