




# PMC-512-A

## AC Multi-Circuit Power Monitor

-  Data Center and Telecom Base Station PDUs
-  Industrial and Commercial Distribution Boards
-  Other High-Density, Multi-Circuit Monitoring Applications

# Product Introduction

**PMC-512-A** is CET's latest offer for the economical multi-circuit monitoring of Data Centers, Telecom Base Stations, Industrial & Commercial Buildings. Housed in a compact DIN Rail Mount enclosure, the PMC-512-A is perfectly suited for high-density metering applications. The PMC-512-A features quality construction with multifunction and Class 1 Energy Measurements. The PMC-512-A comes standard with a built-in LCD display, 12xDIs for status monitoring, 1xDO for control or alarming and 1xAI for temperature measurement or other analogue input applications. The standard SOE Log records all setup changes, alarms and DI/DO operations in 1ms resolution. With dual RS-485 as standard feature supporting Modbus RTU, the PMC-512-A can easily be deployed in a stand-alone system with an optional 7" touch-screen HMI that supports up to 32 devices over a RS-485 network, or simultaneously with a centralized monitoring and control system for an AC power distribution network.

## Feature Highlights



### Multi-Circuit Monitoring

- 12x1-Ø or 4x3-Ø Sub-Meters (SM)
- 4xVirtual Meters (VM) for the arbitrary aggregation of SMs
- 12xDigital Inputs for Trip Status monitoring
- 1xDO for Alarming or Control
- 1xAI (0-20/4-20mA)



### Embedded Data Recording

- 4MB Log Memory
- Up to 60 parameters at min. 1-minute recording interval for 5,000 logs with Timestamps
- Non-volatile storage for data redundancy in the event of networking error



### Alarming

- 4 Alarm Levels for Voltage, Current and AI
- Frequency, Unbalance, DI, Phase Reversal & Phase Loss Alarms
- Programmable Digital Output Trigger
- Facilitate comprehensive monitoring and alarming for Mains & Branch Circuits

## Basic Features



### Measurements

- IEC 62053-21 Class 1 and IEC 62053-23 Class 2 Energy metering
- 1-Ø SM: Voltage, Current, Phase Angle, Frequency, Loading Factor, P, Q, S, PF, kWh, kvarh Import/Export, KVAh
- 3-Ø SM: ULN & ULL per Phase and Average, I per Phase and Average, Unbalance, Phase Angle, Frequency, P, Q, S, PF per Phase and Total, kWh, kvar Import/Export, KVAh Total
- VM: P, Q, S Total, kWh, kvarh Import/Export, KVAh Total

### Demand Measurements

- 1-Ø SM: Current, P, Q, S
- 3-Ø SM and VM: P, Q, S Total
- Max. Demands for This Month and Last Month
- Ability to reset any Max. Demands

### Power Quality

- THD, TOHD, TEHD
- Individual Harmonics up to 31<sup>st</sup>
- U and I Unbalance

### SOE

- 512 events time-stamped to  $\pm 1$ ms resolution
- DI/DO changes, Alarms, Setup changes, Self-Diagnosis



### Data Recording

- 4MB Log Memory
- Up to 60 parameters @ min. 1-min recording interval for 5,000 logs with Timestamps
- 24 Monthly Energy Logs
  - 1-Ø SM, 3-Ø SM and VM: kWh, kvarh Import/Export & kVAh
- 1,000 Daily Freeze Logs
  - 1-Ø SM: Current, P, Q, S, kWh, kvarh Import/Export & kVAh
  - 3-Ø SM and VM: P, Q, S Total, kWh, kvarh Import/Export & kVAh

### Inputs & Outputs

- 12xDI with external excitation @ 48VDC
- 1xDO, mechanical relay @ 250VAC/5A or 30VDC/5A
- 1xAI, 0-20/4-20mA

### Communications

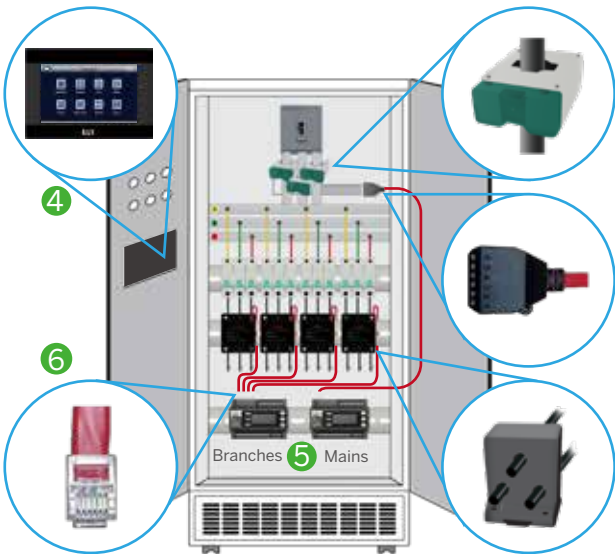
- 2xRS-485, Modbus RTU protocol
- Baud Rate @ 1,200 to 57,600 bps

### Real-Time Clock

- Battery-backed Real-time Clock with 6ppm accuracy (<0.5s per day)



## Overall Setup

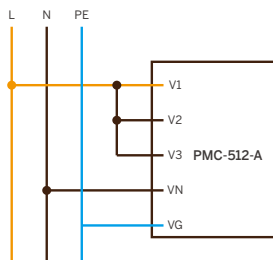


The diagram shows a rack-mounted power monitor unit with various components labeled 1 through 6. Callouts provide details for each component:

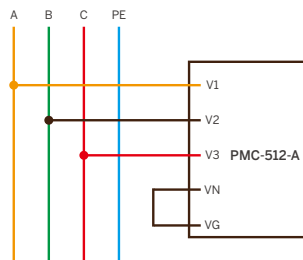
- Mains Solid-Core/Split-Core CTs**  
1 for each phase
- 6-position CT wiring adapter with RJ12 connector for 1-Ø CT**  
1 Adapter for 3x1-Ø CTs
- Molded Case 3-Ø CT**  
3x1-Ø Circuits or 1x3-Ø Circuit
- PMC-512-HMI**
  - 7" TFT Touch-Screen Color LCD Display @ 800x480
  - Requires 24VDC Power Supply
  - Supports 32xPMC-512-A
- PMC-512-A**
- RJ12 connector**

The main unit is labeled with 'Branches' and 'Mains' sections.

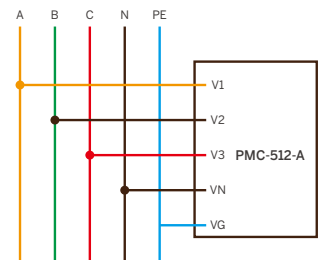
## Wiring



Single-Phase



3P3W Delta



3P4W Wye

## Ordering Information

Product Code					Description				
PMC-512 AC Multi-Circuit Power Monitor									
Basic Function	A				AC Multi-Circuit Power Monitor with 3-Ø Voltage & 12xCurrent Inputs for 12x1-Ø or 4x3-Ø Sub-Meters, 4 Virtual Meters, Data Recorder with 4MB memory, 12xDI, 1xDO, 1xAI and 2xRS-485				
Display Screen		L				LCD			
Input Current			A				External CT with 50A-1600A Primary and 40mA Secondary		
			B				External CT with 5A Primary and 1.667mA Secondary		
Input Voltage				3				240VAC (3x240ULN/415ULL)	
Power Supply					2				95-250VAC/VDC, 47-440Hz
					3				20-60VDC
Frequency						5			45-65Hz
DI							A	12xDI, 48VDC External Excitation	
Display Language								E	English
PMC-512	A	L	A	3	2	5	A	E	PMC-512-ALA325AE (Standard Model)

1) The CTs and cables are not included, please refer to PMC-512-A Accessories for CT options.

2) Please refer to PMC-512-HMI for HMI option.

Product Code			Description	
PMC-512-HMI				
Basic Function	A		7" TFT Touch Screen LCD @ 800x480 and 24VDC ± 20% Power Supply, supporting up to 32xPMC-512-A	
Switching Power Supply		2	HDR-15-24 Switching Power Supply (Input: 85-264VAC/DC, Output: 24VDC)	
		4	PMC-DP-48V/24V Switching Power Supply (Input: 48VDC, Output: 24VDC)	
Language			E	English (Supports both English and Traditional Chinese)
PMC-512-HMI	A	2	E	PMC-512-HMI-A2E (Standard Model)

1) The cables for connecting the HMI to the Switching Power Supply are not included.

2) The HMI and PMC-512 are using high-speed communication. It is recommended to use shielded twisted-pair cable with diameter from 0.5 to 1.0 mm<sup>2</sup>.

3) Please contact the factory in advance for special requirements.





## Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.01V
Current	±0.5%	0.001A
Phase Angle	±1°	0.1°
kW, kvar, kVA	±1.0%	0.001kX
kWh	IEC62053-21: 2003 Class 1	0.01kWh
kvarh	IEC62053-24: 2014 Class 2	0.01kvarh
AI	±1.0%	-
PF	±1.0%	0.001
Frequency	±0.02Hz	0.01Hz
THD	IEC61000-4-7 Class B	0.1%
Voltage Unbalance	±0.2%	0.01%
Current Unbalance	±1.0%	0.01%

## Technical Specifications

Power Supply (L+, N-)	
Standard	95-250VAC/DC, 47-440Hz
Optional	20-60VDC
Burden	2W

AC Voltage & Current		
Voltage Input		Un=240ULN/415ULL, Range=10V to 1.2Un
Current Input	Solid-Core CT	PMC-CT-50A-40mA-3P-A (3-Ø)
		PMC-CT-100A-40mA-3P-A (3-Ø)
		PMC-CT-250A-40mA-3P-A (3-Ø)
		PMC-CT-630A-40mA-3P-A (3-Ø)
		PMC-CT-100A-40mA-12-A (1-Ø)
		PMC-CT-250A-40mA-A (1-Ø)
		PMC-CT-400A-40mA-A (1-Ø)
		PMC-CT-800A-40mA-A (1-Ø)
	Split-Core CT	PMC-SCCT-100A-40mA-16-A (1-Ø)
		PMC-SCCT-200A-40mA-24-A (1-Ø)
		PMC-SCCT-400A-40mA-35-A (1-Ø)
		PMC-SCCT-800A-40mA-A (1-Ø)
		PMC-SCCT-1600A-40mA-A (1-Ø)
		PMC-SCCT-5A-1.667mA-10-A (1-Ø)

Input & Output	
Digital Input	12xDI, 48VDC External Excitation
Digital Output	1xDO, Normally Open, 250VAC/5A or 30VDC/5A
Analog Input	1xAI, 0-20/4-20mA

Communications	
RS-485	2xRS-485, Modbus protocol, 1,200-57,600 bps

Environmental Conditions	
Operating Temp.	-25°C to 70°C
Storage Temp.	-40°C to 85°C
Humidity	5% to 95% (non-condensing)
Atmospheric Pressure	70kPa to 106kPa
Altitude	≤2,000m

Mechanical Characteristics	
Unit Dimensions	126x90x65 mm
IP Rating	IP50

## Safety Standards

Safety Requirements	
CE LVD 2014/35/EU	EN61010-1: 2010 EN61010-2-030: 2010
Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc	IEC61557-12: 2018 (PMD)
Insulation AC Voltage: 2kV @ 1 minute Insulation Resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50µs	IEC62052-11: 2003 IEC62053-21: 2003 EN61010-1: 2010

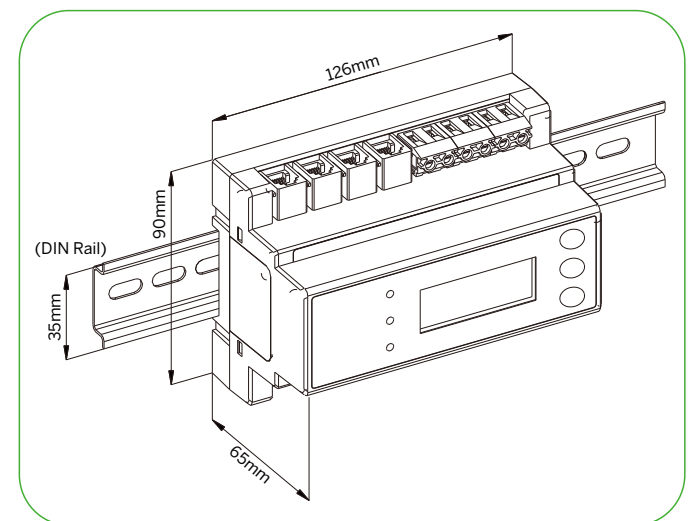
## EMC Compatibility

CE EMC Directive 2014/30/EU (EN61326: 2013)

Immunity Tests	
Electrostatic Discharge	EN61000-4-2: 2009
Radiated Fields	EN61000-4-3: 2006 +A1: 2008 +A2: 2010
Fast Transients	EN61000-4-4: 2012
Surges	EN61000-4-5: 2014 +A1: 2017
Conducted Disturbances	EN61000-4-6: 2014
Magnetic Fields	EN61000-4-8: 2010
Oscillatory Waves	EN61000-4-12: 2017
Voltage Dips and Interruptions	EN61000-4-11: 2004 +A1: 2017

Emission Tests	
Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	EN55011: 2016
Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	EN55032: 2015
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤ 16A	EN61000-3-2: 2014
Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤ 16A	EN61000-3-3: 2013
Emission Standard for Industrial Environments	EN61000-6-4: 2007 +A1: 2011
Testing and Measurement Techniques- Ring Wave Immunity Test	EN61000-4-12: 2017

## Dimensions



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