SELEC®

Energy Meter

NEW



User Manual

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PREFACE

Thank you for choosing the Energy Meter EM306 series. This manual will provide you with detailed steps and precautions regarding installation, wiring, setting of functional parameters, routine maintenance, malfunction diagnosis and solution, etc.

To utilize the meter to its full potential and ensure the safety of both users and the product, please read this manual carefully before using the meter. Any incorrect operations may lead to fault, malfunction or shortened lifetime, or even damage to the device or the people around it.

This manual is available on our website and is accessible through the QR code provided on the unit. We request that you keep it safe considering its importance in commissioning, inspecting, and maintaining the product. In the pursuit of constant improvement, kindly note that all information contained in these materials, including products and product specifications represent information on the product at the time of publication and are subject to change without notice.

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INTRODUCTION

The **EM306** is a energy meter that offers comprehensive 3-phase electrical metering and energy monitoring.

The meter is a panel-mounted 96 x 96 mm panel meter that measures important electrical parameters in 3P4W, 3P3W and 1P2W L-N (P1, P2, P3) networks with field-programmable CT / PT primary and secondary values.

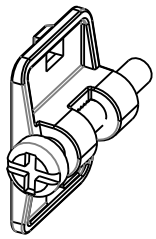
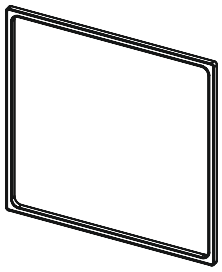
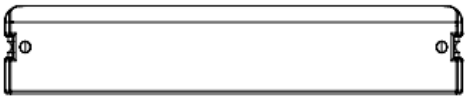
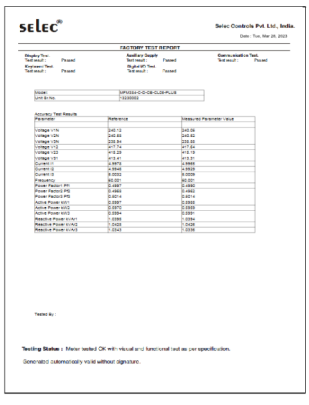
The meter is easy to install, easy to use, compact in size, and meets all safety and reliability standards. The meter is normally supplied readily pre-programmed for operation and can be directly installed in the usual manner. The user can read and write through the front panel or by using RS485 Modbus RTU Communication.

This user manual describes the basic functions and operation methods of the meter. Please read through this manual carefully before using the product.

Contents of the package

Unpack the box and check the contents before using the product. If any part or accessory is missing or if the product appears to be damaged, contact our sales representative.

List of accessories

Sr. No.	Description of Accessories	Image	Qty
1	Panel mount clamp		4
2	Gasket		1
3	Terminal cover		2
4	Record test certificate		1

SAFETY RECOMMENDATION

Read this manual carefully and follow all safety precautions before mounting, installing, operating and servicing the energy meter. Ignoring the safety protocols can result in damage or loss of life or property.

Warning

People working on the device should take part in professional electrical and safety training, receive the certification, and be familiar with all steps and requirements of installing, commissioning, operating and maintaining the device to avoid any hazards.

Delivery and Installation

A pre-delivery inspection for each meter is strictly implemented by our QC department. The packaging is adequately strengthened with special packing materials to protect it from justifiable harm during handling and transportation. However, as an added precaution, we request that you kindly check the following points upon receipt of the device:

- Please check for any damage caused during transportation
- Please check if the enclosed documents are inside the case, namely the record test certificate
- Please check if this is the model of the product for which you placed an order

Safety guidelines

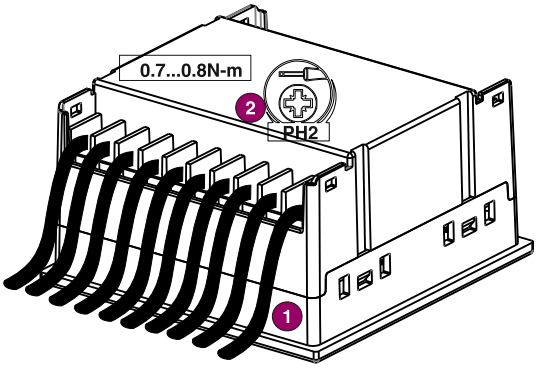
All safety-related codifications, symbols and instructions that appear in this operating manual or on the meter must be strictly followed to ensure the safety of the operating personnel as well as the instrument. If the meter is not used in the manner specified by the manufacturer, it might impair the protection provided by the meter.

Caution

- Do not use the meter if there is any mechanical damage
- Ensure that the equipment is supplied with the correct voltage
- Read the complete instructions prior to the installation and operation of the Unit
- The equipment in its installed state must not come in close proximity to any heating sources, oils, steam, caustic vapors or other unwanted process by-products
- Power must be shut down completely before performing any kind of wiring on the auxiliary terminals
- Do not touch the internal components for your own and the product's safety
- Only qualified professional engineers are allowed to assemble, wire, commission, or maintain
- Do not conduct the procedure of inspection or maintenance until the meter has been shut down for at least 3 minutes
- No permission is granted to change or modify the internal components or circuits

Wiring guidelines

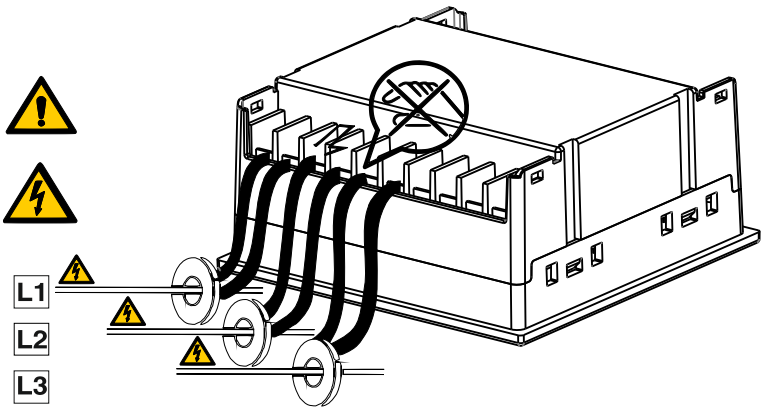
- To prevent the risk of electric shock, power supply to the equipment must be kept OFF while doing the wiring arrangement
- Wiring shall be done strictly according to the terminal layout. Confirm that all connections are correct
- Use lugged terminals
- To reduce electromagnetic interference use of wires with adequate ratings and twists of the same in equal size shall be made with shortest connections
- Layout of connecting cables shall be away from any internal EMI source
- Copper cable should be used (Stranded or Single core cable)
- Before attempting work on device, ensure absence of voltages using appropriate voltage detection device



Danger

- Hazardous voltage cause death or serious injury. Turn off lock out all power supply before working on this device

  Note: Installation & maintenance must be carried out by qualified personnel.
- This product has been designed for environment A. Use of this product in environment B may cause unwanted electromagnetic disturbances in which case the user may require to take adequate mitigation measures
- Risk of damage: Please ensure the proper isolation of meter during the IR (Meggering) test



Installation environment

- The surroundings must be free from dust, Caustic / Corrosive / Inflammable gases / Liquids
- There should not be any metal particulate in the surrounding air
- The ambient temperature should be -10 °C to +55 °C

Installation guidelines

- This equipment, being built-in, normally becomes part of the main control panel
- The terminals do not remain accessible to the end user after installation and internal wiring
- Conductors must not come into contact with the internal circuitry of the meter or else it may lead to a safety hazard that may in turn endanger life or cause an electrical shock to the operator
- A circuit breaker or mains switch must be installed between the power source and supply terminals to facilitate power ON or OFF functions. However, this switch or breaker must be installed in a convenient position that is normally accessible to the operator
- Before disconnecting the secondary of the external current transformer from the equipment, make sure that the current transformer is short circuited to avoid the risk of electric shock and injury
- The equipment does not have a built-in-type fuse; installation of an external fuse of rating 300V 0.5A AC. For electrical circuitry, battery is highly recommended

FEATURE SUMMARY

Ordering code information table

Product code	Supply voltage	Output		Certification
		Pulse output	Comm. (RS485)	
EM306-C-CE	40 to 300V AC/DC 50/60 Hz	Yes	Yes	CE

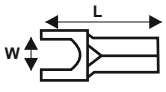
Features

- LED display screen
- True RMS measurement
- Maximum and Minimum demand measurements
- Measurement of 3-phase energy
- Password protected programmable features
- Pages auto scrolling, manual (fixed) and Default mode provision
- Site programmable for CT/PT ratio
- Site programmable POP
- Site programmable for network selection
- RS485 MODBUS communication
- Enclosure protection for dust and water
- Compliance with the International standard IEC 61326-1

Salient features

- Accuracy class for active energy (Wh) Class 1 as per IEC62053-21
- Accuracy class for reactive energy (VARh) Class 2 as per IEC62053-23
- Reactive (Inductive & Capacitive)*
- Configurable pulse weight 0.01 to 99.99 (pulse/kWh)
- Endianess selection (MSRF/LSRF)
- Max values of instantaneous parameters of Voltage, Current
- Power factor sign convention (IEC standards)
- Demand parameters
- Pulse Output (POP) - MAX 24V DC, 100mA
- Voltage phase sequence detection
- Current polarity reversal detection

Technical specifications		
Type of measurement	Networks	3P4W, 3P3W, 1P2W (R, Y, B)
		True RMS
Measurement accuracy		Class 1 as per IEC62053-21
Display	LED	1 row of 9 digits. 7 segment LED Display 0.49 inch height digit Integrated with parameter units
Auxiliary input	Auxiliary voltage	40V - 300V AC/DC
	Power consumption	<6VA / 2W
	Frequency range	50/60 Hz
Measurement input	Input voltage	19V-480V AC LL (277V AC LN) CAT III 520V AC LL (300V AC LN) CAT II
	PT secondary	100V to 500V (programmable)
	PT primary	100V to 500KV (programmable)
	Frequency	45 to 65Hz
	Measurement method	True RMS
	Burden	0.5VA
	Wire gauge	20 to 14 AWG (UL); 75 °C
	Input current	Nominal 5A AC (min - 11mA, max - 6A)
	CT Primary	1A / 5A to 10KA (programmable)
	CT Secondary	1A or 5A (programmable)
	Measurement method	True RMS
	Burden	0.5VA
	Wire gauge	20 to 14 AWG (UL); 75 °C
Pulse output	Pulse output	Voltage range : External 24V DC max Current capacity : 100mA max
	Pulse weight	0.01 to 99.99 kWh
	Pulse duration	100ms to 2s (programmable)
	Output type	Open collector
Communication	Type	RS485 modbus RTU
	Baud rate	300 bps, 600 bps, 1200 bps, 2400 bps, 4800 bps, 9600 bps, 19200 bps
	Slave ID	1- 255 (programmable)
	Parity	Odd, Even, None
	Isolation	2kV AC isolation for 1 minute between communication and other circuits
Certification		CE, RoHS

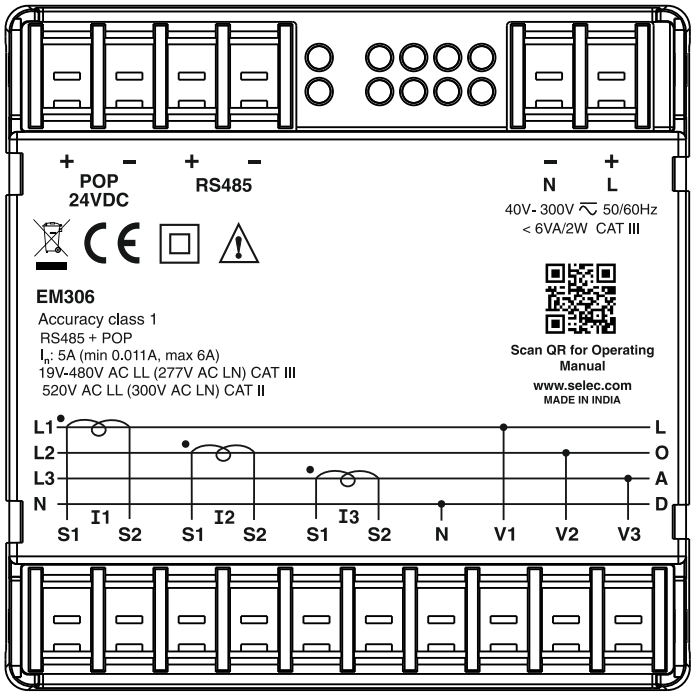
Accuracy		
Measurement type	Class of accuracy as per IEC 61557-12 (In = 5A-nominal CT)	Permissible error
Active energy	Class 1 (Class 1 as per IEC 62053-21 at In = 5A nominal CT) 50 mA to 6 A	±1%
Reactive energy	Class 2 (Class 2 as per IEC 62053-23 at In = 5A nominal CT)	±2%
Apparent energy	Class 1	±1%
Active power	Class 1	±1%
Reactive power	Class 2	±2%
Apparent power	Class 1	±1%
Current	Class 0.5	±0.5%
Voltage (L-L)	Class 0.5	±0.5%
Voltage (L-N) Class 0.5 ±0.5%	Class 0.5	±0.5%
Frequency	0.1%	±0.05%
Power factor	Class 0.5	±0.01 count
Electrical specification		
Insulation properties	Impulse voltage test	±4kV as per IEC 61010-1
	AC voltage test	±2kV double insulation as per IEC 61010-1
	Insulation resistance	500V DC voltage as per IEC 61010-1
Electrical requirements	Test of power consumption	As per IEC 61010-1
	Voltage dips and interrupts	As per IEC 61000-4-11
	Short time over current protection	20 times of IMAX for half a second as per IEC 61010-1
Electromagnetic compatibility (EMC)	Electrical fast transient / burst immunity test	±2kV as per IEC 61000-4-4
	Electrostatic discharge immunity test	±8kV air discharge, ±4kV contact discharge as per IEC 61000-4-2
	Radiated, Radio - Frequency, electromagnetic field immunity test	10 V/m as per IEC 61000-4-3
	Immunity to conducted disturbance, include by radio-frequency fields	3V as per IEC 61000-4-6
	Surge immunity test	±2kV as per IEC 61000-4-5
	Rated power frequency magnetic fields	30A/m as per IEC 61000-4-8 for continuous duration 300A/m as per IEC 61000-4-8 for short duration
	Emission	Class A as per CISPR 11
Environmental	Temperature	Operating: -10 °C to 55 °C Storage: -20 °C to 75 °C
	Humidity	Up to 85% non - condensing
Lug dimensions	Current wires (sq.mm.)	1.0 to 2.5
	Voltage, POP, RS485, AUX (sq.mm.)	1.0
		W = 6.35mm L = 11.20mm
Recommended fuse specifications	300V 0.5A AC	

Mechanical specifications		
Mounting type	Panel mount	
Size	99 x 99mm	
Front bezel	96 x 96mm	
Panel cutout	90.7 x 90.7mm	
Material	Poly carbonate	
Accessories	Panel mount clamp, Gasket	
Weight	216 gm approx	
Protection rating	IP rating Front : IP65 Back : IP20	
Mechanical testing	Shock	40g in 3 planes
	Vibration	10 to 55Hz, 0.15mm peak amplitude
	Casing plastic mould protected to IP65 from front	
Certification		CE, RoHS

Front panel view

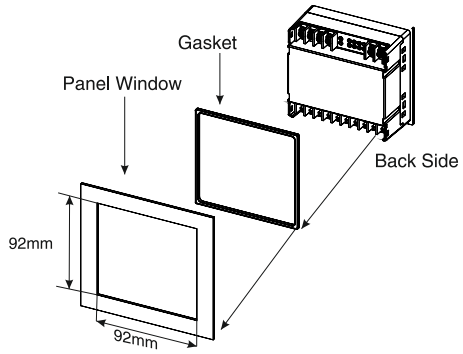
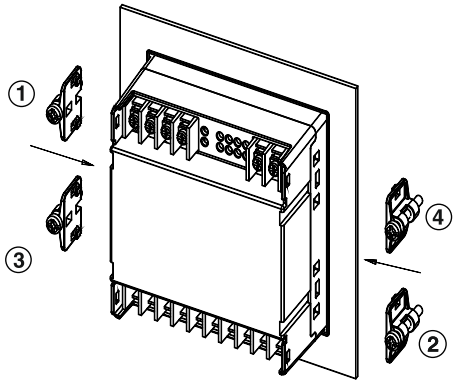
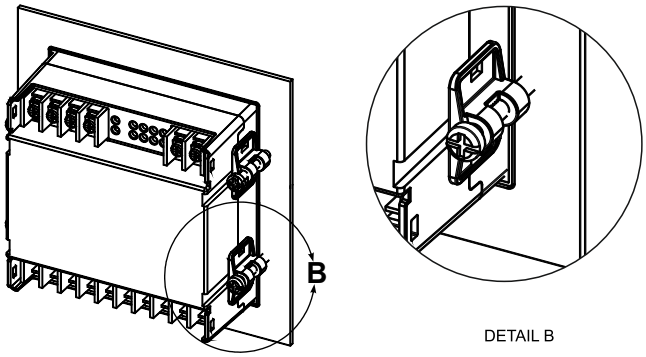


Back panel view

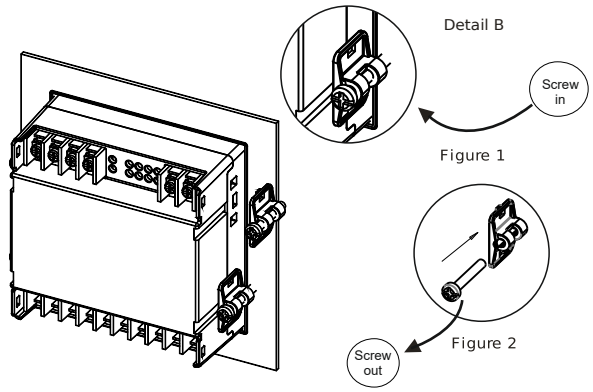
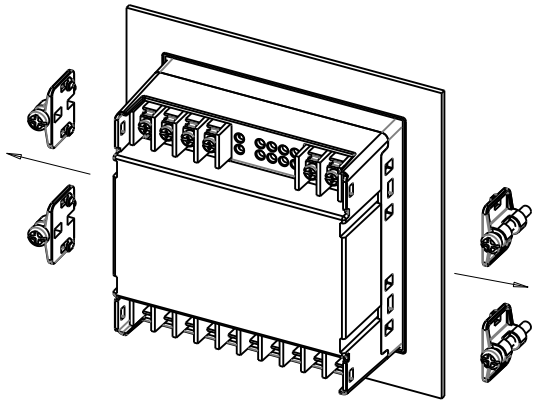
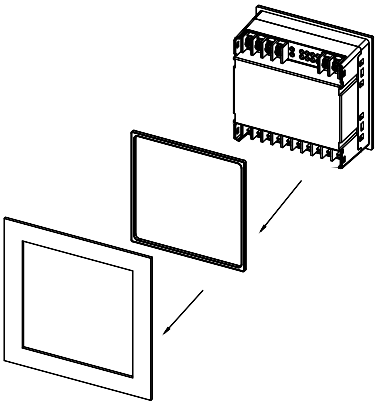


EM306-C-CE

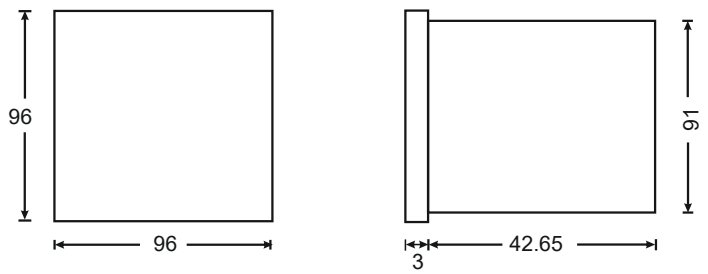
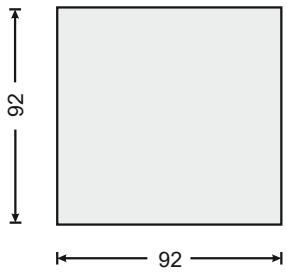
Mounting

Step	Instruction	Visualization
1	Prepare the panel cutout with proper dimensions as shown below, and insert the meter with a gasket into the panel cutout	
2	Fit clamps on both side for optimum fitting	
3	Lock all the four clamps onto the slot as shown in the figure and screw it until the unit fits tightly on the panel. Ensure the meter is properly fitted and ready for wiring **Note:** Ensure the torque of screwing machine is set to 0.2 Nm	

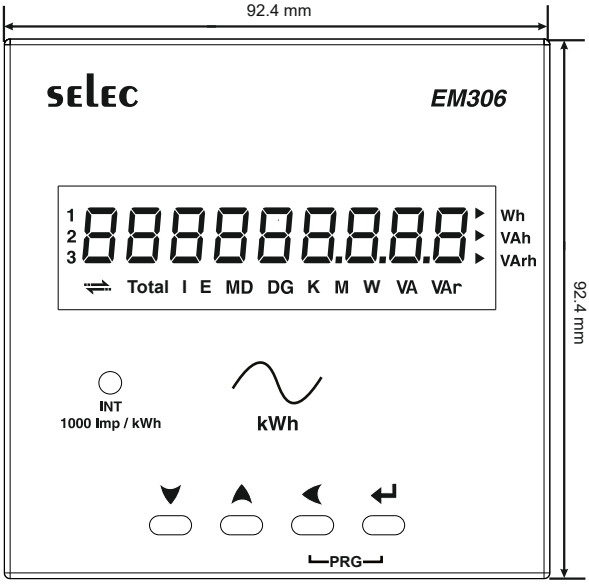
Demounting

Step	Instruction	Visualization
1	Screw out all the four clamps as shown in the figure	
2	Pull out the clamps from the slots as shown in the figure and push the meter out of the panel	
3	Push the meter from the back side of the panel window and remove it from the panel	

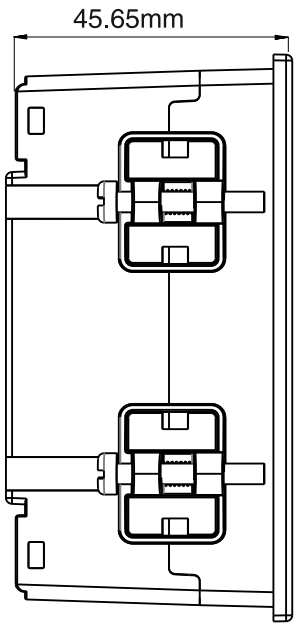
Meter dimensions

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

Mechanical specification



Front view

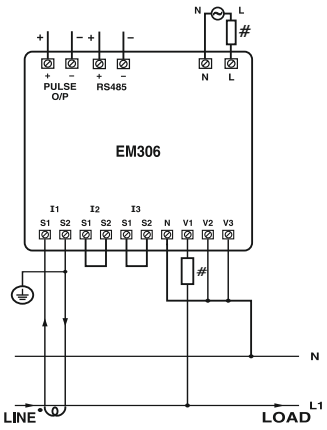


Side view

Wiring diagram

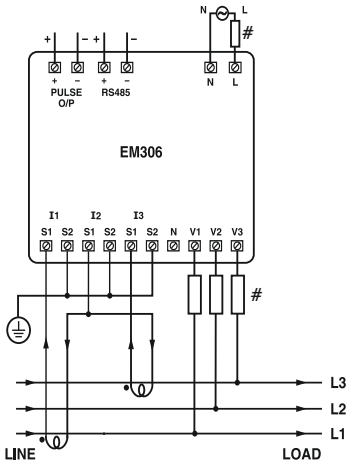
1 PHASE 2 WIRE (L-N)

1Ø - 2 WIRE, 1 CT

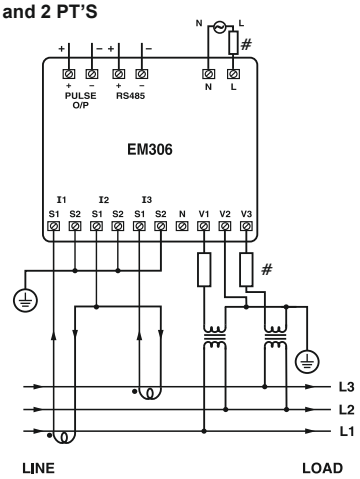


3 PHASE 3 WIRE

3Ø - 3 WIRE, 2 CT'S

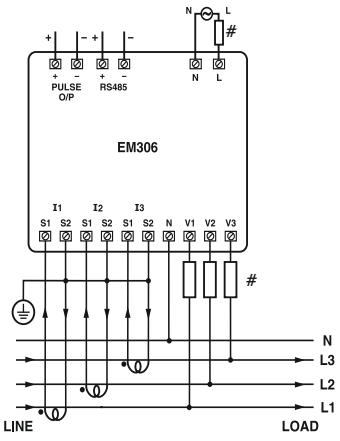


3Ø - 3 WIRE, 2 CT'S and 2 PT'S

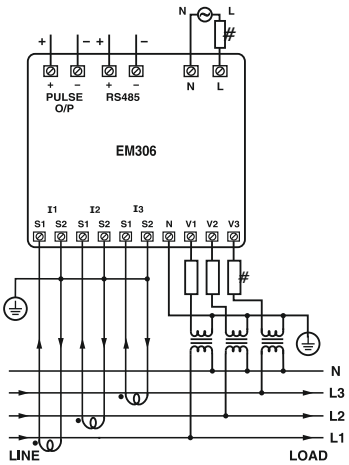


3 PHASE 4 WIRE

3Ø - 4 WIRE, 3 CT'S (COMMONLY USED)

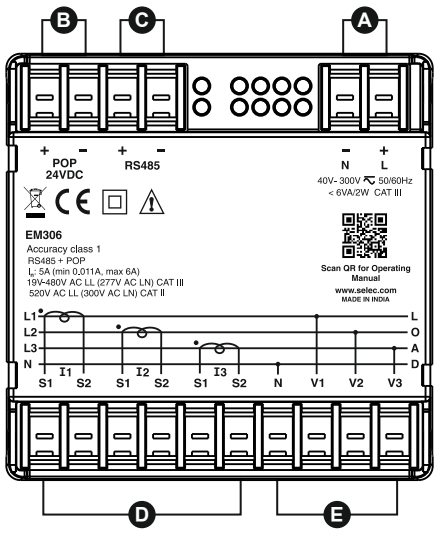


3Ø - 4 WIRE, 3 CT'S and 3 PT'S



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

Description of terminals



EM306-C-CE

Terminal	Description	
A	L (Line)	Auxiliary input
	N (Neutral)	
B	POP+	Pulse output
	POP-	
C	RS485+	Communication connection
	RS485-	
D	S1(I1)	3 phase current input
	S2(I1)	
	S1(I2)	
	S2(I2)	
	S1(I3)	
	S2(I3)	
E	N (neutral for voltage input)	3 phase voltage input
	V1 (voltage R - phase)	
	V2 (voltage Y - phase)	
	V3 (voltage B - phase)	

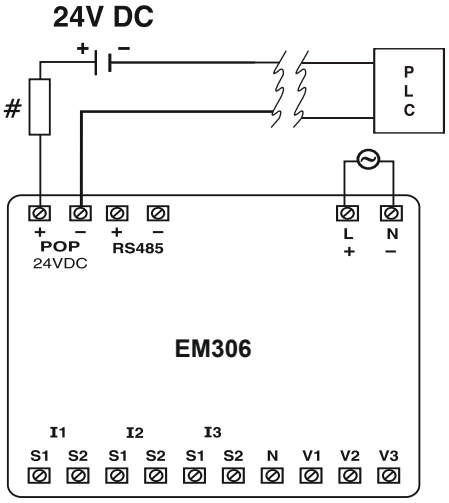
Pulse output (POP)

- Process integration
- Energy controller

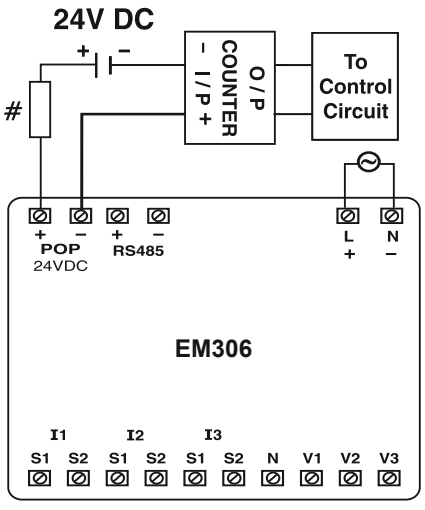
Process integration: Pulse output for EM306 meter can be interface into a process through a PLC for on line control of energy content in the process.

If the PLC has self excited 24V digital input, external 24V DC supply is not needed.

The kWh pulse is also use to drive average kWh information at the PLC.



Energy controller: Pulse output from EM306 meter can be used as alarm generator or total energy controller by interfacing it with presettable counter and control circuits (Contactors, 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.



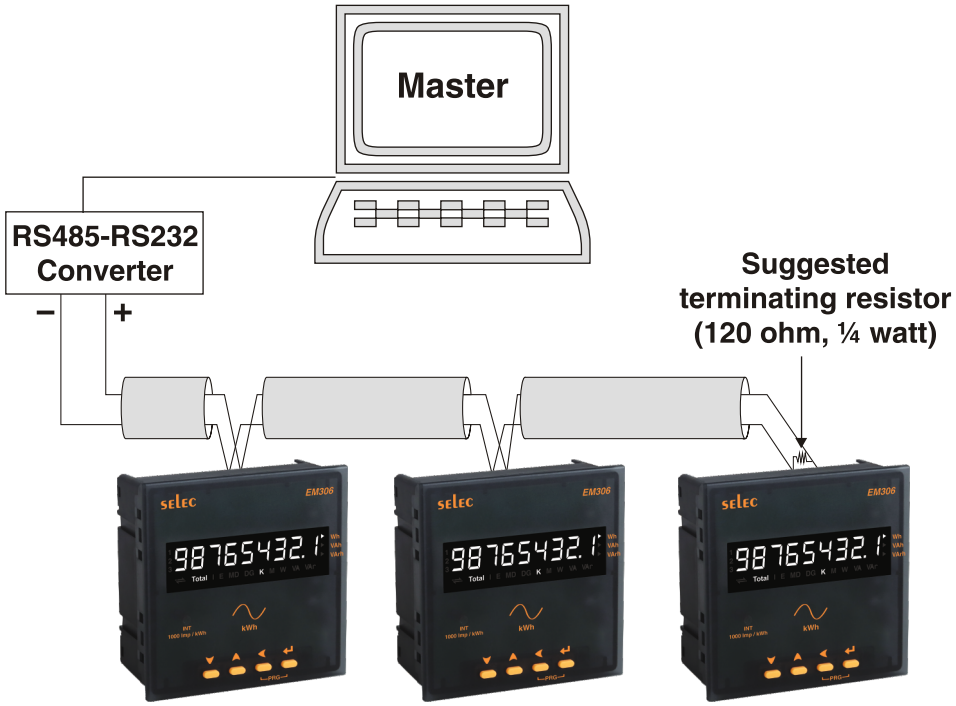
Note:
All fuse types : 0.5A class CC UL type
0.5A fast acting 600V

Serial communication

The meter has RS485 port for the purpose of Serial communication, the RS485 bus can support up to 32 devices connected to it. In RS485 bus the devices are connected in point-to-point configuration. With (+) and (-) terminals of devices connected in series.

Note: Use a shielded twisted pair RS485 cable.

The total distance for devices connected on an RS485 bus should not exceed 500m.

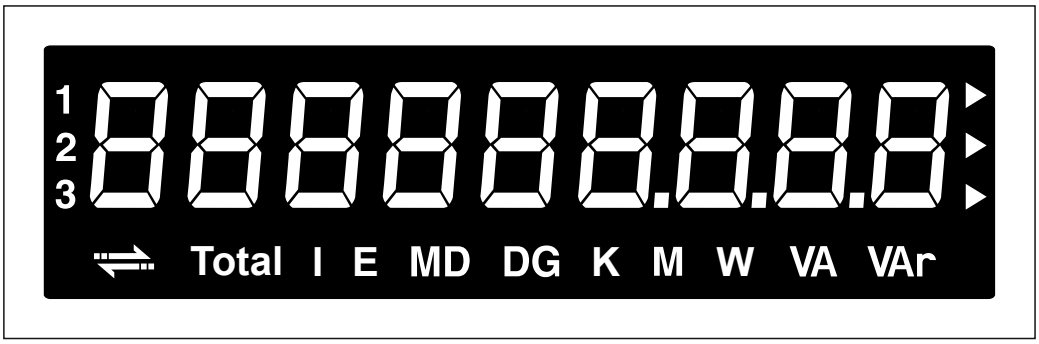


Serial Communication wiring diagram

LED description

The front of the meter consists of LED screen and four control keys. All the display segments are illustrated as below. Function LED Symbols, LED description:

ALL display segments



Sr. No.	Display	Description
1	PF, Hz, kW, kVAr, kVA, kWh, kVArh, kVAh	Symbols represents for units representation of parameter values Active power : kW, MW Reactive power : kVAr, MVAr Apparent power : kVA, MVA Frequency : Hz Power factor : PF Line to Line : L-L Active energy : kWh, MWh, kMWh Reactive energy : kVArh, MVArh, kMVAh Apparent energy : kVAh, MVAh, kMVAh
2	1 ,2, 3, AVG	1, 2, 3 : Represents 3 phases 1-2, 2-3, 3-1 is not showing only L-L and 1, 2, 3 is showing AVG Represents the average
3	Total	Total : Algebraic sum of power

Front panel keys description

There are four dedicated keys with symbol , , & Use these 4 keys to enter into configuration menu.

Note: Setting should be done by professional after going through this user manual and having understood the application situation.

Illustration of keyboard operations

Key function to access different features of meter

Mode	Key press	Key description
Configuration mode		Press key to increment the parameter and for roll over (only if parameter is in edit mode)
		Press key to decrement the parameter and for roll over (only if parameter is in edit mode)
		Press key to shift parameter value in edit mode
		Press key to save the parameter value & go to next page

Mode	Key press	Key description
Measurement mode		Press and hold key for 3 seconds to check the phase voltage sequence detection
		Press and hold key for 3 seconds to check the CT polarity reversal detection
		Press and hold key for 3 seconds to check or exit from the configuration mode
		Press and hold key for 3 seconds to display serial number
		Press and hold key for 3 seconds to Toggle between Automatic, Manual (Fixed) and Default mode

Note: The configuration mode is always password protected

This meter has different types of modes to see the functionality and features of the meter. For ease of meter operation, the operating, the operating modes are classified as below:-

- Measurement mode
- Configuration mode
  - Basic setup
  - DMD
  - POP
  - Communication
  - Reset
- Scrolling mode

Measurement mode

There are four dedicated keys labelled as ▲, ◀, ▼ and ↵ Use these 4 keys to read parameters. Simply press these keys to read the parameters. Units of corresponding parameters on display will glow automatically. Use ▼ key to go back to previous page in sub page.

First ↵ key press	Second ▲ key press	Online page description
Press ▲	———	Displays 1st phase import active energy
	1st time	Displays 2nd phase import active energy
	2nd time	Displays 3rd phase import active energy
	3rd time	Displays 1st phase export active energy
	4th time	Displays 2nd phase export active energy
	5th time	Displays 3rd phase export active energy
	6th time	Displays total import active energy
	7th time	Displays total export active energy
	8th time	Displays net total active energy
Note : 1) For 3 phase 3 wire, only seventh, eighth and nineth, screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		
Press ↵ Key (1st time)	———	Displays 1st phase import reactive energy
	1st time	Displays 2nd phase import reactive energy
	2nd time	Displays 3rd phase import reactive energy
	3rd time	Displays 1st phase export reactive energy
	4th time	Displays 2nd phase export reactive energy
	5th time	Displays 3rd phase export reactive energy
	6th time	Displays total import reactive energy
	7th time	Displays total export reactive energy
	8th time	Displays net total reactive energy
Note : 1) For 3 phase 3 wire, only seventh, eighth and nineth, screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		

First ↵ key press	Second ▲ key press	Online page description
Press ↵ Key (2nd time)	———	Displays 1st phase import apparent energy
	1st time	Displays 2nd phase import apparent energy
	2nd time	Displays 3rd phase import apparent energy
	3rd time	Displays 1st phase export apparent energy
	4th time	Displays 2nd phase export apparent energy
	5th time	Displays 3rd phase export apparent energy
	6th time	Displays total import apparent energy
	7th time	Displays total export apparent energy
	8th time	Displays net total apparent energy
Note : 1) For 3 phase 3 wire, only seventh, eighth and nineth, screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		
Press ↵ Key (3rd time)	———	Displays ON hour
Note : 1) For 3 phase 3 wire & 1 phase 2 wire all screen will be available.		
Press ↵ Key (4th time)	———	Displays 1st phase PF
	1st time	Displays 2nd phase PF
	2nd time	Displays 3rd phase PF
	3rd time	Displays Average PF
Note : 1) For 3 phase 3 wire, only fourth screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		
Press ↵ Key (5th time)	———	Displays frequency
Note : 1) For 3 phase 3 wire & 1 phase 2 wire all screen will be available.		
Press ↵ Key (6th time)	———	Displays 1st phase active power
	1st time	Displays 2nd phase active power
	2nd time	Displays 3rd phase active power
	3rd time	Displays total active power
Note : 1) For 3 phase 3 wire, only fourth screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		
Press ↵ Key (7th time)	———	Displays 1st phase reactive power
	1st time	Displays 2nd phase reactive power
	2nd time	Displays 3rd phase reactive power
	3rd time	Displays total reactive power
Note : 1) For 3 phase 3 wire, only fourth screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		
Press ↵ Key (8th time)	———	Displays 1st phase apparent power
	1st time	Displays 2nd phase apparent power
	2nd time	Displays 3rd phase apparent power
	3rd time	Displays total apparent power
Note : 1) For 3 phase 3 wire, only fourth screen will be available. 2) For 1 phase 2 Wire, only selected phase pages will be available.		

Configuration mode:

Sr. No.	Menu	Function	Description	Range or selection	Factory setting	Remarks
1	Basic setup	PSW	Configuration password	0000 to 9998	1000	
2		CPW	Change password	NO / YES	NO	
3		NPW	New password	0000 to 9998	-	**Note:** The new password is enabled only if Change Password is YES.
4		NET	Network selection	3P4W, 3P3W, 1P2W-P1, 1P2W-P2 and 1P2W-P3	3P4W	
5		CST	CT Secondary	1A OR 5A	5	
6		CPT	CT Primary	1A / 5A to 10,000A	5	
7		PST	PT Secondary selection	100V to 500V	350	
8		PPT	PT Primary selection	100V to 500KV	350	
9	DMD	MTD	Demand interval method	Sliding / Fixed	Sliding	
10		DUN	Demand interval duration	1 to 30	15	
11		LNG	Demand interval length	1 to 30 min	1	
12	POP	WDT	Pulse weight (kWh)	0.01 to 99.99	0.1	
13		DUR	Pulse duration (Sec)	0.1 to 2.0	0.1	
14	Communication	SID	Salve ID selection	1 to 255	1	
15		DUD	Baud rate selection	300 / 600 / 1200 / 2400 / 4800 / 9600 / 19200	9600	
16		PRT	Parity selection	NONE / ODD / EVEN	NONE	
17		STB	Stop bit selection	1 OR 2	1	
18		END	Endianness	MSRF/LSRF	MSBF	**Note:** This parameter will help you see values in LSRF (Mid-Little Endian) and MSRF (Big endian) sequence of bytes of word.
19	Factory defaul	DFT	Factory default	No / Yes	No	

20	Energy reset	RST	Reset energy	No / Yes	No	
20.1		PSW	Reset energy password	0001 to 9999	1001	
20.2		W	Reset active energy	No / Yes	No	
20.3		VAR	Reset reactive energy	No / Yes	No	
20.4		VAH	Reset apparent energy	No / Yes	No	
20.5		DMD	Reset min and max demand values	No / Yes	No	
20.6		OHR	Reset ON Hour	No / Yes	No	
20.7		AUX	Reset auxiliary interrupt	No / Yes	No	

Configuration mode password

For setting the configuration mode parameters, the user will be prompted for the password. If the correct password is entered, the user will be able to access all programming parameters.

Description	Range	
Configuration mode	0000-9998	Default: 1000
Reset	0001-9999	This password will be greater than the configuration password by 1 i.e. (1001)

Scrolling mode

The user can set the display screen in Auto scrolling mode, Default scrolling mode or Manual (fixed) screen mode via the front panel keys.

Long press ↵ for 3 seconds to toggle between Manual, Default and Automatic mode.

- **Automatic mode:** In automatic mode, online pages scroll automatically at a rate of 5 seconds per page. In automatic mode, when any key is pressed, the unit temporarily switches to manual mode and the appropriate page is displayed. Also, if any key is not pressed for 5 seconds, unit resumes automatic mode
- **Manual mode (fixed) :** In manual mode, selected online page will remain static
- **Default mode:** In default mode, when any key is pressed, the unit switches to manual mode and the appropriate page is displayed. Also, if any key is not pressed for 5 seconds, unit resumes to default page (Total net kWh page)

Display measured parameter

Function	Description	Parameters
Real time measuring	Voltage L - N phase voltage per phase and 3 phase average*	V1, V2, V3, VL-NAVG
	Voltage L - L Line voltage per phase and 3 phase average*	V12, V23, V31, VL-LAVG
	Current - Per phase and 3 phase average*	I1, I2, I3, I AVG
	Active power	kW1, kW2, kW3, kWTOTAL
	Reactive power	kVAR1, kVAR2, kVAR3, kVARTOTAL
	Apparent power	kVA1, kVA2, kVA3, kVATOTAL
	True power factor - Per phase and 3 phase average	PF1, PF2, PF3, PFAVG
	Frequency	Hz
Demand*	Power demand (kW, kVAR, kVA)	Peak demand
Energy	Active energy Apparent energy Reactive energy Reactive (Inductive & Capacitive)*	Phasewise import Phasewise export Net total
Auxiliary interrupts		Show the number of auxiliary supply interruptions

Resolution

PT Ratio x CT Ratio	kWh / kVAh / kVArh
≤15	0.01K
≤150	0.1K
≤1500	1K
≤15000	0.01M
≤150000	0.1M
≥150000	1M

Note: a) For Voltage, Current and Power resolution is automatically adjusted
b) For power factor resolution is 0.001
c) INT LED blink indicating accumulation of energy if load is a connected of any one phase of 3 phase
d) *Indicates features that can only be accessed via communication

Phase and system measurement

The meter measures the true RMS values of all 3 Phases and Neutral. Meter measures AC voltage and AC current inputs continuously at a sampling rate of 64 samples per cycle.

Demand measurement

The meter can support demand measurements consisting of power and current demand readings.

The demand will be calculated using the demand calculation method configured in the meter.

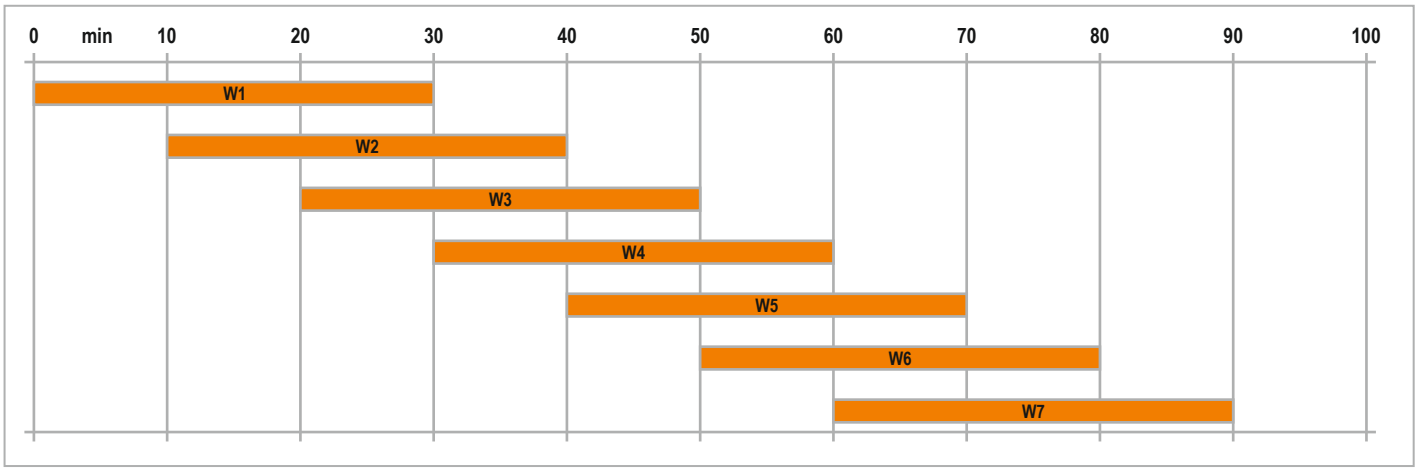
There are two standard types of demand calculation methods that the meter supports: Fixed, Sliding.

Power demand (Total W, VAR, VA)

All demand value data can be accessed via communication only and reset via communication or from the meter front.

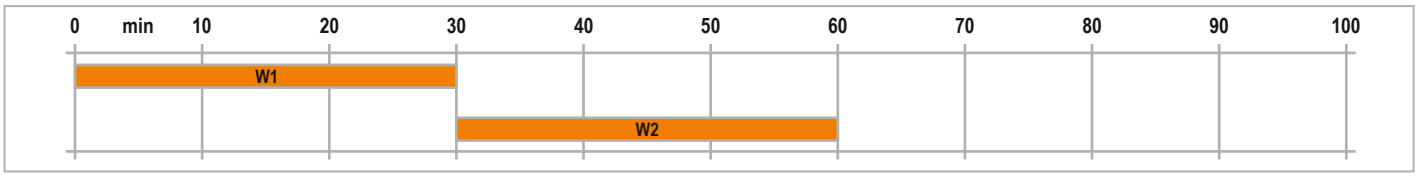
1. Sliding demand

Demand is updated at the end of each sub-interval. If the demand duration selected is 3 and the demand length selected is 2, then demand is updated at the end of 2 minutes. Here, the interval is 6 minutes and the update time is 2 minutes.



2. Fixed demand:

Demand updates at the end of every 1 minute (fixed).



Energy

The meter offers energy monitoring of electricity board, energy data can be accessed and reset via communication or from the meter front.

- Active, Apparent, Reactive energy
- Import
- Export
- Total NET

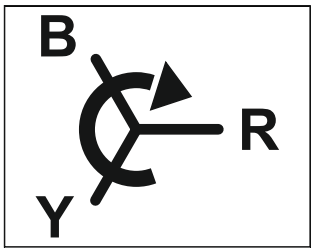
Auxiliary interrupts

Auxiliary interrupts shows number of auxiliary supply interruptions. Auxiliary Interrupts data can be accessed and reset via communication or from the meter front.

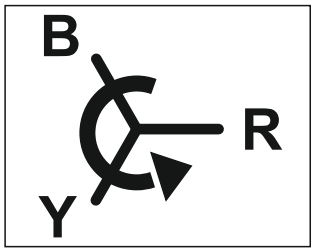
Voltage sequence detection

Meter performs the analysis of the input voltage signals. It detect the wrong phase sequence or failure of one of the input voltage and displays result upon pressing  key for 3 seconds.

1. OK Phase sequence - **"Clockwise"**
2. Wrong phase sequence - **"Anticlockwise"**
3. Failure of one of the input voltage - **"Invalid"**



CLOCKWISE



ANTI-CLOCKWISE

Current polarity (CT reversal detection)

Upon pressing the key  or 5 seconds, the Current Reversal detection page will appear with the CT number of the input current that is reversed in polarity.

1. 1st phase CT polarity has reverse connection **"1"**
2. 1st and 2nd phase CT polarity has reverse connection **"1"**
3. 1st, 2nd and 3rd, phase CT polarity has reverse connection **"123"**

Specifications are subject to change, since development is a continuous process.

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