CET Electric Technology

PMC-512-M
Multi-Circuit Power Monitor

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 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.

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 ±1ms 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 4xIr 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 (<0.5s 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

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

Designed For Reliability *Manufactured To Last*

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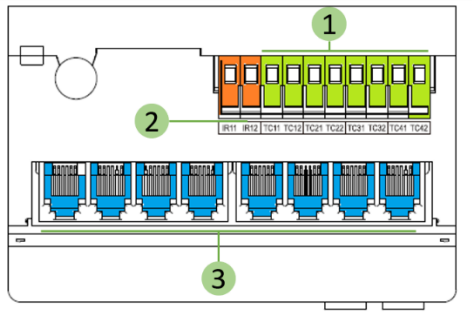
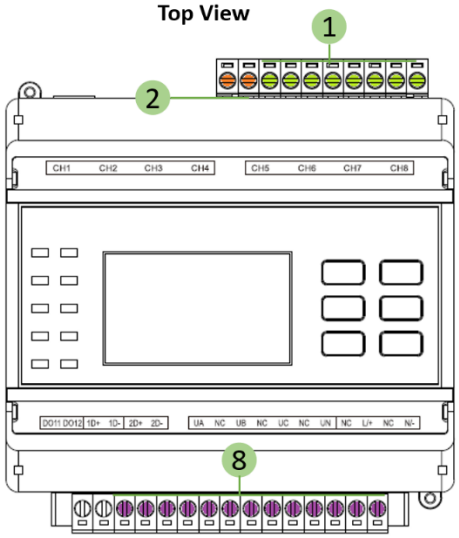
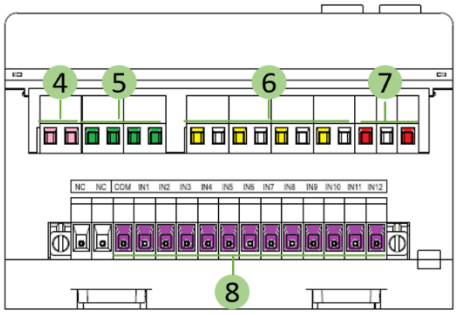
Terminal Diagrams



Top View



Front View



Bottom View

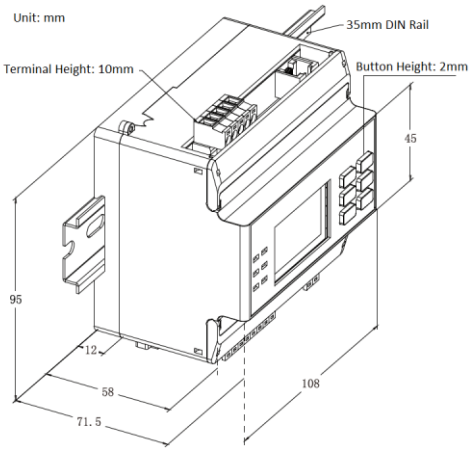
12xDI + 1xIR + 4xNTC + 1xDO Option

1	Optional 4xRTD Input
2	Optional 1xResidual Current Input
3	Optional 8xCurrent Input
4	Optional 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, ±10%, 47-440Hz
Burden	<4W
Voltage Inputs (UA, UB, UC, UN)	
Voltage Input (Un)	240VLN/415VLL
Range	10V to 1.2Un
Starting Voltage	10V
Overload	1.2xUn continuous, 2xUn for 1s
Burden	<0.02VA per phase
Frequency	45Hz to 65Hz
Current Inputs (CH1~CH4 or CH1~CH8)	
I Nominal (In)	40mA
Split-Core CT	50A/100A/200A/400A/800A/1600A to 40mA
Range	5% to 120%
Starting Current	0.08% of In
Overload	1xIn continuous, 10xIn for 10s, 20xIn for 1s
Burden	<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 Input (IR11, IR12 ~ IR41, IR42)	
In	0.5mA
Range	20mA 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	2xRS-485
Protocol	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

Dimensions and Installation



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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
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
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 CT

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

Accessories

Residual Current Solid-Core CT

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

CET *Version 20251210*

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-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, 100A, 200A, 400A, 800A, 1600A Primary and 40mA Secondary
Input Voltage	
3	240VAC (3x240VLN/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
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"

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