



RTR EM96

- Multi-parameter measurements
- Up to 63rd THD and IHD
- RS485 Modbus RTU
- Ethernet TCP gateway (Optional)
- Multi-tariffs
- 4x Digital inputs
- 2x Digital outputs
- Accuracy class 0.5s
- Bar Graph for power indication
- Backlit LCD display for full viewing angles
- Push-in installation and plug-in connection

Product description

The multifunction energy analyzer EM96 is a high end new-generation intelligent panel meter, used not only in electricity transmission and power distribution systems, but also for power consumption measurements and to analyze high voltage intelligent power grids.

EM96 measures and displays the characteristics of 1p2w, 3p4w and 3p3w supplies, including voltage, frequency, current, power and active and reactive energy, imported or exported, harmonic, power factor, Max. demand etc. Energy is measured in terms of kWh, kVARh and kVAh. Maximum demand current can be measured over preset periods of up to 60minutes.

The meter can be configured to work with a wide range of CTs, giving the unit a wide range of operation. Built-in interfaces provides RS485 Modbus RTU communication. Digital input and outputs are provided for external signal counting and external device control.

30 types of parameters can be set for alarm. Easy to wiring and installation with push-in mechanism.

Typical Applications

- Industrial, Commercial and Utility Substation Metering
- Building, Factory and Process Automation
- Sub-metering and Cost Allocation
- Energy Management and Power Quality Monitoring

Standard

- IEC 62053-22 Class 0.5s
 - o Electrical metering equipment (AC) – Particular requirements – Part 22: Static meters for active energy (Class 0.2s and 0.5s)
- IEC 61557-12
 - o Electrical Safety in low voltage distribution systems up to 1000 VAC and 1500 VDC – Equipment for testing, measuring and monitoring device (PMD)



Technical data

Supply voltage

Rated supply voltage	85~275V AC / 120~380V DC
Power consumption	< 7VA/3.5W.
Frequency	45 to 65 Hz

Measuring Circuit

Input Voltage

VT Primary	50 ~ 600000 Vac
Un	230 V L-N
Measured voltage with over-range and crest factor	50 to 600 Vac L-L , 50 to 345 Vac L-N
Permanent overload	600 V L-L , 345 V L-N
Impedance	1M Ω
Frequency range	45~65Hz

Measuring Current Inputs

CT primary current	1~9999A
CT Secondary current	1 A or 5 A
Measured current with over-range and crest factor	5mA~6A
Withstand	120A for 0.5 Seconds
Impedance	<1 mΩ
Frequency range	45~65Hz
Burden	<0.036VA at 6A

Accuracy

Parameter

Voltage	±0.5%
Current	±0.5%
Power	IEC 61557-12 Class 0.5
Active energy	IEC 62053-22 Class 0.5S, IEC 61557-12 Class 0.5S
Reactive energy	± 1%
Power factor	±0.01%
Frequency	± 0.2%
Harmonic distortion	2%

Communication

Communication port	RS485 Modbus RTU
Communication address	1~247
Transmission mode	Half duplex
Data type	Floating point
Transmission distance	1000m Maximum
Transmission speed	2400bps~38400bp
Parity	None (default), Odd, Even
Stop bits	1 or 2
Response time	<100 mS

Digital input

Number	4
Input resistance	10 kΩ
Maximum frequency	1kHz
Response time	10 milliseconds
Isolation	2.5 KVac for 1min

Digital output

Number/type	2 - electromagnetic relay
Output frequency	1 Hz maximum
Switching current	250 Vac at 3.0 Amps, 100k cycles)
Isolation	2.5 KVac for 1min

Environment

Operating temperature	-25 to +55°C
Storage temperature	-40 to +70°C
Humidity	<95% RH at 50 °C (non-condensing)
Pollution degree	2
Altitude	2000m
Vibration	10Hz to 50Hz, IEC 60068-2-6

Enclosure

Weight	420g
IP Degree of protection (IEC 60529)	IP51 front display
Dimensions (WxHxD)	96x96x70
Mounting position	Vertical
Panel thickness	1~5mm
Material of meter case	Self-extinguishing UL 94 V-0
Mechanical environment	M1

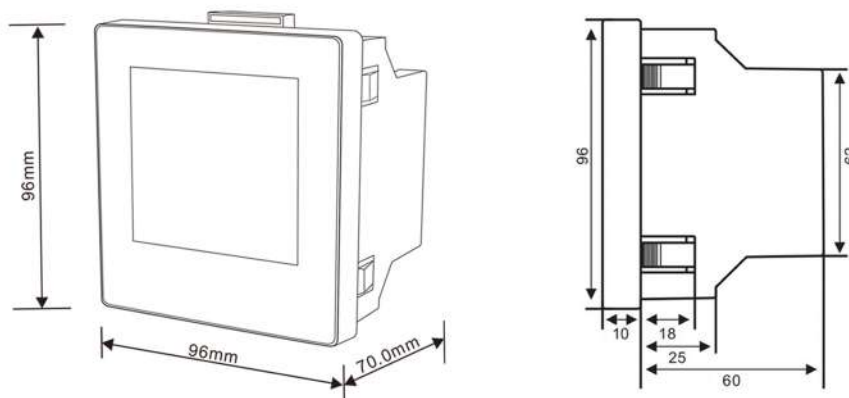
Safety

Measurement category	Per IEC61010-1 CAT III
Current inputs	Require external Current Transformer for Insulation
Over voltage category	CAT III
Dielectric withstand	As per IEC 61010-1 Double Insulated front panel display
Protective class	II

Electromagnetic Compatibility

Electrostatic discharge	IEC 61000-4-2
Immunity to radiated fields	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
Radiated emissions	EN55011 Class A
Conducted emissions	EN55011 Class A
Harmonics	IEC 61000-3-2

DIMENSION



EM96 Functions

Basic measurement

- Voltage: U12, U23, U31, U1, U2, U3
- Current: I1, I2, I3, In, Iavg
- Frequency: f
- Power: P, Q, S, Per phase and Total
- Power factor: PF Per phase and Total
- Running Hour and Real time clock
- Phase Sequence
- Displacement power factor: DPF (Modbus read only)

Demand Values

- Demand P, Q, S
- Demand per phase current
- Max. Demand P, Q, S and per phase current with time-stamped

Max. /Min. Values

- Current: I1, I2, I3, In
- Voltage: U1, U2, U3
- P, Q, S, PF per phase and total
- THDi per phase
- THDu L-L and L-N

Power Quality and Harmonics

- Voltage and Current: THDu, THDi
- Individual harmonics up to 63th order
- Voltage crest factor (Modbus read only)
- Current K factor (Modbus read only)

Energy

- Net/Total kWh and kVArh
- Import/Export kWh and kvVArh

TOU

- 4 Tariffs, each providing the following information
- Import/Export kWh

Input/Output

- 4 Digital Input
- 2 Digital Output

SOE Log

- 30 events time-stamped

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