



CET
Electric
Technology

PMC-53A Intelligent Multifunction Meter



- IEC 62053-22 Class 0.5S
- True RMS Measurements
- THD with 31 Ind. Harmonics
- K-Factor, Crest Factor and TDD
- Unbalance & Phase Angles
- Demands and Peak Demands
- Multi-Tariff TOU
- Max/Min Log with Timestamp
- 12 Monthly Energy Log & SOE Log
- Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Large, Backlit Dot-Matrix LCD with Wide Viewing Angle
- 1-Cycle Real-time WF display
- Optional 4MB Log Memory for 100 days recording at 15 minutes
- I/O Expansion Capabilities
- IP65 Enclosure with No Openings
- Standard Tropicalization
- Industrial Grade Components
- Extended Temperature
- Extended Warranty

Designed For Reliability

Manufactured To Last



Intelligent Multifunction Meter



The PMC-53A Intelligent 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-53A features quality construction, multifunction measurements and a large, backlit, Dot-Matrix LCD that is easy to navigate and user friendly. Compliance with the IEC 62053-22 Class 0.5S Standard, it is a cost effective replacement for analog instrumentation and is capable of displaying 4 measurements at once. It optionally provides I4 input for Neutral Current measurement, a second RS485 port, up to six Digital Inputs for status monitoring, four Relay Outputs for control and alarm applications as well as other I/O options for different applications.

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

Basic Measurements

- VLN, VLL per phase and Average, Neutral-Earth Voltage
- Current per phase and Average with calculated Neutral
- kW, kvar, kVA, PF per phase and Total
- kWh, kvarh Import / Export / Net / Total and kVAh Total
- Frequency
- Device Operating Time (Running Hours)
- Optional I4 measurements
- Calculated Residual Current Ir (with optional I4 Input)

Advanced Measurements

- 1-Cycle Real-time U & I Waveform Display @ 1s update rate
- U and I THD, TOHD, TEHD and Individual Harmonics up to 31st
- Current TDD, TDD Odd, TDD Even, K-Factor and Crest Factor
- U and I Unbalance and Phase Angles
- Displacement PF
- Fundamental U, I and kW per phase
- Total Fundamental kW & Total Harmonic kW
- U and I Symmetrical Components
- kvarh Q1-Q4
- Interval Energy for kWh/kvarh Imp/Exp and kVAh
- Present, Predicted and Peak Demands for kW/kvar/kVA Total as well as Current per phase and average with Timestamp for This Month (or Since Last Reset) and Last Month (or Before Last Reset)
- Two TOU schedules, each providing
 - 12 Seasons
 - 20 Daily Profiles, each with 12 Periods in 15-minute interval
 - 90 Holidays or Alternate Days
 - 8 Tariffs, each providing the following information
 - kWh/kvarh Import/Export, kVAh
 - kW/kvar/kVA Max. Demands
- 12 monthly recording of kWh/kvarh Import/Export/Total/Net, kVAh, kvarh Q1-Q4 as well as kWh/kvarh Import/Export and kVAh per Tariff

Ease of use

- Large, backlit, Dot-Matrix 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

Setpoints

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

SOE Log

- 100 events time-stamped to ± 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, I4, Freq., kW, kvar, kVA, PF, Unbalance, K-factor, Crest Factor and THD.
- Configurable for This Month/Last Month or Before/Since Last Reset

Freeze Logs (Optional)

- 60 Daily Freeze Logs for kWh/kvarh/kVAh Total and kW/kvar/kVA Peak Demands
- 36 Monthly Freeze Logs for kWh/kvarh/kVAh Total and kW/kvar/kVA Peak Demands with Timestamps

Data Recorder Log (Optional)

- 5 Data Recorders of 16 parameters each for real-time measurements, harmonics, energy, demand, TOU, Pulse Counters, ...etc.
- Recording interval from 1 minute to 40 days
- Configurable capacity up to a max. of 100 days at 15-minute interval

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 RS485 port at max. 38,400 bps
- Selectable Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Optional 2nd RS485 port with Modbus RTU support only

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 Johnson Controls Metasys with N2 or other Building Automation Systems with BACnet MS/TP or Modbus RTU
- DNP 3.0 for Utility Substation Automation

Inputs and Outputs

Digital Inputs (Optional)

- Up to 6 channels, volts 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
- Tariff switching based on DI status

Digital Outputs (Optional)

- Up to 4 Form A mechanical relays for alarming and general purpose control

Pulse Outputs (Optional)

- Up to 4 Form A Solid State Relays for kWh and kvarh pulsing

Expansion Modules

Expansion Module A Options

- I4 Input
- RS485 port with optical isolation, supporting Modbus RTU

Expansion Module B Options

- 2xDigital Inputs and 2xRelay Outputs
- 2xDigital Inputs and 2xSolid State Pulse Outputs
- 2xRTD Inputs (PT100 sensor not included)
- 1xAl and 1xAO (0/4-20mA)

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Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.2% Reading + 0.05% F.S.	0.001V
Current	±0.2% Reading + 0.05% F.S.	0.001A
I4 (measurement)	±0.2%	0.001A
kW, kvar, kVA	±0.5% Reading + 0.05% F.S.	0.001k
kWh, kVAh	IEC 62053-22 Class 0.5S	0.1kXh
kvarh	IEC 62053-23 Class 2	0.1kvarh
P.F.	±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 angles	±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, Optional 1A
Range	0.1% to 200% In
Starting Current	0.1% In
Overload	2xIn continuous, 20xIn for 1s
Measurement Category	CAT III up to 600VLL
Burden	<0.15VA per phase
Optional I4 Input (I41, I42)	
In	5A (5A/1A Auto-Scale)
Range	0.1% to 200% In
Starting Current	0.1% In
Power Supply (L+, N-, GND)	
Standard	95-250VAC/DC, ±10%, 47-440Hz
Optional	20-60VDC
Optional	95-480VAC/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
Pulse Outputs (kWh, kvarh)	
Type	Form A Solid State Relay
Isolation	Optical
Max. Load Voltage	80V
Max. Forward Current	50mA
Installation Torque	
Current Inputs	1.3 N.m
Power Supply, Voltage Inputs, RS485 and I/O	0.5 N.m
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
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
cTUVus for UL/CSA Certification	EN61010-2-030: 2010
	UL 61010-1: 2012
	UL 61010-2-030: 2012
	CAN/CSA-C22.2 No.61010-1: 2012
	CSA C22.2 No. 61010-2-030-12
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
V Dips, Interruptions & Variations	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
Radiated Emissions	FCC 47CFR 15.109 Class B
Conducted Emissions	FCC 47CFR 15.107 Class B
Mechanical Tests	
Spring Hammer Test	IEC 62052-11: 2003
Vibration Test	IEC 62052-11: 2003
Shock Test	IEC 62052-11: 2003

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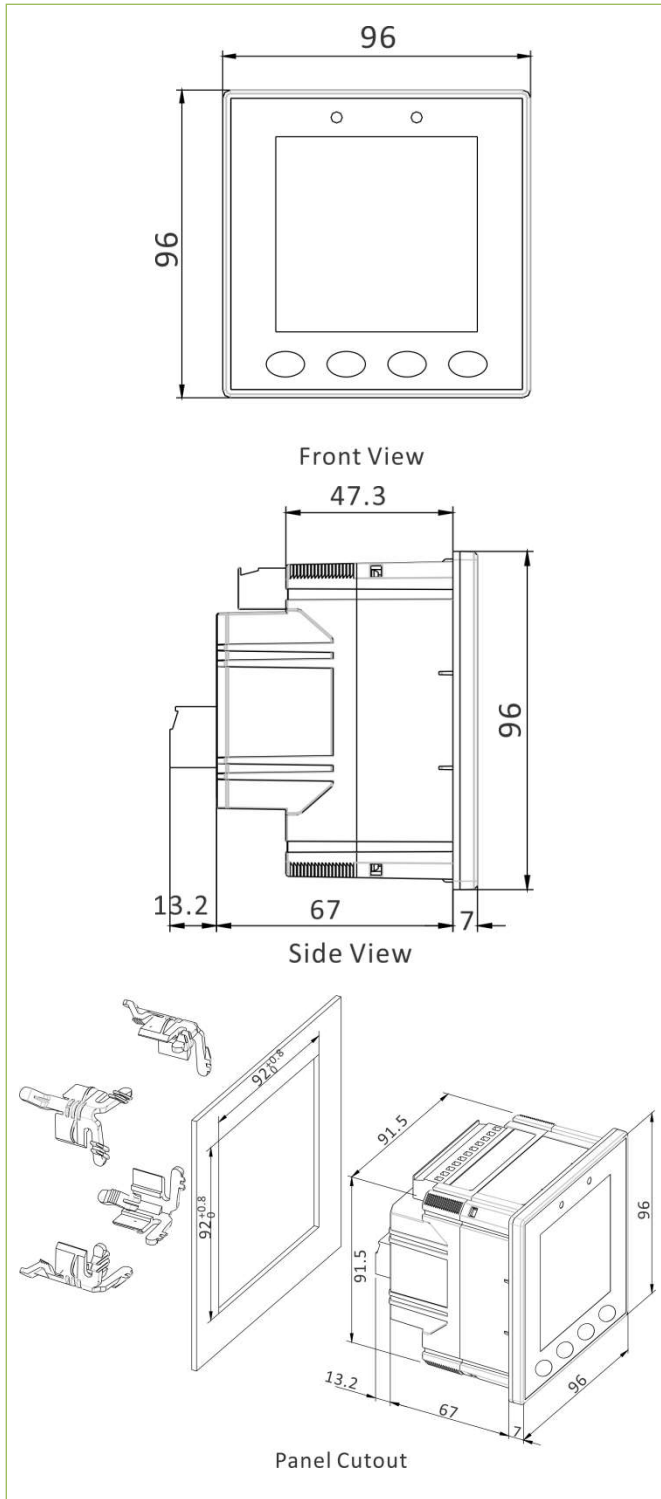


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Device View and Dimensions



Ordering Information



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Version 20180528

Product Code	Description
PMC-53A Intelligent Multifunction Meter	
Basic Function	
1	Dot-Matrix LCD, 1xRS-485 with Multiple Protocol, Monthly Energy Log
2*	Model 1 + Monthly & Daily Freeze Log, Data Recording Log, 4MB Memory
3*	Model 1 + 4xDI + 2xSS Pulse Output
A*	Model 1 + 4xDI + 2xRO (Relay Output)
B*	Model A + Monthly & Daily Freeze Log, Data Recording Log, 4MB Memory
Input Current	
5	5A
1	1A
Input Voltage	
9	400V/LN/690V/L
Power Supply	
2	95-250 VAC/DC, 47-440Hz
3	20-60VDC
4	95-480 VAC/DC, 47-440Hz
Frequency	
5	45Hz-65Hz
Language	
E	English
Expansion A*	
A1	1xRS-485
A2	I4 (5A/1A Auto-Scaling)
Expansion B*	
B1	2xDI + 2xRO (Relay Output)
B2	2xRTD (PT100 sensors not included)
B3	1xAI + 1xAO (0/4-20mA)
B4	2xDI + 2xSS Pulse Output
B5	2xAO (0/4-20mA)
PMC-53A	- 1 5 9 2 5 E - -
PMC-53A-15925E (Standard Model)	

* Additional charges apply

1) Model No. with only one Expansion can be written as PMC-53A-15925E-Ax or PMC-53A-15925E-Bx

2) Model No. with both Expansions can be written as PMC-53A-15925E-Ax-Bx

3) Options B1 and B4 for Expansion B are invalid with options 1, and 2 under Basic Function.

Your Local Representative



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