



- IEC 62053-22 Class 0.5S
- True RMS Measurements
- THD with 31 Ind. Harmonics
- K-Factor, Crest Factor and TDD
- Unbalance & Phase Angles
- U and I Symmetrical Components
- Demands and Maximum Demands
- Max./Min. Log with Timestamp
- Large, Backlit LCD with Wide Viewing Angle
- Setpoint Alarms & SOE Logs
- IP65 Enclosure with No Openings
- Standard Tropicalization
- Industrial Grade Components
- Extended Temperature
- Extended Warranty

*Designed For Reliability*

*Manufactured To Last*



The PMC-33M-A Digital Multifunction Meter is CET's latest offer for the low-cost digital power/energy metering market. Housed in a standard DIN form factor measuring 96x96x88mm, it is perfectly suited for industrial, commercial and utility applications. The PMC-33M-A features quality construction, multifunction true RMS measurements and a large, backlit, 7-segment LCD. Compliance with the IEC 62053-22 Class 0.5S Standard, it is a cost effective replacement for analog instrumentation that is capable of displaying 3-phase measurements at once. It optionally provides four Digital Inputs for status monitoring, two Relay Outputs for control and alarm applications. The standard RS-485 port and Modbus RTU protocol support makes the PMC-33M-A a smart metering component of an intelligent, multifunction monitoring solution for any Energy Management System.

### Typical Applications

- Industrial, Commercial and Utility Substation Metering
- Building, Factory and Process Automation
- Sub-metering and Cost Allocation
- Energy Management and Power Quality Monitoring

### Features Summary

#### Ease of use

- Large, backlit LCD display with wide viewing angle
- Intuitive user interface
- LED indicators for Energy Pulsing and Communication activities
- Password protected setup via front panel or free PMC Setup software
- Easy installation with mounting clips, no tools required

#### Multifunction True RMS Measurements

- VLN, VLL per Phase and Average
- Current per Phase and Average with calculated Neutral Current
- kW, kvar, kVA, PF per Phase and Total
- kWh, kvarh Import / Export / Net / Total and kVAh Total
- Frequency
- Device Operating Time (Running Hours)
- Optional DI Pulse Counters

#### Enhanced Measurements

- U and I THD, TOHD, TEHD and Individual Harmonics up to 31<sup>st</sup>
- Current TDD, TDD Odd, TDD Even, K-Factor and Crest Factor
- U and I Unbalance and Phase Angle
- Displacement PF
- Fundamental U, I and kW per phase
- Total Fundamental kW & Total Harmonic kW
- U and I Symmetrical Components
- kvarh Q1-Q4
- Demands, Predicted Demands and Maximum Demands for kW/kvar/kVA Total and per phase Current with Timestamp for This Month & Last Month (or Since Last Reset & Before Last Reset)

#### Setpoints

- 9 user programmable setpoints with extensive list of monitoring parameters including Voltage, Current, Power, THD, etc.
- Configurable thresholds, time delays and DO triggers

#### SOE Log

- 100 events time-stamped to  $\pm 1$ ms resolution
- Setup changes, Setpoint and DI status changes and DO operations

#### Max./Min. Log

- Max./Min. Log with Timestamp for Real-time Measurements such as Voltage, Current, In, Freq., kW, kvar, kVA, PF, Unbalance, K-factor, Crest Factor and THD.
- Configurable for This Month & Last Month (or Since Last Reset & Before Last Reset)

#### Diagnostics

- Frequency Out-of-Range, Loss of Voltage / Current
- kW Direction per Phase and Total, Possible incorrect CT Polarity
- Incorrect U & I Phase Sequence

#### Communications

- Optically isolated RS-485 port at max. 38,400 bps
- Standard Modbus RTU support

#### Real-Time clock

- Battery-backed Real-time Clock with 25ppm accuracy (<2s per day)

#### System Integration

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

#### Inputs and Outputs

##### Digital Inputs (Optional)

- 4 channels, volt free dry contact, 24VDC internally wetted
- 1000Hz sampling for status monitoring with programmable debounce
- Pulse counting with programmable weight for each channel for collecting WAGES (Water, Air, Gas, Electricity, Steam) information

##### Digital Outputs (Optional)

- 2 Form A mechanical relays for alarming and general purpose control
- 5A @ 250VAC or 30VDC



### Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.2% Reading + 0.05% F.S.	0.001V
Current	±0.2% Reading + 0.05% F.S.	0.001A
kW, kvar, kVA	±0.5% Reading + 0.05% F.S.	0.001k
kWh, kVAh	IEC 62053-22 Class 0.5S	0.01kWh
kvarh	IEC 62053-23 Class 2	0.01kvarh
PF	±0.5%	0.001
Frequency	±0.02 Hz	0.01Hz
THD	IEC 61000-4-7 Class B	0.001%
K-Factor	IEC 61000-4-7 Class B	0.001
Phase angle	±1°	0.1°

### Technical Specifications

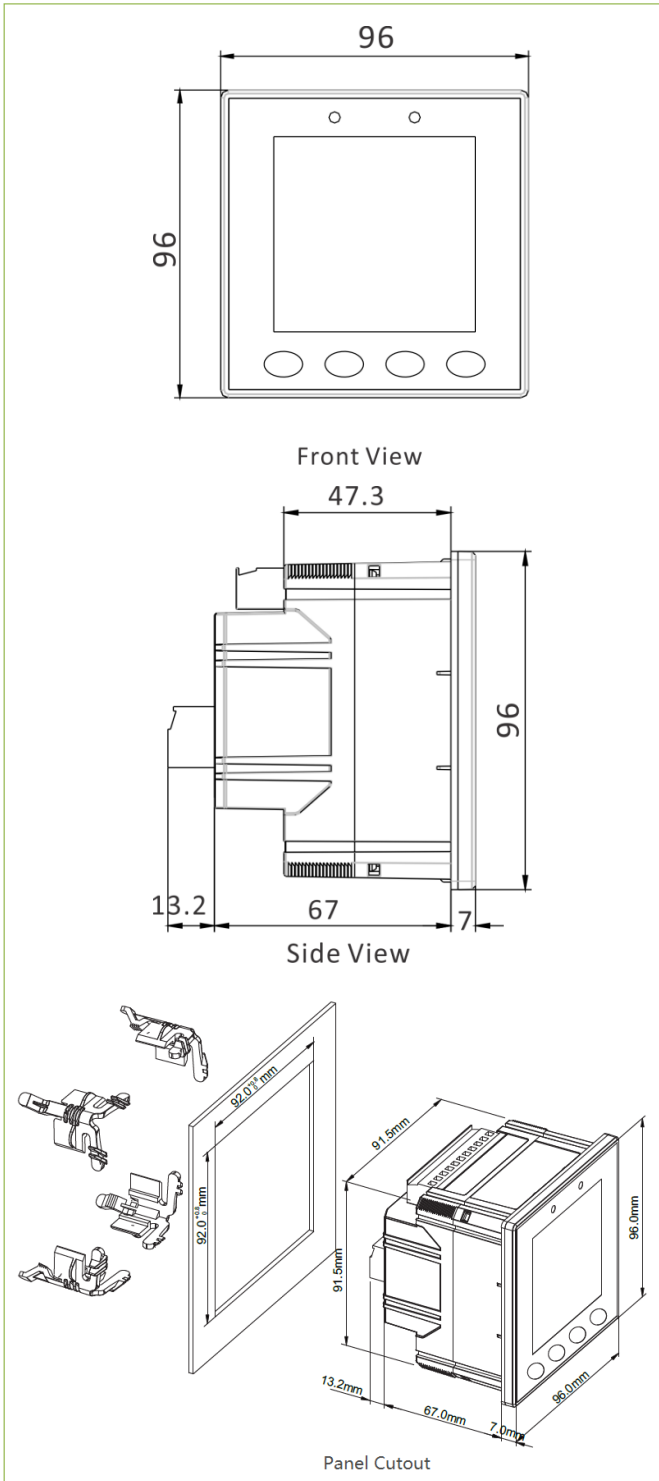
Voltage Inputs (V1, V2, V3, VN)	
Standard Un	400VLN/690VLL
Range	10V to 1.2Un
Overload	1.2xUn continuous, 2xUn for 1s
Burden	<0.02VA per phase
Measurement Category	CAT III up to 600VLL
Frequency	45-65Hz
Current Inputs (I11, I12, I21, I22, I31, I32)	
Standard In	5A (5A/1A Auto-Scaling)
Range	0.1% to 200% In
Starting Current	0.1% of In
Overload	2xIn continuous, 20xIn for 1s
Measurement Category	CAT III up to 600VLL
Burden	<0.15VA per phase
Power Supply (L+, N-, GND)	
Standard	95-250VAC/DC, ±10%, 47-440Hz
Burden	<2W
Overvoltage Category	CAT III up to 300VLN
Digital Inputs (DI1, DI2, DI3, DI4, DIC)	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Hysteresis	1ms minimum
Digital Outputs (DO11, DO12, DO21, DO22)	
Type	Form A Mechanical Relay
Loading	5A @ 250VAC or 30VDC
Installation Torque	
Current Inputs	1.3 N.m
Power Supply, Voltage Inputs, RS-485, I/O	0.5 N.m
Environmental Conditions	
Operating Temperature	-25°C to 70°C
Storage Temperature	-40°C to 85°C
Humidity	5% to 95% non-condensing
Atmospheric Pressure	70 kPa to 106 kPa
Mechanical Characteristics	
Panel Cutout	92x92 mm (3.62"x3.62")
Unit Dimensions	96x96x88 mm
IP Rating	65

### Standards of Compliance

Safety Requirements	
CE LVD 2014 / 35 / EU	EN61010-1: 2010, EN61010-2-030: 2010
Electrical safety in low voltage distribution systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2008 (PMD)
Insulation	IEC 62052-11: 2003 IEC 62053-22: 2003
AC Voltage: 2.5kV @ 1 minute Insulation Resistance: >100MΩ Impulse voltage: 6kV, 1.2/50μs	
Electromagnetic Compatibility CE EMC Directive 2014 / 30 / EU (EN 61326: 2013)	
Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN 61000-4-3: 2006+A1: 2008+A2: 2010
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2006
Conducted Disturbances	EN 61000-4-6: 2009
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN 61000-4-11:2004
Oscillatory Waves	EN 61000-4-12: 2006
Radio Disturbances	CISPR 22:2006, Level B
Emission Tests	
Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-frequency Equipment	EN 55011: 2009 + A1: 2010 (CISPR 11)
Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	EN 55022: 2010+AC: 2011 (CISPR 22)
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16 A	EN 61000-3-2: 2014
Limitation of Voltage Fluctuations and Flicker in Low-voltage Supply Systems for Equipment with Rated Current ≤16 A	EN 61000-3-3: 2013
Emission Standard for Industrial Environments	EN 61000-6-4: 2007+A1: 2011
Testing and Measurement Techniques - Ring Wave Immunity Test.	EN 61000-4-12: 2006
Mechanical Tests	
Spring Hammer Test	IEC 62052-11: 2003
Vibration Test	IEC 62052-11: 2003
Shock Test	IEC 62052-11: 2003



### Device View and Dimensions



### Ordering Information

Product Code		Description
PMC-33M-A		Intelligent Multifunction Meter
Basic Function		
A		7-segment LCD, 1xRS-485 with Modbus
Input Current		
5		5A/1A Auto-Scaling (Class 0.5S for 5A and Class 1 for 1A)
Input Voltage		
9		400V LN/690V LL
Power Supply		
2		95-250 VAC/DC, 47-440Hz
Frequency		
5		45Hz-65Hz
I/O		
X		None
B*		4xDI+2xDO
Communications		
A		1xRS-485
Language		
E		English
PMC-33M	- A - 5 9 2 5 X A E	PMC-33M-A5925XAE (Standard Model)

\* Additional charges apply

Your Local Representative

