



- IEC 62053-22 Class 0.5S
- ANSI C12.20 Class 0.2
- MID Class C Certified
- True RMS Measurements
- THD with 31 Ind. Harmonics
- K-Factor, Crest Factor and TDD
- Unbalance & Phase Angle
- Multi-Tariff TOU & Demands
- Max./Min. Log with Timestamp
- Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Large, Backlit Dot-Matrix LCD
- 1-Cycle Real-Time WF display
- Optional 4MB Log Memory for 100 days recording at 15 minutes
- 12 Monthly Energy Log & SOE Log
- 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, ANSI C12.20 Class 0.2 and EN 50470-1/3 Class C Standards, 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, 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

- ULN, ULL per phase and Average
- Current per phase and Average with calculated Neutral
- P, Q, S, 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 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 P per phase
- Total Fundamental P & Total Harmonic P
- U and I Symmetrical Components
- kvarh Q1-Q4
- Interval Energy for kWh/kvarh Imp/Exp and kVAh
- Present, Predicted and Max. Demands for P/Q/S Total and per phase Current with Timestamp for This Month & Last Month (or Since Last Reset & 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
    - Total and 3-phase kWh/kvarh Import/Export, kVAh
    - P/Q/S 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 and 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, I4, Freq., P, Q, S, PF, Unbalance, K-factor, Crest Factor and THD.
- Configurable for This Month & Last Month (or Since Last Reset & Before Last Reset)

#### Freeze Logs (Optional)

- 60 Daily Freeze Logs for kWh/kvarh/kVAh Total and P/Q/S Max. Demands
- 36 Monthly Freeze Logs for kWh/kvarh/kVAh Total and P/Q/S Max. 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
- P Direction per phase and Total, Incorrect CT Polarity
- Incorrect U & I Phase Sequence

#### Communications

- Optically isolated RS-485 port at max. 38,400 bps
- Selectable Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Optional 2<sup>nd</sup> RS-485 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, 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
- 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
- RS-485 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 sensors not included)
- 1xAI and 1xAO (0/4-20mA)



**Accuracy**

Parameters	Accuracy	Resolution
Voltage	±0.2%	0.001V
Current	±0.2%	0.001A
I4 (measurement)	±0.2%	0.001A
P, Q, S	±0.5%	0.001k
kWh, kVAh	IEC 62053-22 Class 0.5S ANSI C12.20 Class 0.2 EN 50470-1/3: 2006 Class C	0.1kxh
kvarh	IEC 62053-24 Class 0.5S IEC 62053-23 Class 2	0.1kvarh
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**

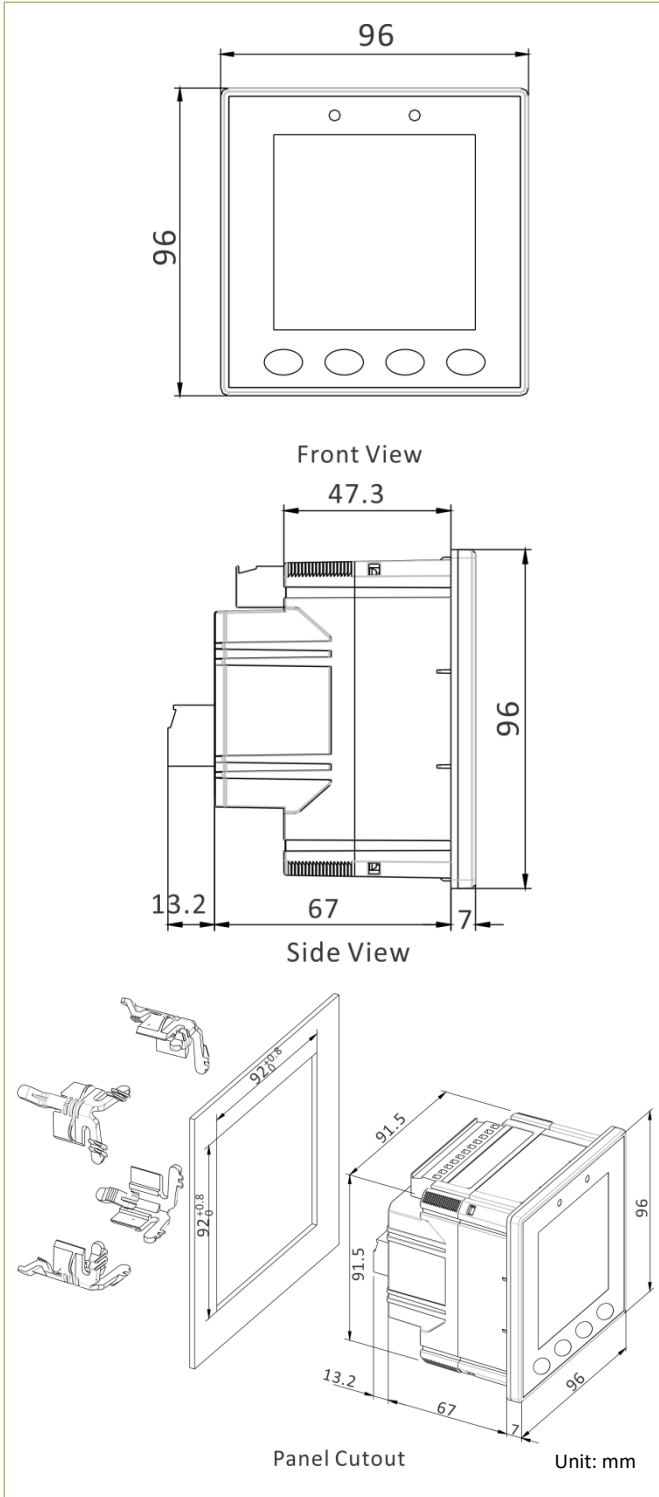
Voltage Inputs (V1, V2, V3, VN)	
Standard Un	400ULN/690ULL
Range	10V to 1.2Un
Overload	1.2xUn continuous, 2xUn for 1s
Burden	<0.02VA per phase
Measurement Category	CAT III up to 600ULL
Frequency	45-65Hz
Current Inputs (I11, I12, I21, I22, I31, I32)	
Standard In	5A (Optional 1A)
Range	0.1% to 200% In
Starting Current	0.1% In
Overload	2xIn continuous, 20xIn for 1s
Measurement Category	CAT III up to 600ULL
Burden	<0.15VA per phase @ 5A
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-)	
Standard	95-250VAC/DC, ±10%, 47-440Hz
Optional	20-60VDC
Burden	<2W
Overvoltage Category	CAT III up to 300ULN
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
Load Type	Resistive
Pulse Outputs (E1+, E1-, E2+, E2-)	
Type	Form A Solid State Relay
Isolation	Optical
Load Type	Resistive
Output	Optocoupler output as ON-OFF
Max. Load Voltage	50VDC
Max. Forward Current	50mA
Installation Torque	
Current Inputs	12lb-in (1.3 N.m)
Power Supply, Voltage Inputs, RS-485 and I/O	5lb-in (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
Altitude	< 2000m
Location / Mounting	For indoor use only
Mechanical Characteristics	
Panel Cutout	92x92 mm (3.62"x3.62")
Unit Dimensions	96x96x88 mm
IP Rating	IP65

**Standards of Compliance**

Safety Requirements	
CE LVD 2014 / 35 / EU	EN 61010-1: 2010
cULus Listed	EN 61010-2-030: 2010
	UL 61010-1, Ed. 3
	CAN/CSA C22.2 NO. 61010-1-12, Ed. 3
	UL 61010-2-030, Ed. 2
	CSA C22.2 NO. 61010-2-030: 18, Ed. 2
MID per 2014/32/EU	UL 61010-2-201, Ed. 2
	CSA C22.2 NO. 61010-2-201 Ed. 2
	EN 50470-1: 2006
Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc	EN 50470-3: 2006
	IEC 61557-12: 2018 (PMD)
Insulation	IEC 62052-11: 2003
	IEC 62053-22: 2003
	EN 50470-1: 2006
AC Voltage: 4kV @ 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: 2014+A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN 61000-4-11:2004+A1: 2017
Ring Wave	EN 61000-4-12: 2017
Emission Tests	
Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment	EN 55011: 2016
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	EN 55032: 2015
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
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
Revenue Metering Type Test Approval	
MID per EU Directive 2014/32/EU	Certificate No: 0120/SGS0427
NMIM of Malaysia per OIML R46	Approval No.: ATS-0026-20



**Device View and Dimensions**

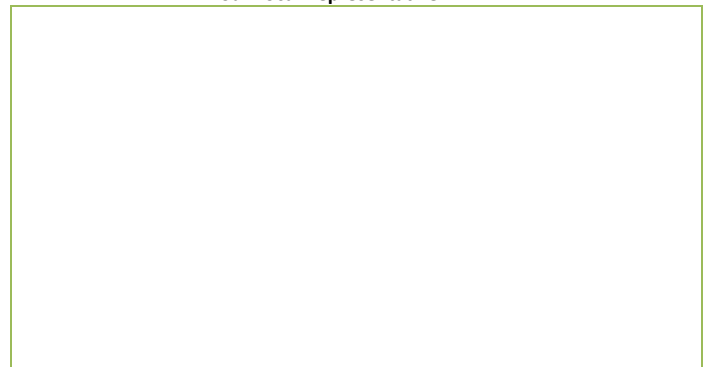


**Ordering Information**

Product Code		Description
PMC-53A Intelligent Multifunction Meter		
<b>Basic Function*</b>		
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 + 2xDO (Mechanical Relay)	
B*	Model A + Monthly & Daily Freeze Log, Data Recording Log, 4MB Memory	
<b>Input Current</b>		
5	5A/1A Auto-Scaling (Class 0.5S for 5A and Class 1 for 1A)	
1	1A	
<b>Input Voltage</b>		
9	400ULN/690ULL	
<b>Power Supply</b>		
2	95-250 VAC/DC, 47-440Hz	
3	20-60VDC	
4	95-480 VAC/DC, 47-440Hz	
<b>Frequency</b>		
5	45Hz-65Hz	
<b>Language</b>		
E	English	
<b>Expansion A*</b>		
A1	1xRS-485	
A2	I4 (5A/1A Auto-Scaling)	
<b>Expansion B*</b>		
B1	2xDI + 2xDO (Mechanical Relay)	
B2	2xRTD (PT100 sensors not included)	
B3	1xAI + 1xAO (0/4-20mA)	
B4	2xDI + 2xSS Pulse Output	
PMC-53A - 1 5 9 2 5 E - -		PMC-53A-15925E (Standard Model)

\* Additional charges apply  
 \* Models PMC-53A-X5925E (X=1, 2, 3, A, B) are certified for MID Class C.  
 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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Revision Date: August 28, 2020