PMC-351

Smart DIN Energy Meter

www.cet-global.com

PMC-351

Overview

PMC-351 Smart DIN Energy Meter is CET's latest offer for the Medium-and-Low Voltage Power/Energy metering market. Equipped with an industrial-grade microprocessor in 1P compact size, it boasts high processing speed and the capability to achieve 64 Samples/Cycle. It provides high-accuracy true RMS measurements of up to two channels of single-phase or three-phase voltage, current, and power, and additionally features rapid refresh response for anti-reverse power flow data. Moreover, the PMC-351 is packed with functions including Demand, Power Quality, Setpoint, SOE as well as Wiring Diagnosis. It supports the connection of Split-Core CT and offers various optional wired and wireless communication modes, including WiFi, Bluetooth, Ethernet and RS-485. Thus, the PMC-351 becomes an ideal component for online monitoring and wireless communication in Balcony/Household PV Energy Storage Systems, Commercial and Industrial Power Systems, as well as Low-Voltage Distribution Systems.

Typical Applications

- Balcony PV Energy Storage System
- Residential PV Energy Storage System
- Residential Multi-Inverter AC Coupling System
- Industrial and Commercial Power System
- AC Medium-and-Low Voltage Distribution System

Features Summary

Ease of use

- Easy installation with DIN Rail mounting, no tools required
- Simple commissioning and low-deployment cost with Split-Core CT and wireless communications
- Press-Fit plug-in terminals and antenna plug-in interfaces simplify construction and wiring

Basic Measurements (Refresh cycle: 1s)

- 1-Φ SMs (1-Φ SM option)
  - Voltage and Frequency
  - I, I Angle, P/Q/S, PF, Fundamental PF/P and Harmonic P for SM1 and/or SM2
  - kWh/kvarh Import/Export/Net/Total, kVAh and kvarh Q1-Q4 for SM1 and/or SM2
  - Present Demands for Current and P/Q/S
  - Device Operating Time (Running Hours)
- 3-Φ SMs (3-Φ SM option)
  - ULN, ULL per Phase and Average and Frequency
  - I per Phase and Average, In (calculated) for SM1 and/or SM2
  - P/Q/S and PF per Phase and Total for SM1 and/or SM2
  - U and I Phase Angles
  - Fundamental P/PF per Phase and Total, and Total Harmonic P for SM1 and/or SM2
  - 3-phase and Per-phase kWh/kvarh Import/Export/Net/Total, kVAh Total and kvarh Q1-Q4 for SM1 and/or SM2
  - Present Demands for per Phase Current and P/Q/S
  - Device Operating Time (Running Hours)

High-Speed Measurements (Refresh cycle: <100ms)

- 1-Φ SMs (1-Φ SM option)
  - Voltage and Frequency
  - I, P/Q/S, PF for SM1 and/or SM2
- 3-Φ SMs (3-Φ SM option)
  - ULN, ULL per Phase and Frequency
  - I per Phase, P/Q/S and PF per Phase and Total

Setpoints

- 10 user programmable Setpoints with extensive list of monitoring parameters including Voltage, Current, Frequency, Power and THD, Unbalance, Phase Reversal, Demands for SM1 and/or SM2, etc.
- Configurable thresholds, time delays and parameters

SOE Log

- 16 events time-stamped to ±1ms resolution
- Setup changes, Setpoint, Clear actions, etc.

Smart DIN Energy Meter

Anti-Reverse Power Flow

- High sampling rate of power and current measurements, and communicates with energy storage systems to achieve the anti-reverse power flow function
- Response Time RS-485 @ 50ms and Wi-Fi @100ms

Enhanced Measurements

- 1-Φ SMs (1-Φ SM option)
  - K-Factor and Crest Factor for Current
  - U and I THD, TOHD, TEHD and Individual Harmonics up to 31st
- 3-Φ SMs (3-Φ SM option)
  - K-Factor and Crest Factor for Current
  - U and I Unbalance, Components (Zero, Positive and Negative Sequence)
  - U and I THD, TOHD, TEHD and Individual Harmonics up to 31st

Built-in Web Interface

- Access Point (AP) and Station Access (STA) Modes
- Support access to data, network configuration and parameters setup via local PC or Mobile

Diagnostics

- Frequency Out-of-Range, Loss of Voltage / Current
- P Direction per Phase and Total
- Incorrect U & I Phase Sequence

Communications

- Optically isolated RS-485 port at 1.2 to 38.4 kbps, supporting Modbus RTU
- 1 optional Ethernet Port with Modbus TCP support #
- Optional Wi-Fi-enabled (2412-2484MHz) with AP/STA dual modes, supporting RPC protocol
- Optional Bluetooth (2402-2480MHz) connects to 3rd party Mobile Apps, supporting Modbus RTU

System Integration

- Supported by our PecStar® iEMS and free configuration software
- Easy integration into other Automation or SCADA systems via Modbus RTU/TCP protocol and various wireless communication modes

Official release for Expansion Communication Option "WBE" with an Ethernet Port is scheduled for Q4 2026.

Accuracy

Parameters	Accuracy	Resolution
Voltage	±0.5%	0.01V
Current	±0.5%	0.001A
P, Q, S	±1.0%	0.001kW/ kvar/kVA
kWh	IEC 62053-21:2020 Class 1	0.01kWh
kvarh	IEC 62053-24: 2020 Class 1	0.01kvarh
PF	±1.0%	0.001
Frequency	±0.02Hz	0.01Hz
THD	IEC 61000-4-7 Class II	0.01%

Technical Specifications

Voltage Inputs (L, N or L1, L2, L3, N)

Voltage (Un)	1-Φ SM	3-Φ SM
	230VLN	230VLN/400VLL
Range (V)	90V-276VAC	
Burden	<0.02VA/phase	
Overload	1.2xUn continuous, 2xUn for 1s	
Frequency	45-65Hz	

Current Inputs (CT or CT1, CT2)

Current (In)	40mA
Range	5%-120%In
Starting Current	0.08A
External 3-Φ SM SCCT	
Model	PMC-SCCT-100A-40mA-16-B
Accuracy	0.5
Aperture	Ø16mm
Cable Length	1m
External 1-Φ SM SCCT	
Model	PMC-SCCT-50A-40mA-16-A PMC-SCCT-100A-40mA-16-A PMC-SCCT-200A-40mA-24-A PMC-SCCT-400A-40mA-35-A PMC-SCCT-800A-40mA-A PMC-SCCT-1600A-40mA-A
Accuracy	0.5
Aperture	Ø16/Ø16/Ø24/Ø35/80*50/130*55 mm
Cable Length	2m
Burden	<0.15VA/phase
Overload	1.2xIn continuous, 10xIn for 10s, 20xIn for 1s

Power Supply

Standard	90-276VAC, Self-Powered via Uan (U1) ~
Burden	<3W

Communications

RS-485 (Standard)	
Protocol	Modbus RTU
Baud Rate	1.2/2.4/4.8/9.6/19.2/38.4 kbps
Ethernet (Optional) #	
Protocol	Modbus TCP
Speed	10/100 Mbps
Wi-Fi (Optional)	
Protocol	RPC
RF Range	2412-2484 MHz
Bluetooth (Optional)	
Protocol	Modbus RTU
RF Range	2402-2480 MHz

Environmental Conditions

Operating Temp.	-30°C to + 70°C
Storage Temp.	-40°C to + 85°C
Humidity	5% to 95% non-condensing
Atmospheric Pressure	70 kPa to 106 kPa
Pollution Degree	2

Mechanical Characteristics

Mounting	DIN Rail
Unit Dimensions	20x66x90 mm
IP Rating	IP30

~ When the 1-Φ SMs option is selected, the device is powered by L/+ and N/-. When the 3-Φ SMs option is selected, it is powered by L1/+ and N/-.

Official release for Expansion Communication Option "WBE" with an Ethernet Port is scheduled for Q4 2026.

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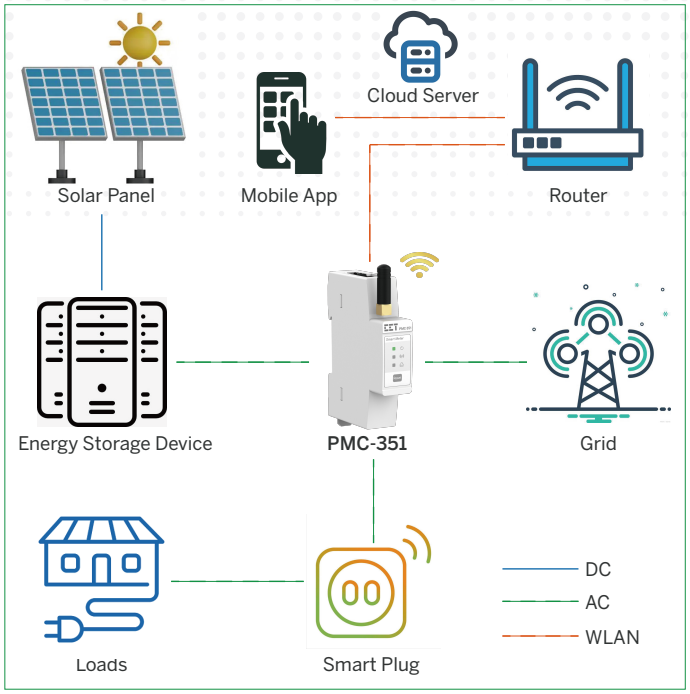
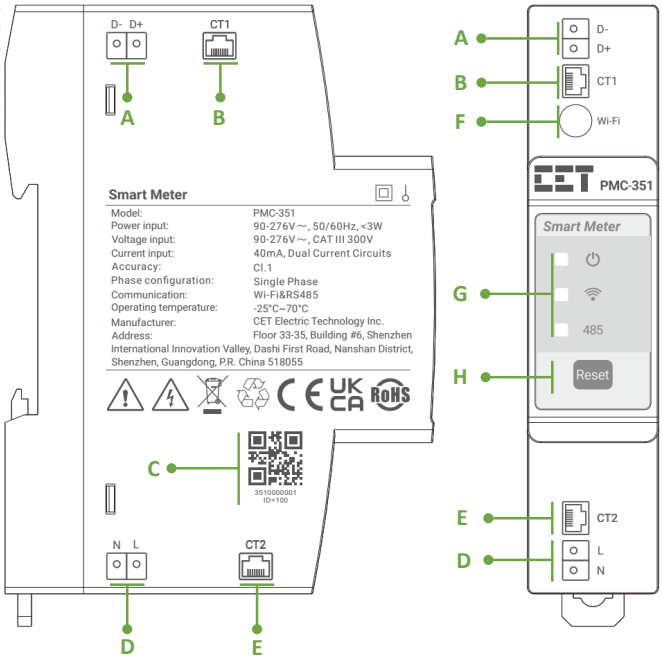
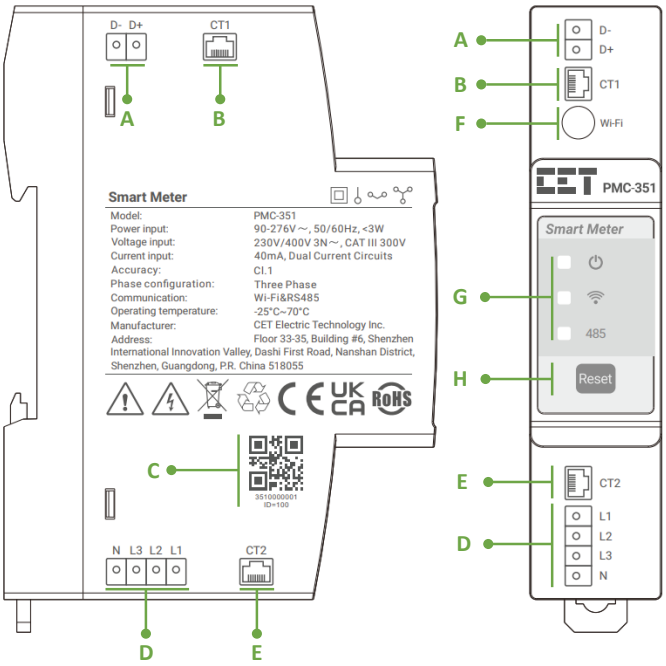
Application Diagram



Appearance and Terminals

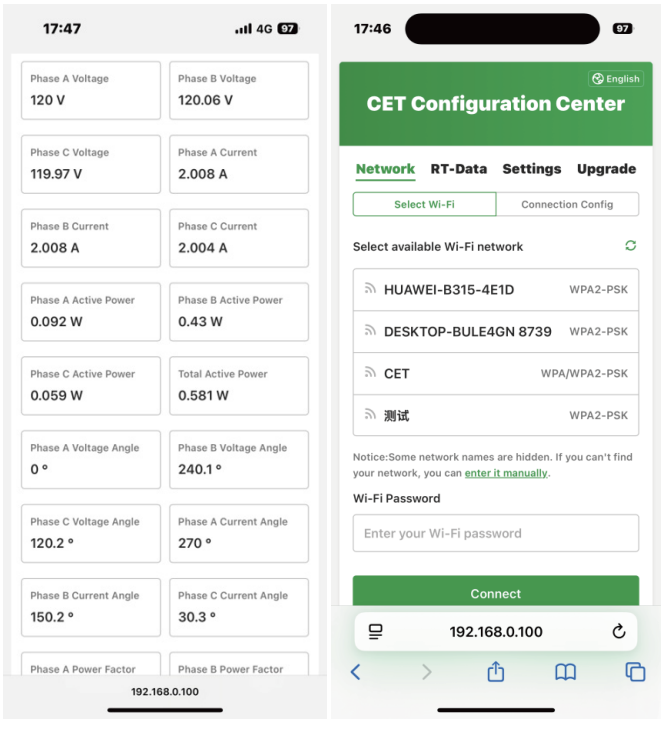


1-Φ SMs Option



3-Φ SMs Option

Web Interface



Area	Description	Area	Description
A	RS-485 Port	E	Optional SM2 Current Input
B	SM1 Current Input	F	Wi-Fi Antenna Interface
C	QR Code	G	LED Indicators (Power supply, Wi-Fi status, RS-485 status)
D	Voltage Inputs	H	Reset Button

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Standards of Compliance

Safety Requirements	
CE LVD 2014/35/EU	EN 61010-1: 2010 + A1 BS EN 61010-1: 2010 + A1 EN 61010-2-030: 2021 + A11: 2021 BS EN 61010-2-030: 2021 + A11: 2021
Electrical Safety in Low Voltage Distribution Systems up to 1000Vac and 1500 Vdc	IEC 61557-12: 2021 (PMD)
Insulation AC Voltage Insulation Resistance Impulse Voltage	IEC 62052-31: 2015 EN 61010-1: 2010 + A1 BS EN 61010-1: 2010 + A1 2kV @ 1 minute >100MΩ 6kV, 1.2/50μs

EMC Compatibility

CE EMC Directive 2014/30/EU (EN IEC 61326-1: 2021)

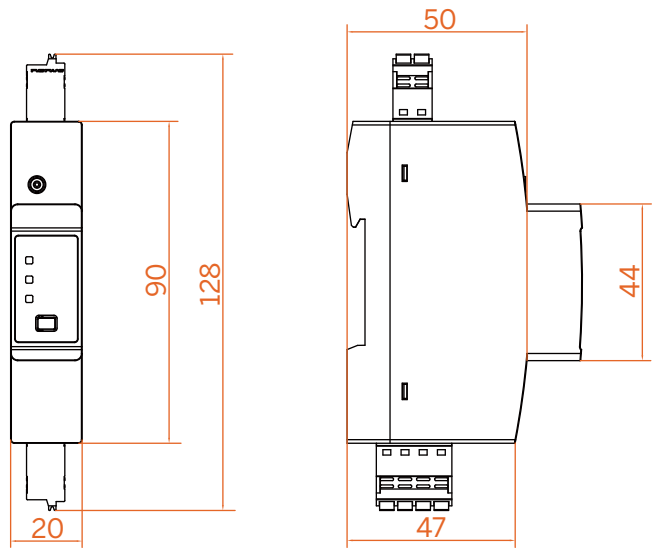
Immunity Tests	
Electrostatic Discharge	EN 61000-4-2: 2009
Radiated Fields	EN IEC 61000-4-3: 2020
Fast Transients	EN 61000-4-4: 2019
Surges	EN 61000-4-5: 2014 + A1: 2017
Conducted Disturbances	EN 61000-4-6: 2014 + AC: 2015
Magnetic Fields	EN 61000-4-8: 2010
Voltage Dips and Interruptions	EN IEC 61000-4-11: 2020
Ring Wave	EN 61000-4-12: 2017
Immunity standard for Residential, Commercial and Light-industrial Environments	EN IEC 61000-6-1: 2019
Immunity Standard for Industrial Environments	EN IEC 61000-6-2: 2019

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 + AC: 2016 + A11: 2020 + A1: 2020
Limits for Harmonic Current Emissions for Equipment with Rated Current ≤16A	EN IEC 61000-3-2: 2019 + A1 + A2
Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems for Equipment with Rated Current ≤16A	EN 61000-3-3: 2013 + A1: 2019 + A2: 2021
Emission Standard for Equipment in Residential Environments	EN IEC 61000-6-3: 2019
Emission Standard for Industrial Environments	EN IEC 61000-6-4: 2019
Electromagnetic Compatibility (EMC) Standard for Radio Equipment and Services; Part 1: Common Technical Requirements	EN 301 489-1 V2.2.3: 2019
Electromagnetic Compatibility (EMC) Standard for Radio Equipment and Services	EN 301 489-17 V3.3.1: 2024
Wideband Transmission Systems; Data Transmission Equipment Operating in the 2.4 GHz Band; Harmonized Standard for Access to Radio Spectrum	EN 300 328 V2.2.2: 2019
Assessment of Electronic and Electrical Equipment Related to Human Exposure Restrictions for Electromagnetic Fields (0 Hz to 300 GHz)	EN IEC 62311: 2020

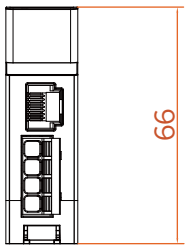
Mechanical Tests	
Spring Hammer Test	IEC 62052-31: 2015
Vibration Test	IEC 62052-11: 2020
Shock Test	IEC 62052-11: 2020

Installation and Dimensions

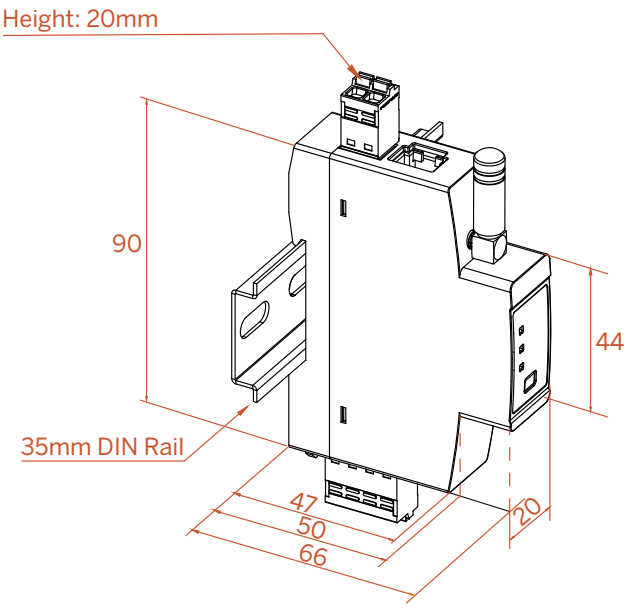
(Unit: mm)



Front View



Bottom



DIN-Rail Installation

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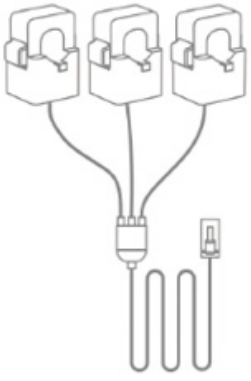
Accessories

1-Φ Split-Core CT



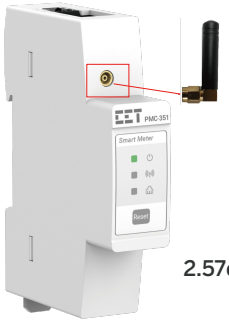
3-Φ Split-Core CT

Antennas

Note: The left-hand magnetic antenna comes as standard. If you need the rubber antenna, please contact CET for details.

Antenna Installation

2.0dBi Antenna Installation



2.57dBi Antenna Installation

Ordering Information

Product Code	Description
PMC-351 Smart DIN Energy Meter	
Basic Function: A5	Multifunction Measurements, 1xRS-485
Branch Feeders: 1	1x SM (1x1-Φ or 3-Φ Sub-Meters)
Branch Feeders: 2*	2x SM (2x1-Φ or 3-Φ Sub-Meters)
Input Current: 1	1-Phase 40mA Input for use with SCCT
Input Current: 3*	3-Phase 40mA Inputs for use with SCCTs
Input Voltage: 1	230VLN (-60% to + 20%), for 1-Phase application
Input Voltage: 3*	230VLN/400VLL (-60% to + 20%), for 3-Phase application
Power Supply: N	90-276VAC, Self-Powered from Uan (or U1)
Frequency: 5	45-65Hz
I/O: N	None
Expansion Comm.: R	1xRS-485
Expansion Comm.: WBE*	WiFi + Bluetooth + Ethernet
Expansion Comm.: WBR*	WiFi + Bluetooth + RS-485
Language: E	English
PMC-351 - A5 1 1 1 N 5 N R E	**PMC-351-A5111N5NRE (Standard Model)**

* Additional charges apply

1) Expansion Communication Option "WBE" is only available with Branch Feeders Option "1" + Input Current Option "3" + Input Voltage Option "3".

2) Input Current Option"1" is only available with Input Voltage Option"1", Input Current Option"3" is only available with Input Voltage Option"3"

3) Wi-Fi: Supports Wi-Fi 6 (802.11ax) in the 2.4 GHz band (2412-2484 MHz). The device supports concurrent AP and STA modes, facilitating both direct device connections and integration into existing local networks.

Bluetooth: Operates in the 2.4 GHz band (2402-2480 MHz) for seamless pairing and communication with companion mobile apps.

The WiFi AP mode and Bluetooth cannot operate simultaneously.

4) Please note that mass production for Expansion Communication Option "WBE" with an Ethernet Port is scheduled for Q4 2026.

Email: sales@cet-global.com
Website: www.cet-global.com

Your Local Representative

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