

PMC-53A

Intelligent

Multifunction Meter



High Performance

PMC-53A Intelligent Multifunction Meter features quality construction, multifunction measurements and a large, backlit, Dot-Matrix LCD that is user friendly and easy to navigate. Housed in a standard DIN form factor measuring 96x96x88mm, it is perfectly suited for industrial, commercial and utility applications. Compliance with the IEC62053-22 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 14 input for Neutral Current measurement, a second RS-485 port, six Digital Inputs for status monitoring, four mechanical relays 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

At-A-Glance



Features Summary

Basic Measurements

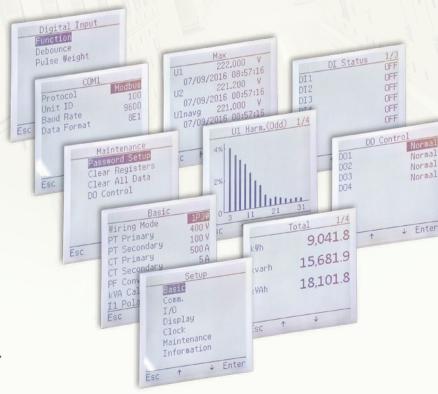
- 1-cycle Real-time waveform @ 1s update rate
- ULN, ULL per phase and Average
- Current per phase and Average with calculated Neutral
- kW, kvar, kVA, PF per phase and Total
- kWh, kvarh Import/Export/Net/Total, kVAh Total & kvarh Q1-Q4
- Frequency
- Optional I4 measurement
- Calculated Residual Current Ir
- Battery-backed Real-time Clock with 25ppm accuracy

Advanced Measurements

- THD, TOHD, TEHD and Individual Harmonics up to 31st
- TDD, K-Factor, Crest Factor and Displacement PF
- U and I Unbalance and Phase Angle

TOU, Energy and Demand Recording

- 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 for Energy and Max. Demands recording
- 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
- Demands, Predicted Demands and Max. Demands for kW Total, kvar Total, kVA Total and per phase Current with Timestamp



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Setpoint Features

Supports comprehensive monitoring and control functions such as SOE Logging, Data Recording or DO Triggering for Alarm or Control Actions.

- 9 user-programmable setpoints
- Configurable thresholds, time delays and DO triggers

Data and Event Logging

SOE Log

- 100 events time-stamped to ±1ms resolution
- Recording Events for Setup changes, Setpoint and DI status changes as well as DO operations

Maximum Demand Log

- Max. Demand Log with timestamps for Ia, Ib, Ic, kW, kvar, kVA for the month and kW, kvar, kVA for TOU Tariffs 1 to 8
- Configurable through the front panel as well as communications for This Month/Last Month or Before/Since Last Reset

Max./Min. Log

- Max./Min. Log with timestamps for parameters 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 Monthly Energy Log
- Energy Log with timestamps for kWh, kvarh Import/Export/Net/Total, kWh, kvarh Import/Export for TOU Tariffs 1 to 8, kVAh Total & kvarh Q1-Q4
- Configurable through communications for present and the last 12 months

Daily/Monthly Freeze Log (4MB Non-Volatile Memory Option)

- Daily/Monthly Log with timestamps for kWh, kvarh, kVAh Total & Max. Demand kW, kvar, kVA Total
- Configurable through communications for 60 daily freeze records (2 months) and 36 monthly freeze records (3 years)

Data Recorder Log (4MB Non-Volatile Memory Option)

- 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

Communications

- Optically isolated RS-485 port at max. 38,400 bps
- Selectable Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Optional 2nd RS-485 port (Modbus RTU only)

System Integration

- Supported by CET's PecStar® iEMS and iEEM
- Easy integration into 3rd-party Energy Management, Automation or SCADA systems via supported protocols

Optional Inputs and Outputs

PMC-53A provides various I/O options to suit different monitoring, control and alarming applications. Extra I/O channels can be extended via optional Expansion Modules.

Digital Inputs

- Up to 6 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 Relay Outputs
- Up to 4 Form A mechanical relays for alarming and general purpose control Digital Outputs
- Up to 4 solid state relays for energy pulsing applications

Optional Expansion Modules

Module A

- I4 Input
- RS-485 port with optical isolation, supporting Modbus RTU

Module B

- 2x Digital Inputs and 2x Relay Outputs
- 2x Digital Inputs and 2x Solid State Pulse Outputs
- 2x RTD Inputs (PT100 sensor not included)
- 1x AI and 1x AO (0/4-20mA)

Accuracy

Parameters	Accuracy	Resolution
Voltage (U)	\pm 0.2% Reading + 0.05% F.S.	0.001V
Current (I)	\pm 0.2% Reading + 0.05% F.S.	0.001A
I4 (Measurement)	±0.2%	0.001A
kW, kVA	\pm 0.5% Reading + 0.05% F.S.	0.001kX
kWh, kVAh	IEC62053-22 Class 0.5S	0.1kXh
kvar	\pm 0.5% Reading + 0.05% F.S.	0.001kvar
kvarh	IEC62053-23 Class 2	0.1kvarh
PF	± 0.5%	0.001
Frequency	±0.02Hz	0.01Hz
THD	IEC61000-4-7 Class B	0.001%
K-Factor	IEC61000-4-7 Class B	0.001
Phase Angle	±1°	0.1°

Technical Specifications

Voltage Inputs (U1, U2, U3, UN)

Un	400ULN/690ULL
Range	10V to 1.2xUn
Overload	1.2xUn continuous, 2xUn for 1s
Burden	<0.02VA/phase
Measurement Category	CAT III 600V
Frequency	45-65Hz

Current Inputs (I11, I12, I21, I22, I31, I32)

In	5A/1A	
Range	0.1% to 200% In	
Starting Current	0.1% ln	
Overload	2xIn continuous, 20xIn for 1s	
Measurement Category	CAT III 600V	
Burden	<0.15VA/phase	

Power Supply (L+, N-)

Standard	95-250VAC/DC, $\pm 10\%$, 47-440Hz OVC CAT III 300V
Optional	95-480VAC/DC, $\pm 10\%$, 47-440Hz OVC CAT III 300V
	20-60VDC

Digital Inputs

Туре	Dry Contact, 24VDC Internally Wetted	
Sampling	1000Hz	
Hysteresis	1ms minimum	

Digital Outputs

Туре	Form A Mechanical Relay
Loading	5A @ 250VAC or 30VDC

Analog Inputs/Outputs

Туре	0/4-20mA, Max. 24mA
AO Loading	Max. 50Ω

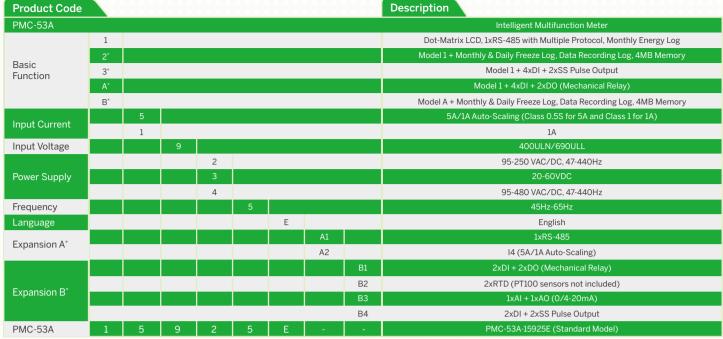
Pulse Outputs (kWh, kvarh)

Туре	Form A Solid State Relay
Isolation	Optical
Max. Load Voltage	80V
Max. Forward Current	50mA





Ordering Information



^{*} Additional charges apply

Environmental Conditions

- 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

Environmental and Mechanical Specifications

Operating Temp.	-25°C to 70°C	
Storage Temp.	-40°C to 85°C	
Humidity	5% to 95% non-condensing	
Atmospheric Pressure	70kPa to 106kPa	
Mechanical Characteristics		
Panel Cutout	92x92mm (3.62"x3.62")	
Unit Dimensions	96x96x88mm	
IP Rating	IP65	
Mechanical Tests		
Vibration Test	IEC62052-11: 2003 Level I	
Shock Test	IEC62052-11: 2003 Level I	
Spring Hammer Test	IEC62052-11: 2003 Level I	

Safety Standards

Safety Requirements	
CE LVD 2014 / 35 / EU	EN61010-1: 2010, EN61010-2-030: 2010
cTUVus for UL/CSA Certification	UL61010-1: 2012 UL61010-2-030: 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	IEC61557-12: 2008
Insulation AC Voltage: 2.5kV @ 1 minute Insulation resistance: >100MΩ Impulse voltage: 6kV, 1.2/50μs	IEC62052-11: 2003 IEC62053-22: 2003

Phone: +86.755.8341.5187 Email: sales@cet-global.com Website: www.cet-global.com

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EMC Compatibility

CE EMC Directive 2014/30/EU (EN61326: 2013)

Emission Tests

Conducted Emissions

Your Local Representative

Immunity Tests	
Electrostatic Discharge	EN61000-4-2: 2009
Radiated Fields	EN61000-4-3: 2006+A1: 2008+A2: 2010
Fast Transients	EN61000-4-4: 2012
Surges	EN61000-4-5: 2006
Conducted Disturbances	EN61000-4-6: 2009
Magnetic Fields	EN61000-4-8: 2010
Oscillatory Waves	EN61000-4-12: 2006
Radio Disturbances	CISPR 22:2006, Level B

Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific And Medical (Ism) Radio-frequency Equipment	EN55011: 2009+A1: 2010 (CISPR 11)
Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment	EN55022: 2010+AC: 2011 (CISPR 22)
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16 A	EN61000-3-2: 2014
Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤ 16 A	EN61000-3-3: 2013
Emission Standard for Industrial Environments	EN61000-6-4: 2007+A1: 2011
Testing and Measurement Techniques - Ring wave Immunity Test	EN61000-4-12: 2006
Radiated Emissions	FCC 47CFR 15 109 Class B

FCC 47CFR 15.107 Class B