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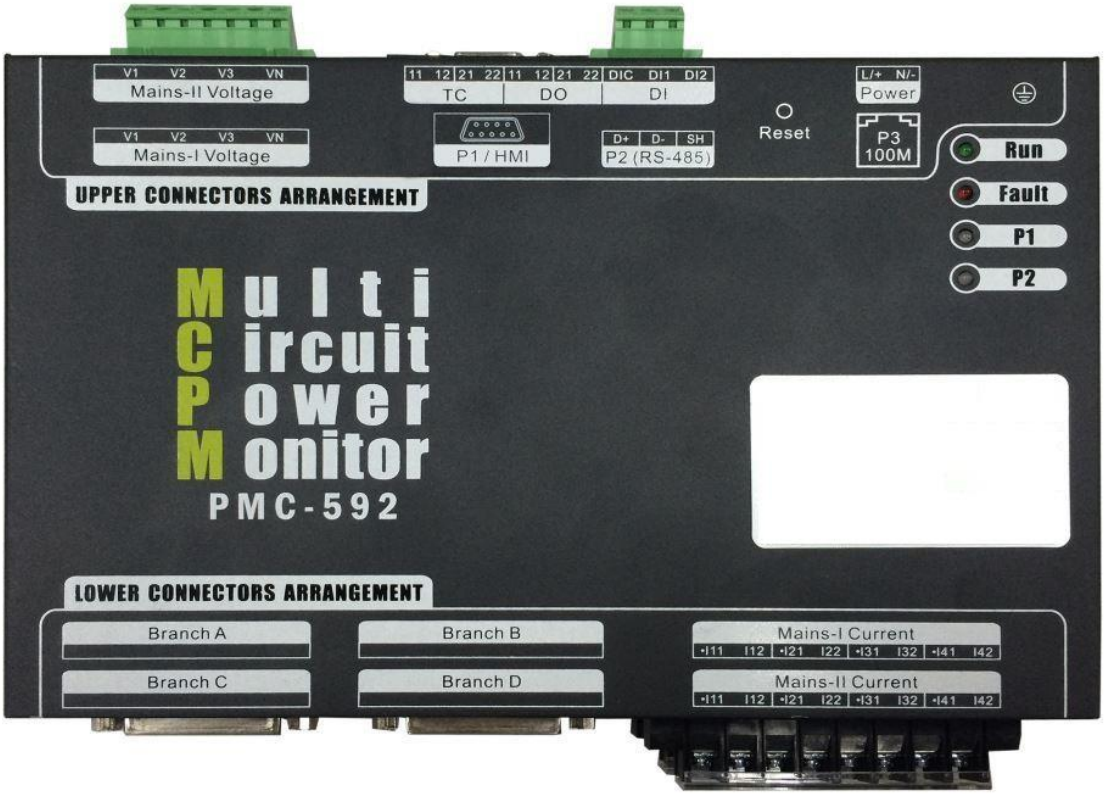
PMC-592 MCPM
Multi-Circuit Power Monitor



The Best Solution for PDU/LVDB/Load Center Monitoring Applications

- IEC 62053-21 Class 1 Compliant
- 2xMains Inputs each with 3xV & 4xI
- 21, 42, 63 or 84 Branches
- Support Fixed and Split-Core CT
- Possible In-Service Branch Expansion
- Mixing of 1Φ, 2Φ and 3Φ Feeders
- 10 Virtual Meters (Grouping)
- Dip/Swell Detection
- Waveform, Data & Event Recording
- Embedded Web
- Harmonics on Mains and all Branches
- Peak Demands and Min/Max
- 4-Level Alarming – HH, H, L and LL
- Battery-backed Real-Time Clock
- Ethernet, RS-422, RS-485
- Multi-Protocol Support
- 2xDI, 2xDO and 2xTemp. Inputs
- User Friendly 7" Color Touch Panel
- Industrial Grade Components
- Tropicalization & Extended Temp. Range

Designed For Reliability *Manufactured To Last*

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PMC-592 Main Unit

The PMC-592 MCPM is CET's latest offer for PDU, LVDB and Load Center applications that require multi-circuit monitoring. Housed in compact metal enclosure, the PMC-592 is perfectly suited for applications that have high density metering requirements. The PMC-592 features quality construction with multifunction and high-accuracy measurements, two Mains Inputs, up to 84 Branch Circuit Inputs and an optional touch-screen HMI. The PMC-592 comes standard with two Digital Inputs for status monitoring, two Relay Outputs for control or alarming as well as two RTD Inputs for temperature measurements. The standard SOE Log records all setup changes, Setpoint alarms and DI/DO operations in 1ms resolution. With Ethernet and dual RS-485 as standard feature supporting Modbus RTU/TCP, HTTP, SMTP as well as SNMP, the PMC-592 becomes a vital component of an intelligent, multi-circuit monitoring solution.

Typical Applications

- Data Centers' PDUs
- Clean room LVDB – LV Distribution Boards
- LV Substation Multi-Circuit monitoring
- Load Center Monitoring
- Ring Main Unit Metering
- Motor Control Center metering

Features Summary

Ease of use
- Status LEDs - Run, Fault, and Comm. activities
- Self-diagnostic function
- Password-protected setup via HMI, Web or PMC Setup software
- Surface Mount

Dual Mains Inputs
- 3-phase Voltage Inputs for 120VLN/208VLL, 220VLN/380VLL, 230VLN/400VLL, 240VLN/415VLL and 277VLN/480VLL systems
- 4-phase Current Inputs for 5A or 1A CT, Starting current at 0.3% In

Branch CT Inputs
- 3/4" or 1" spacing center-on-center for Solid-Core CT strip
- Standard 100A Solid-Core and Split-Core CTs for PDU applications
- Optional 5A CT rated input for LVDB/Load Center applications

Flexible Configuration
- Programmable CT Polarity, CT's reference voltage, CT Sequence and CT Strip Orientation (Sequential or Crossover)
- Support practically any panel arrangement
- Programmable label for each Branch Current Input

Mains Measurements
- 2 Mains, each supporting 3 Voltage and 4 Current Inputs
- VLN and VLL per phase and average
- I per phase and average, Neutral Current measured and calculated
- kW, kvar, kVA, PF per phase and total,
- Frequency
- Loading Factor per phase and average
- kWh Import/Export, kvarh Import/Export, kVAh Total

Branch Circuits Measurements
- 21, 42, 63 or 84 Branch Current Inputs
- I, kW, kvar, kVA, PF, Loading Factor, kWh, kvarh, kVAh per circuit

Demand Measurements
- Mains - I per phase, kW Total, kvar Total, kVA Total for Mains
- Branch - I, kW, kvar, kVA per circuit and kW Total, kvar Total and kVA Total per 1Φ , 2Φ or 3Φ configuration
- Peak Demands with timestamp for This Month and Last Month

Sub-Meters
- Support 1Φ , 2Φ and 3Φ sub-metering without configuration
- I Average, kW/kvar/kVA/PF Total, kWh/kvarh/kVAh Total
- Peak Demands with timestamp for This Month, Last Month and since Last Reset

Virtual Meters
- 10 Virtual Meters are available for arbitrary aggregation of Energy Counters from Sub-Meters

Power Quality
- Mains
  - V and I Unbalance based on Sequence Components
  - THD, TOHD, TEHD and Individual harmonics to 31st
  - TDD and Crest Factor*
  - Dip/Swell Detection*

*Available in 2016

- Branches
  - ITHD per Branch Circuit

Waveform Recorder
- WF Recording at 64 samples/cycle for Mains Inputs

Data Recorders
- 1GB On-board log memory
- Interval Energy recording
- kWh Import/Export, kvarh Import/Export, kVAh for Mains
- kWh Import, kvar Import, kVAh for Sub-Meters and Virtual Meters
- Recording interval: 5 min, 10 min, 15 min, 30 min, 60 min

SOE Log
- 1000 events time-stamped to ±1ms resolution
- Setup changes, Setpoint events, Alarms and I/O operations

Alarms
- Support High-High, High, Low, and Low-Low Alarms
- Configurable Threshold and Time Delay for each circuit
- Support Global Alarm Output
- All alarms are recorded in the SOE Log

Digital Inputs
- 2 Channels, volts free dry contact, 24VDC internally wetted
- External status monitoring with programmable debounce
- 1000Hz sampling

Relay Outputs
- 2 Channels Form A mechanical relays - 5A @ 250VAC / 30VDC

RTD Input
- 2 Channels PT100

Real-time clock
- 6ppm battery-backed real-time clock (<0.5s per day)

Communications

P1 - RS-485/422, P2 - RS-485
- Modbus RTU
- Optically isolated
- 1200 to 38,400 bps

P3 - Ethernet
- 10/100BaseT
- Modbus TCP and Modbus RTU over TCP protocols
- HTTP, SMTP, SNTP, SNMP

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

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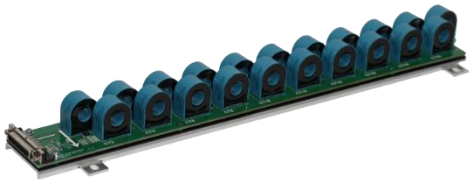
Lower Connectors

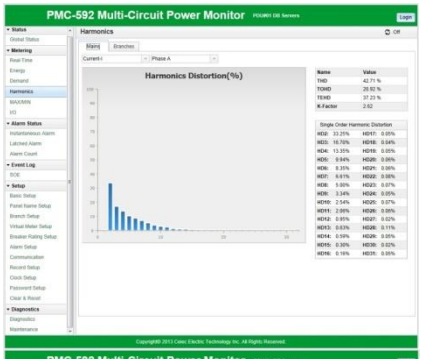
Upper Connectors

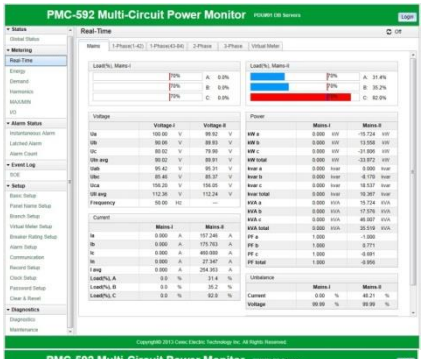
RTD Temperature Sensor

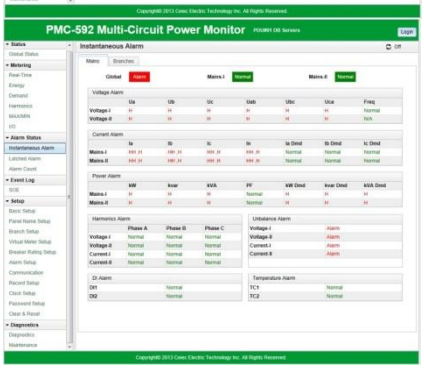
Touch Screen HMI

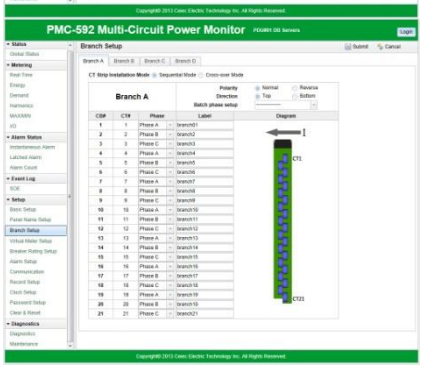


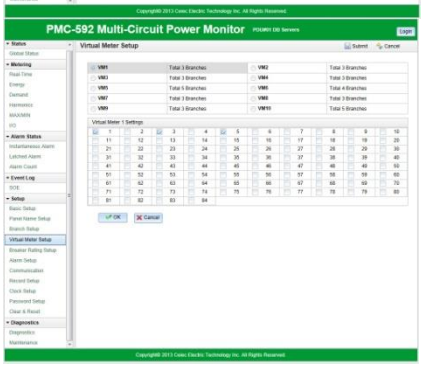
Branch CT Strip, High Quality 50-pin Connector and Cable











Embedded Web Server

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Accuracy

Parameters	Accuracy	Resolution
Mains Voltage	±0.5%	0.01V
Mains I1 - I4	±0.5%	0.001A
kW, kvar, kVA	IEC 62053-21 Class 1	0.001k
kWh, kVAh	IEC 62053-21 Class 1	0.01kXh
kvarh	IEC 62053-23 Class 2	0.01kvarh
P.F.	1%	0.001
Frequency	±0.01 Hz	0.01Hz
Harmonics	IEC 61000-4-7 / 30 Class B	0.01%
K-Factor	IEC 61000-4-7 / 30 Class B	0.1
RTD	±1°	0.1°

Technical Specifications

Main Voltage Inputs (V1, V2, V3, VN)	
Standard (Un)	277VLN / 480VLL
Range	10% to 120% Un
PT Ratio	Not Supported
Overload	1.2xUn continuous, 4xUn for 1s
Burden	< 0.1VA @ 277VLN per phase
Frequency	45-65Hz
Mains Current Inputs	
I Nominal (In)	5A / 1A (CT rated Input)
Range	1% to 120%
Starting Current	0.3% of In
CT Ratio	6000 max. for 5A, 30000 max. for 1A
Overload	1.2xIn continuous, 10xIn for 1s
Burden	<0.5VA per phase
100A Branch Current Inputs (Solid-Core and Split-Core CTs)	
Max. Loading (Imax)	100A max. Direct Input
Range	0.5% to 100%
Starting Current	0.1% of Imax (100mA)
Overload	500A for 1s
Burden	<0.5VA per phase
5A Branch Current Inputs (Solid-Core)	
I Nominal/I Max. (In/Imax)	5A (CT rated Input)/10A max.
Range	1% to 200%
Starting Current	0.1% of Imax (10mA)
CT Ratio	400 max.
Overload	20xIn (100A) for 1s
Burden	<0.5VA per phase
Digital Inputs	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Debounce	1-1,000 ms programmable
Relay Outputs	
Type	Form A Mechanical Relay
Loading	5A @250VAC / 30VDC
RTD Input	
Type	PT100
Range	-40 to 200 °C
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	II
Installation Category	CAT III
Mechanical Characteristics	
Enclosure	Galvanized Steel
Unit Dimensions	260.5*154*55.5
IP Rating	20

Standards of Compliance

Safety Requirements		
LVD Directive 2006 / 95 / EC		EN61010-1-1-2001
Insulation		IEC 60255-5-2000
Dielectric test		2kV @ 1 minute, 50/60Hz
Insulation resistance		>100MΩ
Impulse voltage		5kV, 1.2/50μs
Electromagnetic Compatibility 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 Level III
Fast transients		IEC 61000-4-4: 2004 Level IV
Surges		IEC 61000-4-5: 2005 Level IV
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 60255-21-1:1998 Level I
	Endurance	IEC 60255-21-1:1998 Level I
Shock Test	Response	IEC 60255-21-2:1998 Level I
	Endurance	IEC 60255-21-2:1998 Level I
Bump Test		IEC 60255-21-2:1998 Level I

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