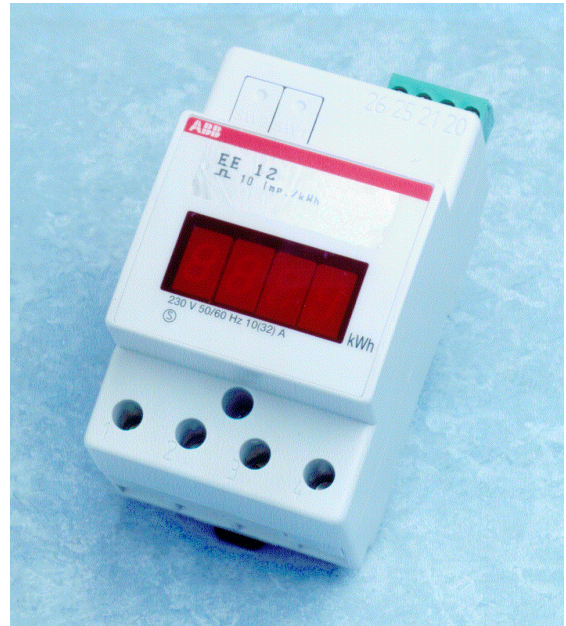


EM/1+ Series Single Phase Electricity Meter

SINGLE PHASE ELECTRICITY METERS



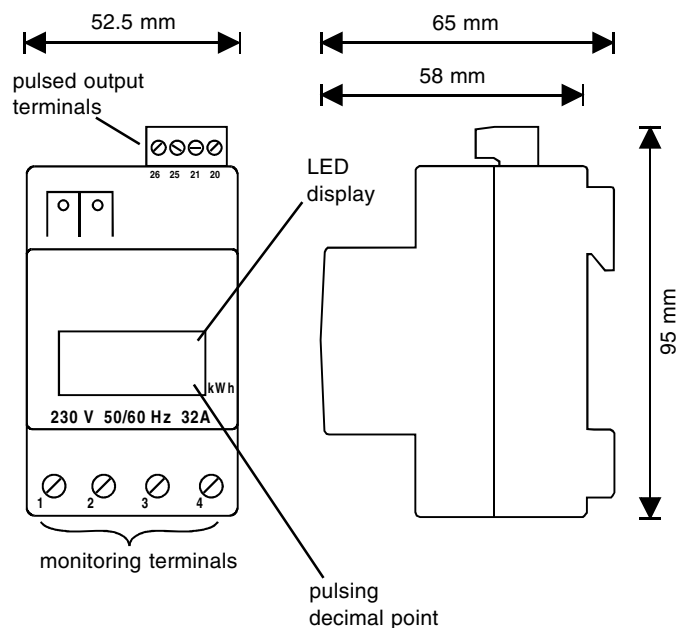
Description

Electronic kWh meter for sub-metering in all types of building. Pulsed output for direct input to a Trend controller. DIN rail mounting for panel installation. Currents up to 32 A can be monitored directly without CT rings. A range of split core type current transformers is also available up to 2000 A. Employs surface mount technology for reliability and compact size.

Features

- Solid state electronic meter
- Very compact
- DIN rail mounting
- Voltage free pulsed output
- Visual display
- Direct connection up to 32A
- Split ring CTs available up to 2000 A

Physical



FUNCTIONALITY

This meter provide solid state output pulses which, when counted and scaled, will give a measurement in kWh (hence the rate will give a value of kW). It is optically-isolated from the measuring circuit and can switch a maximum current of 20 mA.

Voltage transformers may be used, and the meter burden is 7VA (single phase). Any current transformers used should have a 5A secondary current full scale rating, with the meter burden of 0.1 VA single phase, or 0.4VA three phase.

The EM/1+ is a single phase energy meter with a 4 digit LED display which will show electricity usage to the nearest kWh. It can be used for direct connection up to 32A or connection via a CT for higher currents. The pulses are produced at 10 pulses/kWh. *Note that the display will not be correct if an external CT (or VT) is used - see calculations - consumption below.*

Calculations

Flashes

$$\frac{\text{kW} \times 10}{3600} \text{ flashes/sec}$$

$$\frac{3600}{\text{kW} \times 10} \text{ secs between flashes}$$

Consumption

Direct Connection

Actual consumption = displayed consumption

$$\text{pulse output} = \frac{1}{10} = 0.1 \text{ kWh/pulse}$$

Indirect Connection

Actual consumption = [transformer ratio I] x [transformer ration V] x displayed consumption

e.g. if using a CT/500S the ratio is 500:5=100, and with no voltage transformer,

Actual consumption = 100 x displayed consumption

$$\text{pulse output} = \frac{[\text{transformer ratio I}] \times [\text{transformer ratio V}]}{10} \text{ kWh/pulse}$$

INSTALLATION

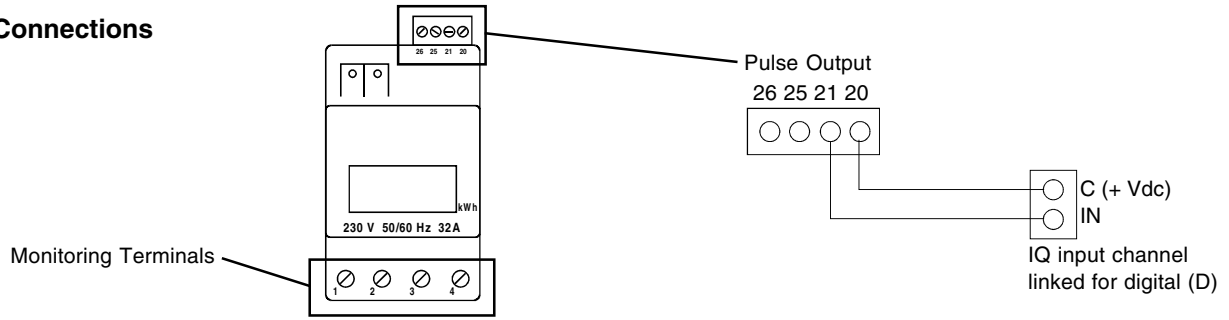
Mount unit on DIN rail in cabinet
Connect meter to mains supply
If using CT rings connect them

Connect fuses to voltage supply
Connect pulse output
Function test

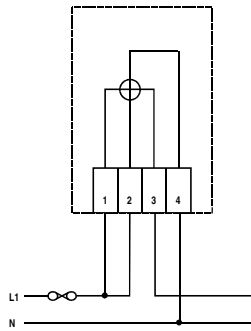
Full installation details are given in the Installation Instructions TG102890.

INSTALLATION (continued)

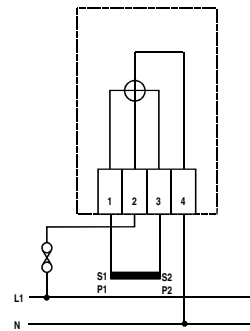
Connections



Direct connection <32 A



Indirect connection >32 A via CT



*Notes: Do not connect CT to Neutral or Earth
Voltage supply is fuse protected
Ensure correct polarity of CT*

PRODUCT CODES

EM/1+/230 Single phase kWh meter - direct or CT measurements
For details of available current transformers see CT Data Sheet, TA102139.

SPECIFICATION**Electrical**

Accuracy	:±2% (class 2-SS406016)
Voltage	:230 V ±20%
Frequency	:50 to 60 Hz
Current range	:0.5 to 32 A
Starting current*	:100 mA
Max fuse	:32 A
Pulse Output wire	:2.5 mm ² maximum
Frequency	:10 pulses/kWh
Pulse Output Current	:20 mA maximum
Pulse Output Voltage	:5 to 40 Vdc
Pulse Output Length	:100 ms
Pulse Output Cable	:500 m for 0.5 mm ² cable 500 to 1000 m for 1.5 mm ² cable

CT

Internal consumption of meter	:0.1 VA (also include cable burden)
-------------------------------	--

VT

Internal consumption of meter	:7 VA
-------------------------------	-------

*Current at which meter starts to register energy

Mechanical

Dimensions	:95 x 52.5 x 65 mm
Material	:Polycarbonate with superior impact strength qualities (polyamide terminals)
Protection	:IP20

Environmental

Temperature	:-40° to +70°C
Humidity	:0 to 90 %RH

Indicators

Display	:4 digit LED
Dec Point	:Right hand decimal point flashes to indicate energy monitoring OK

Trend Control Systems Ltd reserves the right to revise this publication from time to time and make changes to the content hereof without obligation to notify any person of such revisions or changes.

The logo for Trend Control Systems, featuring the word "TREND" in a bold, orange, sans-serif font. The letters are thick and blocky, with a slight shadow effect.