

EM408 Modbus

Single Phase 1 module energy meter with CT

KEY FEATURES

- Single phase metering
- The EM408 is single phase kWh Modbus meter with a LCD display in a 1 module (18mm) casing, ensuring a high accuracy class (Class1)
- Low starting current which makes it exceptionally suited for photovoltaic energy
- Excellent long term stability which is designed for DIN, IEN and EN standards and 1 year warranty.
- MID B & D approval which ensures the meter is produced to the highest European and International standards and the meter is legally suited for all applications.
- For connection rate of up to 100A.

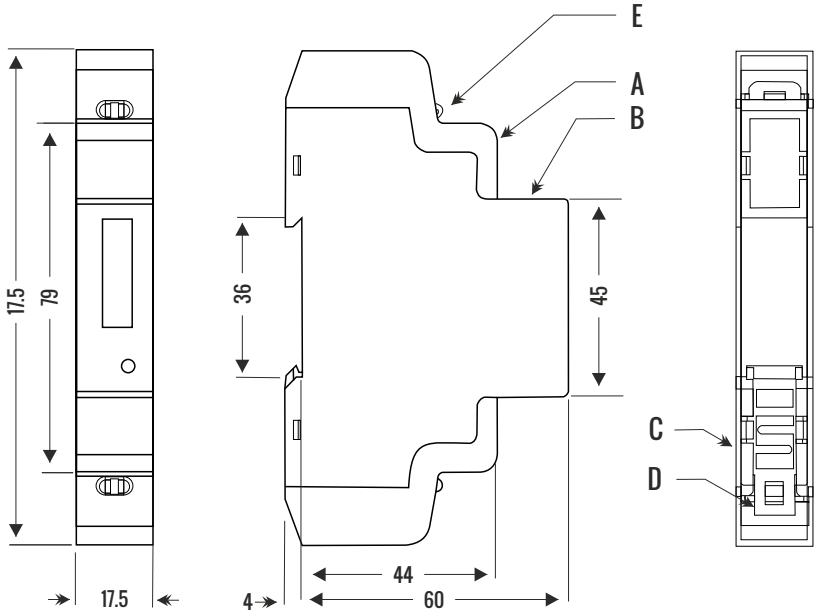


METER SPECIFICATION

Performance Criteria	
Operating Humidity	≤ 75%
Storage Humidity	≤ 95%
Operating Temperature	-25°C to +55°C
Storage Temperature	-30°C to +70°C
International Standard	EN50470-1 EN50470-3
Accuracy Class	B
Protection against penetration dust and water	IP51
Insulating encased meter of protective class	II
The mechanical and elctromagnetic environmental classes	B
Specifications	
Nominal Voltage (Un)	230V AC
Operational Voltage	(-15% ~ +10%)Un
AC voltage withstand	2KV for 1 minute
Impulse voltage withstand	6KV - 1.2μS waveform
Basic Current (Ib)	1.5/5A
Max. rated current (Imax)	6/100A
Operational current range	0.4% Ib-Imax
Over current withstand	30Imax for 0.01s

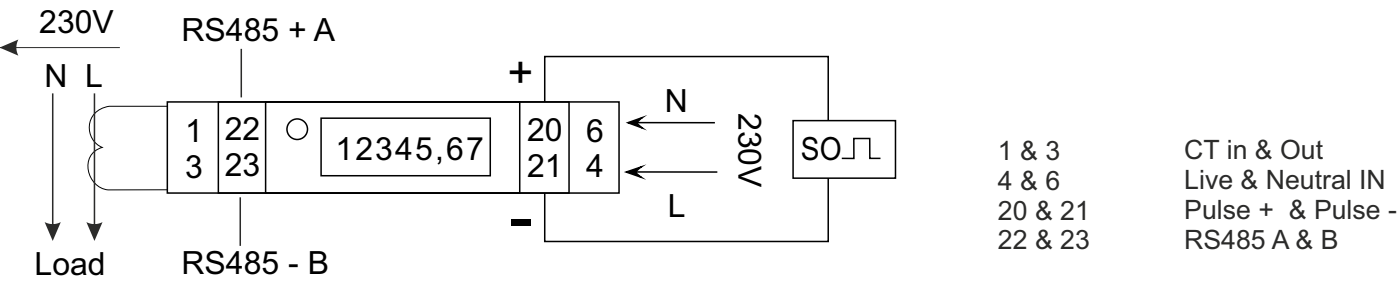
Operational frequency range	50Hz ±10%
Internal power consumption	≤2W /10VA
Test output flash rate (RED LED)	1000 or 2000imp/kWh
Pulse output rate (pins 20&21)	1000 or 2000imp/kWh
Consumption indicator (RED LED)	Flashing at load running
Dimensions	
Width x Height x Depth (mm)	17.5 x 112 x 60

DIMENSIONS AND INSTALLATION



- A LCD
- B Terminal block
- C Case
- D Protection Cover
- E Security Clasp

Register material: PC inflammable retarding
 Case/Terminal Block/Cover: ABS inflammable retarding



- 1 & 3 CT in & Out
- 4 & 6 Live & Neutral IN
- 20 & 21 Pulse + & Pulse -
- 22 & 23 RS485 A & B

TECHNICAL DESCRIPTION

Energy Use indicator

There is a LED which has two colors (green and red) while flashing in the front panel of EM408. When energy is being used, the LED will flash and display red. The quicker the LED flashes, the more energy is being used.

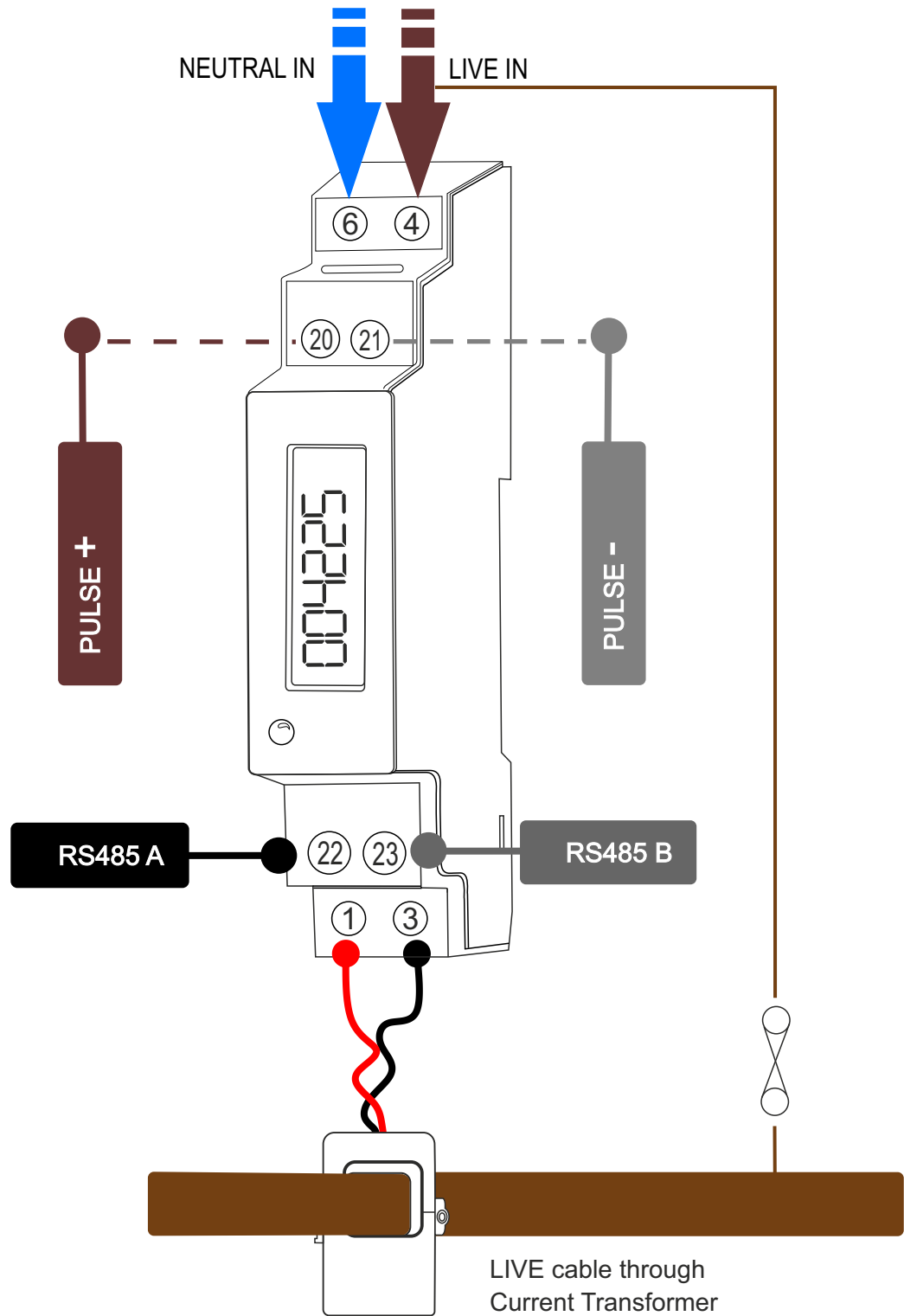
Reading the meter

The EM408 energy meter is equipped with 5+2 LCD display which displays the amount of energy used.

Pulse output

The EM408 DIN rail energy meter is equipped with a pulse output which is fully isolated. **The pulse output is a polarity dependent**, passive transistor output requiring an external voltage source for correct operation. For this external voltage source, the voltage (Ui) should is 5-27V DC, and the maximum input current (Imax) is 27mA DC. To connect the impulse output, connect 5-27V DC to connector 20 (anode), and the signal wire (S) to connector 21 (cathode).

INSTALLATION DIAGRAM



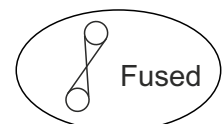
230V

1 & 3 = CT (Red (1), Black (3))

4 & 6 = Live & Neutral

20 & 21 = Pulse Cables Set 2000 imp/kWh (20+ | 21 -)

22 & 23 = RS485 (A) & RS485 (B)



DISPLAY FUNCTION

Cycle display status, Display cycle can be set within 5~20 seconds, the default is 5 seconds. The display items as following:

	Full Screen will last for 3 sec.		Software Version will last for 3 sec.
	Baud Rate		Constant (1000) (2000) (1600) (3200) [Pulse Output]
	ID Number		Serial Number (SnL - Low)
	Serial Number (SnH - High)		
	Total active kWh		Voltage V XXX. X
	Current A XX. XX		Active Power P XXXXX
	Power Factor X. XX		Frequency F XX.X
	Constant C XXXX		Baud Rate
	ID Number		

SO Output
0.001kWh/imp (default), 0.001kWh/imp, 0.01kWh/imp, 0.1kWh/imp, 5kWh/imp, 10kWh/imp

RS485 Communication Specifications

Bus Type	RS485
Protocol	MODBUS RTU with 16 bit CRC
Baud Rate	1200, 2400 (default), 4800, 9600
Address Range	1-255 user settable
Bus Loading	64 meters per bus
Range	1000m

BASIC ERRORS

0.05Ib	Cosφ = 1	± 1.5%
0.1Ib	Cosφ = 0.5L	± 1.5%
	Cosφ = 0.8C	± 1.5%
0.1Ib - Imax	Cosφ = 1	± 1.0%
0.2Ib - Imax	Cosφ = 0.5L	± 1.0%
	Cosφ = 0.8C	± 1.0%