

# Multi-Circuit, Multifunction Monitor



The PMC-509 is a multi-circuit, multifunction monitor, featuring quality construction, DIN rail mount and a large, easy to read LCD display. It comes with either 6 Current Inputs and 3 RTD Inputs or 9 Current Inputs. The PMC-509 also provides 4 self-excited Digital Inputs for status monitoring. Further, the SOE Log records all setup changes, Setpoint and DI events in 1ms resolution. With the standard RS-485 port and Modbus RTU protocol support, the PMC-509 becomes a vital component in any energy management systems.

## Applications

- Maximum Demand Indicator (MDI) for Current and Temperature measurements for pedestal substation
- Optional full multifunction measurements (MFM)
- Demands, Maximum Demands and Multifunction monitoring
- Up to 9 Sub-Meters and 6 Virtual Meters
- Status monitoring
- Extensive data logging with 8MB on-board memory
- Class 0.5S Revenue Metering with bi-directional measurements

## Features Summary

### Ease of use

- Large, backlit, easy to read LCD display
- Password-protected setup via front panel or free PMC Setup software
- Easy installation with DIN rail mounting, no tools required

### Voltage, Current and RTD Inputs

- 3-phase Voltage and two options for Current and RTD Inputs
  - 6 Current Inputs and 3 RTD Inputs
  - 9 Current Inputs
- RTD Input requires optional Pt100 RTD temperature sensors

### Data Recorders

- 8 Data Recorder Logs of 16 parameters each for real-time measurements, harmonics, energy, demand, temperature ....etc
- Recording interval from 1s to 40 days
- Configurable depths and recording offsets
- 8MB log memory

### Digital Inputs

- 4 channels for external status monitoring
- Volts free dry contact, 24VDC internally wetted
- 1000Hz sampling

### Setpoints

- 27 user programmable setpoints
- Configurable thresholds and time delays

### SOE Log

- 64 events time-stamped to  $\pm 1$ ms resolution
- Setup changes, Setpoint and DI events

### Real-time clock

- Battery-backed real-time clock @ 6ppm or 0.5s/day
- Time can be set via front panel or communications

### Communications

- Optically isolated RS485 port
- Baud rate from 1200 to 19,200bps
- Modbus RTU protocol

### System Integration

- Supported by our PecStar® iEMS and PMC Setup
- Easy integration into other Automation or SCADA systems via Modbus RTU protocol

## Measurements Summary

### MDI Option (Maximum Demand Indicator)

- VLN and VLL per phase, Frequency
- Current and RTD measurements
- Demands and Max. Demands with Timestamp for Currents and RTDs

### MFM Option (Multifunction Measurements)

- All the measurements with the MDI Option
- Per phase Voltage and Current THD
- Status Monitoring, SOE Log
- One Sub-Meter per Current Input, each providing the following:
  - I, kW, kvar, kVA, PF
  - Demand and Max. Demand for I, kW, kvar, kVA
  - kWh Import/Export, kvarh Import/Export, kVAh
- Supports 6 Virtual Meters, each providing the following:
  - Configurable totalization from individual Sub-Meters for 2-phase or 3-phase metering
  - kW, kvar, kVA, PF Total
  - Demand and Max. Demand for I, kW, kvar, kVA
  - kWh Import/Export, kvarh Import/Export, kVAh

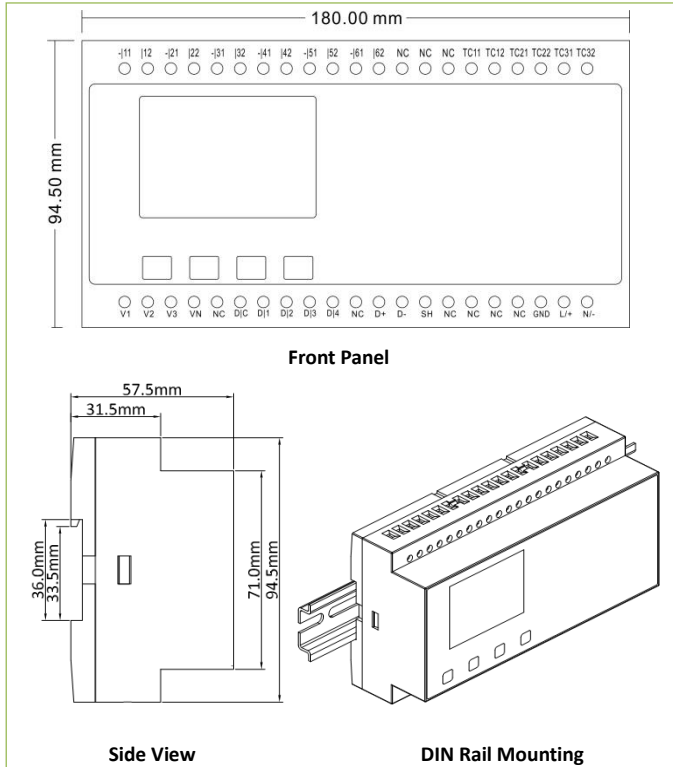
## Accuracy

Parameters	Accuracy	Resolution
Voltage	$\pm 0.2\%$ reading	0.01V
Current	$\pm 0.2\%$ reading + 0.05% F.S.	0.001A
kW, kVA	IEC 62053-22 Class 0.5S	0.001k
kWh	IEC 62053-22 Class 0.5S	0.1kWh
kvar / kvarh	IEC 62053-21 Class 2	0.001kvar / 0.1kvarh
P.F.	IEC 62053-22 Class 1.0	0.001
Frequency	$\pm 0.02$ Hz	0.01Hz
Temperature	$\pm 2^\circ\text{C}$	0.1 $^\circ\text{C}$

## Technical Specifications

Power Supply (L+, N-, GND)	
Standard Burden	95-250VAC/DC, $\pm 10\%$ , 47-440Hz 3W
Voltage Inputs (V1, V2, V3, VN)	
Standard (Un)	240VLN/415VLL
Range	10% to 120% Un
PT Ratio	1-2200
Overload Burden	1.2xUn continuous, 1.6xUn for 10s <0.5VA @ 240V
Current Inputs (I11, I12, ... I91, I92)	
Standard (In/Imax)	5A / 6A
Optional (In/Imax)	1A / 1.2A
Range	0.1% Imax to 120% Imax
CT Ratio	1-6,000 (5A), 1-30,000 (1A)
Overload Burden	1.2xIn continuous, 10xIn for 1s <0.25VA @ 5A
RTD Temperature Input (TC1, TC2, TC3)	
Type	2-wire Pt100
Range	-40 $^\circ\text{C}$ to 200 $^\circ\text{C}$
Digital Inputs (DI1 to DI4, DICOM)	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Debounce	1ms minimum
Environmental conditions	
Operating temp	-25 $^\circ\text{C}$ to +70 $^\circ\text{C}$
Storage temp	-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$
Humidity	5% to 95% non-condensing
Atmospheric pressure	70 kPa to 106 kPa
Mechanical Characteristics	
Installation	Standard DIN-Rail Mount
Unit Dimensions	180x94.5x57.5mm
IP Rating	52
Shipping Weight	0.7kg
Shipping Dimensions	222x136x100mm


**Dimensions and Installation**



**Standards of Compliance**

Safety Requirements		
CE LVD 2006 / 95 / EC	EN61010-1-1-2001	
Insulation Dielectric test: 2kV @ 1 minute Insulation resistance: >100MΩ Impulse voltage: 5kV, 1.2/50μs	IEC 60255-5-2000	
Electromagnetic Compatibility CE EMC Directive 2004 / 108 / EC (EN 61326: 2006)		
Immunity Tests		
Electrostatic discharge	IEC 61000-4-2:2008 Level IV	
Radiated fields	IEC 61000-4-3:2008 (10 V/m)	
Fast transients	IEC 61000-4-4:2004 Level IV	
Surges	IEC 61000-4-5:2005 Level V	
Conducted disturbances	IEC 61000-4-6:2008 Level III	
Magnetic Fields	IEC 61000-4-8:2009 Level IV	
Oscillatory waves	IEC 61000-4-12:2006 Level III	
Electromagnetic Emission	IEC 60255-25: 2000	
Emission Tests		
Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment	EN 55011: 2009 (CISPR 11)	
Limits and methods of measurement of radio disturbance characteristics of information technology equipment	EN 55022: 2006+A1: 2007 (CISPR 22)	
Limits for harmonic current emissions for equipment with rated current ≤16 A	EN 61000-3-2: 2006+A1: 2009	
Limitation of voltage fluctuations and flicker in low-voltage supply systems for equipment with rated current ≤16 A	EN 61000-3-3: 2006	
Emission standard for residential, commercial and light-industrial environments	EN 61000-6-3: 2007	
Electromagnetic Emission Tests for Measuring Relays and Protection Equipment	IEC 60255-25: 2000	
Mechanical Tests		
Vibration Test	Response	IEC 60255-21-1 Level I
	Endurance	IEC 60255-21-1 Level I
Shock Test	Response	IEC 60255-21-2 Level I
	Endurance	IEC 60255-21-2 Level I
Bump Test	IEC 60255-21-2 Level I	

**Ordering Guide**



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Version 20130115

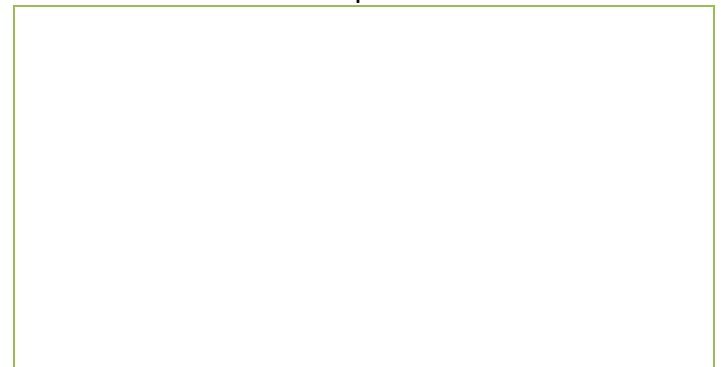
Product Code	Description
PMC-509	Maximum Current Demand Indicator
<b>Software Function</b>	
A	MDI
B*	Multifunction Meter
<b>Basic Function</b>	
A	3U + 6I + 3RTD
B	3U + 9I
<b>Input Current (I1, I2, I3, I4, I5, I6)</b>	
1	1A
5	5A
<b>Input Voltage (V1, V2, V3)</b>	
3	277/480VAC(WYE), 415VAC(Delta)
<b>Power Supply</b>	
2	95-250VAC/DC, 47-440Hz
<b>System Frequency</b>	
5	50Hz
6	60Hz
<b>IO</b>	
A	4DI
<b>Interface Language</b>	
E	English
PMC-509 - A A 5 3 2 5 A E	PMC-509-AA5325AE (Standard Model)

\*Additional charges apply

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**Your Local Representative**



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