Ceiec
Electric
Technology

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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PMC-660
Advanced Power Quality Monitor

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

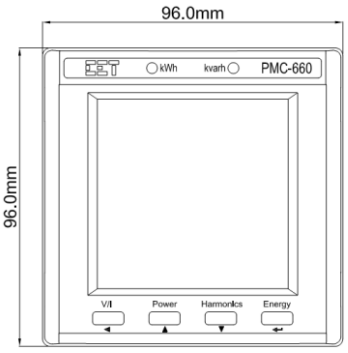
Real-time clock

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

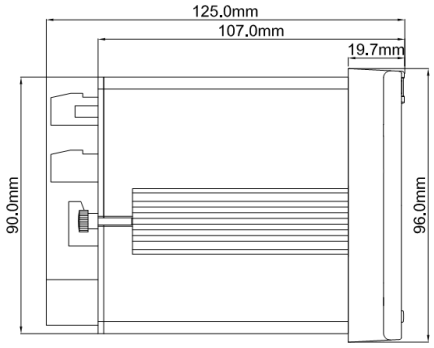
System Integration

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

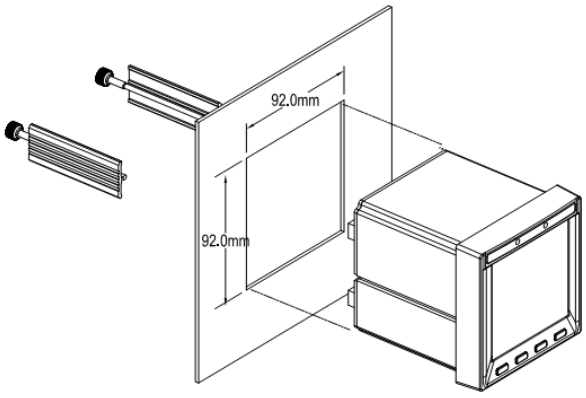
Device View and Dimensions



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″×4.92″)
Shipping Dimensions	170x145x155 mm (6.69″x5.71″×6.10″)
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
	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

Ordering Guide

Ceiec Electric Technology

Version 20110804

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

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