

Network Analyzers (LCD)

MPR-4 Series

NEW



MPR-4 Series Network Analyzers

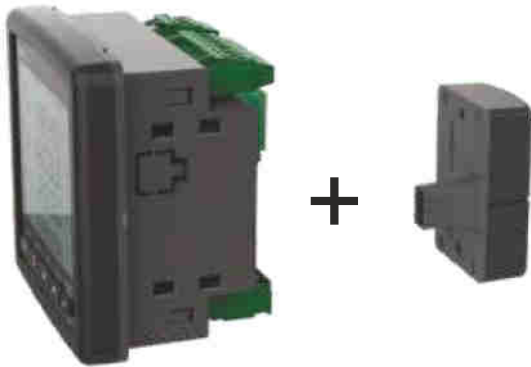
With their compact design and 45mm depth, MPR-4 series new generation network analyzers occupy less space in the panels and have a wide range of operating voltage (45-300 VAC/DC). In addition up to 16 MB internal memory, they offer wide I/O solutions with their replaceable modular structure based on customer requirements and areas of application.

MPR-4 Series offer a wide range of analog and digital inputs/outputs and relay outputs with their I/O modules.

PRODUCT SELECTION TABLE

| Product Code | Dimensions / mm | 3xV, 3xI, Frequency, W, VAR, VA, ΣP, ΣQ, ΣS, kWh, kVAh, KVAh Demand, Max., Min. Cosφ, I neutral | Active Energy Class 0,5 | Active Energy Class 1 | % THD-I | % THD-V | Individual Harmonics | RS-485 | Digital Input | Digital Output | Temperature Input | Analog Output | Relay Output | Clock (RTC) | Number of Samples In One Period | Memory | Voltage/Current Unbalances | Pulse Counter | Operating Hours Meter | Alarm | Event Logs | Profile Logs | X/5, X/1 | plug & meter | 24-60 VAC/DC | 45-265 VAC/DC | Pcs/Box |
|--|-----------------|---|-------------------------|-----------------------|---------|---------|----------------------|--------|---------------|----------------|-------------------|---------------|--------------|-------------|---------------------------------|--------|----------------------------|---------------|-----------------------|-------|------------|--------------|----------|--------------|--------------|---------------|---------|
| MPR-45 | 96x96 | ● | ● | | | | | * | * | * | * | * | * | ● | 128 | | * | ● | ● | ● | ● | | | | ● | 24 | |
| MPR-45S | 96x96 | ● | ● | | | | ● | * | * | * | * | * | * | ● | 128 | 16MB | * | ● | ● | ● | ● | ● | | | ● | 24 | |
| MPR-46 | 96x96 | ● | ● | ● | ● | | | * | * | * | * | * | * | ● | 128 | | * | ● | ● | ● | ● | | | | ● | 24 | |
| MPR-46S | 96x96 | ● | ● | ● | ● | | ● | * | * | * | * | * | * | ● | 128 | 16MB | * | ● | ● | ● | ● | ● | | | ● | 24 | |
| MPR-47S | 96x96 | ● | ● | ● | ● | 51 | ● | * | * | * | * | * | * | ● | 128 | 16MB | ● | * | ● | ● | ● | ● | | | ● | 24 | |
| MPR-47S-D | 96x96 | ● | ● | ● | ● | 51 | ● | * | * | * | * | * | * | ● | 128 | 16MB | ● | * | ● | ● | ● | ● | | | ● | 24 | |
| MPR-47S-0,5 | 96x96 | ● | ● | ● | ● | 51 | ● | * | * | * | * | * | * | ● | 128 | 16MB | ● | * | ● | ● | ● | ● | | | ● | 24 | |
| MPR-47S-D-0,5 | 96x96 | ● | ● | ● | ● | 51 | ● | * | * | * | * | * | * | ● | 128 | 16MB | ● | * | ● | ● | ● | ● | | | ● | 24 | |
| MPR-47S-PM ^{plug & meter} | 96x96 | ● | ● | ● | ● | 51 | ● | * | * | * | * | * | * | ● | 128 | 16MB | ● | * | ● | ● | ● | ● | ● | ● | ● | 24 | |

* Modular structure ● Standard



MPR-4 series network analyzers can be customized for various applications with I/O modules.

I/O Module Selection Table

| |
|---|
| 2 DI (2 Digital Input, 5-24 VDC) |
| 2 DO (2 Digital Output, 5-24 VDC) |
| 2 Relay (2 Relay, 5A /250 VAC; NO) |
| 2 DI-2 DO (2 Digital Input + 2 Digital Output, 5-24 VDC) |
| MM-202 (2 Analog Output, (0-10VDC)(0-5VDC)(±5 VDC)(±10VDC)(0-20mA)(0-24mA)(4-20mA)) |
| 4 DI-4 DO (4 Digital Input + 4 Digital Output 5-24 VDC) |
| Temperature Measurement (4 therm + 2 RTD)+(1 Digital Input - 1 Digital Output) |

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 devices. As a result, comprehensive energy monitoring and data storage is provided.

With the analysis of stored data, improvements in energy costs and sustainable savings are accomplished.



* For more detailed information, see Page 84.



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MEASURED PARAMETERS

| | | | |
|---------------------------------------|------------------------------|-------------------------------------|---|
| Phase - Neutral Voltages (V_{LN}) | Neutral Current (I_n) | 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) | Reactive Energy Capacitive (kVArh or MVARh) |
| Average Phase-Phase Voltage | $\cos\phi$ | Total Active Power (ΣP) | Reactive Energy Inductive (kVArh or MVARh) |
| Max. Demand | Frequency (Hz) | Total Reactive Power (ΣQ) | Apparent Energy (kVAh or MVAh) |
| Phase Currents (I_L) | Max. / Min. Values | Total Apparent Power (ΣS) | |

MPR-45 / MPR-45S



Total Harmonic Distortion for Voltage (THD-V)

Total Harmonic Distortion for Current (THD-I)

MPR-46 / MPR-46S



Voltage / Current Unbalances

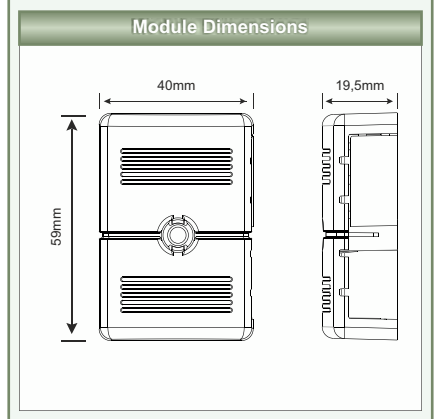
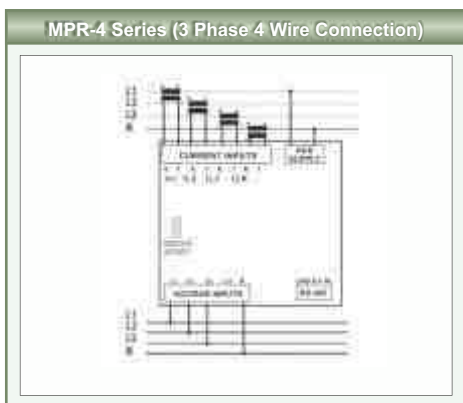
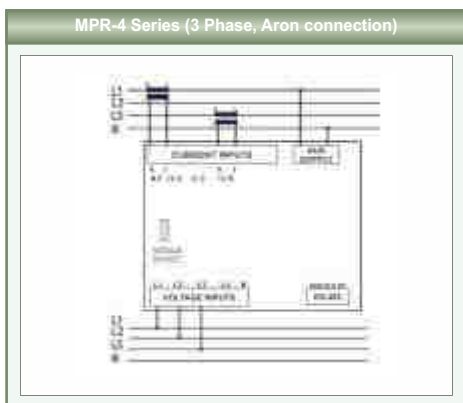
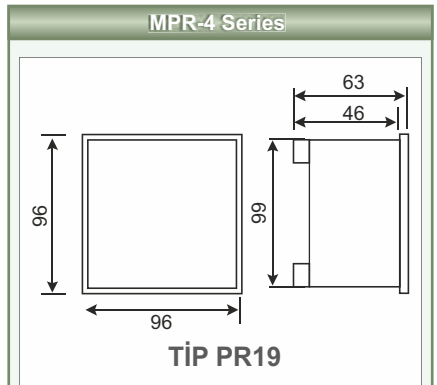
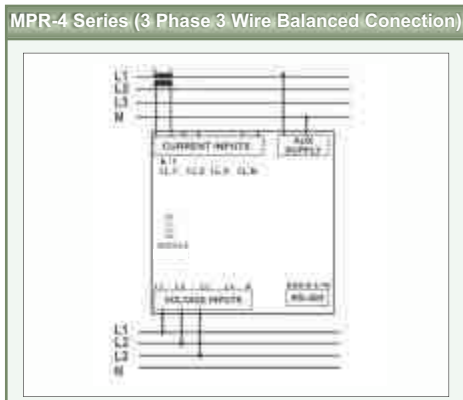
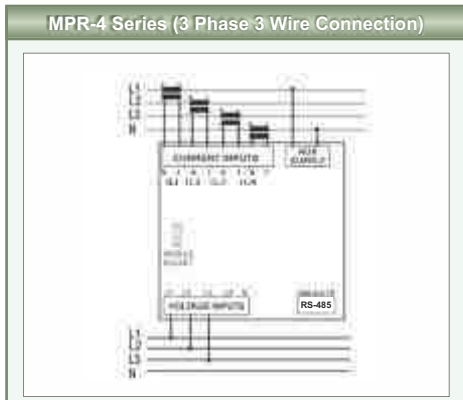
1-51st Individual Voltage Harmonics

1-51st Individual Current Harmonics

MPR-47S / MPR-47S-D / MPR-47S-05 / MPR-47S-D-0,5 / MPR-47S-PM

Connection Diagram PR19 - MPR 4 Series (96x96mm)

Dimensions



Network Analyzers (LCD)

MPR-4 Series

SPECIFICATIONS

| | MPR-45 | MPR-45S | MPR-46 | MPR-46S | MPR-47S | MPR-47S-D | MPR-47S-PM |
|------------------------------------|---|---------------------|--------|---------------------|----------------|-----------|-----------------|
| ENCLOSURE | | | | | | | |
| Dimensions | 96x96x45mm | | | | | | |
| Protection Class | Terminals = IP20, Enclosure Protection Class = IP 51 | | | | | | |
| Display | LCD | | | | | | |
| MEASUREMENTS | | | | | | | |
| VOLTAGE | | | | | | | |
| Measurement Range | 10 - 400 VAC (L-N) 10 – 690 VAC (L-L) | | | | | | |
| Measurement Range with Transformer | 1-400.0kV Transformer Ratio: 1-5000 | | | | | | |
| Accuracy | %0.5 ± 1 Digit | | | | | | |
| Input Impedance | >1M | | | | | | |
| Burden (Input Load) | <0,5 VA | | | | | | |
| CURRENT | | | | | | | |
| Nominal Current | In : 5A / 1A | | | | | | |
| Minimum Current | 5 mA | | | | | | |
| Measurement Range | 50 mA - 5,5 A Accuracy: 0.5% ± 1 Digit | | | | | | |
| Measurement Range with Transformer | 50 mA -10000 A | | | | | | |
| Burden | 0,5 VA | | | | | | |
| Overload Current | 1.2 x I nominal continuous | | | | | | |
| Short Time Overload (1s) | 10xIn | | | | | | |
| POWER/ENERGY | | | | | | | |
| Active Power | Range: 0 - 1 GW, Accuracy: 1 % ± 1 Digit | | | | | | |
| Reactive Power | Range: 0 - 1 GVar, Accuracy: 1% ± 1 Digit | | | | | | |
| Apparent Power | Range: 0 - 1 GVA, Accuracy: 1% ± 1 Digit | | | | | | |
| Power Factor | Range: ±1.00, Accuracy : ± 0,02 | | | | | | |
| Active Energy | Range: 0 - 99 999 999 kWh or MWh, Accuracy: 1% class 1 | | | | | | |
| Reactive Energy | Range: 0 - 99 999 999 kVarh or MVarh, Accuracy : 2% class 2 | | | | | | |
| Individual Harmonics | - 2-51 Voltage(V) and Current(I) | | | | | | |
| Demand Period | 1,2,5,10,15,20,30,60 minute adjustable | | | | | | |
| Frequency | 45-65 Hz | | | | | | |
| Number of Samples In One Period | 128 | | | | | | |
| SUPPLY | | | | | | | |
| Operating Voltage | 45 - 300 VAC/DC | | | | 24 - 60 VAC/DC | | 45 - 300 VAC/DC |
| Operating Frequency | 50/60 Hz | | | | | | |
| Power Consumption | <5 VA | | | | | | |
| PULSE OUTPUT | | | | | | | |
| Energy Pulse Output | * Active Energy Output (1kWh/pulse - 50MWh/pulse) *Reactive Energy Output (1kVarh/pulse - 50MVarh/pulse) | | | | | | |
| Switching Current | * Max. 50 mA | | | | | | |
| Switching Voltage | * 5..24 VDC | | | | | | |
| Pulse Width | * 100 ...2500 ms | | | | | | |
| Maximum Voltage | * Max. 30 VDC | | | | | | |
| MEMORY | | | | | | | |
| Internal Memory Size | - | 16MB | - | 16MB | | | |
| COMMUNICATION | | | | | | | |
| Communication Interface/Protocol | - | RS-485 / MODBUS RTU | - | RS-485 / MODBUS RTU | | | |
| Transfer Speed | - | 2400-115200 | - | 2400-115200 | | | |
| AMBIENT CONDITIONS | | | | | | | |
| Operating Temperature | - 5 / +55°C | | | | | | |
| Storage Temperature | - 25 / +70°C | | | | | | |
| Overvoltage Category | III | | | | | | |
| Pollution Degree | II | | | | | | |
| Ambient Humidity | %90 | | | | | | |
| STANDARDS | | | | | | | |
| Applied Security Standards | EN 61557-12, EN 61326-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 EN 62053, EN 60068, EN 61010 | | | | | | |
| CONNECTIONS | | | | | | | |
| Mounting | Front Panel Mounting with Rear Terminals | | | | | | |
| Connection Terminals | Screw Terminal with Socket | | | | | | |
| Connection Types | 3P4W, 3P3W, 3 Phase (Aron), 3P4W Balanced, 3P3W Balanced | | | | | | |

* Provided with digital output I / O modules