PMC-512-M

Economical Multi-Circuit Monitor

- Data Center and Telecom Base Station PDUs
- Industrial Distribution Board
- Commercial & Residential LV High-Density Multi-Circuit Monitoring

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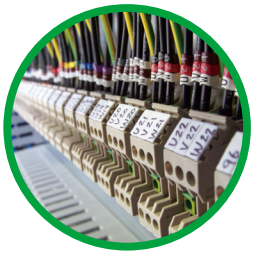
Product Introduction

PMC-512-M is CET's latest offer for the economical multi-circuit monitoring in Data Centers, Telecom Base Stations, and Industrial & Commercial Buildings. Housed in a compact DIN Rail Mount enclosure, the PMC-512-M is perfectly suited for high-density metering applications. It features quality construction with multifunction and Class 1 Energy Measurements. The PMC-512-M comes standard with a built-in Dot-Matrix LCD display, and one DO for control or alarming. It optionally provides up to 4xIr Input for Residual Current Measurement, 4xNTC Input for temperature measurements, as well as other I/O options for different applications. The standard SOE Log records all setup changes, alarms and DO operations in ±1ms resolution. With two RS-485 ports supporting Modbus RTU and an optional 10Base-T/100Base-TX Ethernet Port, the PMC-512-M can easily be deployed in an intelligent, multi-circuit monitoring solution.

Feature Highlights



Multi-Circuit Monitoring

- 12x1-Φ/4x3-Φ Sub-Meters (SM) or optional 24x1-Φ/8x3-Φ Sub-Meters without configuration
- 12xDigital Inputs for Trip Status monitoring
- 4xDO for Alarming or Control
- Optional 4xIr Input
- Optional 4xTemperature Input

Embedded Data Recording

- 5 Data Recorders of 60 parameters each for Real-time measurements, Harmonics, Energy, Demand, Alarm, etc. with 16MB Log Memory
- Recording interval from 1 min. to 40 days
- Configurable capacity up to a max. of 52 days at 15-minute interval

Alarms

- Support Current, Voltage, Frequency, Power, Unbalance, Phase Reversal, Phase Loss, Ir, Digital Input and Temperature Alarms
- Configurable Threshold and Time Delay
- All alarms are recorded in the SOE Log

Basic Features

Basic Measurements

- IEC 62053-21 Class 1 for kWh and IEC 62053-24 Class 1 for kvarh metering
- ULN & ULL per Phase and Average, Phase Angle, optional Ir
- Voltage Unbalance, Frequency, Temperature

Sub Meters

- 12x1-Φ/24x1-Φ SM: I, P, Q, S, PF and I Phase Angle, kWh/kvarh Import/Export/Net/Total
- 4x3-Φ/8x3-Φ SM: I per Phase and Average, and In (Calculated), P, Q, S, PF per Phase and Total, I Unbalance, Per-Phase I Angle, Per-Phase and 3-Phase Total kWh/kvarh Imp./Exp./Net/Tot., Per-Phase and 3-Phase Total kWh/kvarh Imp./Exp. for Tariff T1-T6
- Demand for I per Phase and P/Q/S per Phase and Total
- Max. Demands for I, P/Q per Phase and Total with timestamp for This Month and Last Month

Power Quality

- U THD, TOHD, TEHD, Individual Harmonics up to 31st
- Total Harmonics (per Phase I THD, TOHD, TEHD)
- Per-Phase and Total P Fund., Harmonic P, and PF Fund.
- TDD, K-Factor and Crest Factor for Current

SOE

- 128 events time-stamped to ±1ms resolution
- DI status changes, DO operations, Alarms, Setup changes, Self-Diagnosis

TOU

- Two independent sets of TOU Schedules, each supporting:
  - Up to 12 Seasons
  - 20 Holidays or Alternate Days and 3 Weekdays
  - 12 Daily Profiles, each with 14 Periods
  - 6 Tariffs, each providing information for kWh/kvarh Import/Export per Phase and Total
- Switching between two TOU schedules manually or according to preprogrammed time

Inputs & Outputs

- Optional 12xDI, Active Contact, 220VAC/DC external excitation, Pulse counting with programmable weight for each channel for collecting WAGES information
- Up to 4xForm A Mechanical Relays
- Optional 4xIr Input and Optional 4xTemperature Input

Communications

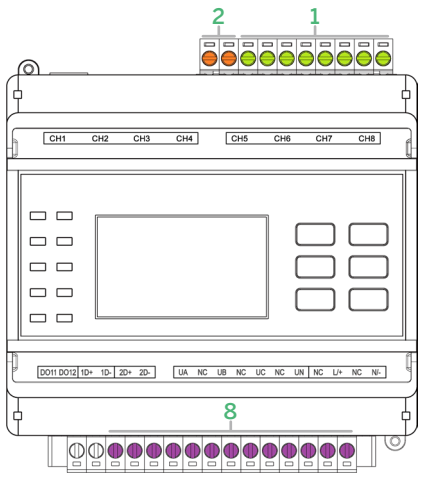
- 2xRS-485, Modbus RTU protocol, Baud Rate @ 1,200 to 38,400 bps
- Optional Ethernet, Modbus TCP, MQTT, SNTP

Real-Time Clock

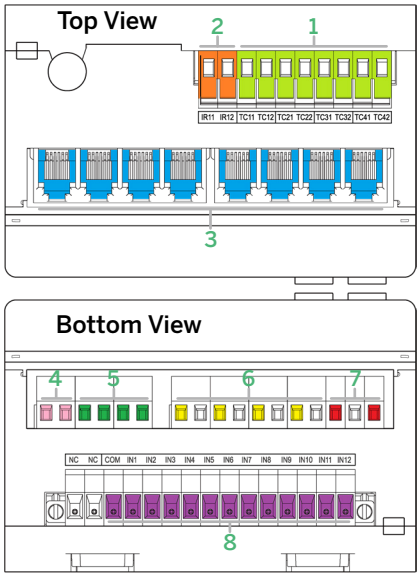
- Battery-backed Real-time Clock with 6ppm accuracy (<0.5s per day)

Terminal Diagrams

12xDI + 1xIR + 4xNTC + 1xDO Option



Front View



1 Optional 4xRTD Input
2 Optional 1xResidual Current Input
3 Optional 8xCurrent Input
4 1xDigital Output
5 2xRS-485 Port
6 Voltage Inputs
7 Power Supply
8 Optional Digital Inputs

Technical Specifications

Power Supply (L+, N-)	
Standard	95-250VAC/DC, 47-440Hz
Burden	<4W
AC Voltage & Current	
Voltage Input	Un=240VLN/415VLL, Range=10V to 1.2Un
Current Input	Split Core CTs, Range=50A to 1600A
Input & Output	
Optional Digital Inputs	12xDI, Active Contact, 220V AC/DC external-excitation
Digital Output	1xDO, Form A, 250VAC/5A or 30VDC/5A, optional 4xDO
Optional Residual Current Inputs	
In	0.5mA
Range	20mA to 2000mA
CT Type	Solid-Core CT
Optional Temperature Inputs	
Type	NTC Thermistors (Sensor Not Included)
Range	0°C to 140°C
Cable Length	2m/3m optional
Communications	
RS-485	2xRS-485, Modbus protocol, 1,200-38,400 bps
Ethernet	Modbus TCP, MQTT, SNTP
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
Pollution Degree	2
Mechanical Characteristics	
Unit Dimensions	95x71.5x108 mm
IP Rating	IP40

Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.01V
Current	±0.5%	0.001A
Ir	±1%	0.1mA
P, Q, S	±1.0%	0.001kX
kWh	IEC62053-21 Class 1	0.01kWh
kvarh Fund.	IEC62053-24 Class 1	0.01kvarh
PF	±1.0%	0.001
Frequency	±0.02Hz	0.001Hz
Harmonics	IEC61000-4-7 Class II	0.001%
Temperature	±1.0°C	0.01°C

Standards of Compliance

Safety Requirements	
CE LVD 2014/35/EU	EN 61010-1: 2010 + A1: 2019 EN IEC 61010-2-030: 2021 + A11: 2021
Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2021 (PMD)
Insulation AC Voltage: 2kV @ 1 minute Insulation Resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50μs	EN 61010-1: 2010 + A1: 2019 IEC 62052-31: 2015

EMC Compatibility

CE EMC Directive 2014/30/EU (EN IEC 61326: 2021)

Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN IEC 61000-4-3: 2020
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2014 + A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014 + AC: 2015
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN IEC 61000-4-11: 2020
Ring Wave	EN 61000-4-12: 2017
Immunity Standard for Industrial Environments	EN IEC 61000-6-2: 2019

Emission Tests

Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	EN 55011: 2016+ A1: 2017 + A11: 2020 + A2: 2021
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	EN 55032: 2015 + A11: 2020 + A1: 2020
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16A	EN IEC 61000-3-2: 2019 + A1: 2021
Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤16A	EN61000-3-3: 2013 + A1: 2019 + A2: 2021
Emission Standard for Industrial Environments	EN IEC 61000-6-4: 2019

Mechanical Tests

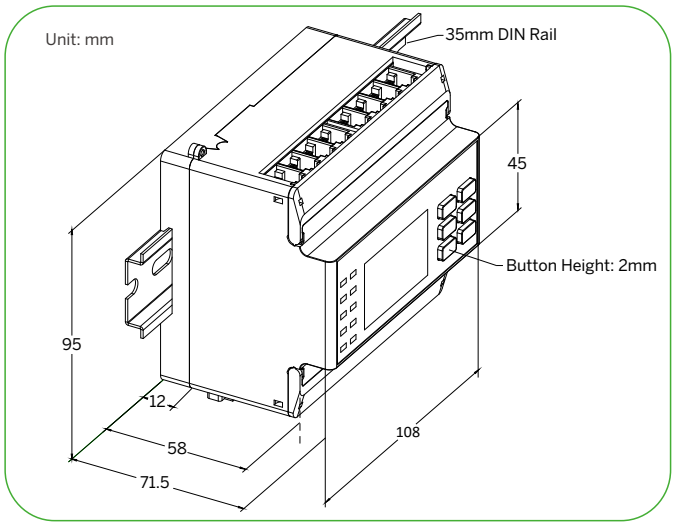
Spring Hammer Test	IEC 62052-31: 2015
Vibration Test	IEC 62052-11: 2020
Shock Test	IEC 62052-11: 2020

Ordering Information

Product Code										Description
PMC-512 Multi-Circuit Power Monitor										
Basic Function	M									Multi-Circuit Power Monitor with Backlit B&W LCD Display, Data Recorder with 16MB memory, supporting Real-time RMS measurements, Daily and Monthly Freeze Logs, Demands, Multi-Tariff TOU, standard with 2xRS-485 ports
Branch Feeders		4								4x3-Phase SM (12x1-Φ or 4x3-Φ Sub-Meters)
		8*								8x3-Phase SM (24x1-Φ or 8x3-Φ Sub-Meters)
Input Current			SCCT							External Split-Core CT with 50A-1600A Primary and 40mA Secondary
Input Voltage				3						240VAC (3x240VLN/415VLL)
Power Supply					2					95-250VAC/VDC, 47-440Hz
Frequency						5				45-65Hz
I/O							N			1xDO
							A*			12xDI (220VAC/DC) + 1xIR + 4xNTC + 1xDO
							B*			4xDO + 4xIR + 4xNTC
Expansion Comm.								N		None
								ETH*		1xEthernet Port
Language									E	English
PMC-512	M	4	SCCT	3	2	5	N	N	E	PMC-512-M4SCCT325NNE (Standard Model)

*Additional charges apply
1) Please refer to PMC-512-M Accessories for CTs and NTC Sensor options.
2) Branch Feeders Option "8" is only available with I/O Option "N" or "A" + Expansion Comm. Option "N".
3) I/O Option "N" and "A" is only available with Expansion Comm. Option "N".
I/O Option "B" is only available with Branch Feeders Option "4" + Expansion Comm. Option "ETH".

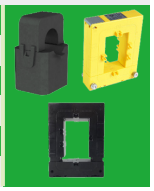
Dimensions



Accessories

Split-Core CTs

Part Number	L	Accuracy	Aperture (mm)
PMC-SCCT-50A-40mA-16-A	2m	0.5	Ø16
PMC-SCCT-100A-40mA-16-A	2m	0.5	Ø16
PMC-SCCT-200A-40mA-24-A	2m	0.5	Ø24
PMC-SCCT-400A-40mA-35-A	2m	0.5	Ø35
PMC-SCCT-800A-40mA-A	2m	0.5	80x50
PMC-SCCT-1600A-40mA-A	2m	0.5	130x55

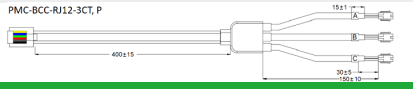


Notes:
All of the above CTs are standardly equipped with pluggable connectors.

CT Adaptors

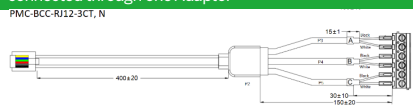
PMC-BCC-RJ12-3CT, P	3 single-phase CTs with pluggable connectors can be connected through one Adaptor

PMC-BCC-RJ12-3CT, P



PMC-BCC-RJ12-3CT, N	3 single-phase CTs with needle connectors can be connected through one Adaptor

PMC-BCC-RJ12-3CT, N



Residual Current Solid-Core CTs

Part Number	Accuracy	Aperture (mm)
CT517103 Phase Current Range: 0-100A	0.5	Ø30
CT517203 Phase Current Range: 0-160A	0.5	Ø46
CT517303 Phase Current Range: 0-250A	0.5	Ø65
CT517403 Phase Current Range: 0-400A	0.5	Ø80

NTC Thermistors

Part Number	Description
NTC-1044	4xNTC Sensor as one set, each with insulated metal protective sleeve (Yellow, Green, Red and Black), optional cable length of 2m or 3m

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