

EMG SERIES MULTIFUNCTION POWER METER





DEFINING AN ENERGY ANALYZER IN SIMPLE TERMS

An energy analyzer is an automation device which offers 3-phase energy monitoring, analyzing and controlling the network comprehensively.

It enables advanced applications such as energy metering, data logging, DIO applications, tranducer applications etc.

WHICH ACTIONS ARE EXECUTED?

WHICH MARKETS ARE THEY USED FREQUENTLY?

- Submetering station
- PLC-Scada
- applications
- Electrical power plants and substations
- Medium voltage modular cabinets
- Energy meter applications
- Electric utilities
- Infrastructure
- Alarm station
- IT centres
- High-rise buildings

An energy analyzer provides highly accurate measuring for main electrical parameters and expanded energy metering solutions for your electrical network.

All the data which are being measured or kept in its memory can be transmitted to remote monitoring system thanks to modbus communication.

It offers 3-phase energy and power measurement with data logging such as min/max/avg values, energy values, demand values etc. with date and time.

Digital inputs can be used for equipment status/position monitoring, activation second tariff which is used by generators or as a counter.

Digital outputs can be used to take an impulse which is synchronized with internal energy meters.

DIMENSION & SHIPPING

Weight: 0.428 kg H x W x D: 135 mm x 163 mm x 132 mm





MEASURING METERING COUNTING HARMONIC MONITORING WAVEFORM DISPLAYING CONVERTING DATA LOGGING PHASOR ANALYZING ALARMING COMMUNICATING TAKING IMPULSE SPECIFYING HOUR METERS It provides conversion of main electrical parameters into DC voltage or DC mA outputs thanks to analogue outputs which can be easily programmed by the users.

Low/high limit thresholds for all electrical parameters can be defined so load management in a network is possible by means of alarm relay outputs.

In dept-analysis of individual current and voltage harmonics in order to increase network quality.

Displaying signal waveforms for current and voltage phases to detect signal deviations which are observed in real time.

Detailed analyze of phase relationships between current and voltage lines thanks to phasor diagram feature. Specifying run hours, on hours and power interruptions in order for your machine to be used more effectively.



DATASHEET





Type EMG 50 EMG 10 EMG 20 EMG 20 EMG 20 Definition 39 Multimetry 39 Energy Analyzer 39 Energy Analyzer 39 Energy Analyzer Display Seven Segment Seven Segment LCD LCD LCD Data Logging with Timestamp - - - - - - Crit & VTR (1:5000 adj.) 0 0 0 0 0 0 0 Mumber of Measurement In a period 256 256 256 256 256 Signal Waveforms - - - - 0 0 Stadd Resource Consumption <3 W, 65 WA <3 W, 66 WA <2 W, <4.5 VA <2 W, <4	1 - GENERAL SPECIFICATIONS					
Definition 39 Multimetre 39 Energy Analyser 30 Energy Analyser </td <td>Туре</td> <td>EMG 5</td> <td>EMG 10</td> <td>EMG 20B</td> <td>EMG 25</td> <td>EMG 50</td>	Туре	EMG 5	EMG 10	EMG 20B	EMG 25	EMG 50
Display Seven Segment Seven Segment LCD LCD LCD LCD Data Logging with Timestamp -<	Definition	3Ø Multimeter	3Ø Multimeter	3Ø Energy Analyzer	3Ø Energy Analyzer	3Ø Energy Analyzer
Data Logging with Timestamp -<	Display	Seven Segment	Seven Segment	LCD	LCD	LCD
CTR & VTR (1-5000 adj) • • • • • Demand Period (1-60 min adj) - • <td< td=""><td>Data Logging with Timestamp</td><td>-</td><td>-</td><td>-</td><td>-</td><td>•</td></td<>	Data Logging with Timestamp	-	-	-	-	•
Demand Period (1-60 min adj.) - • • • • Number of Measurement in a period 256 256 256 512 Phasor Diagram - - - - - • <td>CTR & VTR (1-5000 adj.)</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td> <td>•</td>	CTR & VTR (1-5000 adj.)	•	•	•	•	•
Number of Measurement in a period 256 256 256 256 512 Phasor Diagram -	Demand Period (1-60 min adj.)	-	•	•	•	•
Phasor Diagram -	Number of Measurement in a period	256	256	256	256	512
Signal Waveforms -	Phasor Diagram	-	-	-	-	•
R5485 Communication - - - - - - 2 - AUXLLARY POWER 85 - 300 WC/DC 95 - 300 WC/DC 96 - 300 WC/DC 96 - 300 WC/DC 97 - 300 WC/DD 97 - 400 WC 1-300 WC (L+0) 1 - 300 WC (L+	Signal Waveforms	-	_	_	-	•
2 - AUXILLARY POWER BS - 300 VAC/DC BS - 3	RS485 Communication	-	-	•	•	•
Range 85 - 300 VAC/DC 82 - 300 VAC/DC <td>2 - AUXILIARY POWER</td> <td></td> <td></td> <td></td> <td></td> <td></td>	2 - AUXILIARY POWER					
Power Consumption <3 W, <6 VA <3 W, <6 VA <2 W, <4.5 VA <2 W, <4	Range	85 - 300 VAC/DC	85 - 300 VAC/DC	85 - 300 VAC/DC	85 - 300 VAC/DC	85 - 300 VAC/DC
3 - MEASUREMENT only V, I, f only V, I, f • • • Basic Measurements (V, I, f, GoS, PF, P, Q, S, THD), THDV, etc.) - • <td>Power Consumption</td> <td><3 W, <6 VA</td> <td><3 W, <6 VA</td> <td><2 W, <4.5 VA</td> <td><2 W, <4.5 VA</td> <td><2.5 W, <3 VA</td>	Power Consumption	<3 W, <6 VA	<3 W, <6 VA	<2 W, <4.5 VA	<2 W, <4.5 VA	<2.5 W, <3 VA
Basic Measurements (V. I, f. Cos0, PF, P. O, S, THDI, THDV, etc.) only V, I, f • • • Min, Max and Demand Values - • • • • • Current Measurement Input 10mA - 6A AC	3 - MEASUREMENT					
(V, I, f, Cos@, PF, P, Q, S, THDI, THDV, etc.) only V, I, T • • • • • Min, Max and Demand Values - • <td>Basic Measurements</td> <td></td> <td>_</td> <td>_</td> <td>_</td> <td>_</td>	Basic Measurements		_	_	_	_
Min, Max and Demand Values - • • • • Current Measurement Input 10mA - 6A AC	(V, I, f, CosØ, PF, P, Q, S, THDI, THDV, etc.)	oniy v, i, t	•	•	•	•
Current Measurement Input 10mA - 6A AC	Min, Max and Demand Values	-	٠	•	•	•
Voltage Measurement Input 1 - 300 VAC (L-N) Harmonics for Current and Voltage Phases - - Up to 31st Up to 31st Up to 31st Up to 51st ThD for Voltage and Current in - - Up to 31st Up to 51st Up to 51st Total Reactive Power - 0.5 0.5 0.5 0.2 Total Reactive Power - 1 1 1 1 Total Reactive Power - 0.5 0.5 0.5 0.2 Total Reactive Energy - 2 2 2 2 Frequency 0.1 0.1 0.1 0.05 0.5 0.5 Current 0.5 0.5 0.5 0.5 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 0.5 Current 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	Current Measurement Input	10mA - 6A AC	10mA - 6A AC	10mA - 6A AC	10mA - 6A AC	10mA - 6A AC
Voltage Measurement Input 2 - 500 VAC (L-1) 2 - 500 VAC (L-1) <td>I</td> <td>1 - 300 VAC (L-N)</td>	I	1 - 300 VAC (L-N)	1 - 300 VAC (L-N)	1 - 300 VAC (L-N)	1 - 300 VAC (L-N)	1 - 300 VAC (L-N)
Harmonics for Current and Voltage Phases - - Up to 3tst Up to 3tst Up to 5tst THD for Voltage and Current in -	Voltage Measurement Input	2 - 500 VAC (L-L)	2 - 500 VAC (L-L)	2 - 500 VAC (L-L)	2 - 500 VAC (L-L)	2 - 500 VAC (L-L)
THD for Voltage and Current in - • • • 4 - MEASUREMENT ACCURACY • • • • Total Active Power - 0.5 0.5 0.5 0.2 Total Reactive Power - 1 1 1 1 1 Total Reactive Power - 0.5 0.5 0.5 0.2 Total Reactive Energy - 0.5 0.5 0.5 0.5 Total Reactive Energy - 2 2 2 2 Frequency 0.1 0.1 0.1 0.1 0.05 0.5 0.5 0.2 Neutral Current 0.5 0.5 0.5 0.5 0.5 0.5 0.5 Voltage 0.2 0	Harmonics for Current and Voltage Phases	-	-	Up to 31st	Up to 31st	Up to 51st
4 - MEASUREMENT ACCURACY Total Active Power - 0.5 0.5 0.5 0.2 Total Reactive Power - 1 1 1 1 1 Total Active Energy - 0.5 0.5 0.5 0.2 Total Active Energy - 0.5 0.5 0.5 0.5 Total Active Energy - 2 2 2 2 Frequency 0.1 0.1 0.1 0.1 0.5 0.5 0.5 Neutral Current 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 Voltage 0.2 0.5 0.5	THD for Voltage and Current in	_	•	•	•	•
Total Active Power - 0.5 0.5 0.5 0.2 Total Reactive Power - 1 1 1 1 1 Total Active Power - 0.5 0.5 0.5 0.2 Total Active Energy - 0.5 0.5 0.5 0.5 Total Reactive Energy - 2 2 2 2 2 Frequency 0.1 0.1 0.1 0.1 0.05 0.5 0.5 Current 0.5 0.5 0.5 0.5 0.5 0.5 Voltage 0.2 0.2 0.2 0.2 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 Tariff - 1 1 1 1 Se Energy Meters - - - - - 30 Phase Energy Meters - - - - - - - - - - - </td <td>4 - MEASUREMENT ACCURACY</td> <td></td> <td></td> <td>_</td> <td>-</td> <td>-</td>	4 - MEASUREMENT ACCURACY			_	-	-
Total Reactive Power - 1 1 1 1 1 Total Apparent Power - 0.5 0.5 0.5 0.5 0.2 Total Reactive Energy - 0.5 0.5 0.5 0.5 0.5 Total Reactive Energy - 2 2 2 2 2 Frequency 01 01 01 01 0.05 0.5 0.5 0.2 Neutral Current 0.5 0.5 0.5 0.5 0.5 0.5 Voltage 0.2 0.2 0.2 0.2 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 0.5 ThUV, THDI - 1 1 1 1 1 5 - ENERGY METERS AND COUNTERS - - - • • • • • • • • • • • • • • • • •	Total Active Power	-	0.5	0.5	0.5	0.2
Total Apparent Power - 0.5 0.5 0.5 0.2 Total Active Energy - 0.5 0.5 0.5 0.5 Total Reactive Energy - 2 2 2 2 2 Frequency 0.1 0.1 0.1 0.1 0.1 0.1 0.05 0.5 0.5 0.2 Neutral Current 0.5	Total Reactive Power	-	1	1	1	1
Total Active Energy - 0.5 0.5 0.5 0.5 Total Reactive Energy - 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Total Apparent Power	-	0.5	0.5	0.5	0.2
Total Reactive Energy - 2 2 2 2 Frequency 0.1 0.1 0.1 0.1 0.1 0.05 Current 0.5 0.5 0.5 0.5 0.5 0.2 Neutral Current - 0.5 0.5 0.5 0.5 0.5 Voltage 0.2 0.2 0.2 0.2 0.2 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 0.5 ThDV, THDI - 1 1 1 1 1 5 - ENERGY METERS AND COUNTERS - <	Total Active Energy	-	0.5	0.5	0.5	0.5
Frequency 0.1 0.05 0.5 0.5 0.2 Neutral Current - 0.5	Total Reactive Energy	-	2	2	2	2
Current 0.5 0.5 0.5 0.5 0.2 Neutral Current - 0.5 0.5 0.5 0.5 Voltage 0.2 0.2 0.2 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 ThDV, THDI - 1 1 1 1 Se ENERGY METERS AND COUNTERS - - - - Tariff - Utility Utility Utility & Genset Utility & Genset Multi Sub-Tariffs (Peak, Day and Off-Peak) - - - - - 3Ø Phase Energy Meters - • • • • • • On Hour, Run Hour and Int Counter - • <td>Frequency</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> <td>0.1</td> <td>0.05</td>	Frequency	0.1	0.1	0.1	0.1	0.05
Neutral Current - 0.5 0.5 0.5 0.5 Voltage 0.2 0.2 0.2 0.2 0.2 0.2 Power factor - 0.5 0.5 0.5 0.5 0.5 THDV, THDI - 1 1 1 1 1 1 5 - ENERGY METERS AND COUNTERS Tariff - Utility Utility Utility & Genset Utility & Genset Multi Sub-Tariffs (Peak, Day and Off-Peak) -	Current	0.5	0.5	0.5	0.5	0.2
Voltage 0.2 <th0.2< th=""> 0.2 <th0.2< th=""> <th0.2< t<="" td=""><td>Neutral Current</td><td>_</td><td>0.5</td><td>0.5</td><td>0.5</td><td>0.5</td></th0.2<></th0.2<></th0.2<>	Neutral Current	_	0.5	0.5	0.5	0.5
Power factor - 0.5 0.5 0.5 0.5 THDV, THDI - 1 1 1 1 1 5 - ENERGY METERS AND COUNTERS Tariff - 1 1 1 1 Tariff - Utility Utility Utility & Genset Utility & Genset Multi Sub-Tariffs (Peak, Day and Off-Peak) -	Voltage	0.2	0.2	0.2	0.2	0.2
THDV, THDI-1111 5 - ENERGY METERS AND COUNTERS Tariff-UtilityUtilityUtility & GensetUtility & GensetMulti Sub-Tariffs (Peak, Day and Off-Peak)3Ø Phase Energy Meters•0Hour, Run Hour and Int Counter-••••0Hour, Run Hour and Int Counter-••••6INPUTS AND OUTPUTSAlarm Relay Outputs2pcs. (toA,250VAC,1250VA)(toA,250VAC,1250VA)Digital Inputs2pcs. (Dry Contact)2pcs. (try Contact)Digital Outputs2 pcs. (5-30VDC)2 pcs. (5-30VDC)7 - COMMUNICATION1200-57600 bps adj.1200-57600 bps adj.2400-115200 bps adj.Protocol1200-57600 bps adj.1200-57600 bps adj.2400-115200 bps adj.LEGEND:1200-57600 bps adj.1200-57600 bps adj.2400-115200 bps adj.IEGEND:1200-57600 bps adj.1200-57600 bps adj.1200-57600 bps adj.IEGEND:1200-57600 bps adj.1200-57600 bps adj.IEGEND:1200-57600 bps adj.1200-57600 bps adj.IEGEND:1200-57600 bps adj.1200-57600 bps adj.IEGEND: <td>Power factor</td> <td>_</td> <td>0.5</td> <td>0.5</td> <td>0.5</td> <td>0.5</td>	Power factor	_	0.5	0.5	0.5	0.5
5 - ENERGY METERS AND COUNTERS Tariff - Utility Utility Utility & Genset Multi Sub-Tariffs (Peak, Day and Off-Peak) - - - - 30 Phase Energy Meters - - - - - 30 Phase Energy Meters - - - - - On Hour, Run Hour and Int Counter - - - - - 6 - INPUTS AND OUTPUTS - <td>THDV. THDI</td> <td>_</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	THDV. THDI	_	1	1	1	1
Tariff-UtilityUtilityUtility & GensetUtility & GensetMulti Sub-Tariffs (Peak, Day and Off-Peak)3Ø Phase Energy Meters-•••On Hour, Run Hour and Int Counter-•••6 - INPUTS AND OUTPUTS••Alarm Relay Outputs2 pcs. (10A,250VAC,1250VA)2 pcs. (10A,250VAC,1250VA)Digital Inputs2 pcs. (Dry Contact)2 pcs. (Dry Contact)Digital Outputs2 pcs. (5-30VDC)2 pcs. (5-30VDC)7 - COMMUNICATIONModbus RTUModbus RTUProtocol1200-57600 bps adj.2400-115200 bps adj.Baud Rate1200-57600 bps adj.2400-115200 bps adj.2400-115200 bps adj.LEGEND: • feature supportedbit.ly/GAEemg10bit.ly/GAEemg20bit.ly/GAEemg25bit.ly/GAEemg50	5 - ENERGY METERS AND COUNTERS					
Multi Sub-Tariffs (Peak, Day and Off-Peak) -<	Tariff	-	Utility	Utility	Utility & Genset	Utility & Genset
3Ø Phase Energy Meters - • • • 3Ø Phase Energy Meters - • • • On Hour, Run Hour and Int Counter - • • • 6 - INPUTS AND OUTPUTS - - • • • Alarm Relay Outputs - - - 2 pcs. (10A,250VAC,1250VA) (10A,250VAC,1250VA) Digital Inputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (Sry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (5-30VDC) 2 pcs. (5-30VDC) 7 - COMMUNICATION - - - 2 pcs. (5-30VDC) 2 pcs. (5-30VDC) Protocol - - - Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 1200-57600 bps adj. 2400-115200 bps adj. LEGEND: - - - - CRE 1 CRE 1 CRE 2 CRE 2 CRE 2 • feature supported - - - <	Multi Sub-Tariffs (Peak, Dav and Off-Peak)	_	-	-	-	•
On Hour, Run Hour and Int Counter - • • • • 6 - INPUTS AND OUTPUTS Alarm Relay Outputs - - - 2 pcs. (10A,250VAC,1250VA) 2 pcs. (10A,250VAC,1250VA) Digital Inputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (5-30VDC) 2 pcs. (5-30VDC) 7 - COMMUNICATION - - 2 pcs. (5-30VDC) 2 pcs. (5-30VDC) Protocol - - Modbus RTU Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 2400-115200 bps adj. 2400-115200 bps adj. LEGEND: - - - IU/GAEemg10 bit.ly/GAEemg20b bit.ly/GAEemg25 bit.ly/GAEemg50	30 Phase Energy Meters	_	•	•	•	•
6 - INPUTS AND OUTPUTS Alarm Relay Outputs - - - 2 pcs. (10A,250VAC,1250VA) 2 pcs. (10A,250VAC,1250VA) Digital Inputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (5-30VDC) 2 pcs. (5-30VDC) 7 - COMMUNICATION - - Modbus RTU Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 2400-115200 bps adj. 2400-115200 bps adj. LEGEND: - - - - - - - • feature supported bit.ly/GAEemg5 bit.ly/GAEemg10 bit.ly/GAEemg20b bit.ly/GAEemg25 bit.ly/GAEemg50	On Hour, Run Hour and Int Counter	_	•	•	•	•
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Digital Inputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) Digital Outputs - - - 2 pcs. (Dry Contact) 2 pcs. (Dry Contact) 7 - COMMUNICATION - - - 2 pcs. (S-30VDC) 2 pcs. (S-30VDC) Protocol - - - Modbus RTU Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 1200-57600 bps adj. 2400-115200 bps adj. LEGEND: -<	Alarm Relay Outputs	-	-	-	2 pcs.	2 pcs.
Digital Outputs - - - 2 pcs. (5 - 30VDC) 2 pcs. (5 - 30VDC) 7 - COMMUNICATION Protocol - - Modbus RTU Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 1200-57600 bps adj. 2400-115200 bps adj. LEGEND: • feature supported bit.ly/GAEemg5 bit.ly/GAEemg10 bit.ly/GAEemg20b bit.ly/GAEemg25 bit.ly/GAEemg50	Digital Inputs	_	_	-	2 pcs. (Dry Contact)	2 pcs. (Dry Contact)
7 - COMMUNICATION Protocol - - Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 1200-57600 bps adj. 2400-115200 bps adj. LEGEND: • feature supported bit.ly/GAEemg5 bit.ly/GAEemg10 bit.ly/GAEemg20b bit.ly/GAEemg25 bit.ly/GAEemg50	Digital Outputs	-	-	_	2 pcs (5-30VDC)	2 pcs (5-30VDC)
Protocol - - Modbus RTU Modbus RTU Modbus RTU Baud Rate - - 1200-57600 bps adj. 1200-57600 bps adj. 2400-115200 bps adj. LEGEND: • • • • • • • feature supported bit.ly/GAEemg5 bit.ly/GAEemg10 bit.ly/GAEemg20b bit.ly/GAEemg25		l		l		
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feature supported bit.ly/GAEemg5 bit.ly/GAEemg10 bit.ly/GAEemg20 bit.ly/GAEemg25 bit.ly/GAEemg50	LEGEND:					
	 feature supported 	bit.ly/GAEemg5	bit.ly/GAEemg10	bit.ly/GAEemg20b	bit.ly/GAEemg25	bit.ly/GAEemg50



WIRING DIAGRAM







EMG 50







DIGITAL I/O AND ALARM OUTPUT CONNECTION EMG25 & EMG50







Alarm Relay Output



Digital Output



JAKARTA TIMUR 13930

SURABAYA 60293

Jl. Rungkut Industri I No. 29 Rungkut Industrial Estate T (031) 849 3885-86, F (031) 841 6661

Jl. Rawa Gelam II No. 8 Pulogadung Industrial Estate T (021) 4682 5050, F (021) 4682 4758