

ACCURACY CLASS 0.2S

AS/IEC 62053-22 COMPLIANT

ANSI C12.20 ACCURACY

TOU REVENUE METERING

1 MB LOG MEMORY

MV90xi COMPATIBLE

[View the PM172 product page on satec-global.com.au](#)

PM172 Series

Advanced High Accuracy Power and Revenue Meter

The PM172 is a compact, multi-function, three-phase AC power meter and Class 0.2S revenue meter. It is designed for users ranging from electrical panel builders to substation operators, with more than 100 measured parameters for feeder monitoring, utility substations, industrial SCADA and distribution automation.

A bright three-row LED display with a load bar graph sits on a detachable display module that can be located up to 1000 m from the meter. Built-in Time of Use tariffs, event and data recorders, harmonic analysis and waveform capture sit alongside two independent communication ports supporting Modbus, DNP3 and Profibus DP, with an Ethernet option for **Expertpower™**.



PM172P

Multi-functional three-phase power meter with harmonic analysis, setpoint control and digital I/O.

PM172E

Adds a Class 0.2S TOU revenue meter, an event recorder and multi-channel data recorders.

PM172EH

Adds extended harmonic analysis, fast waveform recorders and voltage disturbance monitoring.

Main Features

- Class 0.2S four-quadrant energy metering to AS/IEC 62053-22 (PM172E and PM172EH)
- Accuracy per ANSI C12.20
- Time of Use metering with 8 registers x 8 tariffs, 4 seasons x 4 types of days
- Voltage and current THD, current TDD and K-Factor up to the 40th harmonic
- Waveform recording at up to 128 samples per cycle (PM172EH)
- 16 control setpoints with a 1-cycle response time
- 2 relay outputs and 2 digital inputs, with optional analogue inputs or outputs
- 1 Mbyte battery-backed memory for long-term data and waveform recording
- Two communication ports: RS-232/422/485, Ethernet and Profibus DP options
- Detachable three-row LED display module, mountable up to 1000 m away
- Expertpower™ enabled Ethernet with Modbus/TCP and DNP3/TCP
- Panel mounting in an ANSI 4" round or DIN 92 x 92 mm cutout, or 35 mm DIN rail

Feature Capabilities

Multi-functional Three-phase Power Meter

- 3 voltage and 3 current transformer-isolated AC inputs for direct connection to the power line or via potential and current transformers
- True RMS volts, amps, power, power factor, neutral current, voltage and current unbalance and frequency
- Ampere, volt, THD and TDD demand meter
- 1-cycle real-time and 1-second average measurements
- 25, 50, 60 and 400Hz operation

Harmonic Analysis

- Embedded harmonic analyser: voltage and current THD, current TDD and K-Factor up to the 40th order
- Voltage and current harmonic spectrum and angles up to the 40th order (PM172EH)
- Harmonic power and energy (PM172EH)

Programmable Controller and Alarms

- Embedded programmable controller with 16 control setpoints
- Programmable thresholds and delays with relay output control
- 1-cycle response time
- Four six-digit counters for counting pulses or events

Billing and TOU Revenue Meter

PM172E & PM172EH ONLY

- Class 0.2S four-quadrant active, reactive and apparent energy, import and export, to AS/IEC 62053-22
- Time of Use with 8 totalisation and tariff energy/demand registers x 8 tariffs
- 4 seasons x 4 types of days and 8 tariff changes per day, with an easy programmable tariff schedule
- Automatic daily profile for energy and maximum demand readings (total and tariff registers)
- MV90xi compatible

Waveform and Disturbance Recording

PM172EH ONLY

- Two waveform recorders with simultaneous 6-channel AC recording in a single plot
- Sampling rates of 32 and 128 samples per cycle, with 20 pre-fault cycles
- Up to 30 seconds of continuous recording at 32 samples per cycle
- Real-time waveform capture and monitoring: simultaneous 6-channel 4-cycle capture at 128 samples per cycle
- Voltage disturbance monitor with setpoint triggering

Event and Data Recording

PM172E & PM172EH ONLY

- Event recorder for logging internal diagnostic events, control events and I/O operations
- Eight data recorders with programmable data logs on a periodic basis and on any internal or external trigger
- Real-time stamped logging of more than 100 parameters
- 1 Mbyte onboard memory with battery backup

Feature Capabilities (continued)

Display

- Easy to read 3-row (2 x 4 characters + 1 x 6 characters) bright LED display
- Adjustable update time, auto-scroll with adjustable page exposition time and auto-return to a default page
- LED bar graph showing percent load against a user-definable nominal load current
- Detachable display module with a 3-wire RS-485 interface, operating up to 1000 m from the meter
- Optional colour touch screen graphical display

Communications

- Two independent communication ports for local and remote meter reading and setup
- COM1 options: RS-232/422/485, Ethernet 10/100BaseT or Profibus DP
- COM2: RS-422/485
- Modbus RTU and ASCII, Modbus/TCP, DNP3, DNP3/TCP, GE EGD producer, Profibus DP and SATEC ASCII protocols
- Ethernet port is Expertpower™ enabled, with a TCP notification client

Inputs and Outputs

- 2 digital inputs for monitoring external contacts and receiving pulses from energy, water and gas meters
- 2 relay outputs for alarms, controls and energy pulse output
- Optional DIO module adds 2 digital inputs and 2 digital outputs (4 DI / 4 DO in total)
- 2 optional optically isolated analogue outputs or analogue inputs with an internal power supply
- Optional analogue expander providing an additional 2 x 8 analogue outputs

Real-time Clock and Firmware

- Precise internal clock and calendar with battery backup
- Time synchronisation via a communication port or digital input
- Easy field upgrading of device firmware through any communication port

Current Input Options

- 5A or 1A secondary inputs for standard CTs
- Optional **High Accuracy Current Sensors (HACS)**
- 5A split core remote HACS option for retrofit installations

Software Support

- **Power Analysis Software (PAS)** for meter setup, data retrieval and analysis
- **Expertpower™** web platform for energy monitoring and management reports
- **eXpertConnect™ App** for mobile connection to the meter for configuration, readings and diagnostics

Applications

Utility substations

Feeder monitoring

Industrial SCADA

Distribution automation

Revenue and tariff metering

Electrical panel builders

Specifications

ENVIRONMENTAL CONDITIONS

Operating temperature	-20°C to 60°C (-4°F to 140°F)
Storage temperature	-25°C to 80°C (-13°F to 176°F)
Humidity	0 to 95% non-condensing

CONSTRUCTION

Display module	127 x 127 mm (max.)
Meter body	114 x 114 mm
Panel mounting	ANSI 4" round or DIN 92 x 92 mm square cutout
DIN rail mounting	35 mm DIN rail
Weight	1.23 kg (2.7 lb)
Case enclosure	Plastic PC/ABS blend
Front panel	Plastic PC
PCB	FR4 (UL94-V0)
Terminals	PBT (UL94-V0)

POWER SUPPLY

120/230V AC, 110/220V DC option	85 to 264V AC 50/60Hz, 88 to 290V DC
Burden	10W
12V DC option	9.6 to 19V DC
24V DC option	19 to 37V DC
48V DC option	37 to 72V DC
Isolation	Input to output 3000V AC; input to ground 2000V AC
Wire size	Up to 12 AWG (3.5 mm ²)

VOLTAGE INPUTS

Operating range	690V AC line-to-line, 400V AC line-to-neutral
Direct input and via PT	Up to 828V AC line-to-line, up to 480V AC line-to-neutral
Input impedance	500 kΩ
Burden	< 0.4VA at 400V; < 0.04VA at 120V
Overvoltage withstand	1000V AC continuous; 2000V AC for 1 second
Galvanic isolation	3500V AC
Wire size	Up to 12 AWG (3.5 mm ²)

CURRENT INPUTS

Galvanic isolation	3500V AC
Wire size	12 AWG (up to 3.5 mm ²)
5A SECONDARY	
Operating range	10A RMS continuous
Burden	< 0.1VA
Overload withstand	15A RMS continuous; 300A RMS for 1 second
1A SECONDARY	
Operating range	2A RMS continuous
Burden	< 0.02VA
Overload withstand	6A RMS continuous; 80A RMS for 1 second

FREQUENCY

Measurement range	15Hz to 480Hz
Calibration frequency	25, 50, 60 or 400Hz (upon order)

RELAY OUTPUTS

Relays	2 relays rated at 3A/250V AC; 3A/30V DC
Contacts	2 contacts (SPST Form A)
Isolation	Contacts to coil 2000V AC for 1 minute; open contacts 1000V AC
Operate / release time	10 ms max. / 5 ms max.
Update time	1 cycle
Wire size	14 AWG (up to 1.5 mm ²)

Specifications (continued)

COMMUNICATION PORTS

COM1 RS-232 OR RS-422/485 (OPTIONAL MODULE)

Port	Optically isolated, 2000V RMS, DB9 female
Baud rate	Up to 115.2 kbps
Protocols	Modbus RTU, DNP3 and SATEC ASCII

COM1 ETHERNET (OPTIONAL MODULE)

Port	Transformer-isolated 10/100BaseT, RJ45
Protocols	Modbus/TCP (port 502), DNP3/TCP (port 20000), GE EGD producer

Connections	4 simultaneous (4 Modbus/TCP, or 2 Modbus/TCP + 2 DNP3/TCP)
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COM1 PROFIBUS DP, IEC 61158 (OPTIONAL MODULE)

Port	RS-485 optically isolated, DB9 female
Baud rate	9600 bit/s to 12 Mbit/s (auto detection)
Data	32 bytes input, 32 bytes output

COM2 RS-422/485

Port	Optically isolated, 2000V RMS, removable 5-pin connector
Baud rate	Up to 115.2 kbps
Protocols	Modbus RTU, DNP3 and SATEC ASCII
RS-485 network	Up to 32 devices
Wire size	Up to 14 AWG (1.5 mm ²)

REAL-TIME CLOCK AND MEMORY

Clock accuracy	Typical error 30 seconds per month at 25°C
Log memory	1 Mbyte onboard memory with battery backup

WARRANTY

Product warranty	3 years
Warranty of accuracy	10 years

DIGITAL INPUTS

Inputs	2 dry contact inputs
Sensitivity	Open at input resistance > 100 kΩ; closed at < 100 Ω
Galvanic isolation	2000V RMS
Internal power supply	15V
Scan time	1 ms
Wire size	14 AWG (up to 1.5 mm ²)

OPTIONAL ANALOGUE INPUTS

Inputs	2 optically isolated analogue inputs
Ranges (upon order)	±1 mA (1.2 kΩ); 0–1 mA (2.4 kΩ); 0–20 mA (250 Ω); 4–20 mA (250 Ω)
Isolation	2000V RMS
Accuracy	0.5% FS
Scan time	1 cycle
Wire size	14 AWG (up to 1.5 mm ²)

OPTIONAL ANALOGUE OUTPUTS

Outputs	2 optically isolated analogue outputs, internal power supply
Ranges (upon order)	±1 mA and 0–1 mA (max. load 5 kΩ); 0–20 mA and 4–20 mA (max. load 510 Ω)
Isolation	2000V RMS
Accuracy	0.5% FS
Update time	1 cycle
Wire size	14 AWG (up to 1.5 mm ²)

DISPLAY MODULE

Display	High-brightness seven-segment LEDs, two 4-digit and one 6-digit windows
Keypad	6 push buttons
Communication	EIA RS-485 port with 12V supply voltage
Connector	DB15, 15 pins
Distance	Up to 1000 m (3200 ft)
Supply / consumption	12V DC ±10% / 2W
Wire size	Up to 14 AWG (1.5 mm ²)

Measurement Accuracy

PARAMETER	FULL SCALE AT INPUT RANGE	% READING	% FS	CONDITIONS	RANGE
Voltage	120V x PT at 120V 400V x PT at 690V	0.2	0.01	10% to 120% FS	0 to 1,150,000V
Line current	CT	0.2	0.02	1% to 200% FS	0 to 40,000A
Neutral current		0.4			
Active power	0.36 x PT x CT at 120V 1.2 x PT x CT at 690V	0.2	0.02	$ PF \geq 0.5$ ¹	-10,000,000 kW to +10,000,000 kW
Reactive power	0.36 x PT x CT at 120V 1.2 x PT x CT at 690V	0.3	0.04	$ PF \leq 0.9$ ¹	-10,000,000 kvar to +10,000,000 kvar
Apparent power	0.36 x PT x CT at 120V 1.2 x PT x CT at 690V	0.2	0.02	$ PF \geq 0.5$ ¹	0 to 10,000,000 kVA
Power factor	1.000		0.2	$ PF \geq 0.5$, $I \geq 2\%$ FSI	-0.999 to +1.000
Frequency		0.02			15Hz to 480Hz
Total harmonic distortion, THD V (I), %Vf (%If)	999.9	1.5	0.1	THD $\geq 1\%$, V (I) $\geq 10\%$ FSV (FSI)	0 to 999.9
Total demand distortion, TDD, %	100		1.5	TDD $\geq 1\%$, $I \geq 10\%$ FSI	0 to 100
Active energy, import and export	Class 0.2S under conditions as per AS/IEC 62053-22:2003				0 to 999,999,999 MWh
Reactive energy, import and export	Class 0.2S under conditions as per AS/IEC 62053-22:2003, $ PF \leq 0.9$				0 to 999,999,999 Mvarh
Apparent energy	Class 0.2S under conditions as per AS/IEC 62053-22:2003				0 to 999,999,999 MVAh

¹ At 80% to 120% of voltage FS, 1% to 200% of current FS and frequency 50/60Hz. PT: external potential transformer ratio. CT: primary current rating of external current transformer. FSV: voltage full scale. FSI: current full scale. Vf: fundamental voltage. If: fundamental current.

Accuracy is expressed as $\pm$ (percentage of reading + percentage of full scale) ± 1 digit. This does not include inaccuracies introduced by the user's potential and current transformers. Accuracy is calculated at a 1-second average.

Specifications assume voltage and current waveforms with THD $\leq 5\%$ for kvar, kVA and PF, and a reference operating temperature of 20°C to 26°C. Temperature coefficient: 0.008% / °C. Measurement error is typically less than the maximum error indicated.

Standards Compliance

Accuracy

- AS/IEC 62053-22 Class 0.2S (1A and 5A versions)
- Accuracy per ANSI C12.20-1998

Electromagnetic Immunity

- EN 50082-1:1992
- EN 50082-2 Generic Immunity Standard, Industrial Environment
- EN 61000-4-2
- ENV 50140:1983
- ENV 50204:1995 (900MHz)
- ENV 50141:1993
- EN 61000-4-4:1995
- EN 61000-4-8:1993

Electromagnetic Emission

- EN 55011:1991
- EN 50081-2 Generic Emission Standard, Industrial Environment
- EN 55022:1994 Class A

Safety

- EN 61010-1:1993, A2/1995

Directives Complied With

- EMC: 89/336/EEC as amended by 92/31/EEC and 93/68/EEC
- LVD: 72/23/EEC as amended by 93/68/EEC and 93/465/EEC

Communication Protocols

- Modbus RTU, Modbus ASCII and Modbus/TCP
- DNP3 and DNP3/TCP
- Profibus DP (IEC 61158)
- GE EGD producer

Ordering Information

MODEL - VOLTAGE - CURRENT - CAL. FREQ. - POWER - I/O MODULE - COMMUNICATION

MODEL

DESCRIPTION	ORDER CODE
Power meter	PM172P-N
Power meter including revenue meter	PM172E-N
Power meter including revenue meter, harmonic analysis and waveform capture	PM172EH-N
PM172E-N transducer version, no display	RPM072

VOLTAGE INPUT

DESCRIPTION	ORDER CODE
690V AC nominal voltage input (standard)	No code
120V AC nominal voltage input	U

CURRENT INPUT

DESCRIPTION	ORDER CODE
5 ampere	5
1 ampere	1
5A split core remote high accuracy current sensor	RS5
High Accuracy Current Sensors (order 3 HACS separately)	HACS

CALIBRATION FREQUENCY

DESCRIPTION	ORDER CODE
25Hz	25HZ
50Hz	50HZ
60Hz	60HZ
400Hz	400HZ

POWER SUPPLY

DESCRIPTION	ORDER CODE
85 to 264V AC and 88 to 290V DC	ACDC
9.6 to 19V DC	1DC
19 to 37V DC	2DC
37 to 72V DC	3DC

I/O MODULE

DESCRIPTION	ORDER CODE
2 digital inputs / 2 digital outputs (standard)	No code
Additional 2 DI / 2 DO (4 DI / 4 DO in total)	DIO
2 analogue outputs, ±1 mA	AO1
2 analogue outputs, 0-20 mA	AO2
2 analogue outputs, 0-1 mA	AO3
2 analogue outputs, 4-20 mA	AO4
2 analogue inputs, ±1 mA	AI1
2 analogue inputs, 0-20 mA	AI2
2 analogue inputs, 0-1 mA	AI3
2 analogue inputs, 4-20 mA	AI4

COMMUNICATION

DESCRIPTION	ORDER CODE
RS-232/422/485 (standard)	No code
Ethernet (TCP/IP)	ETH
Profibus DP	PRO



Place an Order

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DOCUMENT REVISION HISTORY

VERSION	DATE
TBV1.0	28 September 2026