PMC-660
Advanced Power Quality Monitor



- Advanced PQ Monitoring
- Sag/Swell and Transient Capture
- WF Recording @ 256 samples/cycle
- IEC 62053-22 Class 0.2S Compliant
- 4MB Log Memory
- High-speed Data Recording
- Setpoint Alarms
- Energy Log, PQ Log, SOE Log
- Standard Dual RS-485 ports
- I4 Monitoring
- Large, Bright, Backlit LCD Display with Wide Viewing Angle
- Extensive I/O Capabilities
- Extended Warranty
- Extended Temperature Range
- Industrial Grade Components
- Standard Tropicalization
- Metal Enclosure with No Openings
- IP52 Rated
- DIN96x96

Designed For Reliability *Manufactured To Last*

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The PMC-660 is CET's latest offer for the advanced power quality monitoring of incomers and critical feeders for utilities, data centers, high-tech manufacturing facilities and heavy industries. Housed in an industry-standard DIN form factor measuring 96mmx96mmx125mm, the PMC-660's compact size is perfectly suited for today's space restricting installations. The PMC-660 features quality construction with metal enclosure, advanced power quality and revenue-accurate measurements, high-resolution waveform recording capabilities, comprehensive data logging, extensive I/O and an easy-to-read LCD display, capable of displaying 3-phase measurements at once. With standard dual RS-485 ports and Modbus protocol support, the PMC-660 becomes a vital component of an intelligent Power Quality Monitoring System.

Typical Applications

- Class 0.2S Revenue Metering
- Power quality monitoring of main incomer or critical feeder
- Waveform recording at 256 samples per cycle
- Extensive logging capability with 4MB on-board memory
- Utility, industrial and commercial metering
- Substation, building and factory automation
- Low, medium and high voltage applications
- Analog meter replacement
- I4 monitoring

Features Summary

Ease of use

- Large, backlit, easy to read LCD display with wide viewing angle
- Password protected setup via front panel or free PMC Setup software
- Easy installation with mounting slide bar, no tools required

Basic Measurements (1 second update)

- 3-phase voltage, current and power measurements
- Neutral current (I4) and Frequency
- Bi-directional energy measurements
- Voltage and Current phase angles

High-speed Measurements

- 3-phase voltage @ ½ cycle
- 3-phase current, neutral current (I4) @ 1 cycle
- 3-phase power and power factor @ 1 cycle

Power Quality

- Fundamental RMS measurements for 3-phase voltage, current, power, PF, and I4
- Voltage and Current Unbalance based on Sequence Components
- Voltage and Frequency Deviation
- THD, TOHD, TEHD, K-Factor and Displacement PF
- Individual harmonics to 63rd on-board, 127th via communications
- Sag/Swell Detection and Transient Capture
- PQ LOG with 1000 entries

Sliding Window and Predicted Demands

- 3-phase voltage, current, power, PF, I4, Frequency, V and I Unbalance, and THD
- Max/Min values per demand interval
- Demand synchronization with DI
- Peak Demands for This Month and Last Month

Setpoints

- 16 standard setpoints with extensive monitoring sources
- 8 high-speed setpoints with high-speed measurements and DI
- Configurable thresholds and time delays
- 6 Logical Modules supporting AND/OR/NAND/NOR operations
- WF Recording, Data Recorder, DO, and Email Alarm trigger

Log memory

- 4MB on-board memory
- Dynamic allocation for Data Recorder Logs, Waveform Recorder Logs and Interval Energy and Demand Logs

Waveform Recorder Log

- 2 independent groups of waveform recorders with a combined total of 32 entries
- Simultaneous capture of 3-phase voltage and current signals
- Programmable formats and pre-fault cycles from 256X20 to 16X320
- Support FIFO recording mode

Interval Energy and Demand Log

- TOU capability without complicated tariff programming
- Interval recording of kWh, kvarh Import/Export and kVAh Total
- Interval recording of Demands and associated Min/Max values per demand interval
- Support FIFO or stop-when-full recording mode

Data Recorder Log

- 12 standard Data Recorder Logs
- 4 high-speed Data Recorder Logs (1 cycle interval)
- Recording interval from 1s to 40 days for standard and 1 to 60 cycles for high-speed
- Programmable sources include almost all real-time, harmonics, unbalance and demand values
- Configurable depth and recording offset
- Support FIFO or stop-when-full recording mode

SOE Log

- 512 events time-stamped to ±1ms resolution
- Setup changes, Setpoint events and I/O operations

PQ Log

- 1000 entries time-stamped to ±1ms resolution
- Sag/Swell and Transient detection or other PQ events

Max/Min Log

- Logging of Max/Min values for real-time measurements such as Voltage, Current, Frequency, kW, kvar, kVA, PF, Freq, Unbalance, K-factor, THD of This Month and Last Month

Digital Inputs

- 6 channels, volts free dry contact, 24VDC internally wetted
- External status monitoring with programmable debounce
- Pulse counting with programmable weight for each channel for collecting WAGES information
- Demand Synchronization
- 1000Hz sampling

Digital Outputs

- 3 channels standard without the optional AO
- 2 channels only with the optional AO
- Form A Mechanical relays

Analog Input (Optional)

- 0-20 / 4-20mA DC input
- Can be used to measure external transducer signal
- Programmable zero and full scales

Analog Output (Optional)

- 0-20 / 4-20mA DC output
- Can be "keyed" to any measured quantity
- Programmable zero and full scales

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Communications

Port 1 and Port 2

- Optically isolated RS485 port
- Baud rate from 1200 to 38400bps
- Modbus RTU protocol

Ethernet (Optional)

- 10/100BaseT Ethernet with RJ45 connection
- Modbus RTU over TCP/IP, Modbus TCP, Ethernet Gateway, HTTP, SMTP, SNTP

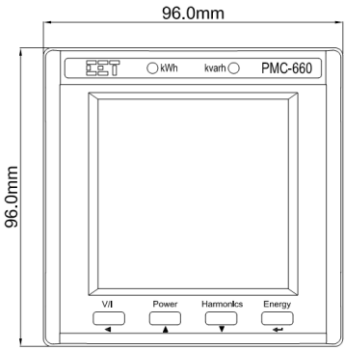
Real-time clock

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

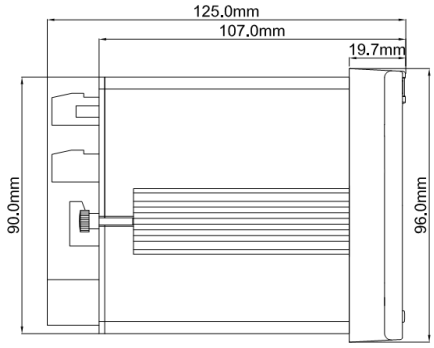
System Integration

- Supported by our PecStar® iEMS and iPQMS
- Easy integration into other Automation or SCADA systems via Modbus RTU and Modbus TCP protocols

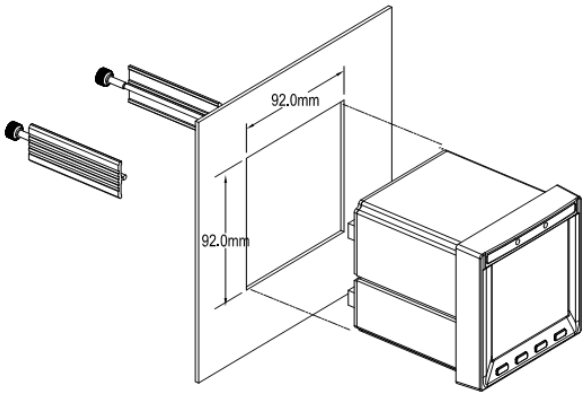
Device View and Dimensions



Front View



Side View



Panel Cutout

Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.1% reading	0.01V
Current	±0.1% reading + 0.05% F.S.	0.001A
I4 Measured	±0.1% reading + 0.05% F.S.	0.001A
I4 Calculated	0.5% F.S.	0.001A
kW, KVA	IEC 62053-22 Class 0.2S	0.001k
kWh, kVAh	IEC 62053-22 Class 0.2S	0.01kXh
kvar, kvarh	IEC 62053-23 Class 2	0.001k / 0.01kvarh
P.F.	IEC 62053-22 Class 0.2S	0.001
Frequency	±0.01 Hz	0.01Hz
Harmonics	IEC 61000-4-7 Class A	0.01%
K-Factor	IEC 61000-4-7 Class A	0.1
Phase angles	±1°	0.1°
AI	±0.5% F.S.	-
AO	±0.5% F.S.	-

Technical Specifications

Voltage Inputs (V1, V2, V3, VN)	
Standard (Un)	240VLN/415VLL
Optional (Un)	69VLN/120VLL, 400VLN/690VLL
Range	10% to 120% Un
PT Ratio	1-10,000
Overload	1.2xUn continuous, 2xUn for 10s
Burden	<0.5VA @ 240V
Frequency	45-65Hz
Current Inputs (I11, I12, I21, I22, I31, I32, I41, I42)	
Standard (In / Imax)	5A / 10A
Optional (In / Imax)	1A / 2A
Range	0.1% to 200% In
CT Ratio	1-6,000 (5A) or 1-30,000 (1A)
Overload	2xIn continuous, 20xIn for 1s
Burden	<0.25VA @ 5A
Power Supply (L+, N-)	
Standard	95-415VAC/VDC ± 10%, 47-440Hz
Burden	<5W
Digital Inputs (DI1, DI2, DI3, DI4, DI5, DI6, DIC)	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Hysteresis	20-2,000ms programmable
Digital Outputs (DO11, DO12, DO21, DO22, DO31, DO32)	
Type	Form A Mechanical Relay
Loading	8A@250VAC / 8A@24VDC, 5A@30VDC for DO1 5A@250VAC / 5A@30VDC for DO2 and DO3
LED Pulse Outputs (kWh, kvarh)	
Type	Optical
Pulse Constant	1000/3200/5000 imp/kxh
Analog Input (I41, I42)	
Type	0-20 / 4-20 mA
Overload	24 mA maximum
Analog Output (AO+, AO-)	
Type	0-20 / 4-20 mA
Loading	500 Ω maximum
Overload	24 mA maximum
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
Measurement Category	CAT III
Mechanical Characteristics	
Enclosure	Aluminum Alloy
Panel Cutout	92x92 mm (3.62″x3.62″)
Unit Dimensions	96x96x125 mm (3.78″x3.78″x4.92″)
Shipping Dimensions	170x145x155 mm (6.69″x5.71″x6.10″)
IP Rating	52
Shipping Weight	1.1 kg

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Standards of Compliance

Safety Requirements	
LVD Directive 2006/95/EC	EN61010-1-1-2001
Insulation	IEC 60255-5-2000
Dielectric test	2kV @ 1 minute
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 III
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
Vibration Test – Endurance	IEC 60255-21-1:1998 Level I
Shock Test – Response	IEC 60255-21-2:1998 Level I
Shock Test – Endurance	IEC 60255-21-2:1998 Level I
Bump Test	IEC 60255-21-2:1998 Level I

Ordering Guide

Product Code	Description
PMC-660 Power Quality Monitor	
Basic Function	
256 samples per cycle, Class 0.2S Compliant, 3-Phase Metering, Demands, Peak Demands, Min/Max, SOE Log, Ind. Har to 63rd, 4MB Log Memory, 16 Data Recorders, High-Speed Recording, WF Recording, Sag/Swell and Transient Detection	
Display Screen	
A	Integrated LCD Screen
Input Current (I1, I2, I3, I4#)	
5	5A
1	1A
Input Voltage (V1, V2, V3)	
1	69V/120V
3	240V/415V
9*	400V/690V
Power Supply	
2	95-415VAC/DC, 47-440Hz
System Frequency	
5	50Hz
6	60Hz
DI/DO/AO	
A	6DI + 3DO
B*	6DI + 2DO + 1AO (0-20mA or 4-20mA)
AI	
X	No
A*	1 Analog Input (0-20mA or 4-20mA)#
Communications	
B	2 RS-485 ports
D*	1 10/100BaseT Ethernet port + 1 RS-485 port

PMC-660 - A 5 3 2 5 A X B — PMC-660-A5325AXB (Standard Model)

* Additional charges apply

With AI option A , I4 is not available

Contact us

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