Multi-function Power Meter

Multifunction Power Monitor

EnergoM-94-X series are digital multifunction power meter. Panel mounting install, it is the ideal choice for monitoring and controlling of power distribution systems. With its four direct access keys and LED/LCD displays, helps to use all the parameters in 3P3W or 3P4W LV installation.

It can be used as a data gathering device for an intelligent Power Distribution System or Plant Automation System. All monitored data is available via a digital RS485 communication port running MODBUS-RTU Protocol. Ethernet communication is also options.

Advantage Features

- Easy to install and operate
- ITF Technology: galvanic insulation protection inputs outputs
- Clear and large character LCD Screen display with back light
- Track real-time power conditions
- 128 samples per cycle, 0.5s screen refresh rate
- Provide load alarm and timestamps
- Optional expand I/O, Ethernet connection port

Measurement Parameter

Voltage	Va, Vb, Vc / Vab, Vbc, Vca
Current	Ia, Ib, Ic
Power	Pa, Pb, Pc, Psum
Reactive Power	Qa, Qb, Qc, Qsum
Apparent Power	Sa, Sb, Sc, Ssum
Frequency	Fra, Frb, Frc, Fr
Power Factor	PFa, PFb, PFc, PF
Active Energy	Ep_imp, Ep_exp, Ep_total
Reactive Energy	Q_imp, Q_exp, Q_total
Voltage THD *	THD_U%, THD_I%
Harmonic *	2~15th / 2~31th / 2~63th
Multi- tariffs *	3 month, 4 Tariffs, 12 Segment
Max Demand *	Um, Im, Pm, Qm
Power Quality *	Voltage Drop / Flicker / Unbalance

* Parameter depends on the meter series code

Application

- Metering of distribution feeders, transformers, generators, capacitor banks and motors.
- Medium and low voltage systems.
- Remote data reading.
- Alarm station with voltage-free digital inputs.
- Commercial, industrial, utility.
- Power quality analysis.
- Harmonic measurement.

Energom-X-DR

Multi-function Meter
Three phase for Din-Rail mounting

Description

Special designed for din-rail mounting, it is a high-end multifunction power meter. Using dot matrix LCD screen, can more easily display more electrical parameters on the same screen.

0.5class high-precision performance, can instead of your old analog indicator or digital single-function products such as ammeters, voltmeters or watt meters etc. Build-in virtual alarm trigger, can detect voltage drop or flicker event, and record in register for future tracing work.

Features

- Measurement accuracy class 0.5
- Current measuring .../5 or .../1 A
- 1.6'' dot matrix LCD screen
- Universal series power supply (85-265VAC/DC)
- Provide 5 virtual alarm trigger
- Provide 100 lists SOE record, include:
  20 lists I/O event
  80 lists virtual alarm even
- Optional advanced electrical parameter*
- Optional record and read multi- tariffs ratio, Up to 3 months
- With RS-485 Modbus/RTU Communications
- With 1 channel Pulse Output (PO) for active energy counting
- Optional 4 channel Digital Input (DI) and 2 channel Digital Output (DO)

* Refer to products Ordering Information

Technical characteristics

Current measurement on inputs (TRMS)	
CT secondary	1 or 5 A, optional 100mA
Measurement range	0 ... 11 kA
Input consumption	<0.1 VA
Voltage measurement (TRMS)	
Measurement range	18 ... 400 VAC
PT secondary	100VAC/400VAC
Input consumption	<0.1 VA
Elctrical power measurement (IEC61557-12)	
Accuracy (V,I)	0.20%
Accuracy (P,Q)	0.50%
Frequency measurement	
Measurement range	45 ... 65 Hz
Accuracy	±0.02Hz
Energy accuracy	
Active energy	Class 0.5 (IEC 62053-22)
Reactive energy	Class 2.0 (IEC 62053-23)
Auxiliary power supply	
AC voltage	DC/AC 85~265 ± 10 %
Frequency	50 / 60 Hz
Consumption	< 10 VA
I/O port, configuration as ordering info	
Optical outputs (PO)	1* Pulse, 1600imp/kWh
Relay outputs (DO)	2* 5A@250Vac / 5A@30Vdc
Status Inputs (DI)	4* Dry contact Ri<500Ω ON, Ri>100kΩ OFF
Isolation*	1kVac r.m.s
Communication	
Link	RS485 (2/3 wires half duplex)
Protocol	Modbus RTU mode
MODBUS speed	4800/9600bauds

* Can provide 4KV isolation model, please indicate detail request before order

EnergoM-94-Z / EnergoM-94-L

Economic Power Meter
Three phase for panel mounting

Description

Low cost design digital power meter, provide RS-485 communication port, easy for user connect to PLC and build SCADA system.

Higher measurement accuracy and system stability, it is cost effective ideal for OEMs and panel builders solution. (Option LED display screen)

Features

- PMD measurement accuracy class 0.5
- Current measuring .../5 or .../1 A
- Backlit LCD display
- Universal series power supply (85-265VAC/DC)
- Expandable input / output modules (up to 3 modules)
- With RS-485 Modbus/RTU Communications
- Optional 2 channel Pulse Output (PO) for active energy&reactive energy counting
- Optional 1 channel Analog Output (AO)
- Optional 4 channel Digital Input (DI) and 2 channel Digital Output (DO)

Technical characteristics

Current measurement on inputs (TRMS)	
CT secondary	1 or 5 A
Measurement range	0 ... 11 kA
Input consumption	<0.1 VA
Voltage measurement (TRMS)	
Measurement range	18 ... 400 VAC
PT secondary	100VAC/400VAC
Frequency	50 / 60 Hz
Input consumption	<0.1 VA
Elctrical power measurement (IEC61557-12)	
Accuracy (V,I)	0.50%
Accuracy (P,Q)	0.50%
Frequency measurement	
Measurement range	45 ... 65 Hz
Accuracy	±0.02Hz
Energy accuracy	
Active energy	Class 1.0 (IEC 62053-21)
Reactive energy	Class 2.0 (IEC 62053-23)
Auxiliary power supply	
AC voltage	DC/AC 85~265 ± 10 %
Frequency	50 / 60 Hz
Consumption	< 10 VA
I/O port, configuration as ordering info	
Optical outputs (PO)	2* Pulse, 1600imp/kWh
Relay outputs (DO)	2* 5A@250Vac / 5A@30Vdc
Status Inputs (DI)	4* Dry contact
Analog output (AO)	1* 4~20mA, load <390Ω, or 0~10V, load >100KΩ
Isolation	1kVac r.m.s
Communication	
Link	RS485 (2/3 wires half duplex)
Protocol	Modbus RTU mode
MODBUS speed	4800/9600bauds

EnergoM-94-Y

Multi-fcuntion Power Meter
Three phase for panel mounting

Description

Three phase electrical network power quality detection device, provide energy consumption and generate; THD (Total Harmonic Distortion); Harmonic individual data reading.

Build-in 4 tariffs energy logger function, with onboard memory can record last three month energy data, free to set max 12 segment record period, can be use as a commercial billing unit.

Features

- PMD measurement accuracy class 0.5s
- Current measuring .../5 or .../1 A
- Backlit LCD display
- Universal series power supply (85-265VAC/DC)
- Record and read multi- tariffs ratio, Up to 3 months
- 15th individual harmonic
- With RS-485 Modbus/RTU Communications
- Optional Ethernet, TCP/IP or MODBUS-TCP
- With 2 channel Pulse Output (PO) for active energy&reactive energy counting
- Optional 1 channel Analog Output (AO)
- Optional 4 channel Digital Input (DI) and 2 channel Digital Output (DO)

Technical characteristics

Current measurement on inputs (TRMS)	
CT secondary	1 or 5 A
Measurement range	0 ... 11 kA
Input consumption	<0.1 VA
Voltage measurement (TRMS)	
Measurement range	18 ... 400 VAC
PT secondary	100VAC/400VAC
Frequency	50 / 60 Hz
Input consumption	<0.1 VA
Elctrical power measurement (IEC61557-12)	
Accuracy (V,I)	0.20%
Accuracy (P,Q)	0.50%
Frequency measurement	
Measurement range	45 ... 65 Hz
Accuracy	±0.02Hz
Energy accuracy	
Active energy	Class 1.0 (IEC 62053-21)
Reactive energy	Class 2.0 (IEC 62053-23)
Auxiliary power supply	
AC voltage	DC/AC 85~265 ± 10 %
Frequency	50 / 60 Hz
Consumption	< 10 VA
I/O port, configuration as ordering info	
Optical outputs (PO)	2* Pulse, 1600imp/kWh
Relay outputs (DO)	2* 5A@250Vac / 5A@30Vdc
Status Inputs (DI)	4* Dry contact
Analog output (AO)	1* 4~20mA, load <390Ω, or 0~10V, load >100KΩ
Isolation	2kVac r.m.s
Communication	
Link	RS485 (2/3 wires half duplex)
Protocol	Modbus RTU mode
MODBUS speed	4800/9600bauds

EnergoM-94-J

Smart Power Monitor
Three phase for panel mounting

Description

New series Smart Power Monitor is the more powerful meter than series power analyzer. With higher precision and more measurement parameters.

Standard RS485 communication structure, MODBUS-RTU protocol, optional profibus-DP protocol. In different project requirement, also support choose RJ45 Ethernet port (MODBUS-TCP)

Features

- PMD measurement accuracy class 0.2
- Current measuring .../5 or .../1 A
- Backlit LCD display
- Universal series power supply (85-265VAC/DC)
- Record and read multi- tariffs ratio, Up to 3 months
- 31th individual harmonic
- A variety of advanced electrical parameters can display the status of the power grid on the spot (Max demand/unbalance/crest factor/K factor...)
- Provide max 50 lists SOE record function
- With RS-485 Modbus/RTU Communications
- With 2 channel Pulse Output (PO) for active energy&reactive energy counting
- Optional 2 channel Analog Output (AO)
- Optional 4 channel Digital Input (DI) and 2 channel Digital Output (DO)

Technical characteristics

Current measurement on inputs (TRMS)	
CT secondary	1 or 5 A
Measurement range	0 ... 11 kA
Input consumption	<0.1 VA
Voltage measurement (TRMS)	
Measurement range	18 ... 400 VAC
PT secondary	100VAC/400VAC
Frequency	50 / 60 Hz
Input consumption	<0.1 VA
Elctrical power measurement (IEC61557-12)	
Accuracy (V,I)	0.20%
Accuracy (P,Q)	0.50%
Frequency measurement	
Measurement range	45 ... 65 Hz
Accuracy	±0.02Hz
Energy accuracy	
Active energy	Class 0.5s (IEC 62053-22)
Reactive energy	Class 1.0 (IEC 62053-24)
Auxiliary power supply	
AC voltage	DC/AC 85~265 ± 10 %
Frequency	50 / 60 Hz
Consumption	< 10 VA
I/O port, configuration as ordering info	
Optical outputs (PO)	2* Pulse, 1600imp/kWh
Relay outputs (DO)	2* 5A@250Vac / 5A@30Vdc
Status Inputs (DI)	4* Dry contact
Analog output (AO)	1* 4~20mA, load <390Ω, or 0~10V, load >100KΩ
Isolation	4kVac r.m.s
Communication	
Link	RS485 (2/3 wires half duplex)
Protocol	Modbus RTU mode
MODBUS speed	4800/9600bauds

EnergoM-94-Q

Intelligent Power Analyzer
Three phase for panel mounting

Description

High-end multifunction power analyzer. higher measurement accuracy, and powerful functions. With its four direct access keys and TFT displays, friendly full text interface helps user operate device more easy.

Max 63th harmonic individual monitor, let user clear grasp of the present electrical grid quality.

Features

- PMD measurement accuracy class 0.2
- Current measuring .../5 or .../1 A
- Clear and large matrix LCD screen
- Universal series power supply (85-265VAC/DC)
- Record and read multi- tariffs ratio, Up to 3 months
- 63th individual harmonic
- A variety of advanced electrical parameters can display the status of the power grid on the spot (Max demand/unbanlance/crest factor/K factor...)
- Provide 5 virtual alarm trigger
- Provide max 100 lists SOE record
- 1KHz Waveform Snapshot, capture length 1 second of voltage, current power flicker / drop for event tracing.
- With RS-485 Modbus/RTU Communications
- With 2 channel Pulse Output (PO) for active energy&reactive energy counting
- Optional 3 channel Analog Output (AO)
- Optional 6 channel Digital Input (DI) and 2 channel Digital Output (DO)
- Optional 128MB memory for data logger

Technical characteristics

Current measurement on inputs (TRMS)	
CT secondary 1 and 5 A	1 or 5 A
Measurement range	0 ... 11 kA
Input consumption	<0.1 VA
Voltage measurement (TRMS)	
Measurement range	18 ... 400 VAC
PT secondary	100VAC/400VAC
Frequency	50 / 60 Hz
Input consumption	<0.1 VA
Elctrical power measurement (IEC61557-12)	
Accuracy (V,I)	0.20%
Accuracy (P,Q)	0.50%
Frequency measurement	
Measurement range	45 ... 65 Hz
Accuracy	±0.02Hz
Energy accuracy	
Active energy	Class 0.2s (IEC 62053-22)
Reactive energy	Class 1.0 (IEC 62053-24)
Auxiliary power supply	
AC voltage	DC/AC 85~265 ± 10 %
Frequency	50 / 60 Hz
Consumption	< 10 VA
I/O port, configuration as ordering info	
Optical outputs (PO)	2* Pulse, 1600imp/kWh
Relay outputs (DO)	2* 5A@250Vac / 5A@30Vdc
Status Inputs (DI)	4* Dry contact
Analog output (AO)	1* 4~20mA, load <390Ω, or 0~10V, load >100KΩ
Isolation	4kVac r.m.s
Communication	
Link	RS485 (2/3 wires half duplex)
Protocol	Modbus RTU mode
MODBUS speed	4800/9600bauds

EnergoM-94-X Series Ordering Information

	94-E	94-DR	94-L	94-Z	94-Y	94-J	94-Q
METERING FEATURES							
3 lines 4 digital LED display	●	–	–	–	–	–	–
Backlit LCD display	–	–	●	●	●	●	●
Dot matrix LCD display	–	●	–	–	–	–	●
Voltage (P-P, P-N)	●	●	●	●	●	●	●
Current (P-N)	●	●	●	●	●	●	●
Frequency	●	●	●	●	●	●	●
Total Power Factor & Per phase	●	●	●	●	●	●	●
Active power & Per phase	●	●	●	●	●	●	●
Reactive power & Per phase	●	●	–	●	●	●	●
Apparent power & Per phase	●	●	–	●	●	●	●
Active energy consumed / generated	●	●	●	●	●	●	●
Reactive energy consumed / generated	●	●	–	●	●	●	●
Time of Use (TOU)	–	○	–	○	●	●	●
Voltage & Current harmonic distortion (THD)	–	○	–	–	●	●	●
Individial harmonic(1)	–	○	–	–	●	●	●
Current / Voltage unbalance(2)	–	○	–	–	–	●	●
Max Demand(3)	–	○	–	–	–	●	●
Voltage deviation(4)	–	○	–	–	–	●	●
Sequncy of Event record (SOE)	–	○	–	–	–	●	●
Voltage drop / flicker	–	–	–	–	–	–	●
Waveform capture	–	–	–	–	–	–	●
128MB logger memory	–	–	–	–	–	–	○
ACCURACY							
PMD (IEC61557-12)	CL 0.5	CL 0.5	CL 0.5	CL 0.5	CL 0.5s	CL 0.2	CL 0.2
Active enery (IEC62053-21/22)	CL 1.0	CL 0.5	CL 1.0	CL 1.0	CL 1.0	CL 0.5s	CL 0.5s
Reactive energy (IEC62053-23/24)	CL 2.0	CL 2.0	CL 2.0	CL 2.0	CL 2.0	CL 1.0	CL 1.0
EXPANSION MODULE							
Energy pulse output (active & reactive)	●	●	○	●	●	●	●
Analogue outputs (0/4~20mA ; 0~5V)	–	–	–	○	○	○	○
Digital input / outputs(5)	–	○	–	○	○	○	○
COMMUNICATION PORT							
RS-485	○	●	●	●	●	●	●
Ethernet 10/100MB(6)	–	–	–	–	○	○	○
COMMUNICATIONS PROTOCOL							
Modbus RTU	○	●	●	●	●	●	●
Profubus	–	–	–	○	○	○	○

● With this function ○ Optional function -- Without this function

(1) 94-DR detect **2~51** th, 194Y detect **2~15** th,194J detect **2-31** th, 194Q detect **2~63** th.

(2) Unbalance default calculated by electrical **Vector value**, if need Split phase absolute value calculation, please tell us before order.

(3) Max Demand value default calculated by **15min Sliding window** method, if need Block Interval please tell us before order.

(4) Deviation value default calculated in rated **220V** and **50Hz,** please confirmed with our sales team of your local grid parameter.

(5) Standard are **4DI & 2DO** port, can modify as client requirement, max support 6DI & 4DO port.

(6) Choose Ethernet port protocol default use **MODBUS-TCP**.

EnergoM-94[1]-[2]S[3]-[4]/[5]/[6]

Series Name	Optional Type
[1] series code	**DR:** Din-rail Multifunction Power Meter **Z/L:** Eenomic Power Meter **Y:** Multifunction Power Meter **J:** Smart Power Monitor **Q:** Intelligent Power Analyzer
[2] panel size	**3:** 80(W)x80(H)x71(D)mm **9:** 96(W)x96(H)x71(D)mm **2:** 120(W)x120(H)x123(D)mm
[3] display mode	**4:** 3 lines 4 digital LED display (red) **Y:** Backlit LCD display
[4] analogue output	**AO1 / AO2 / AO3:** with 1-3 channels analog liner output **Blank:** without this function
[5] digital output	**DO1 / DO2 / DO3 / DO4:** with 1-4 channels digital relay output **Blank:** without this function
[6] digital input	**DI1 / DI2 / DI3 / DI4 / D5 / D6:** with 1-4 channels digital signal input **Blank:** without this function

Install Dimensions

Unit: mm