



The 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 4xlr 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 $\pm 1\text{ms}$ 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.

Typical Applications

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

Features Summary

Ease of Use

- Status LEDs for Run, Comm. Activities and Phase Voltage
- Self-Diagnostic function
- Password-protected setup via the Front Panel
- Compact, DIN Rail Mount for easy installation

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 (SM)

- Support 12x1- Φ /4x3- Φ Sub-Meters or optional 24x1- Φ /8x3- Φ Sub-Meters without configuration
- 12x1- Φ /24x1- Φ SM: I, P, Q, S, PF and I Phase Angle, kWh/kvarh Imp./Exp./Net/Tot.
- 4x3- Φ or 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 (or Since Last Reset and Before Last Reset)

Power Quality

- 12x1- Φ or 24x1- Φ SM:
 - U THD, TOHD, TEHD and 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

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

SOE Log

- 128 events time-stamped to $\pm 1\text{ms}$ resolution
- DI status changes, DO operations, Alarms, Setup changes, Self-Diagnosis

Data Recording

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

Freeze Logs

- 62 Daily Freeze Logs for kWh/kvarh Import/Export
- 31 Monthly Freeze Logs for kWh/kvarh Import/Export

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

Input & Output

- Up to 4xForm A Mechanical Relays for alarming and general purpose control
- Optional 12xDigital Input
 - Active Contact, 220VAC/DC external excitation
 - 1000Hz sampling with programmable debounce
 - Pulse counting with programmable weight for each channel for collecting WAGES (Water, Air, Gas, Electricity, Steam) information
- Optional 4xlr Input for Residual Current measurement (CT not included)
- Optional 4xTemperature Input (NTC sensors not included)

RS-485

- Dual Optically Isolated RS-485 ports
- Baud Rate from 1,200 to 38,400 bps
- Modbus RTU protocol

Ethernet (Optional)

- 1x10Base-T/100Base-TX Ethernet Port with RJ45 connector
- Modbus TCP, MQTT and SNTP

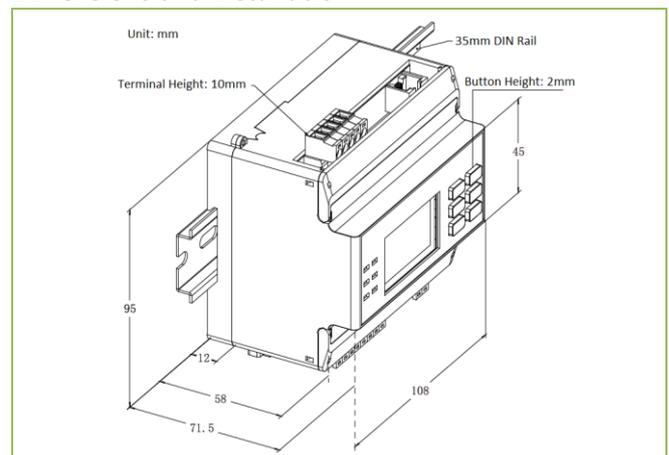
Real-Time Clock

- Battery-backed Real-time Clock with 6ppm accuracy ($< 0.5\text{s}$ per day)

System Integration

- Supported by CET's PecStar® iEMS and iEEM
- Easy integration into other Automation, Energy Management, BMS or SCADA systems via Modbus RTU/TCP

Dimensions and Installation





Technical Specifications

| Power Supply (L/+, N/-) | |
|--|--|
| Standard Burden | 95-250VAC/DC, ±10%, 47-440Hz <4W |
| Voltage Inputs (UA, UB, UC, UN) | |
| Voltage Input (Un) Range | 240VLN/415VLL 10V to 1.2Un |
| Starting Voltage | 10V |
| Overload Burden | 1.2xUn continuous, 2xUn for 1s <0.02VA per phase |
| Frequency | 45Hz to 65Hz |
| Current Inputs (CH1~CH4 or CH1~CH8) | |
| I Nominal (In) | 40mA |
| Split-Core CT Range | 50A/100A/200A/400A/800A/1600A to 40mA 5% to 120% |
| Starting Current | 0.08% of In |
| Overload Burden | 1xIn continuous, 10xIn for 10s, 20xIn for 1s <0.15VA per phase |
| Optional Digital Inputs (COM, IN1 ~ IN12) | |
| Type | Active Contact, 220V AC/DC external excitation |
| Hysteresis | 1ms |
| Digital Outputs (DO11, DO12 or DO11, DO12 ~ DO41, DO42) | |
| Type | Form A Mechanical Relay |
| Loading | 5A @250VAC / 30VDC |
| Optional Residual Current Inputs (IR11, IR12 or IR11, IR12 ~ IR41, IR42) | |
| In Range | 0.5mA to 2000mA |
| CT Type | Solid-Core CT |
| Optional Temperature Inputs (TC11, TC12 or TC11, TC12 ~ TC41, TC42) | |
| Type | NTC Thermistors (Sensor Not Included) |
| Range | 0°C to 140°C |
| Cable Length | 2m/3m optional |
| Communications | |
| RS-485 Protocol | 2xRS-485 Modbus RTU |
| Baud Rate | 1,200 to 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 | 70 kPa to 106 kPa |
| Pollution Degree | 2 |
| Mechanical Characteristics | |
| Mounting | DIN Rail |
| Unit Dimensions | 95x71.5x108mm |
| 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 | 0.01kXh |
| kvarh Fund. | IEC 62053-24 Class 1 | 0.01kvarh |
| PF | ±1.0% | 0.001 |
| Frequency | ±0.02 Hz | 0.001Hz |
| Harmonics | IEC 61000-4-7 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 | EN 61010-1: 2010+A1: 2019 IEC 62052-31: 2015 |
| AC Voltage: 2kV @ 1 minute Insulation Resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50µs | |
| Electromagnetic 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 ≤16 A | EN IEC 61000-3-2: 2019+A1: 2021 |
| Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤16 A | EN 61000-3-3: 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 |

Accessories

| Split-Core CTs |
|--|
| PMC-SCCT-50A-40mA-16-A , L=2m, Aperture= Ø16mm 1-phase 50A/40mA split-core CT, Accuracy: Class 0.5 |
| PMC-SCCT-100A-40mA-16-A , L=2m, Aperture= Ø16mm 1-phase 100A/40mA split-core CT, Accuracy: Class 0.5 |
| PMC-SCCT-200A-40mA-24-A , L=2m, Aperture= Ø24mm 1-phase 200A/40mA split-core CT, Accuracy: Class 0.5 |
| PMC-SCCT-400A-40mA-35-A , L=2m, Aperture= Ø35mm 1-phase 400A/40mA split-core CT, Accuracy: Class 0.5 |
| PMC-SCCT-800A-40mA-A , L=2m, Aperture= 80x50mm 1-phase 800A/40mA split-core CT, Accuracy: Class 0.5 |
| PMC-SCCT-1600A-40mA-A , L=2m, Aperture= 130x55mm 1-phase 1600A/40mA split-core CT, Accuracy: Class 0.5 |



50A/100A/200A/400A SCCT



800A SCCT



1600A SCCT

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



Accessories

| CT Adaptors | |
|---------------------------------|--|
| PMC-BCC-RJ12-3CT, P | 3 single-phase CTs with pluggable connectors can be connected through one Adaptor |
| PMC-BCC-RJ12-3CT, N | 3 single-phase CTs with needle connectors can be connected through one Adaptor |
| PMC-BCC-RJ12-3CT, P | |
| PMC-BCC-RJ12-3CT, N | |
| Unit: mm | |
| Residual Current Solid-Core CTs | |
| CT517103 | Phase Current Range: 0-100A Aperture=Ø30mm, Accuracy: Class 0.5 |
| CT517203 | Phase Current Range: 0-160A Aperture=Ø46mm, Accuracy: Class 0.5 |
| CT517303 | Phase Current Range: 0-250A Aperture=Ø65mm, Accuracy: Class 0.5 |
| CT517403 | Phase Current Range: 0-400A Aperture=Ø80mm, Accuracy: Class 0.5 |
| | |
| NTC Thermistors | |
| 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 |

Ordering Information

| Product Code | Description |
|-------------------------------------|--|
| PMC-512 Multi-Circuit Power Monitor | |
| Basic Function | |
| M | Multi-Circuit Power Monitor with Backlit B&W LCD Display, 16MB On-board Memory, supporting Real-time RMS measurements, Data Recorder, Daily and Monthly Freeze Logs, Demands, Multi-Tariff TOU, standard with 2xRS-485 ports |
| Branch Feeders | |
| 4 | 4x3-Phase SM (12x1-Ø or 4x3-Ø Sub-Meters) |
| 8* | 8x3-Phase SM (24x1-Ø or 8x3-Ø Sub-Meters) |
| Input Current | |
| SCCT | External Split-Core CT with 50A, 100A, 200A, 400A, 800A, 1600A Primary and 40mA Secondary |
| Input Voltage | |
| 3 | 240VAC (3x240V/LN/415VLL) |
| Power Supply | |
| 2 | 95-250VAC/DC ± 10%, 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 |
| Display Language | |
| E | English |
| PMC-512 - M 4 SCCT 3 2 5 N N E | PMC-512-M4SCCT325NNE (Standard Model) |

* Additional charges apply

- Please refer to PMC-512-M Accessories for CTs and NTC Sensor options.
- Branch Feeders Option "8" is only available with I/O Option "N" or "A" + Expansion Comm. Option "N".
- 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"

Terminal Diagrams

Top View

Front View

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

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

Your Local Representative