Network Analyzers (LED Display)

EMR Series

EMR-53 / EMR-07 Series Network Analyzers provide you to monitor more than 50 electrical parameters on the screen.

EMR-04 : Power Energy Meter

EMR-07 : Network Analyzer

**EMR-07S :** Network Analyzer with RS-485 (MODBUS) Communication

EMR-53 : Network Analyzer Measuring THD

EMR-53S : Network Analyzer with RS-485 (MODBUS) communication, Pulse Counters, Digital Timer, Alarm Contacts

Remote Monitoring Software EnerMedic

Thanks to EnerMedic Energy Management Software developed by ENTES, the measured values can be read remotely and energy consumption and quality can be monitored in real time.

In this way, comprehensive energy monitoring, data storage, the analysis of the data stored can be optimized. Control of energy consumption by analyzing data gives an opportunity to decrease the energy costs and achieve the sustainable energy targets.
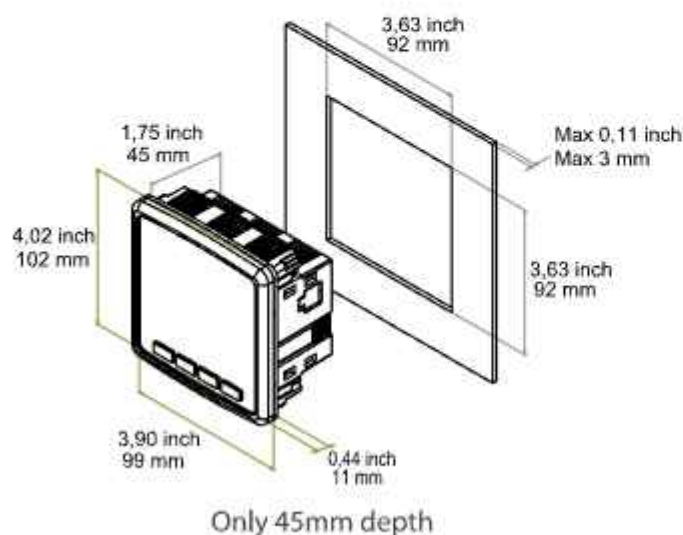
Only 45mm depth

Benefits

EMR Series Energy Analyzers allows the electrical measurements to be read clearly in any environment.

EMR Series Energy Analyzers make a difference with its 45mm depth while save time by ghost screen technology and easy mounting features.

Applications

Wide variety of models and features in EMR Series Energy Analyzers will provide you the analysis of energy parameters in any project you are in.

Network Analyzers (LED Display)

⚙ Product Selection Table

Product Code	3-Phase Voltage, 3-Phase Current, Frequency	W, Var, VA	kWh, kVArh	Cosφ	THDV/THDI	Individual Harmonics	Digital Input	Digital Output	Contact Output	Neutral Current	Demand	Max./Min. Values	Under/Over Voltage Protection	Phase Sequence Protection	RS-485	Internal Memory	X/1, X/5 Current Transformer	Total Operation Time	Supply Voltage
EMR-04		•	•	•			2	2			•	•					•	•	100-270 VAC/VDC
EMR-04S		•	•	•			2	2			•	•			•	2MB	•	•	100-270 VAC/VDC
EMR-07	•	•	•	•			2	2			•	•						•	100-270 VAC/VDC
EMR-07S	•	•	•	•	•		2	2			•	•			•	2MB	•	•	100-270 VAC/VDC
EMR-53	•	•	•	•	•	15	2	2	•	•	•	•						•	100-270 VAC/VDC
EMR-53S	•	•	•	•	•	31	2	2	•	•	•	•			•	2MB	•	•	100-270 VAC/VDC
EMR-53CS	•	•	•	•	•	31	2	2	•	•	•	•	•	•	•	2MB	•	•	100-270 VAC/VDC

⚙ Measured Parameters

EMR-53 Models	EMR-07 Models	EMR-04 Models			
			Total Active Power (ΣP)	Active Power (P)	Inductive Reactive Energy (kVArh)
			Total Reactive Power (ΣQ)	Reactive Power(Q)	Capacitive Reactive Energy (kVArh)
			Total Apparent Power (ΣS)	Apparent Power(S)	Apparent Energy (kVAh)
			Active Energy – Import (kWh)	Cosφ	Maximum Demand
			Active Energy – Export (kWh)		Maximum/Minimum Values
			Phase-Neutral Voltages(VLN)	Phase Currents	
			Phase-Phase Voltages(VLL)	Calculated Neutral Current	
			THDV/THDI		
			Individual Harmonics		

" EMR Series Energy Analyzers gather innovation, functionality and competitive features in one design and stand out in integrated energy management, energy efficiency and energy measurement projects. "

Network Analyzers (LCD Display)

MPR-4 Series Network Analyzer

With their compact design and 45mm depth, MPR-4 Series New Generation Network Analyzers occupy less space in the panels. Real-time monitoring is possible via large graphic screen. Imn addition up to 16 MB internal memeory and communication feature they offer wide I/O solutions with thei replaceable modular structure based on customeer requirements and areas of application.

I/O Modules

MPR-4 Series Network Analyzers can be customized by installing I/O modules based on project requirements.

MPR-4X I/O Module Selection Table
MM-120 (2 Digital Input, 5-24 VDC)
MM-102 (2 Digital Output, 5-24 VDC)
MM-002 (2 Relays, 5A /250 VAC; NO)
MM-122 (2 Digital Inputs + 2 Digital Outputs, 5-24 VDC)
MM-202 (2 Analog Outputs, (0-10VDC)(0-5VDC)(±5 VDC)(±10VDC)(0-20mA)(0-24mA)(4-20mA)
MM-144 (4 Digital Inputs + 4 Digital Outputs 5-24 VDC)

MPR-4X-OG and MPR-4X-PM I/O Module Selection Chart
MM-OG-26 (2 Digital Inputs, 2 Digital Outputs, 2 Relays, 2 Analog Outputs)

Increase Your Efficiency by Monitoring Your Energy Remotely

See page 63 for energy monitoring software.

Benefits

MPR-4 takes up less space in the cabinet by its 45 mm depth. MPR-4 range offers wide operating voltage options and can be customized with wide I/O solutions compatible with its modular structure.

Applications

Projects require flexibility of modular I/O extension, easy and fast installations, record of sag and swell, detailed harmonics are the ideal applications for MPR -4 series energy analyzers.

Network Analyzers (LCD Display)

Product Comparison Chart

Product Name	Dimensions/mm	3×V, 3×I, Frequency, W, VAr, VA, 3P, SQ, 3S, kWh, kVArh, Demand, Max., Min. Cosφ, I hsltr	Active Energy Class 0,5	Active Energy Class 1	%THD-I / %THD-V	Neutral Current Input	Individual Harmonics	RS-485	Ethernet	Digital Input	Digital Output	Analog Output	Relay Output (Alarm Contact)	Clock (RTC)	Memory (MB)	Current-Voltage Unbalances	Tariff	Pulse Counter	Çalışma Saati	Alarm	Event Recording	Log Recording	Constant Current Terminals	X/5, X/1	X/333 mV	24-60 VAC/DC	50-270 VAC/DC
50-270 VAC/DC Supply																											
MPR-45	96×96	●		●		●				*	*	*	*	●			1	*	●	*	●			●			●
MPR-45S	96×96	●		●		●		●		*	*	*	*	●	16		1	*	●	*	●	●		●			●
MPR-46	96×96	●		●	●	●				*	*	*	*	●			1	*	●	●				●			●
MPR-46S	96×96	●		●	●	●		●		*	*	*	*	●	16		8	*	●	*	●	●		●			●
MPR-46S-PM	96×96	●		●				●		*	*	*	*	●	16		8	*	●	*	●	●			C ●		●
MPR-47S	96×96	●		●	●	●	51	●		*	*	*	*	●	16	●	8	*	●	*	●	●		●			●
MPR-47S-0,5	96×96	●	●		●	●	51	●		*	*	*	*	●	16	●	8	*	●	*	●	●		●			●
MPR-47S-PM	96×96	●		●			51	●		*	*	*	*	●	16	●	8	*	●	*	●	●			C ●		●
MPR-47SE	96×96	●		●	●	●	51	●	●	*	*	*	*	●	16	●	8	*	●	*	●	●		●			●
MPR-47SE-0,5	96×96	●	●		●	●	51	●	●	*	*	*	*	●	16	●	8	*	●	*	●	●		●			●
24-60 VAC/DC Supply																											
MPR-47S-D	96×96	●		●	●	●	51	●		*	*	*	*	●	16	●	8	*	●	*	●	●		●		●	
MPR-47S-D-0,5	96×96	●	●		●	●	51	●		*	*	*	*	●	16	●	8	*	●	*	●	●		●		●	
OG Series (Constant Current Terminals)																											
MPR-42-OGT-26	96×96	●		●	●		31	●	●	●	●	●	●	●	16		8	●	●	●	●	●	●	●	●		●
MPR-42-OGT-26-0,5	96×96	●	●		●		31	●		●	●	●	●	●	16		8	●	●	●	●	●	●	●	●		●
MPR-47S-OG	96×96	●		●	●		51	●		*	*	*	*	●	16	●	8	*	●	*	●	●	●	●	●		●
MPR-47S-OG-D	96×96	●		●	●		51	●		*	*	*	*	●	16	●	8	*	●	*	●	●	●	●	●	●	
MPR-47S-OG-D-0,5	96×96	●	●		●		51	●		*	*	*	*	●	16	●	8	*	●	*	●	●	●	●	●	●	

C can be used with X5/PM Converter, *Modular Structure

Measured Parameters

MPR-45 **MPR-45S**	Phase-Neural Voltages (V_{LN})	Neutral Current (In)	Active Power (P)	Active Energy- Import (kWh or MWh)
	Phase-Phase Voltages (V_{LL})	Total Current (ΣI)	Reactive Power (Q)	Active Energy - Export (kWh or MWh)
	Average Phase - Neutral Voltage	Power Factor (P.F)	Apparent Power (S)	Inductive Reactive Energy (kVArh or MVArh)
	Average Phase-Phase Voltage	Cosφ	Total Active Power (ΣP)	Capacitive Reactive Energy (kVArh or MVArh)
	Maximum Demand	Frequency (Hz)	Total Active Power (ΣP)	Apparent Energy (kVAh or MVAh)
	Phase Currents (IL)	Max / Min. Values	Total Apparent Power (ΣS)	Ground - Neutral Voltage (VEN)
MPR-46 **MPR-46S** **MPR-46S-PM**	Total Harmonics in Voltages Distortion (%THD-V)	Total Harmonic in Currents Distortion (%THD-I)		
MPR-47S **MPR-47S-D** **MPR-47S-0,5** **MPR-47S-D-0,5** **MPR-47S-PM** **MPR-47SE** **MPR-47SE-0,5**	Sag / Swell	Current / Voltage Unbalances	1-51. Voltage Harmonics	1-51. Current Harmonics

Quality Analyzers

EMK Series Class A Power Quality Analyzers

EMK-01 and EMK-10P Power Quality Analyzers enable the measurement of electrical parameters in LV and MV systems according to EN6100-4-30 Class A standard. It monitors and analyzes the quality of the energies on the distribution and consumption side of the networks according to the EN50160 standard in order todetect the problems in the system.

EMK-10P Power Quality Analyzers with 5 voltage and 4 current terminals can be used in various applications. Rogowski type clamps provide easy and fast connection wherever you need to analyze the power quality.

The portable form of quality

Benefit

EMK-10P offers you a flexibility for your measurements in any environment and in any condition.

Usage areas

They are equipment designed to meet all the needs of teams who want to measure power quality at multiple points.

Quality Analyzers

Product Comparison Chart

Product Name	Dimensions(mm)	Graphic LCD	3xV/I, Hz, W, Var, VA, ΣP/Q/S, kWh, kVArh, Max, Min, cosφ, I neutral	Active Energy Class 0.2S	Current / Voltage Unbalance	THD-V/I	Individual Harmonics	Sag/Swell	Transient	Fliker	K Factor	RS-485 Communication	Ethernet	Sıcaklık Sensörü	Digital Input / Output	Memory	Event/Log Recordings	X/5, X/1	230 VAC	85-265 VAC/DC	24-60 VAC/DC
EMK-01	144X144	●	●		●	●	●	64	●	●	●	●	●	●	●	2	1GB	●	●	●	O	O
EMK-10P	Portable Box	●	●		●	●	●	64	●	●	●	●			●		1GB	●	●	●		

○ Optional

Measured Parameters

EMK-01 EMK-10P	Phase-Neural Voltages (V_LN)	Active Power (P)	Total Harmonics in VoltagesDistortion (%THD-V)
	Phase-Phase Voltages (V_LL)	Reactive Power (Q)	Total Harmonic in CurrentsDistortion (%THD-I)
	Phase Currents (IL)	Apparent Power (S)	Current / Voltage Unbalances
	Neutral Current (In)	Total Active Power (ΣP)	1-64. Voltage Harmonics
	Total Current (ΣI)	Total Reactive Power (ΣQ)	1-64. Current Harmonics
	Power Factor (P.F)	Total Apparent Power (ΣS)	Sag / Swell
	cosφ	Active Energy- Import (kWh veya MWh)	Flicker
	Frequency (Hz)	Active Energy - Export (kWh veya MWh)	Transient
	Max / Min. Values	Inductive Reactive Energy (kVArh veya MVArh)	
		Capacitive Reactive Energy (kVArh veya MVArh)	
		Apparent Energy (kVAh veya MVAh)	

> EMK Series Energy Quality Analyzers, provides you the most detailed energy measurements in accordance with international standards. Fixed and portable versions provide you the flexibility wherever you need an energy analysis solution.

Network Analyzers

MPR - 1 Series Network Analyzers

MPR-1 Series DIN type network analyzers have been designed for the purpose of measurement of electrical parameters at machines and panels. By means of its design without a screen, it is a cost effective measurement device series for energy monitoring software.

Remote Monitoring Software EnerMedic

Thanks to the energy management software developed by ENTES, the measured values can be read remotely and energy consumption and quality can be monitored in real time.
In this way, comprehensive energy monitoring, data storage, the analysis of the data stored can be optimized. Control of energy consumption by analyzing data gives an opportunity to decrease the energy costs and achieve the sustainable energy targets.

Increase Your Efficiency by Monitoring Your Energy Remotely

See page 63 for energy monitoring software.

⚙ Benefit

MPR-1 series Energy Analyzers are the optimum solution where project requires remote monitoring.

🌐 Applications

MPR-1 Energy Analyzers are optimum solution for the projects require detailed harmonic measurements, remote energy analysis, record of current and voltage imbalances.

Network Analyzers

Product Comparison Chart

Product Code	Dimensions	%THD-I	%THD-V	Individual Harmonics	Current-Voltage Unbalances	RS-485 Modbus	Tariff	Digital Input	Digital Output	Analog Output (mA/V)	Relay Output	Pulse Counter	Memory	Log Recording	Event Recording	X5/X1 Current Transformer	9S-270 VAC/DC	12-50 VDC
9S-270 VAC/DC Supply																		
MPR-14S	DIN4					●	8								●	●	●	
MPR-15S-22	DIN4	●	●			●	8	2	2			●	4 MB	●	●	●	●	
MPR-16S-21	DIN4	●	●	51	●	●	8	2			1	●	4 MB	●	●	●	●	
MPR-17S-23	DIN4	●	●	51	●	●	8	2	2	1		●	4 MB	●	●	●	●	
12-50 VDC Supply																		
MPR-14S-D	DIN4					●	8								●	●		●
MPR-15S-22-D	DIN4	●	●			●	8	2	2			●	4 MB	●	●	●		●
MPR-16S-21-D	DIN4	●	●	51	●	●	8	2			1	●	4 MB	●	●	●		●
MPR-17S-23-D	DIN4	●	●	51	●	●	8	2	2	1		●	4 MB	●	●	●		●

Measured Parameters

MPR-14S	Phase-Neural Voltages (V_{LN})	Neutral Current (In)	Active Power (P)
	*Phase-Phase Voltages(V_{LL})	Phase Currents (IL)	Reactive Power (Q)
	Max / Min. Values	Total Active Power (ΣP)	Apparent Power (S)
	Power Factor (P.F)	Total Reactive Power (ΣQ)	Active Energy– Import (kWh or MWh)
	Cosφ	Total Apparent Power (ΣS)	Active Energy – Export (kWh or MWh)
	Frequency (Hz)	Apparent Energy(kVAh or MVAh)	Inductive Reactive Energy (kVArh or MVArh)
	Demand / Maximum Demand		Capacitive Reactive Energy (kVArh or MVArh)
MPR-15S-22	Total Harmonics in VoltagesDistortion (%THD-V)	Total Harmonic in CurrentsDistortion (%THD-I)	
MPR-16S-21 MPR-17S-23	Current / Voltage Imbalances	1-51. Voltage Harmonics	1-51. Current Harmonics

ENTES MPR-1 Energy Analyzers cover all your basic requirements in the projects where the measurement data can be transfered by communication and without any need of screen on device.

Network Analyzers(LCD)

MPR - 2 Series Network Analyzers

MPR-2 Series have been designed for detailed measurement and analysis of electrical parameters. With their communication features all measurements can be tracked from a single monitoring center.

With its digital inputs and outputs, MPR-2 Series can detect and control the status of devices in the field (breakers, switches,contacts,etc.).

Log Reader

By the help of free ENTES Log Reader Software, parameters such as; current, voltage, power, load profile and THD can be transferred to computer. The data is able to be filtered by time period and parameter type. The data stored can be exported in XLS, CSV, etc. formats.

Current, voltage, power, load profile and THD values can be exported in different formats.

Benefit

MPR-2 Series with its digital inputs and outputs detect the status of devices in the field as well as control (breakers, switches, contacts, etc.).

Application

MPR-2 Series Network Analyzers are ideal for the customers who aim to monitor electrical parameters on the screen, require detailed analysis of harmonic, current, voltage imbalances, log reading and quick installation.

⚙ Product Comparison Chart

Product Name	3xV, 3xI, Frequency, W, VAr, VA,ΣP, ΣQ, ΣS,kWh	kWrh, Demand, Max, Min, Cosφ, I nstr	%THD-I	%THD-V	Individual Harmonics	RS-485	Digital Input	Digital Output	Analog Output	Relay Output (alarm contact)	Tariff	Clock(RTC)	Memory	Current-Voltage Unbalances	Pulse Counter	Run/On Hour	Alarm	Event Recording	Log Recording	X/5, X/1	X/333 mV	95-270 VAC/DC	12-50 VDC
95-270 VAC/DC Supply																							
MPR-24	•										1	•				•		•		•		•	
MPR-24-PM	•										1	•				•		•		C	•	•	
MPR-25S-22	•		•	•		•	2	2			8	•	4MB		•	•	•	•	•	•		•	
MPR-26S-21	•		•	•	51	•	2			1	8	•	4MB	•	•	•	•	•	•	•		•	
MPR-26S-21-PM	•		•	•	51	•	2			1	8	•	4MB	•	•	•	•	•	•	C	•	•	
MPR-27S-23	•		•	•	51	•	2	2	1		8	•	4MB	•	•	•	•	•	•	•		•	
12-50 VDC Supply																							
MPR-24-D	•										1	•				•		•		•			•
MPR-24-D-PM	•										1	•				•		•		C	•		•
MPR-25S-22-D	•		•	•		•	2	2			8	•	4MB		•	•	•	•	•	•			•
MPR-26S-21-D	•		•	•	51	•	2			1	8	•	4MB	•	•	•	•	•	•	•			•
MPR-26S-21-D-PM	•		•	•	51	•	2			1	8	•	4MB	•	•	•	•	•	•	C	•		•
MPR-27S-23-D	•		•	•	51	•	2	2	1		8	•	4MB	•	•	•	•	•	•	•			•

C C It can be used with X5/PM converter.

⚙ Measured Parameters

MPR-24 MPR-24-PM	Phase-Neural Voltages (V$_{LN}$)	Neutral Current (In)	Active Power (P)
	Phase-Phase Voltages (V$_{LL}$)	Phase Currents (IL)	Reactive Power (Q)
	Max / Min. Values	Total Active Power (ΣP)	Apparent Power (S)
	Power Factor (P.F)	Total Reactive Power (ΣQ)	Active Energy- Import (kWh or MWh)
	Cosφ	Total Apparent Power (ΣS)	Active Energy - Export (kWh or MWh)
	Frequency	Apparent Energy (kVAh or MVAh)	Inductive Reactive Energy (kVArh or MVArh)
	Demand / Maximum Demand		Capacitive Reactive Energy (kVArh or MVArh)
MPR-25S-22	Total Harmonics in VoltagesDistortion (%THD-V)	Total Harmonic in Currents- Distortion (%THD-I)	
MPR-26S-21 MPR-26S-21-PM MPR-27S-23	Current / Voltage Imbalances	1-51. Voltage Harmonics	1-51. Current Harmonics

See page 63 for energy monitoring software.

Network Analyzers(LCD)

MPR - 3 Series Mini Network Analyzers

With 72x72x50mm size, MPR-3 Series Mini Network Analyzers occupy less space in the panel. They are preferred in rack type panels used in applications such as UPS, machine control panels, data processing and system rooms, and security control owing to their compact design.With their digital inputs and outputs, These MPR-3 Mini Network Analyzers can detect and control the status of the devices in the field (breakers, switches, contactors, etc.).

Remote Monitoring Software

With the energy management software developed by ENTES, energy consumption and quality can be monitored in real time by reading the values measured by the devices.As a result, it is provided that monitoring comprehensive energy, data storage, analysis of stored data, optimum control of energy consumption, improvement of energy costs and sustainable targets of energy systems.

With ENTES solutions, you are in control of your systems by remote monitoring.

Benefit

The MPR-3 Network Analyzers let you measure electrical parameters, detect the status of devices in the field and control (breakers, switch, contacts etc.).

Application

MPR-3 Series Network Analyzers are optimum solution for the project requirements such as compactness, both LCD screen and remote monitoring, log reading, easy and fast

⚙ Product Comparison Chart

Product Name	Dimensions/mm	3xV, 3xI, Frequency, W, VAr, VA, ΣP, ΣQ, ΣS, kWh, kVArh, Demand, Max., Min., Cosφ, I ndtr	%THD-I	%THD-V	RS-485	Digital Input	Digital Output	Clock (RTC)	Pulse Counter	Run/On Hou	Alarm	Event Recording*	Memory	X/5, X/1	X/333 mV	95-270 VAC/DC
MPR-32	72x72	●						●		●		●		●		●
MPR-34-11	72x72	●	●	●		1	1	●	●	●	●	●		●		●
MPR-34S-11	72x72	●	●	●	●	1	1	●	●	●	●	●	1MB	●		●
MPR-34S-11-PM	72x72	●	●	●	●	1	1	●	●	●	●	●	1MB	C	●	●
MPR-34-20	72x72	●	●	●		2		●	●	●		●		●		●
MPR-34S-20	72x72	●	●	●	●	2		●	●	●		●	1MB	●		●

Initial energizing, long interruption for interruptions lasting more than 3 seconds, alarm setting change, time change and reset.

C C can be used with X5/PM converter.

⚙ Measured Parameters

MPR-32			
	Phase-Neural Voltages (V$_{LN}$)	Neutral Current (In)	Active Power (P)
	Phase-Phase Voltages (V$_{LL}$)	Phase Currents (IL)	Reactive Power (Q)
	Max / Min. Values	Total Active Power (ΣP)	Apparent Power (S)
	Power Factor (P.F)	Total Reactive Power (ΣQ)	Active Energy- Import (kWh veya MWh)
	Cosφ	Total Apparent Power (ΣS)	Active Energy – Export (kWh veya MWh)
	Frequency (Hz)	Apparent Energy (kVAh veya MVAh)	Inductive Reactive Energy (kVArh veya MVArh)
	Demand / Maximum Demand		Capacitive Reactive Energy (kVArh veya MVArh)
MPR-34-11 MPR-34S-11 MPR-34-20 MPR-34S-20 MPR-34S-11-PM	Total Harmonics in VoltagesDistortion (%THD-V)	Total Harmonic in CurrentsDistortion	

See page 63 for energy monitoring software.

" MPR-3 Series Network Analyzers with its unique 72x72 mm size are smart solution for UPS, machine control panels, data processing and system rooms, rack used in applications such as security control rooms, electrical panels thanks to its compact design. It is the ideal solution for the measurement and monitoring of electrical parameters. "