PMC-53A
Intelligent Multifunction Meter

- IEC 62053-22 Class 0.2S*/Class 0.5S
- ANSI C12.1 Class 0.2
- MID Class C Certified
- True RMS @ 128* Samples/Cycle
- THD with 63rd* Ind. Harmonics
- K-Factor, Crest Factor and TDD
- Unbalance & Phase Angle
- Multi-Tariff TOU & Demands
- Max./Min. Log with Timestamps
- Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Large, Backlit Dot-Matrix LCD
- 1-Cycle Real-Time WF display
- Optional 16MB Log Memory
- Carbon Emission^
- 12 Monthly Energy Log & SOE Log
- I/O Expansion Capabilities
- IP65 Enclosure with No Openings
- Standard Tropicalization
- Industrial Grade Components
- Extended Operating Temperature
- Extended Warranty

*The PMC-53A with Firmware V2.00.00 or later supports the selection of Class 0.2S accuracy model and features enhanced capabilities, including an upgrade from 31st to 63rd individual harmonics, a sampling upgrade from 64 Sample/Cycle to 128 Sample/Cycle true RMS, and an expansion of log memory from 4MB to 16MB. ^ The Carbon Emission metering function is availabe in Firmware V2.00.02 or later.

Designed For Reliability *Manufactured To Last*

PMC-53A
Intelligent Multifunction Meter

The PMC-53A Intelligent Multifunction Meter is CET's latest offer for the low-cost digital power/energy metering market. The PMC-53A features quality construction, multifunction measurements and a large, backlit, Dot-Matrix LCD display that is easy to navigate and user friendly. Housed in a standard DIN form factor measuring 96x96x83.6mm, it is perfectly suited for industrial, commercial and utility applications. Compliance with the IEC 62053-22 Class 0.2S/0.5S, ANSI C12.1 Class 0.2 and EN 50470-1/3 Class C, 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 RS-485 port, up to six Digital Inputs for status monitoring, pulse counting or Tariff switching, up to four Relay Outputs for control and alarm applications, up to two Solid State Relays for energy pulsing 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
- Retrofit applications with Split-Core Current Transformers and Rogowski Coils

Features Summary

Basic Measurements

- ULN, ULL per Phase and Average with calculated Neutral-to-Ground Voltage (Ung)
- Current per Phase and Average with calculated Neutral
- Current Loading Factor per Phase and Average
- 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 63rd*
- Current TDD, TDD Odd, TDD Even, K-Factor and Crest Factor
- U and I Phase Angle
- U Over/Under Deviation and Frequency Deviation*
- Displacement PF
- Fundamental U, I and P per Phase
- Total Fundamental P & Total Harmonic P
- U and I Unbalance and Sequence
- kvarh Q1-Q4
- Interval Energy for kWh/kvarh Import/Export and kVAh
- Demands, Predicted Demands and Max. Demands for P/Q/S Total, I per Phase and Average as well as ULL Average 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
  - 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 configuration software
- Easy installation with mounting clips, no tools required

Carbon Emission Metering^

- Carbon Emission measurements for This Month & This Year & Total Cumulative
- Configurable Carbon Emission Factor and Associated kWh Imp./Exp. for both Transmission & Distribution Lines and Load-side Power Generation Equipment
- Storage of up to 12 monthly and 12 annual historical Carbon Emission logs

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 ±1ms 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 Timestamp

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

Real-Time Clock

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

Communications

- Standard 1 Optically isolated RS-485 port at max. 38,400 bps
- Selectable Modbus RTU, BACnet MS/TP, Metasys N2 and DNP 3.0
- Optional 2nd comm. port with RS-485 Modbus RTU at max. 115,200 bps/ PROFIBUS DP~ at max. 1,500 kbps support

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 2 Form A Solid State Relays for kWh and kvarh pulsing

*These features were upgraded since Firmware V2.00.00.
~ The PROFIBUS DP is available in Firmware V2.00.01 or later.
^ The Carbon Emission metering function is availabe in Firmware V2.00.02 or later.

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Expansion Modules

Expansion Module A Options

- I4 Input
- 2nd comm. port with optical isolation, supporting Modbus RTU at max. 115,200 bps /PROFIBUS DP~ at max. 1,500 kbps

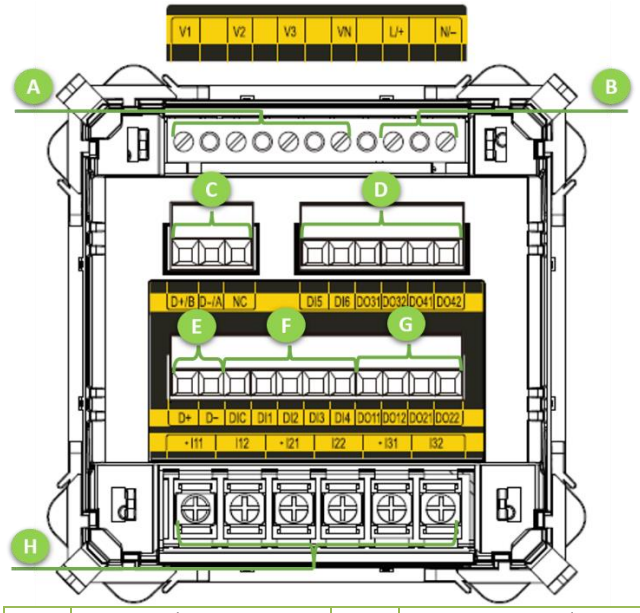
Expansion Module B Options

- 2xDigital Input and 2xRelay Output
- 2xRTD Input (PT100 sensors not included)
- 1xAI and 1xAO (0/4-20mA)
- 2xAO (0/4-20mA)

Accuracy

Parameter	Accuracy			Resolution
	5A/1A Input		SCCT/ Rogowski Coil	
	Class 0.2S	Class 0.5S		
Voltage	±0.1%	±0.2%	±0.5%	0.001V
Current	±0.1%	±0.2%	±0.5%	0.001A
I4	±0.1%	±0.2%	±0.5%	0.001A
P, Q, S	±0.2%	±0.5%	±1%	0.001kX
kWh, kVAh	IEC 62053-22 Class 0.2S IEC 62053-22 Class 0.5S ANSI C12.1 Class 0.2 EN 50470-1/3: 2006 Class C		IEC 62053-21 Class 1	0.1kXh
kvarh	IEC 62053-24 Class 0.5S IEC 62053-23 Class 2		IEC 62053-24 Class 1 IEC 62053-23 Class 2	0.1kvarh
PF	±0.2%	±0.5%	±1%	0.001
Freq.	±0.01Hz	±0.02Hz	±0.02Hz	0.01Hz
THD	IEC 61000-4-7 Class II			0.01%
K-Factor	IEC 61000-4-7 Class II			0.001
Phase Angle	±1°			0.1°

Terminals Diagram



A	3xVoltage Input	B	Power Supply
C	Expansion Module A	D	Expansion Module B
E	1xRS-485 Port	F	4xDigital Input
G	2xDigital Output	H	3xCurrent Input

~ The PROFIBUS DP is available in Firmware V2.00.01 or later.

Technical Specifications

Voltage Inputs (V1, V2, V3, VN)	
Standard Un	400VLN/690VLL
Range	10V to 2Un
Overload	2xUn continuous, 5xUn for 1s
Burden	<0.02VA per phase
Measurement Category	CAT III 600V
Frequency	45-65Hz
Current Inputs (·I11, I12, ·I21, I22, ·I31, I32, Optional ·I41, I42)	
Standard In	5A (Optional 1A)
Range	0.1% to 200% In
Starting Current	0.1% In
Overload	2xIn continuous, 20xIn for 1s
Burden	<0.15VA per phase @ 5A
CT Options[1]	
SCCT	100A/200A/400A/800A/1600A to 40mA
Rogowski Coils	400A/1200A/2500A/5000A to 40mA
Power Supply (L/+, N/-)	
Standard	60-250VAC ±10%, 47-440Hz 24-250VDC ± 10%
Burden	<6W
Overvoltage Category	OVC III up to 300VLN
Digital Inputs[2] (DI1, DI2, DI3, DI4, DI5, DI6, DIC)	
Type	Dry contact, 24VDC internally wetted
Sampling	1000Hz
Hysteresis	1ms minimum
Digital Outputs[2] (DO11, DO12, DO21, DO22, DO31, DO32, DO41, DO42)	
Type	Form A Mechanical Relay
Loading	5A @ 250VAC or 30VDC
Load Type	Resistive
Pulse Outputs[2] (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
Analog Input[2] (AI+, AI-)	
Type	0/4-20 mA
Overload	24mA
Analog Outputs[2] (AO+, AO- or AO1+, AO1-, AO2+, AO2-)	
Type	0/4-20 mA DC
Loading	500Ω maximum
Overload	24mA maximum
RTD Inputs[2] (TC11, TC12, TC21, TC22)	
Type	Platinum Resistor PT100 (Sensor Not Included)
Range	-50°C to 200°C
Cable Length	3000mm
Protective Tube Length	30mm
Tightening Installation Torque	
Current Inputs	7.1 kgf.cm/6.28 lb-in/0.7 N.m/M3.5
Power Supply, Voltage Inputs, RS-485 and I/O	4 kgf.cm/3.54 lb-in/0.4 N.m/M3
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
Pollution Degree	2
Location / Mounting	For indoor use only
Mechanical Characteristics	
Panel Cutout	92x92mm (3.62"x3.62")
Unit Dimensions	96x96x83.6mm
IP Rating	IP65

Notes:

1. The CT Options are available in Firmware V2.00.01 or later.
2. Optional I/O options

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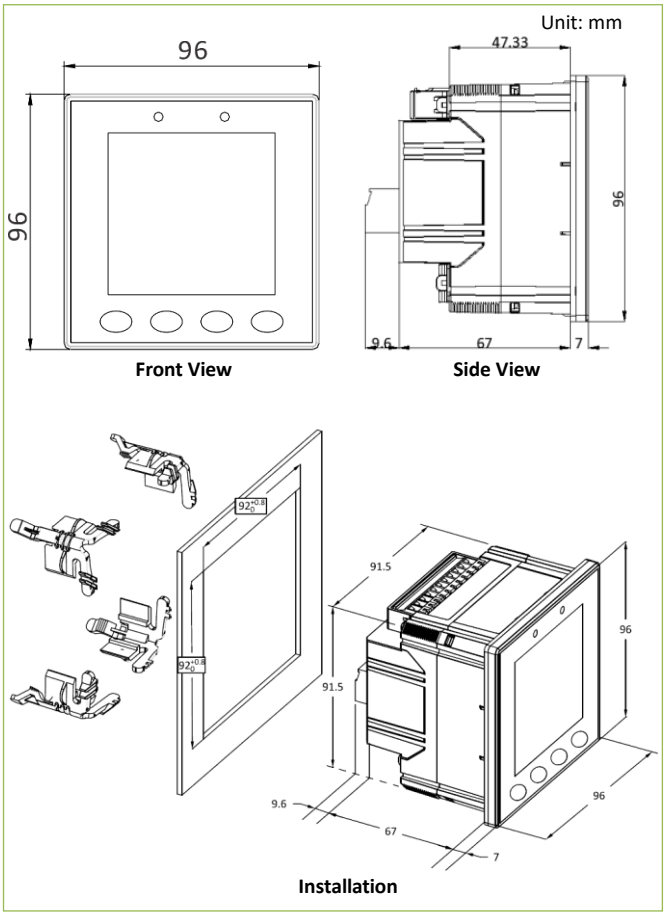
Standards of Compliance

Safety Requirements	
CE LVD 2014 / 35 / EU	EN 61010-1: 2010+A1: 2019 EN IEC 61010-2-030: 2021+A11:2021
cULus Listed	UL 61010-1, Ed.3, Rev 06/06/2023 CAN/CSA C22.2 NO. 61010-1, Ed.3 UL 61010-2-030, Ed.2 CSA C22.2 NO. 61010-2-030: 18, Ed.2
MID per 2014/32/EU	EN 50470-1: 2006 EN 50470-3: 2006
Electrical Safety in Low Voltage Distribution Systems up to 1000 Vac and 1500 Vdc	IEC 61557-12: 2021 (PMD)
Insulation AC Voltage: 3.6kV @ 1 minute Insulation Resistance: >100MΩ Impulse Voltage: 6kV, 1.2/50µs	EN 61010-1: 2010+A1: 2019 IEC 62052-31: 2015
Electromagnetic Compatibility CE EMC Directive 2014 / 30 / EU (EN IEC 61326: 2021)	
Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN IEC 61000-4-3: 2020
Fast Transients	EN 61000-4-4: 2012
Surges	EN 61000-4-5: 2014+A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014+AC: 2015
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN IEC 61000-4-11: 2020
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+A1: 2017+A11: 2020+A2: 2021
Electromagnetic Compatibility of Multimedia Equipment - Emission Requirements	EN 55032: 2015+ A11: 2020+A1: 2020
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16 A	EN IEC 61000-3-2: 2019+A1: 2021
Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤16 A	EN 61000-3-3: 2013+A1: 2019+A2: 2021
Emission Standard for Industrial Environments	EN IEC 61000-6-4: 2019
Radiated Emissions	FCC 47CFR Part 15 Subpart B Class B ANSI C63.4: 2014
Conducted Emissions	FCC 47CFR Part 15 Subpart B Class B ANSI C63.4: 2014
Mechanical Tests	
Spring Hammer Test	IEC 62052-31: 2015
Vibration Test	IEC 62052-11: 2020
Shock Test	IEC 62052-11: 2020
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
BACnet Conformance Certificate	
BTL Listing	Certificate No.: BTL-31239

Device Views and Installation



Front View | Side View

Installation

Accessories

Split-Core CT for Current Input	
Models	PMC-SCCT-100A-40mA-16-A (100A, Ø=16mm) PMC-SCCT-200A-40mA-24-A (200A, Ø=24mm) PMC-SCCT-400A-40mA-35-A (400A, Ø=35mm) PMC-SCCT-800A-40mA-A (800A, 80x50mm) PMC-SCCT-1600A-40mA-A (1600A, 130x55mm)
Primary Input	100A/200A/400A/800A/1600A
Secondary Output	40mA
Range	0.15%-120%In
Accuracy	Class 0.5
Frequency	50Hz / 60Hz
Operating Temp.	-20°C to +50°C

100A/200A/400A SCCT

800A/1600A SCCT

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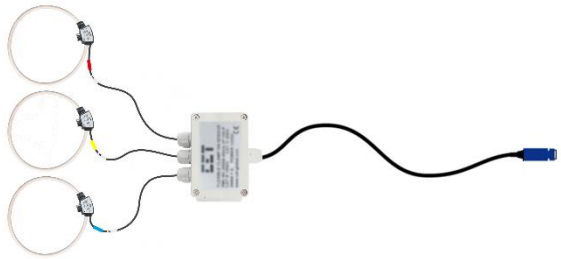
Accessories

Rogowski Coils for Current Input	
Models	
3-Phase	PMC-RC-400A-40mA-3P-100-PY-W-F (Ø=100mm)
	PMC-RC-1200A-40mA-3P-150-PY-W-F (Ø=150mm)
	PMC-RC-2500A-40mA-3P-200-PY-W-F (Ø=200mm)
	PMC-RC-5000A-40mA-3P-350-PY-W-F (Ø=350mm)
1-Phase	PMC-RC-400A-40mA-1P-100-PY-W-N (Ø=100mm)
	PMC-RC-1200A-40mA-1P-150-PY-W-N (Ø=150mm)
	PMC-RC-2500A-40mA-1P-200-PY-W-N (Ø=200mm)
	PMC-RC-5000A-40mA-1P-350-PY-W-N (Ø=350mm)
Primary Input	400A/1200A/2500A/5000A
Secondary Output	40mA
Accuracy	0.5%, (5%-110%) In @25°C
Linearity	±0.2% F.S. (10% to 110%) In
Bandwidth	30Hz to 5kHz
Burden	≤5W
Power Supply	10-25 VDC
Storage Temp.	-40°C to 85°C
Operating Temp.	-25°C to 70°C
Humidity	≥80% non-condensing
Frequency	50Hz / 60Hz
Insulation Voltage	5kV
Overvoltage Category	1000V CAT III, 600V CAT IV



3-Phase Rogowski Coil

1-Phase Rogowski Coil

Optional Extension Cable for Rogowski Coil	
Models	**For 3-Phase Rogowski Coil**
	SP13-F-M-5 (5m extension cable with SP13-9)
	SP13-F-M-10 (10m extension cable with SP13-9)
	For 1-Phase Rogowski Coil
	SP13-4-F-M-5 (5m extension cable with SP13-4)
	SP13-4-F-M-10 (10m extension cable with SP13-4)

10-25 VDC Power Supply for Rogowski Coil

Ordering Information

Version 20250620

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, 16MB 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, 16MB Memory
Input Current	
5	5A (5A/1A Auto-Scaling)
1	1A
4	For use with 100A, 200A, 400A, 800A, 1600A to 40mA Split-Core CTs and 400A, 1200A, 2500A, 5000A to 40mA Rogowski Coils
Input Voltage	
9	400VLN/690VLL
Power Supply	
2	60-250 VAC ± 10%, 47-440Hz 24-250 VDC ± 10%
Frequency	
5	45Hz-65Hz
Language	
E	English
Expansion A*	
A1	1xRS-485 / 1xProfibus DP
A2^	I4
Expansion B*	
B1	2xDI + 2xDO (Mechanical Relay)
B2	2xRTD (PT100 sensors not included)
B3	1xAI + 1xAO (0/4-20mA)
B5	2xAO
Accuracy	
2*	Class 0,2S for Active Energy
" "	Class 0,5S for Active Energy

PMC-53A	-	1	5	9	2	5	E	-			-	2	PMC-53A-15925E-2 (Class 0,2S Standard Model)
PMC-53A	-	1	5	9	2	5	E	-			-		PMC-53A-15925E (Class 0,5S Standard Model)

* Additional charges apply

Models PMC-53A-X5925E (X=1, 2, 3, A, B) are certified for MID Class C.

^ I4 specifications of Expansion A2 are consistent with those of the selected Input Current Option.

1) Model No. with no Expansion A or B can be written as PMC-53A-15925E-X (X=2 or Null)

2) Model No. with only one Expansion can be written as PMC-53A-15925E-Ax-X or PMC-53A-15925E-Bx-X (X=2 or Null)

3) Model No. with both Expansions can be written as PMC-53A-15925E-Ax-Bx-X (X=2 or Null)

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

Your Local Representative

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Revision Date: January 16, 2026