selec **EM306** (96x96)
Operating Instructions

FEATURES

- 1/4 DIN
- 6 digit 7 segment LED display.
- User programmable CT primary.
- Memory retention.
- Pulse output for energy.
- 90 to 270 VAC/DC auxiliary supply.

SPECIFICATIONS

DISPLAY
6 digit 7 segment LED display. Height 0.5”

LED INDICATIONS
INT - Integration of energy
X10 - Resolution is 10
REV - Reverse connected CT warning

INPUT
3 Ø - 4 wire and 1 Ø - 2 wire input type

RATED INPUT VOLTAGE
Nominal 300 VAC max.
3-phases(R,Y,B) with respect to Neutral.

FREQUENCY RANGE
50 Hz

RATED INPUT CURRENT
Nominal 6A maximum

CT PRIMARY (selectable via rear key)
5, 30, 40, 50, 60, 75, 80, 100, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500, 1600, 2000, 2500, 3000, 4000, 5000.

BURDEN
0.5 VA@5A per phase

MEASUREMENT
kWh (not resettable)

ACCURACY
Class 1

RESOLUTION

CT Primary	kWh	INT blink (kWh/ blink)	Pulse output (kWh/ pulse)
<=10	0.01	0.001	0.01
10> CT primary <=100	0.1	0.01	0.1
100> CT primary <=1000	1	0.1	1
>1000	10	1	10

NOTE:
Auto shift of resolution after display reaches maximum display point. For example resolution is shifted to 1 after 99999.9 kWh. After 999999 with resolution of 10 display rolls back to 0 and resolution shifts as per CT primary selected.

AUXILIARY SUPPLY RANGE
90 to 270 VAC / DC, 50/60 Hz

OUTPUT
Pulse Output: Voltage range - 24 VDC
Current capacity - 100 mA max
Pulse Width: 500 ms ± 50 ms.

TEMPERATURE
Operating: 0 to 50 °C
Storage: -20 to 75 °C

HUMIDITY
85% non-condensing

MOUNTING
Panel mounting

WEIGHT
225 gms

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 handled in a manner specified by the manufacturer it might impair the protection provided by the equipment.

CAUTION: Read complete instructions prior to installation and operation of the unit.

CAUTION: Risk of electric shock.

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 eliminate electromagnetic interference use of wires with adequate ratings and twists of the same in equal size shall be made.
5. Cable used for connection to power source, must have a cross section of 1.5mm^2. These wires shall have current carrying capacity of 5A.

MAINTENANCE
1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean soft cloth . Do not use Isopropyl alcohol or any other cleaning agent.

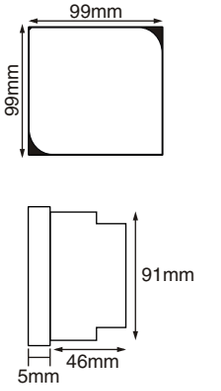
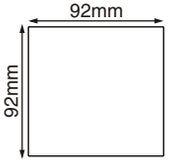
INSTALLATION GUIDELINES

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.

CAUTION:
1. The equipment shall not be installed in environmental conditions other than those mentioned in this manual.
2. The equipment does not have a built-in-type fuse. Installation of external fuse of rating 275VAC/1Amp for electrical circuitry is highly recommended.
3. Thermal dissipation of equipment is met through ventilation holes provided on chassis of equipment. Such ventilation holes shall not be obstructed else it can lead to a safety hazard.
4. Connectors screws must be tightened after Installation.

MECHANICAL INSTALLATION

For installing the meter
1. Prepare the panel cutout with proper dimensions as shown below :

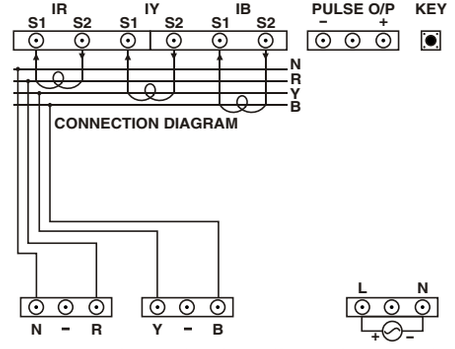
Outline dimensions (in mm)	Panel cutout dimensions (in mm)
	

2. Push the meter into the panel cutout. Secure the meter in its place by pushing the clamp on the rear side. The screws, of the pane of the clamp, must be in the farthest forward slot.
3. For proper sealing, tighten the screws evenly with required torque.

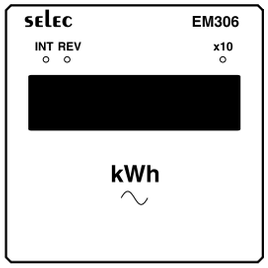
CAUTION:
The equipment in its installed state must not come in close proximity to any heating sources, caustic vapors, oils, steam, or other unwanted process by-products.

EMC Guidelines:
1. Use proper input power cables with shortest connections and twisted type.
2. Layout of connecting cables shall be away from any internal EMI source.

TERMINAL CONNECTIONS



FRONT PANEL DESCRIPTION



LED INDICATIONS

1. **INT:** LED blinks when integration of energy is in progress.
2. **X10:** LED is ON when the resolution is 10
3. **REV:** LED ON when there is improper wiring or negative power consideration in any or all phases.

CONFIGURATION SCHEME

The unit can be programmed using the 'tact key' near the terminals. The position of the key is as shown in terminal diagram.
To enter into Programming keep the key continuously pressed and power ON.

To configure CT primary

Keys description	Display shows
Press ⊙ and power ON	CT. 5

Pressed the ⊙ to scroll to the next CT value from the range.
When key is pressed & released the value is modified.
After last value it rolls back to the first value.
Following are the primary ranges:
5, 30, 40, 50, 60, 75, 80, 100, 150, 200, 250, 300, 400, 500, 600, 800, 1000, 1200, 1500, 1600, 2000, 2500, 3000, 4000, 5000.

NOTE:

Key has no other function during normal working mode.

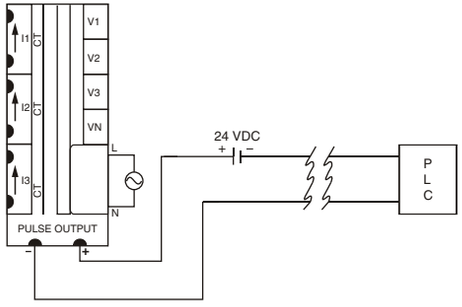
USER GUIDE

What does the INT, REV and X10 LEDs on the front panel indicate ?

- INT: The INT LED provides quick visual indication of energy integration. The blink rate is 10 times per count update and it is depending upon the CT primary. By running at faster rate, the user need not wait long till the counter updation in the meter.
- 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. In such cases meter may not indicate the correct energy consumption. The CT should be connected to the meter with correct polarities.

APPLICATION OF PULSE OUTPUT

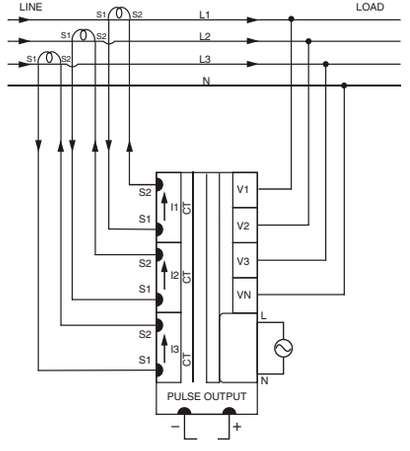
• PROCESS INTEGRATION



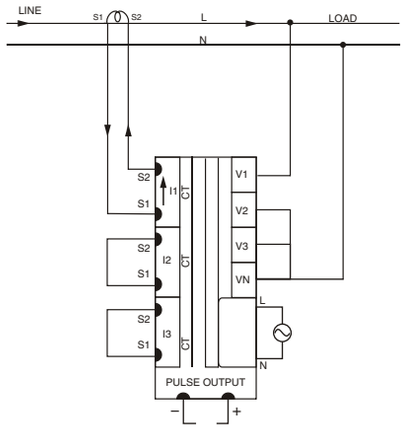
Pulse output from EM306 meter can be interfaced into a process through a PLC for on line control of energy content in the process.
If the PLC has a self excited 24V digital input, external 24 VDC supply is not needed.
The kWh pulse is also used to derive average kWh information at the PLC.

TYPICAL WIRING DIAGRAM

3 PHASE 4-WIRE WIRING DIAGRAM



SINGLE PHASE WIRING DIAGRAM



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

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