

CET



PMC-53M-A

Intelligent Multifunction Meter

Intelligent Multifunction Meter



PMC-53M-A Digital Multifunction Meter is CET's latest offer for the lowcost digital power/energy metering market. Housed in a standard DIN form factor measuring 96x96x83.6mm, it is perfectly suited for industrial, commercial and utility applications. The PMC-53M-A features quality construction, multifunction true RMS measurements and a large, backlit, 7-segment LCD. Compliance with the IEC 62053-22 Class 0.5S, 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-53M-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 configuration software
- Easy installation with mounting clips, no tools required

SOE Log

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

Setpoints

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

Multifunction True RMS Measurements

- ULN, ULL per Phase and Average
- Current per Phase and Average with calculated Neutral Current
- P, Q, S, 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 63rd*
- Current TDD, TDD Odd, TDD Even, K-Factor and Crest Factor
- ULN, ULL Over/Under Deviation and Frequency Deviation*
- U and I Phase Angles
- Displacement PF
- Fundamental U, I and P per Phase
- Total Fundamental P & Total Harmonic P
- U and I Unbalance and Sequence
- kvarh Q1-Q4
- Present, Predicted Demands 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)

Max./Min. Log

- Max./Min. Log with Timestamp for Real-time measurements such as Voltage, Current, In, 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)

Diagnostics

- Frequency Out-of-Range, Loss of Voltage/Current
- P 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
- Easy integration into other Automation, SCADA or BMS systems via Modbus RTU

Optional Inputs and Outputs

System Integration

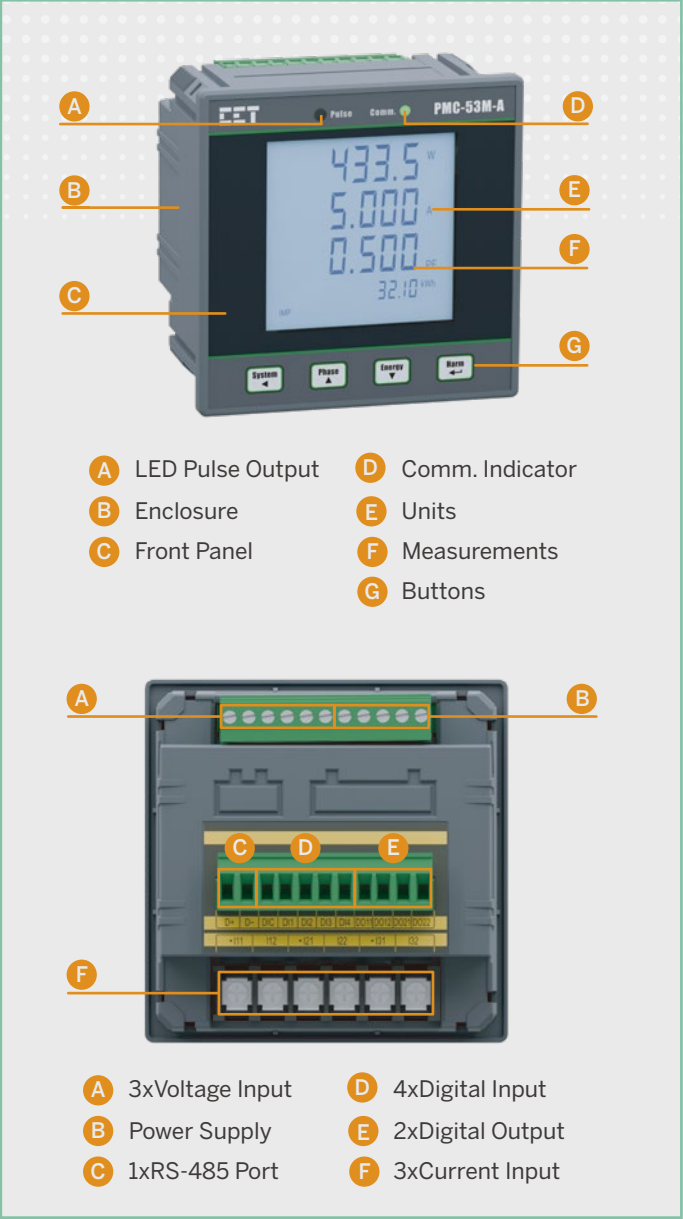
- 4 channels, volt free dry contact, 24VDC internally wetted
- 1000Hz sampling for status monitoring with programmable debounce
- Pulse counting with programmable weight for each channel for collecting WAGES (Water, Air, Gas, Electricity, Steam) information

Digital Outputs

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

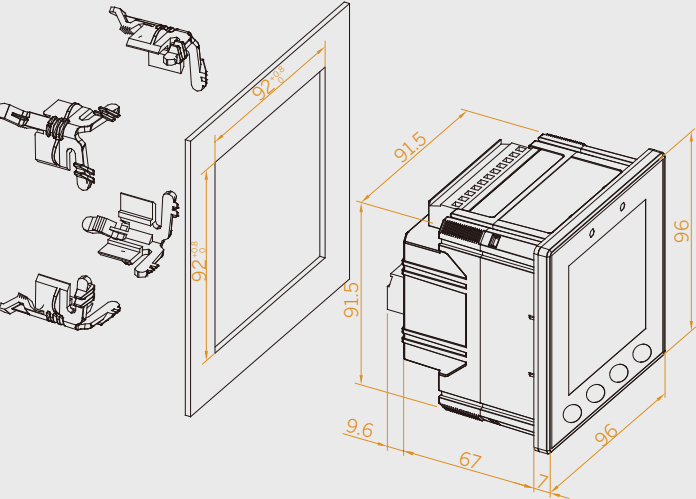
*These features are upgraded in the PMC-53M-A V2 and later versions

Front Panel & Rear Panel



Dimensions and Installation

Unit: mm



Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.2%	0.001V
Current	±0.2%	0.001A
P, Q, S	±0.5%	0.001kX
kWh, kVAh	IEC 62053-22 Class 0.5S	0.01kXh
kvarh	IEC 62053-24 Class 0.5S, IEC 62053-23 Class 2	0.01kvarh
PF	±0.5%	0.001
Frequency	±0.02Hz	0.01Hz
THD	IEC 61000-4-7 Class II	0.001%
K-Factor	IEC 61000-4-7 Class II	0.001
Phase Angle	±1°	0.1°

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)	
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
Burden	<0.15VA per phase
Power Supply (L+, N-)	
Standard	60-250VAC ±10%, 47-440Hz 24-250VDC ±10%
Burden	<2W
Overvoltage Category	OVC 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
Load Type	Resistive
Installation Torque	
Current Inputs	7.1 kgf.cm/6.28 lb-in/0.7 N.m/M3.5
Power Supply, Voltage Inputs, RS-485, I/O	4 kgf.cm/3.54 lb-in/0.4N.m/M3
Environmental Conditions	
Operating Temperature	-25°C to +70°C
Storage Temperature	-40°C to +85°C
Humidity	5% to 95% non-condensing
Atmospheric Pressure	70kPa to 106kPa
Altitude	< 2000m
Pollution Degree	2
Location/Mounting	For indoor use only
Mechanical Characteristics	
Unit Dimensions	96x96x83.6 mm
Panel Cutout	92x92 mm (3.62"x3.62")
IP Rating	IP65

Standards of Compliance

Safety Requirements

CE LVD 2014/35/EU	EN 61010-1: 2010 +A1: 2019 EN IEC 61010-2-030: 2021 +A1: 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
Electrical Safety in Low Voltage Distribution Systems Up to 1000Vac 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

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 +A1:2020 +A2: 2021
Electromagnetic Compatibility of Multimedia Equipment-Emission Requirements	EN 55032: 2015 +A1: 2020 +A1: 2020
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16A	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

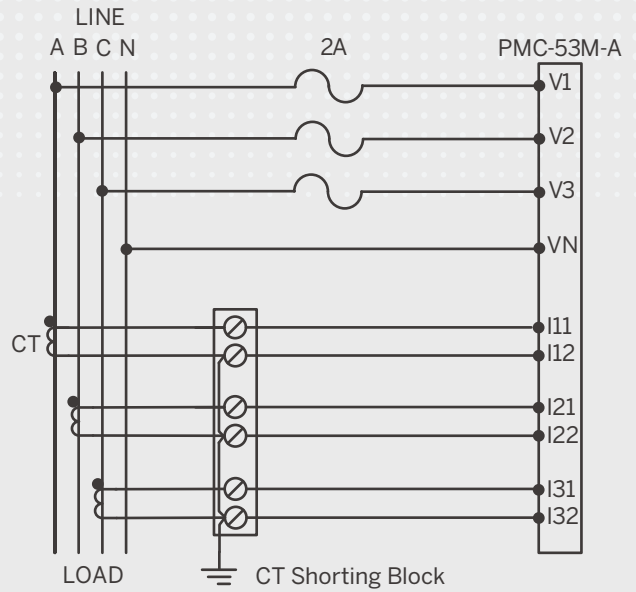
Spring Hammer Test	IEC 62052-31: 2015
Vibration Test	IEC 62052-11: 2020
Shock Test	IEC 62052-11: 2020

Ordering Information

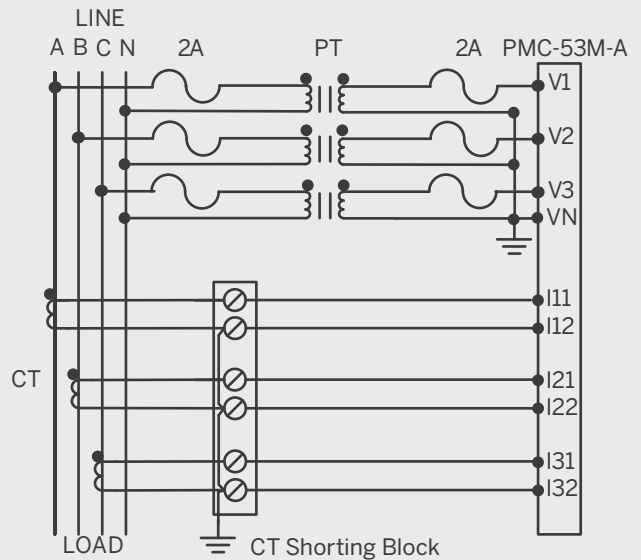
Product Code	Description
PMC-53M DIN96 Intelligent Multifunction Meter	
Basic Function	A 7-segment LCD
Input Current	5 5A/1A Auto-Scaling
Input Voltage	9 400VLN/690VLL
Power Supply	2 60-250 VAC ±10%, 47-440Hz 24-250 VDC ±10%
Frequency	5 45Hz-65Hz
I/O	X None B* 4×DI + 2×DO
Comm. Ports	A 1×RS-485
Language	E English
PMC-53M	- A - 5 9 2 5 X A E PMC-53M-A-5925XAE (Standard Model)

*Additional charges apply

Typical Wiring Diagrams



3P4W with 3CTs and no PTs



3P4W with 3CTs and 3PTs

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Your Local Representative

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