

DIN rail type multi-circuit Modbus RTU/TCP smart Power meter



Enabling ESG-driven Smart Energy Management

As ESG and sustainability initiatives become increasingly important, enterprises, industrial facilities and public infrastructure require greater visibility into energy consumption and operational efficiency. Accurate power monitoring provides the essential data foundation for smarter energy management, helping organizations optimize energy use and support measurable sustainability goals. In response to the trend and customer needs, PLANET announces a series of Smart Power Meter for smarter energy management and long-term ESG initiatives.

High-density Multi-circuit Power Monitoring

The PLANET **SPM-D05/D10 Series** is a line of DIN-rail multi-circuit power meters designed for centralized monitoring of multiple electrical circuits. The series consists of four models: the 5-circuit **SPM-D05** and **SPM-D05E**, and the 10-circuit **SPM-D10** and **SPM-D10E**. By integrating electrical measurement, power-quality analysis, data logging and Modbus communication into a compact unit, the series helps reduce installation space, wiring complexity and deployment costs in energy management applications.

Flexible 5-circuit and 10-circuit Configurations

The **SPM-D05** and **SPM-D05E** provide a 5-circuit configuration suitable for smaller distribution panels and applications with fewer monitored loads. The **SPM-D10** and **SPM-D10E** provide a 10-circuit configuration with two independent main circuits and up to **24 single-phase branch circuits or 8 three-phase branch circuits**. Their upper and lower current input groups are electrically isolated, allowing two independent power systems to be monitored by a single meter.

Product Type	Circuit Type	Model	Current Sensor Input	Power Supply	Primary Communication	Secondary Communication Option
DIN-rail Power Meter	5-circuit	SPM-D05	RC/MV 0–333 mV	AC 85–264 V / DC 100–300 V	RS-485 Modbus RTU	N/A
		SPM-D05E				Ethernet Modbus TCP
	10-circuit	SPM-D10				N/A
		SPM-D10E				Ethernet Modbus TCP

Highlights

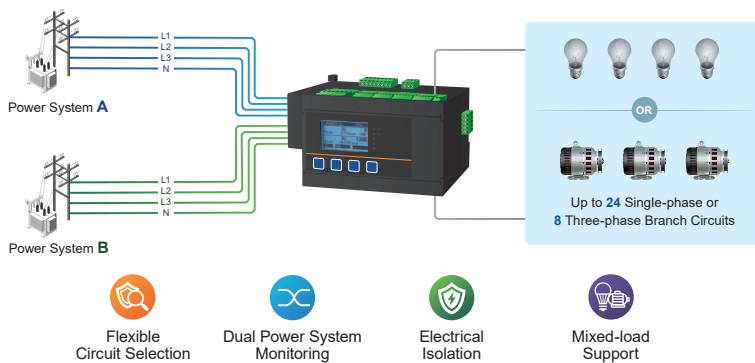
- 5-circuit **SPM-D05/SPM-D05E** and 10-circuit **SPM-D10/SPM-D10E** models
- Compact multi-circuit power monitoring for centralized energy management
- True RMS measurement with 256-point-per-cycle sampling
- 0.2% voltage and current measurement accuracy
- Class 0.5S active and reactive energy accuracy
- RS-485 Modbus RTU communication on all models
- Ethernet Modbus TCP support on **SPM-D05E** and **SPM-D10E**
- Built-in 2MB Flash memory for data logging
- Time-of-Use management with multiple time zones and tariff rates

Multi-circuit Measurement

- 5-circuit and 10-circuit configurations for different monitoring scales
- Two independent main circuits on **SPM-D10** and **SPM-D10E**
- Supports up to 24 single-phase or 8 three-phase branch circuits on the 10-circuit models
- Electrically isolated upper and lower current input groups on the 10-circuit models
- Suitable for monitoring two independent power systems
- Supports mixed single-phase and three-phase load monitoring
- Compatible with split-core current transformers for retrofit installation

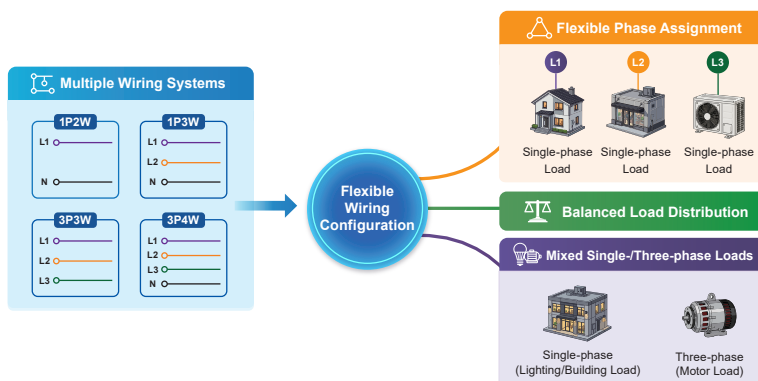
Electrical Measurement

- Voltage
- Current
- Frequency
- Active power
- Reactive power
- Apparent power
- Power factor
- Active energy
- Reactive energy
- Apparent energy
- Current and power demand
- Maximum and minimum value recording



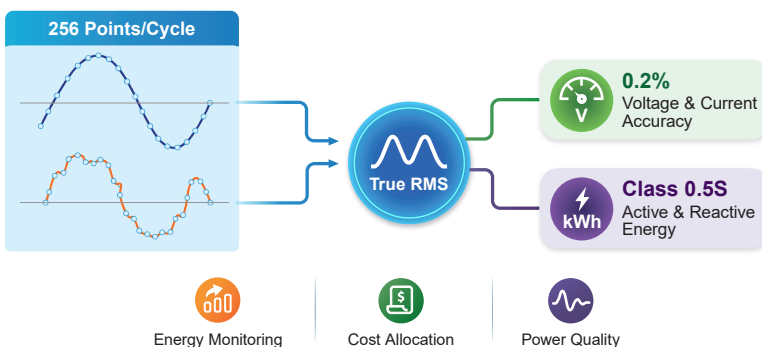
Flexible Wiring for Various Power Systems

Each group of three current inputs can be configured for **1P2W**, **1P3W**, **3P3W** or **3P4W** systems according to the connected load. When a branch circuit is configured for single-phase measurement, each current input can be assigned to the corresponding voltage phase. This flexible configuration supports mixed single-phase and three-phase loads and simplifies load-balancing arrangements in different power distribution environments.



High-accuracy True RMS Measurement

With True RMS measurement and a sampling rate of **256 points per cycle**, the SPM-D05/D10 Series delivers reliable measurements across a wide range of electrical loads. It provides **0.2% voltage and current accuracy** and **Class 0.5S active and reactive energy accuracy**, making it suitable for energy monitoring, electricity cost allocation and power-quality management.



Power-quality Analysis

- Voltage and current total harmonic distortion (THD)
- 2nd to 31st individual harmonic measurement
- Odd and even harmonic analysis
- Three-phase voltage and current unbalance measurement
- True RMS measurement
- Sampling rate of 256 points per cycle
- Voltage measurement accuracy of 0.2%
- Current measurement accuracy of 0.2%
- Active and reactive energy accuracy compliant with Class 0.5S

Flexible Wiring Systems

- Supports 1P2W single-phase two-wire systems
- Supports 1P3W single-phase three-wire systems
- Supports 3P3W three-phase three-wire systems
- Supports 3P4W three-phase four-wire systems
- Configurable circuit wiring for balanced and unbalanced loads
- Individual voltage-phase assignment for single-phase branch circuits
- Configurable PT and CT ratios for different electrical systems

Communication

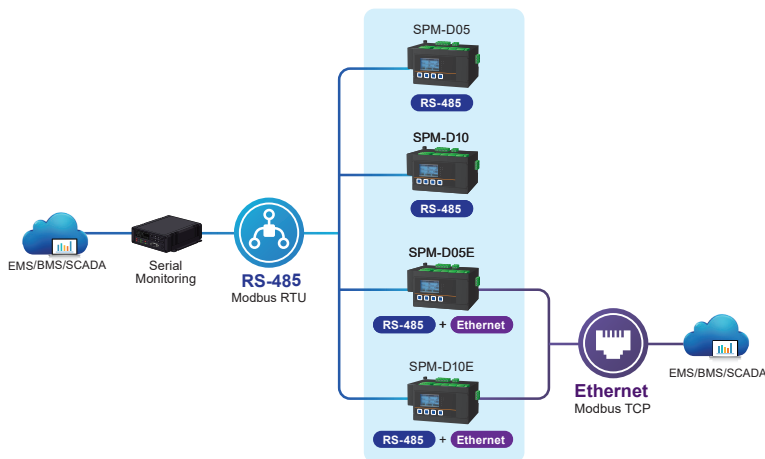
- One RS-485 communication interface on all models
- Modbus RTU protocol
- Device address range from 1 to 247
- Communication speeds from 1200bps to 115200bps
- Configurable parity and stop bits
- Maximum RS-485 transmission distance of 1200 meters
- Ethernet interface on **SPM-D05E** and **SPM-D10E**
- Modbus TCP protocol on Ethernet models
- Supports integration with EMS, BMS, SCADA and industrial control systems

Data Logging and Time-of-Use Management

- Built-in 2MB Flash memory
- Configurable data logging intervals
- Records selected measurement parameters with date and time
- Up to 86 selectable logging parameters
- Cyclic recording when the storage capacity is reached
- Supports up to 4 time zones
- Supports up to 8 time periods
- Supports 4 tariff rates
- Special-day and weekend schedule settings
- Monthly or user-defined electricity settlement date
- Demand recording according to tariff period

RS-485 and Ethernet Connectivity

All models are equipped with an RS-485 interface supporting **Modbus RTU**. The **SPM-D05E** and **SPM-D10E** additionally provide an Ethernet interface supporting **Modbus TCP** for integration into IP-based monitoring networks. The **SPM-D05** and **SPM-D10** are designed for standard RS-485 deployments without Ethernet connectivity.

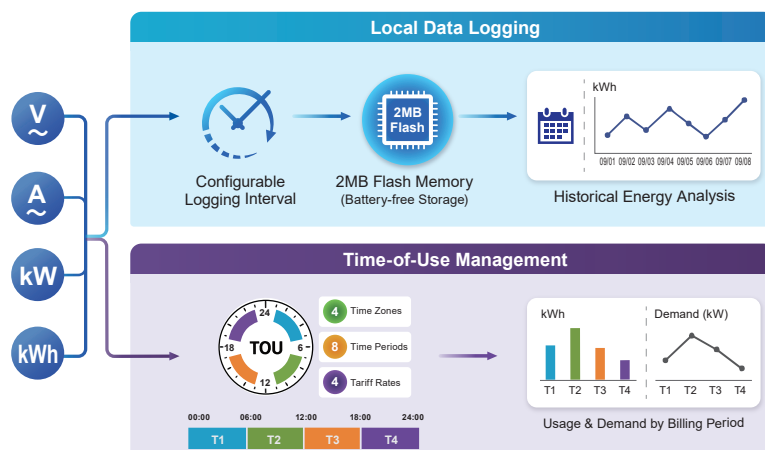


Comprehensive Energy and Power-quality Measurement

The SPM-D05/D10 Series provides comprehensive measurement of voltage, current, frequency, active power, reactive power, apparent power, power factor, and active, reactive and apparent energy. It also supports voltage and current total harmonic distortion (THD), **2nd- to 31st-order harmonic measurement**, three-phase unbalance, demand calculation, and maximum and minimum value recording, enabling detailed analysis of energy consumption and power quality.

Built-in Data Logging and Time-of-use Management

The SPM-D05/D10 Series incorporates **2MB Flash memory** for local data logging without battery-life limitations. It can record selected measurement parameters at configurable intervals for historical energy analysis. Time-of-Use (TOU) functionality supports up to **4 time zones, 8 time periods and 4 tariff rates**, enabling electricity consumption and demand to be tracked according to different billing periods.



Digital Input and Output

- 2 digital inputs
- Digital inputs configurable for general input or data-reset functions
- 4 SPST relay outputs
- Relay outputs configurable for alarm or digital output operation
- Up to 12 alarm conditions configurable for each relay
- High, low, high-hold and low-hold relay operating modes
- 1 open-collector pulse output
- Pulse output assignable to active or reactive energy
- Maximum pulse output frequency of 40Hz

Display and Operation

- 128 × 64 dot-matrix LCD
- White LCD backlight
- Displays up to five electrical parameters simultaneously
- On-site measurement viewing and parameter configuration
- Configurable default monitoring screen
- Password protection against unauthorized configuration changes
- Built-in date and time display
- Operating-hour and running-hour counters

Installation and Environment

- Compact DIN-rail design
- Standard 35mm DIN-rail mounting compliant with EN50022
- IP20-rated enclosure
- CAT II measurement environment
- Operating temperature range of 0 to 60 degrees C
- Storage temperature range of -10 to 70 degrees C
- Relative humidity range of 5% to 95%, non-condensing
- Maximum operating altitude of 2,000 meters
- AC 85–264V or DC 100–300V power input

Integrated I/O for Alarm and Control

The SPM-D05/D10 Series is equipped with **2 digital inputs**, **4 relay outputs** and **1 pulse output**. The relay outputs can be configured for alarm or digital output operation, enabling the meter to respond to specified electrical conditions and work with external alarm, monitoring and control equipment.

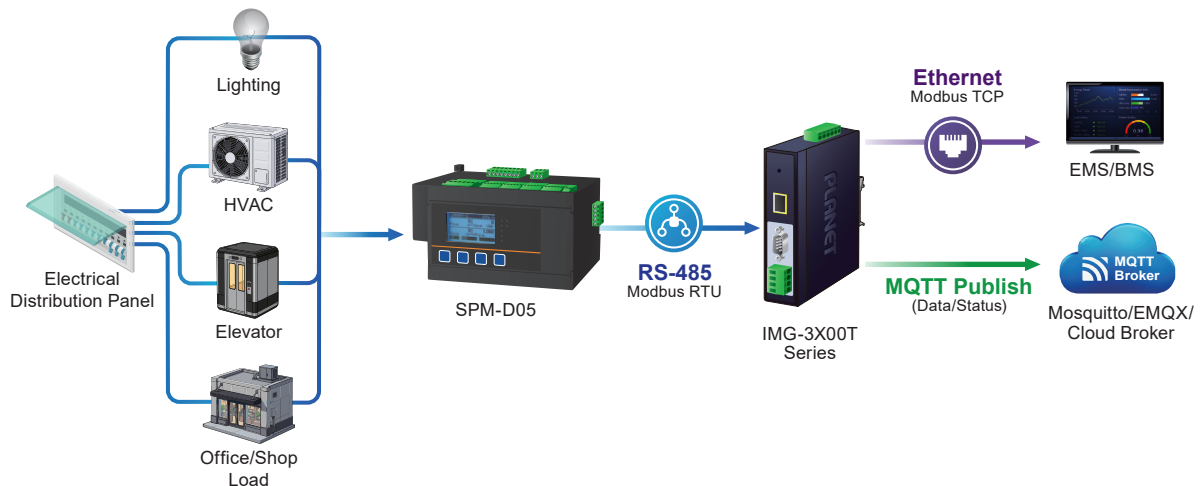
Compact Design for Industrial Environments

Featuring a compact enclosure and standard **35mm DIN-rail mounting**, the SPM-D05/D10 Series can be easily installed in electrical distribution panels. When paired with split-core current transformers, it is well suited for retrofit projects where installation space and system downtime are limited. Its built-in **128 × 64 dot-matrix LCD** provides an intuitive interface for on-site measurement viewing and parameter configuration.

Applications

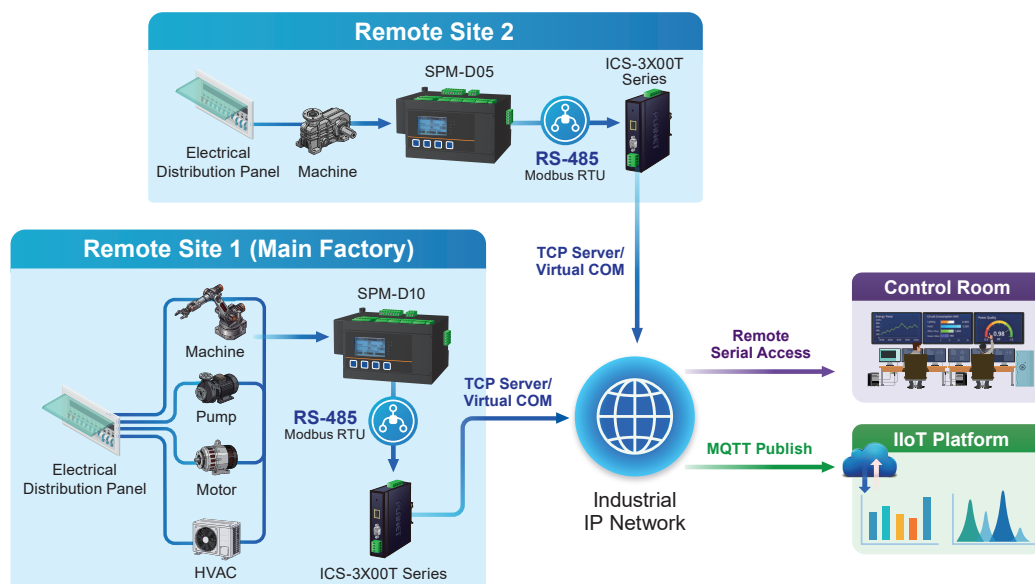
Modbus-based Building Energy Management

The multi-circuit power meter can be connected to a Modbus gateway through RS-485 **Modbus RTU**, allowing its electrical data to be converted into Modbus TCP for transmission over an Ethernet network. An EMS or BMS can centrally monitor voltage, current, power, energy consumption and power quality across multiple circuits. This architecture is suitable for commercial buildings, rental facilities and distribution panels requiring centralized energy analysis, electricity cost allocation and load management.



Remote Power Monitoring for Distributed Industrial Sites

For factories and geographically distributed facilities, the multi-circuit power meter can be connected to a **serial device server** to extend RS-485 communication across an IP network. Measurement data from remote electrical panels can be delivered to a central control room or IIoT platform for real-time equipment load monitoring, historical analysis and abnormal power-condition detection. This solution enables existing serial power meters to be remotely accessed without replacing field equipment, simplifying industrial energy monitoring across multiple locations.



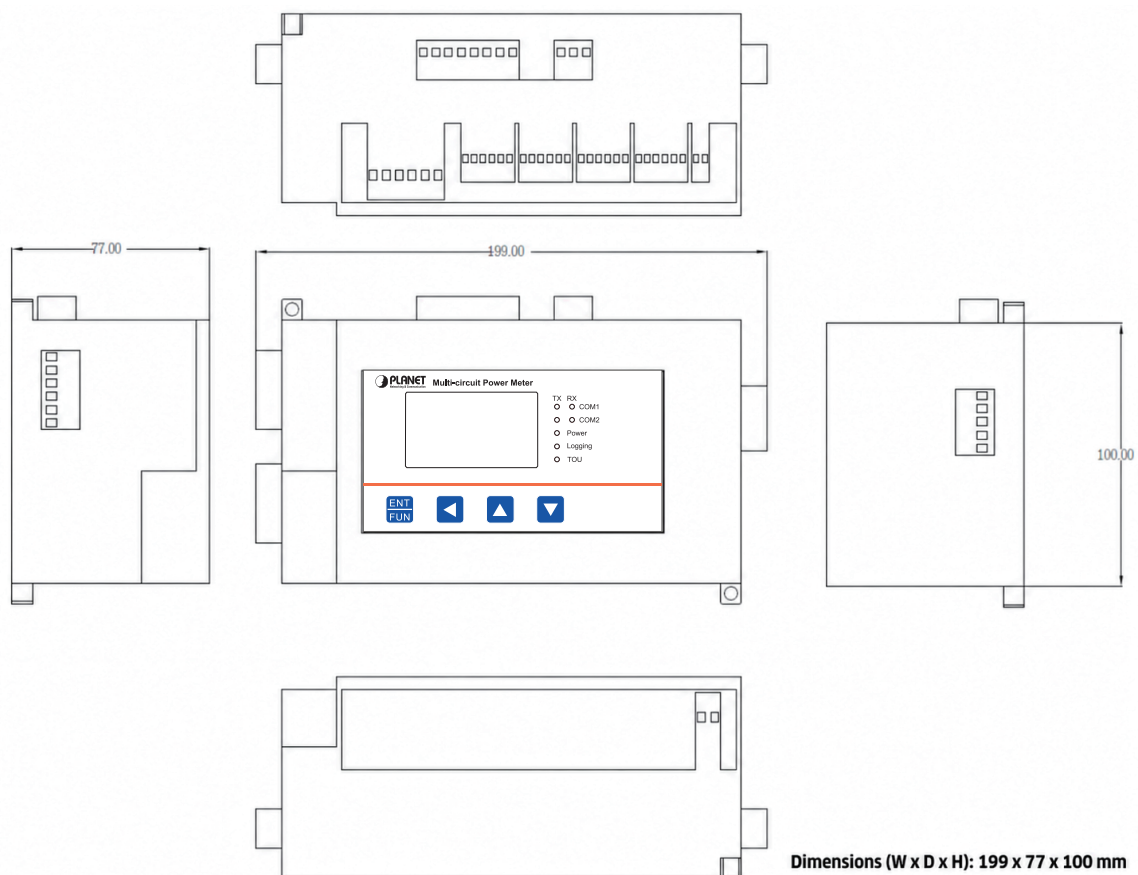
Specifications

Model	SPM-D05		SPM-D05E		SPM-D10		SPM-D10E	
Hardware Specifications								
Circuit Configuration	5 circuits				10 circuits			
Main Circuit	1 independent main circuit				2 independent main circuit			
Branch Circuit Input	Up to 12 single-phase or 4 three-phase branch circuits				Up to 24 single-phase or 8 three-phase branch circuits			
Current Input Group Isolation	-				Upper and lower current input groups electrically isolated			
LED Indicators	Power, COM1, Data Logging and TOU		Power, COM1, COM2, Data Logging and TOU		Power, COM1, Data Logging and TOU		Power, COM1, COM2, Data Logging and TOU	
Display Panel	128 × 64 dot-matrix LCD with white backlight							
Display Refresh Rate	0.5 second							
Power Parameters Display	Up to 5 power parameters on one page							
Date and Time	Perpetual calendar with year, month, day, hour, minute and second							
Loading Type	IND or CAP loading type							
Installation	35mm DIN-rail mounting (EN50022)							
Power Requirements	85–264V AC, 50/60Hz or 100–300V DC							
Power Consumption	AC: 15VA maximum DC: 5W maximum							
Dimensions (WxDxH)	199 × 118 × 77mm							
Weight	685g							
Enclosure	Flame-retardant black ABS							
Metering Specifications								
Measurement	True RMS measurement							
Sample Rate	256 points per cycle							
Power System	1P2W, 1P3W, 3P3W or 3P4W							
Load System	Balanced or unbalanced load							
Voltage Input Range	20–400V AC, L-N 35–690V AC, L-L							
Frequency Range	45–65Hz							
Main Circuit Current Input	333mV CT input							
Branch Circuit Current Input	333mV CT input							
CT Primary Ratio	5–9999A							
CT Secondary Ratio	333mV							
PT Primary Ratio	100V–9999kV							
PT Secondary Ratio	50–600V							
Overload Capacity	2 times rated current continuously; 20 times rated current for 1 second							
Measurement Category	CAT II							
Power Quality								
Total Harmonic Distortion	THD of voltage and current based on True RMS and fundamental values							
Individual Harmonic	2nd to 31st individual harmonics of voltage and current							
Harmonic Content	Odd and even harmonic content							
Unbalance	Three-phase voltage and current unbalance							
Demand								
Calculation Method	Fixed block or sliding block							
Period	1–60 minutes							
Demand Parameters	Current, active power, reactive power and apparent power demand							
Demand Record	Maximum demand value and time stamp							
Max./Min. Values	Maximum and minimum parameter values with time stamps							
Communication								
RS-485 Interface	1							
Protocol	Modbus RTU							
Device Address	1–247							
Baud Rate	Up to 115200bps							
Response Time	Less than 50ms between completion of command reception and start of data transmission							
Data Bits	8 bits							
Parity	None, Even or Odd							
Stop Bits	1 or 2							
Distance	1200m							
Maximum Connected Devices	32							
Ethernet Interface	-		10/100BASE-TX RJ45		-		10/100BASE-TX RJ45	
Ethernet Protocol	-		Modbus TCP		-		Modbus TCP	
TCP Socket	-		Up to 4 sockets		-		Up to 4 sockets	

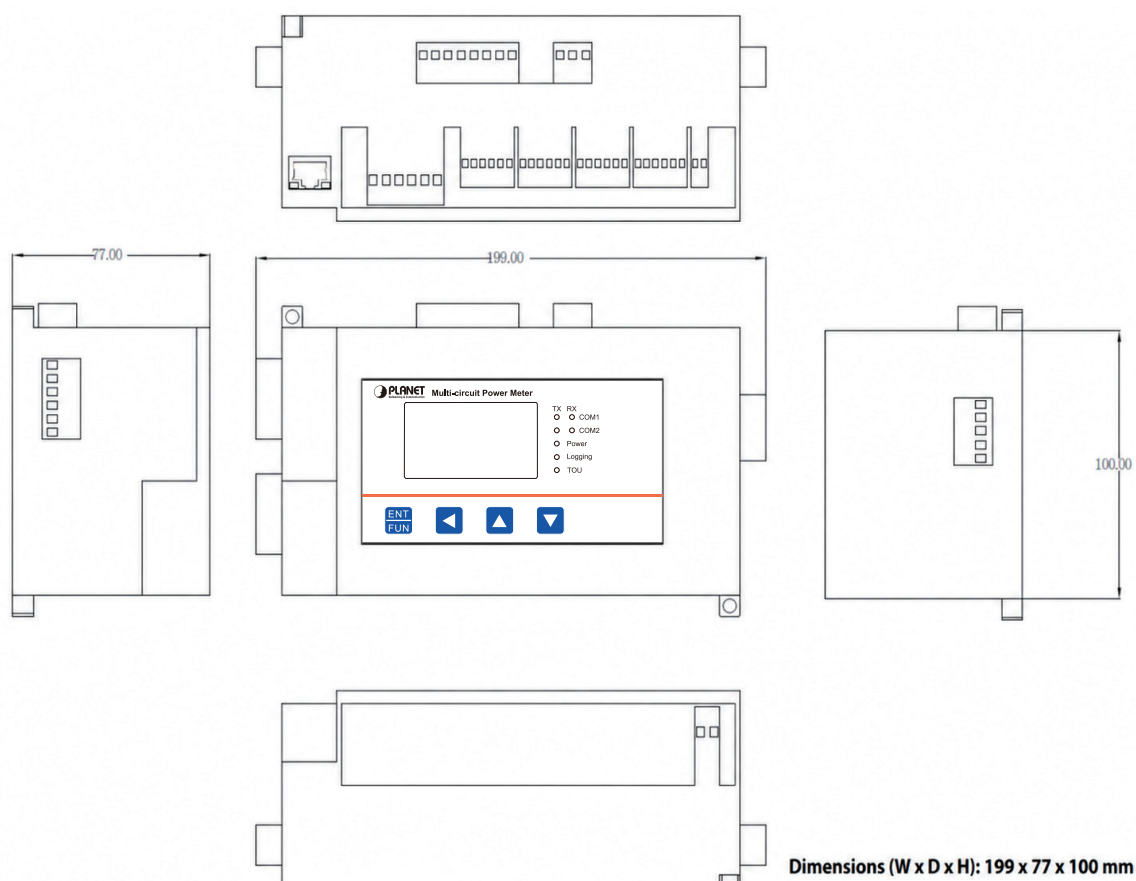
Address Configuration	-	DHCP or static IP address	-	DHCP or static IP address
Data Logging				
Memory Storage	2MB Flash ROM without battery-life limitations			
Log Setting	Selected measurement parameters can be recorded at configurable intervals			
Interval Time	1–32767 seconds, minutes, hours or days			
Date and Time	Year, month, day, hour, minute and second			
Storage Method	Cyclic recording when storage capacity is reached			
Recording Capacity	Approximately 40,300 records or 28 days when recording ten 4-byte data points every minute			
Data Access	Data logs are configured and read through communication			
Time of Use (TOU)				
Time Zones	1–4 zones per year			
Schedules	Up to 8			
Periods	Up to 8			
Tariffs	Sharp, Peak, Valley and Normal			
Parameters in TOU	Import active energy, import reactive energy, total apparent energy, current demand and power demand			
Holiday Setting	Holiday dates and schedules configurable for up to five years			
Weekend Schedule	Saturday and Sunday			
Settlement	Monthly or user-defined settlement date			
Digital Input				
Input Capacity	2 digital inputs			
Input Type	Mechanical contact or open-collector input			
Function Mode	DI, Demand Reset, Maximum Demand Reset, Energy Reset, Maximum/Minimum Reset or Relay Reset			
Trigger State	ON or OFF			
Relay Output				
Relay Capacity	4 SPST normally open contacts			
Relay Contact Rating	5A at 250V AC; 5A at 30V DC			
Function Mode	Alarm or digital output			
Action Mode	High, Low, High Hold or Low Hold			
Alarm Set Points	Up to 12 alarm-condition groups per relay			
Pulse Output				
Output Capacity	Open collector, 30V DC and 30mA maximum			
Corresponding Item	Active or reactive energy of a selected circuit			
Output Frequency	40Hz maximum			
Test Pulse Output	3200 pulses/kWh, 50% duty cycle			
Environment Specifications				
Operating Temperature	0–60 degrees C			
Storage Temperature	-10–70 degrees C			
Humidity Rating	5–95%, non-condensing			
Temperature Coefficient	100ppm/degree C or less			
Operating Altitude (Maximum)	2,000m above sea level			
Protection Rating	IP20			
Standards Conformance				
Measurement Accuracy	IEC 61557-12:2018/AMD1:2021			
Active Energy	Class 0.5S, IEC 62053-22:2020			
Reactive Energy	Class 0.5S, IEC 62053-24:2020			
Isolation	2.5kV AC, 50/60Hz for 1 minute between power, input, output and enclosure			
Surge	±4kV AC, 1.2/50µs, applied to voltage input and power input			
Insulation Resistance	≥100MΩ at 500V DC			
EMC	EN 61326-1:2013			
	EN 55011:2016			
	EN 61000-3-2:2014			
	EN 61000-3-3:2013			
	IEC 61000-4-2:2008			
	IEC 61000-4-3:2006+A1:2007+A2:2010			
	IEC 61000-4-4:2012			
	IEC 61000-4-5:2014+A1:2017			
	IEC 61000-4-6:2013/COR1:2015			
	IEC 61000-4-8:2009			
	IEC 61000-4-11:2004/A1:2017			
Safety (LVD)	EN 61010-1:2010+A1:2019			
FCC	FCC 47 CFR Part 15, Subpart B, Class A			

Dimensions

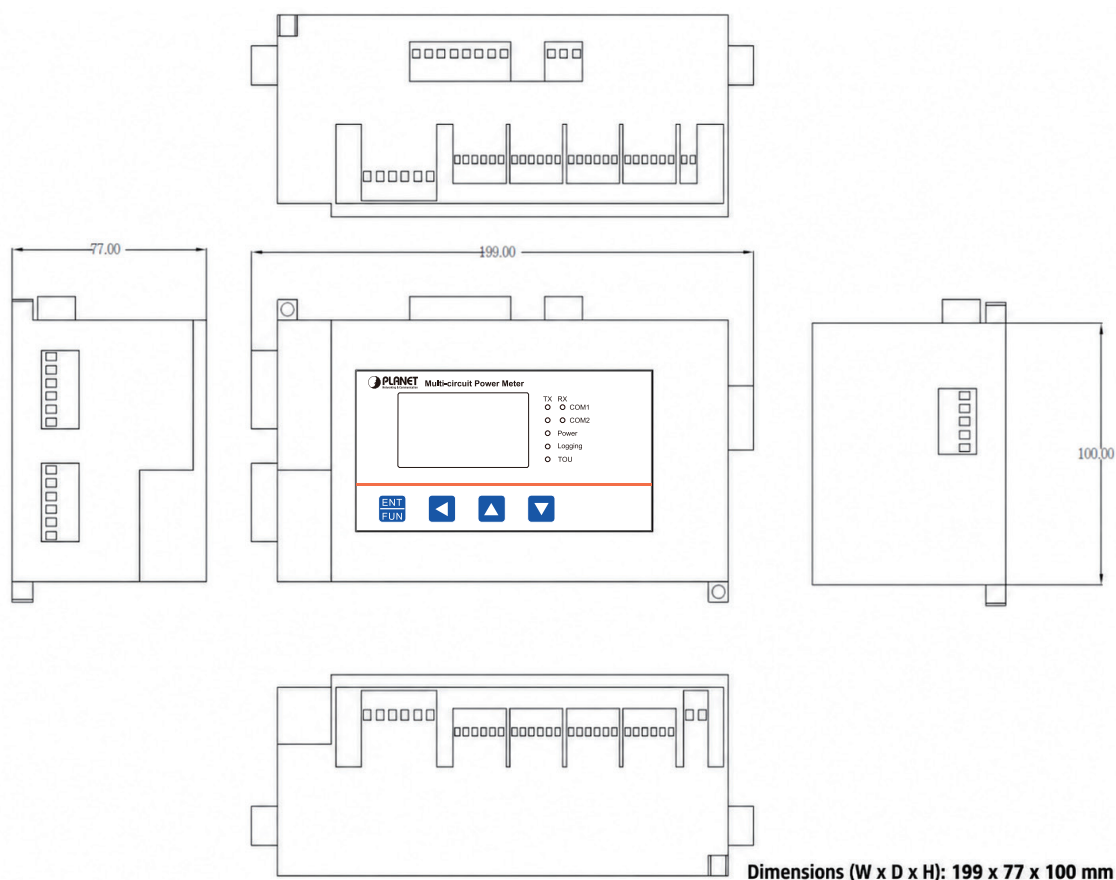
■ SPM-D05



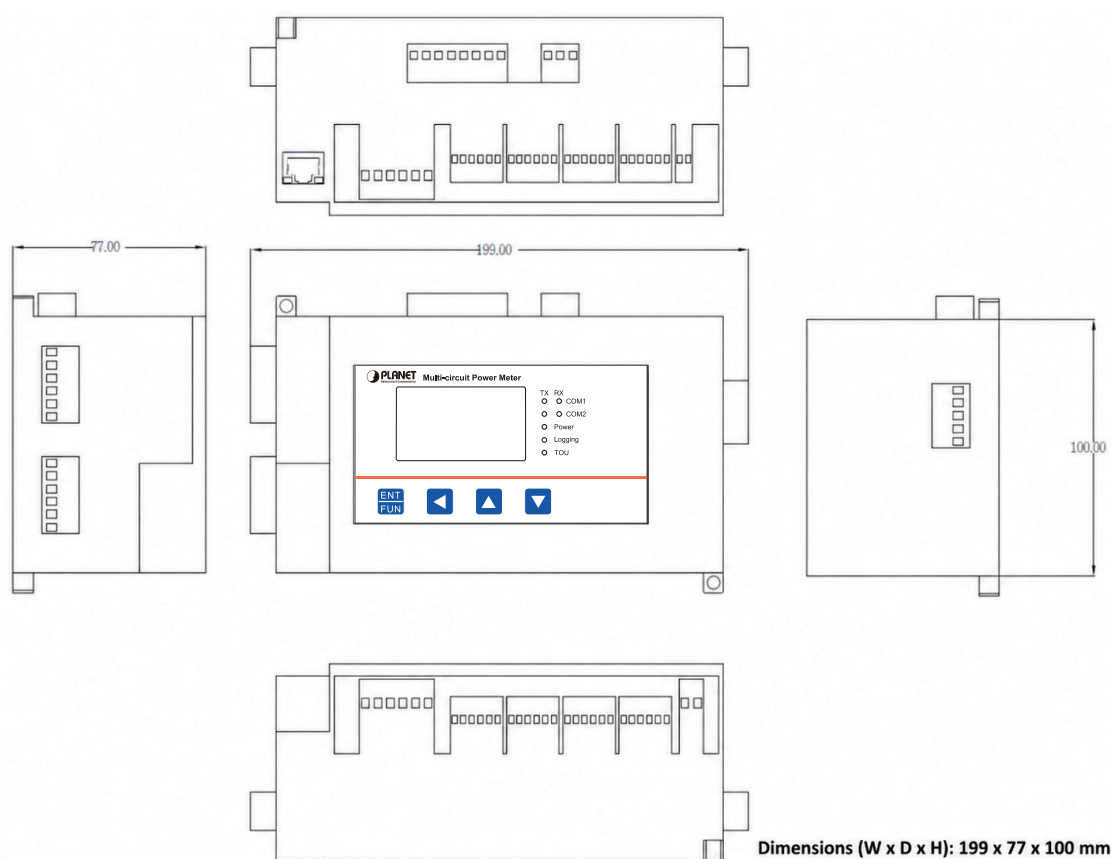
■ SPM-D05E



■ SPM-D10



■ SPM-D10E



Ordering Information

SPM-D05	DIN-rail 5-circuit Modbus Smart Power Meter
SPM-D05E	DIN-rail 5-circuit Modbus RTU/TCP Smart Power Meter
SPM-D10	DIN-rail 10-circuit Modbus Smart Power Meter
SPM-D10E	DIN-rail 10-circuit Modbus RTU/TCP Smart Power Meter

Related Products

SPM-D01-R	DIN-rail Single-circuit Modbus Smart Power Meter with Rogowski Coil Input
SPM-D01-M	DIN-rail Single-circuit Modbus Smart Power Meter with 333mV CT Input
CT-60A-16	60A Split-Core Current Transformer with 333mV Output
CT-100A-16	100A Split-Core Current Transformer with 333mV Output
CT-200A-24	200A Split-Core Current Transformer with 333mV Output
CT-400A-35	400A Split-Core Current Transformer with 333mV Output
CT-600A-35	600A Split-Core Current Transformer with 333mV Output
RC-300A-395	300A Rogowski Coil Current Sensor with 333mV Output
RC-500A-395	500A Rogowski Coil Current Sensor with 333mV Output
RC-800A-525	800A Rogowski Coil Current Sensor with 333mV Output
RC-1000A-525	1000A Rogowski Coil Current Sensor with 333mV Output
RC-1500A-525	1500A Rogowski Coil Current Sensor with 333mV Output
RC-2000A-525	2000A Rogowski Coil Current Sensor with 333mV Output
RC-3000A-525	3000A Rogowski Coil Current Sensor with 333mV Output

PLANET Technology Corporation

11F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231,
Taiwan (R.O.C.)

Tel: 886-2-2219-9518

Email: sales@planet.com.tw

Fax: 886-2-2219-9528

www.planet.com.tw



PLANET reserves the right to change specifications without prior notice. All brand names and trademarks are property of their respective owners. Copyright © 2026 PLANET Technology Corp. All rights reserved.

SPM-D05/D10 series