EasyLogic™ EM1250H Technical Datasheet

EM1250H energy meters in LCD display

The EasyLogic™ EM1250H energy meter offers all the basic energy measurement capabilities required to monitor an electrical installation in a single 96 x 96 mm unit.
Characterized by their rugged construction, compact size, and low installation costs, these state-of-the-art meters are ideal for control panels, motor control centres, and genset panels.

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EM1250H

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EasyLogic™ LCD display

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EasyLogic™ energy meter rear view

EasyLogic™ meters are ideal replacements for multiple analog meters for stand-alone metering in custom panels, switch boards, switch-gear, genset panels, motor control centres, power factor improvement panels and OEM panel board.

- Application
  - Cost management applications
    - Measurement of basic electrical parameters in control panels, motor control panels, power distribution boards, OEM's, Building management systems, panel instrumentation.
    - Aggregation of energy consumption and cost allocation per area, per usage, per shift and per time within the same facility.
  - Network management applications
    - Measurement of Power factor.
    - Modbus RTU protocol RS-485 communication port for integration with energy management system.
- Main characteristics
  - Easy to install: Mounts using two retainer clips, no tools required. Compact meter with 49 mm meter depth behind the panel, connectable up to 480 V +10% AC volts L-L without voltage transformers for installation compliant with measurement category III, and double insulated.
  - Easy to operate: Intuitive navigation with self-guided menus and Heart beat LED indicates normal functioning of meters while it conveys the communication status when connected to RS-485 network.
  - LCD display: elegant, single row, bright, back lit graphical LCD display, 128 * 32 pixels. Fast, in-line view, three parameters, name and value at one glance.
  - Power and energy: measurement, display and recording of all three power and corresponding energy parameter at a time (W/ Wh, VA/ VAh or VAR/ VARh).
  - Accuracy:
    - Class 1.0 for active energy as per the test limits given in IEC 62053-21
    - Class 2.0 for reactive energy as per the test limits given in IEC 62053-23
    - Tested in accordance with IEC 62052-11 for energy test requirements
    - EMI/ EMC tests: As per IEC 61326-1
  - CT nominal: 5 A or 1 A I-nominal (field settable). CT reversal auto correction for energy consumption.
  - Password: Field configurable password for securing set up information and prevents tampering of integrated values.
  - Cyber security: Option for disabling RS-485 port through front panel keys against unauthorized access. This feature can also be used for maintenance and troubleshooting of complex communication network.
  - Display: Auto scaling, 4 digits for Instantaneous parameters and 9+3 digits for energy parameter with auto scroll and auto range capability.
  - Smart line indicators in LCD display meter: Helps check the presence of input supply voltage.
  - Suppression current: To disregard the measurement of induced and panel auxiliary load current in the circuit (settable from 5 to 99 mA).
  - Protective cover: Tamper-proof terminal screws do not detach from housing.

EM1250H

EM1250H technical specifications

General	
Use on LV & MV systems with Potential transformer (PT or VT)/ Current transformer (CT) ratio programmable at site	
Digital panel meters for measurement of basic electrical parameters	
Instantaneous rms values	
Real (active), reactive, and apparent power	Total and per-phase
True power factor	Average and per-phase signed
Energy values stored in non-volatile memory	
Delivered or forward or import energy from the grid - Accumulated or integrated active (Real - Wh), reactive (VARh) and apparent (VAh) energy	
Time counters such as meter ON Hrs, load RUN Hrs and power outage counters	
Old registers facilitate retrieval of last cleared energy values and load Run Hrs	
Display	
LCD display: Elegant single row, bright back lit graphical LCD display 132 (Horizontal) * 32 (Vertical) pixels, 60 Degree angular view. Fast in-line view, three parameters name and value at one glance	
Communication	
RS-485 serial channel connection Industry standard Modbus RTU protocol	
Native Plug and Play support for Schneider Electric energy management system software - EcoStruxure™ Power Monitoring Expert, EcoStruxure™ Power SCADA Operation along with ION Setup programming support	
Diagnostics	
Diagnostic page indicates the healthiness of communication system, device serial number, device model number OS & RS version, communication status, error code display	
Page lock	
Page lock and unlock features. Once the commonly referred page is enabled for lock feature, then the display returns to locked page in 4 minutes of inactive time	
Favourite page	
Number and type of parameters can be chosen and arranged in Favourite page according to the user's requirement	
Electrical characteristics	
Type of measurement	True RMS, 4 quadrant power and 2 quadrant energy, 32 samples/ cycle
Measurement accuracy	
Power (active and apparent)	± 1.0 % for Class 1.0
Power (reactive)	± 2.0 % for Class 1.0
Power factor, per-phase & average	± 0.01 of reading
Active or real energy	Class 1.0 (± 1.0 %)
Apparent energy	± 1.0 %
Reactive energy	Class 2.0 (± 2.0 %)
Input-voltage	
VT (PT) connection	Selectable from No VT (direct), 1 VT, 2 VT to 3 VT
VT (PT) primary	100 V L-L to 999 kV L-L max
U (V) nominal (secondary)	Up to 277 V L-N/ 480 V L-L (selectable VT secondary from 100, 110, 115, 120 to 415 V L-L)
Operating voltage range with accuracy	80-480 V L-L ± 10 % Category III
Measured Voltage with full range	35 to 600 V L-L
Permanent overload (withstand)	750 V L-L, continuous
Impedance	≥5 MΩ
Frequency range	50/60 Hz ± 2
VA burden	≤0.2 VA at 240 V L-N at 50 Hz

EM1250H

EM1250H technical specifications (continued)

Input current	
CT connect	Solo or multi-phase current measurement by installing CT(s) in either of A1, A2, A3, A12, A23, A13, A123 phase(s)
CT primary	1 A to 32767 A programmable
CT secondary	1 A or 5 A I-nominal (field settable)
Operating current range with accuracy	10 mA to 6 A[+1]
Measured Amps with full range	5 mA to 10 A
Suppression current	5 to 99 mA (to disregard negligible load)
Permanent overload (withstand)	Continuous 10 A, 10 s/hr 50 A, 1s/hr 500 A
Impedance	0.3 mΩ
Frequency range	50/60 Hz ± 2
VA burden	≤0.1 VA at 5 A, 50 Hz
AC - control power	
Operating range	48 to 277 V L-N AC ± 10 %
Burden	≤4 VA at 240 V L-N, 50 Hz
Frequency	50/60 Hz nominal (45 to 65 Hz operating range)
Ride-through time	200 ms at 240 V L-N, 50Hz
DC - control power	
Operating range	48 to 277 V DC ± 10 %
Burden	≤2 W at 240 V DC
Ride-through time	120 ms at 240 V DC
Display update	
Instantaneous/ RMS parameters	1 s
Power system	
Phase labelling	Configurable to 123, ABC, rst, pqr or ryb
Wiring configuration	13 wiring schemes (5 on front screen) 1ph, 2 w, L-N 1ph, 2 w, L-L 1ph, 3 w, L-L with N (2phase) 3ph, 3 w, Delta, Ungrounded 3ph, 3 w, Delta, Corner Grounded[+2] 3ph, 3 w, Wye, Ungrounded[+2] 3ph, 3 w, Wye Grounded[+2] 3ph, 3 w, Wye, Resistance Grounded[+2] 3ph, 4 w, Open Delta, Center-Tapped[+2] 3ph, 4 w, Delta, Center-Tapped[+2] 3ph, 4 w, Wye, Ungrounded[+2] 3ph, 4 w, Wye Grounded 3ph, 4 w, Wye, Resistance Grounded[+2]
Mechanical characteristics	
Weight	~ 300 gm (10.6 oz)
IP degree of protection	IP 51 front side, IP 30 meter body, tested as per IEC 60529 (IP 54 with optional gasket METSEIP54GK96X96FF or upgrade to IP65 front side with Optional accessory kit METSEIP65OP96X96FF)
Material	Polycarbonate meets UL 94V-0 flammability rating
Dimensions W x H x D	96 x 96 x 49 mm (3.78 x 3.78 x 1.93 in) (D = depth of the meter from housing mounting flange) 13 mm (0.51 in) protrusion of meter from housing flange
Mounting position	vertical
Panel thickness	5 mm (0.196 in) maximum
Environmental characteristics	
Operating temperature	- 10 to +60° C (14 to140° F)
Storage temperature	- 20 to +70° C (-4 to 158° F)
Humidity rating	5 % to 95 % RH non-condensing
Pollution degree	2
Attitude	≤2000 metres (6562 ft), Category III
Product life	>7 years
Insulation category	Double insulation for user accessible parts

[+1] Additional error of ± 2 % between 10 mA to 50 mA, ± 1% between 50 mA to 100 mA
[+2] Through communication

EM1250H

EM1250H technical specifications (continued)

Electromagnetic compatibility (tested as per IEC 61326-1)	
Electrostatic discharge	IEC 61000-4-2
Immunity to radiated field	IEC 61000-4-3
Immunity to fast transients	IEC 61000-4-4
Immunity to impulse waves	IEC 61000-4-5
Conducted immunity	IEC 61000-4-6
Immunity to magnetic fields	IEC 61000-4-8
Immunity to voltage dips	IEC 61000-4-11
Emissions	Emissions FCC Part 15 Class A/CE
Safety	
Europe	CE, as per IEC 61010-1 edition-3
US and Canada	cULus as per UL61010-1 and CAN/CSA-C22.2 IEC 61010-1 edition-3, for 480 V AC L-L
Measurement Category (Voltage inputs)	CAT III up to 480 V L-L
Overvoltage Category (Control power)	CAT III up to 300 V L-N
Dielectric	As per IEC/UL 61010-1 edition-3
Protective Class	II, Double insulated for user accessible parts
Green premium	EOL, REACH, PEP, RoHS complied
Communication	
RS-485 port	Modbus RTU: 2-Wires, 4800, 9600, 19200 or 38400 baud, Parity - Even, Odd, None, 1 stop bit if parity is Odd or Even, 2 stop bits if none. DLF3000: Firmware update through communication port
Isolation	2.5 kV RMS, double insulated
Protection features	User configurable password (selectable from 0000 to 9999) protected for set-up and clearing of energy, and other integrated data
Display language	English
Technical publication	Printed installation guide (QSG) supplied with meter in English and user guide in soft copy format
Human machine interface	
Display type - LCD	Segment Fast in-line view, three parameters, name and value at one glance. 3+1 digits for instantaneous parameters and 9+3 digits for energy parameters with auto scroll and auto range.
Keypad	4 buttons for navigation at the front, combination of 2 buttons for performing set-up, lock/unlock pages and viewing diagnostic pages
CAL LED (pulse LED)	Red colour, meter constant is configurable from 1 to 9999000 pulses/ k_h (kWh, kVAh, or kVARh)
Communication activity	Green LED (for indicating RS-485 interface or heart beat pulse)

Feature set summary

Parameter/ Meter reference	EM1250H, CL 1.0, RS-485
Class of accuracy (Wh & VAh)	1.0
Sampling rate per cycle	32
Class of accuracy (VARh)	2.0
Power factor: average and per-phase	■
Power W, VA, VAR - 4 quadrant	■
Energy - delivered or forward or import energy: Wh, VAh, VARh	■
Old registers - retrieval of last cleared values of energy and Run Hrs	■
Life time counter - meter ON Hrs, Load Run Hrs and number of power interruptions	■
Communication: 2 wire, RS-485, Modbus RTU protocol	■
Commercial reference number	METSEEM1250HCL1

EM1250H

EM1250H meter mounting

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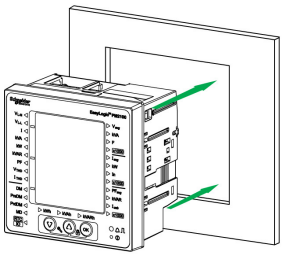

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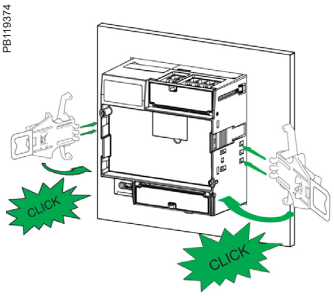

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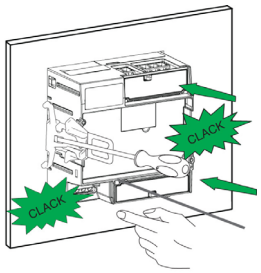

See the appropriate **Installation Guide** for correct installation instructions.

EM1250H meter mechanical dimensions

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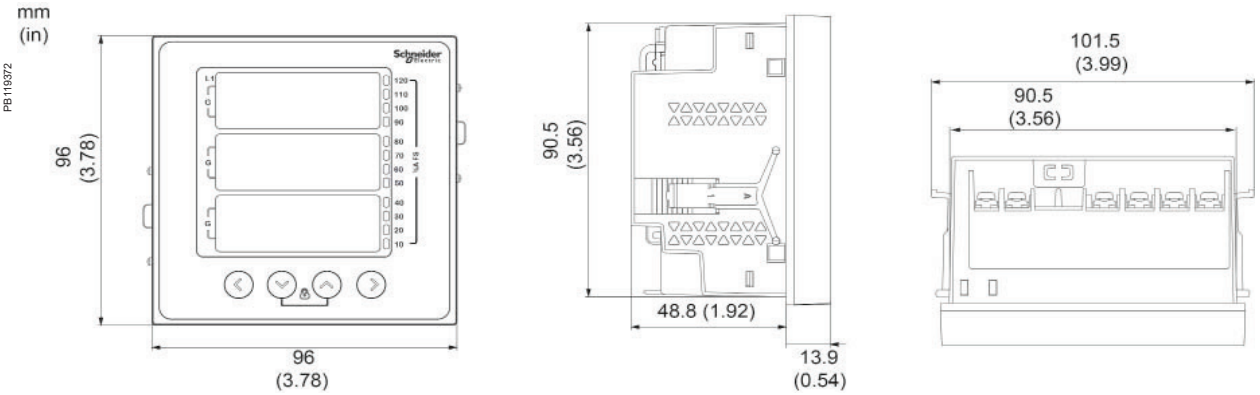

EM1250H meter LCD display overview

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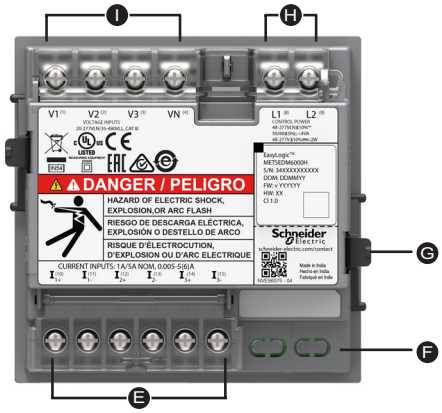

A Menu selection buttons

- Left key: To navigate left
- Down key: To navigate down
- Up key: To navigate up
- Right/OK key: To navigate right/Enter key

B LED indicators

C Alpha numeric LCD display

E Current inputs

F RS-485

G Retainer clip

H Control power

I Voltage inputs

See the appropriate **Installation Guide** for correct installation instructions.

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