

**selec****EM306A**  
Operating Instructions

96 x 96

**FEATURES**

- User programmable CT primary and CT secondary.
- Memory retention.
- Potential free Pulse output for energy.

**SPECIFICATIONS****DISPLAY**

6 digit 7 segment LED display, Height 0.5"

**WIRING INPUT**

3 Ø - 4 wire, 3 Ø - 3 wire, 2 Ø - 3 wire and  
1 Ø - 2 wire system

**RATED INPUT VOLTAGE**

11 to 300V AC (L-N) ;  
19 to 519V AC (L-L) Installation Category III

**FREQUENCY RANGE**

45-65 Hz

**RATED INPUT CURRENT**

Nominal 5A AC (Min-11mA, Max-6A)

**CT PRIMARY**

1A/5A to 10,000A (Programmable for any Value)

**Note** : 1A to 10,000A if CT secondary is 1 else CT  
primary is 5A to 10,000A

**CT SECONDARY**

1A or 5A (programmable)

**BURDEN**

0.5 VA @ 5A per phase

**MEASUREMENT**

kWh (resettable)

**ACCURACY**

Class 1

**AUXILIARY SUPPLY RANGE**

230V AC, ±20%, 50 / 60Hz

**OUTPUT**

**Pulse Output** : Voltage range: External 24V DC max.  
Current capacity : 100 mA max

**Pulse Width** : 100 ms ± 50 ms.**INT** : 1000 pulses / kWh**RESOLUTION :**

CT Ratio	kWh	Pulse output ( kWh / pulse )
<15	0.01	0.01
<150	0.1	0.1
<1500	1	1
2000	10	10

**ENVIRONMENTAL CONDITIONS**

- Indoor use
- Altitude of up to 2000 meters
- Pollution degree II

Temperature : Operating : -10 to 55°C

Storage : -20 to 75°C

Humidity : Up to 85% RH, non-condensing

**MOUNTING**

Panel mounting

**WEIGHT**

340gms

**SAFETY PRECAUTIONS**

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If the equipment is not used in a manner specified by the manufacturer it might impair the protection provided by the equipment.

- Do not use the equipment if there is any mechanical damage.
- Ensure that the equipment is supplied with correct voltage.

**CAUTION :**

1. Read complete instructions prior to installation and operation of the unit.
2. Risk of electric shock.
3. The equipment in its installed state must not come in close proximity to any heating sources, steam, caustic vapors, oils or other unwanted process by products.

**WIRING GUIDELINES****WARNING :**

1. To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement.
2. Wiring shall be done strictly according to the terminal layout. Confirm that all connections are correct.
3. Use lugged terminals.
4. To reduce electromagnetic interference use of wires with adequate ratings and twists of the same in equal size shall be made with shortest connections.
5. Layout of connecting cables shall be away from any internal EMI source.
6. Cable used for connection to power source, must have a cross section of 1.5mm<sup>2</sup> (AWG 15). These wires shall have current carrying capacity of 6A.
7. Before attempting work on device, ensure absence of voltages using appropriate voltage detection device.

**INSTALLATION GUIDELINES****CAUTION :**

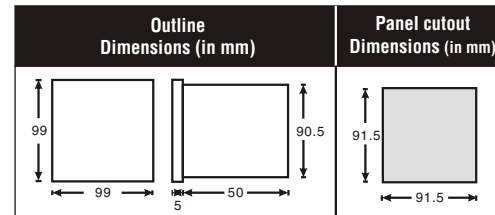
1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
2. Conductors must not come in contact with the internal circuitry of the equipment or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.

3. Circuit breaker or mains switch must be installed between power source and supply terminals to facilitate power 'ON' or 'OFF' function. However this switch or breaker must be installed in a convenient position normally accessible to the operator.
4. Before disconnecting the secondary of the external current transformer from the equipment, make sure that the current transformer is short circuited to avoid risk of electrical shock and injury.
5. The equipment shall not be installed in environmental conditions other than those mentioned in this manual.
6. The equipment does not have a built-in-type fuse. Installation of external fuse of rating 275V AC / 0.5Amp for electrical circuitry / battery is highly recommended.

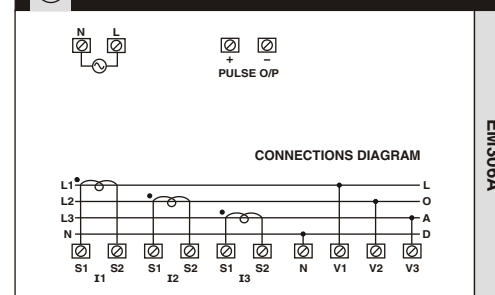
**MECHANICAL INSTALLATION**

For installing the meter

1. Prepare the panel cutout with proper dimensions as shown below.
2. Push the meter into the panel cutout. Secure the meter in its place by fitting the clamp on the rear side. fit clamps on both sides in diagonally opposite location for optimum fitting.
3. For proper sealing, tighten the screws evenly with required torque.  
Terminal screw tightening torque : 0.5 N-m (4.42536 Lb-inch)  
Screw clamp tightening torque : 0.1N-m (0.885 Lb-inch)

**MAINTENANCE**

1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean dry or damp cloth. Do not use any cleaning agent other than water.

**TERMINAL CONNECTIONS****FRONT PANEL DESCRIPTION****USER GUIDE****LED INDICATIONS**

- **INT** : The INT LED provides optical output for calibration verification as well as visual indication of energy integration. The pulse rate is 1000 Pulses/kWh.
- **X10** : X10 LED ON when the resolution is 10. It is the indication of count reading which must be multiplied by 10 to get actual kWh consumed.
- **REV** : REV LED gives the indication of reversal of two or more CT connections or presence of negative power in any or all phases. In such cases meter may not indicate the correct energy consumption. The CT should be connected to the meter with correct polarities.

**CONFIGURATION**

There are 4 dedicated keys with symbols marked as . Use these 4 keys to enter into configuration menu / change setting.

**Note** : The settings should be done by a professional, after going through this users manual and after having understood the application situation.

For the configuration setting mode :

- Use (←) and (→) keys for 3sec. to enter or exit from configuration menu.
- Use (▼) and (▲) keys for increasing and decreasing parameters value respectively.
- Use (←) key to go back to previous page.
- Use (↵) key to save the setting and move on next page.

Config page.	Function	Range or Selection	Factory Setting
	Password	0000 to 9998	10
1	Change Password	No / Yes	No
1.1	New Password	0000 to 9998	10
2	Network Selection	3P3W / 3P4W	3P4W
3	CT Secondary	1A or 5A	5
4	CT Primary	1A, 5A to 10,000A (10.0kA)	5
5	Reset Energy	No / Yes	No
• 5.1	Password	0001 To 9999	11
5.01	Reset Active Energy	No / Yes	No
5.02	Factory Default	No / Yes	No

- For resetting energy parameters user will be prompted for password. If correct password is entered, the user will be able to reset all energy parameters. This password will be value which will be greater than the configuration password by 1.

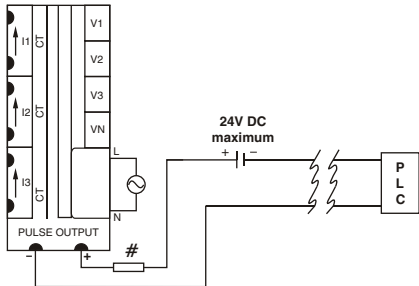
## NETWORK SELECTION AND WIRING INPUT

Network selection in configuration mode	Wiring
3P4W	3P4W, 2P3W, 1P2W
3P3W	3P3W

## APPLICATION OF PULSE OUTPUT

### ● PROCESS INTEGRATION

# All fuse types : 0.5A class CC UL type  
0.5A fast acting 600V



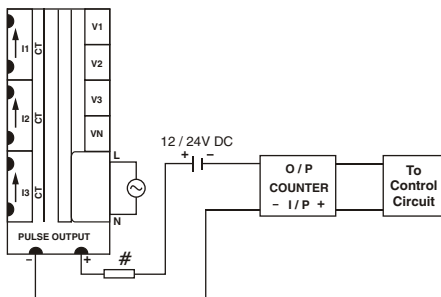
Pulse output from EM306A meter can be interfaced into a process through a PLC for on line control of energy content in the process.

If the PLC has a self excited digital input, external DC supply is not needed.

The kWh pulse is also used to derive average kWh information at the PLC.

### ● ENERGY CONTROLLER

# All fuse types : 0.5A class CC UL type  
0.5A fast acting 600V



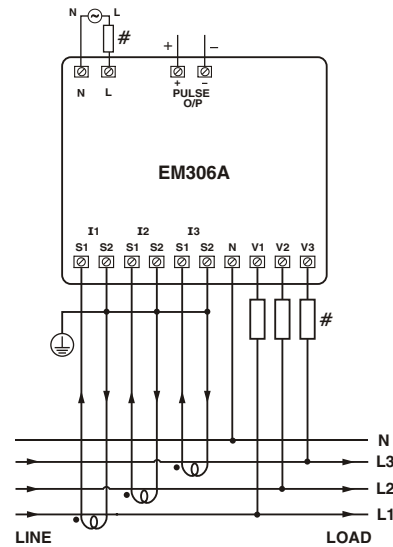
Pulse output from EM306A meter can be used as alarm generator or total energy controller by interfacing it with Pre-settable counter and control circuits (Contractors, Relay, Trip Circuit).

The counter is loaded with the maximum energy consumption. When count reaches setpoint it provides output to control circuit to take appropriate action.

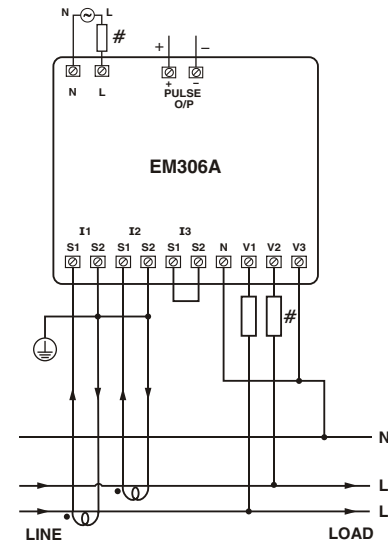
## TYPICAL WIRING DIAGRAM

# All fuse types : 0.5A class CC UL type ; 0.5A fast acting 600V

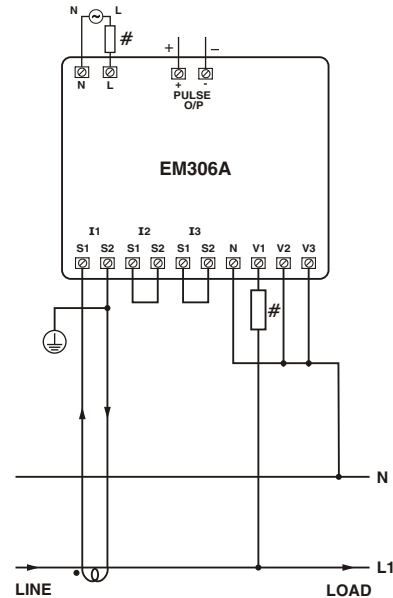
### 3 PHASE 4 WIRE (Commonly Used)



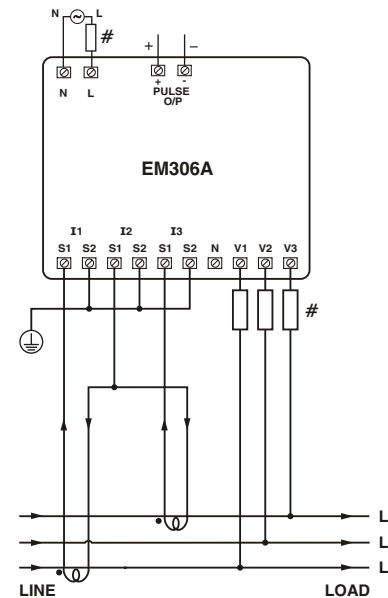
### 2 PHASE - 3 WIRE



### 1 PHASE - 2 WIRE



### 3 PHASE - 3 WIRE



(Specifications subject to change as development is a continuous process.)

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