

ACCURACY CLASS 0.5/1.0
AS/IEC 62053-41 COMPLIANT
DC METERING ENABLED
UL FILE E236895
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PM130E DC

Multi-Function Direct Current (DC) Energy Meter For Substations, Data Centres & Renewables

The PM130E DC is a multi-function direct current (DC) energy meter designed for single channel DC metering. Measuring DC volts, amps, power, energy and demand to Class 0.5/1.0 accuracy per AS/IEC 62053-41, it is built for utility substations, data centres, renewable energy systems, SCADA integration and building management systems.

Current is measured via a DC shunt (single-channel), with direct voltage measurement to 670 V DC and extended ranges to 1500 V DC – or higher on application – using the SATEC Voltage Ratio Module (VRM). Every unit ships with a standard RS-485 port, with optional Ethernet, 4G modem and PROFIBUS interfaces, up to 16 digital/analogue I/O, dual 92×92 mm / 4-inch round panel mounting and an optional DIN-rail mounting kit.



PM130E-DCC-RS5

DC shunt input – single-channel metering via a 50, 60, 75 or 100 mV shunt (shunt dependent)

+ SATEC VRM

Optional Voltage Ratio Module extends direct voltage measurement beyond 670 V to 1500 V DC

Main Features

- Accuracy: Class 0.5/1.0 per AS/IEC 62053-41
- Communication: built-in RS-485; optional Ethernet, 4G modem, PROFIBUS
- Open protocols: Modbus RTU, DNP3.0, IEC 60870-5-101/104
- Digital and analogue I/O modules: up to 16 I/O
- Dual mounting: suitable for 4-inch round and 92×92 mm square cutouts
- DIN-rail mounting option
- LED bar-graph: displays load as a percentage of nominal current
- Non-volatile event and data recording (48 days)

Feature Capabilities

DC Energy Metering

- DC volts
- DC amps
- DC power
- DC energy
- DC ampere demand
- DC volt demand

Billing / TOU Energy Meter

PM130E-DCC ONLY

- Total and per-channel energy measurements
- Time-of-Use: 4 totalisation and tariff energy/demand registers × 8 tariffs, 4 seasons × 4 day types, 8 tariff changes per day
- Easy programmable tariff calendar schedule
- Automatic daily energy and maximum demand profile log for total and tariff registers

Programmable Logical Controller

- Embedded programmable controller
- 16 control setpoints – programmable thresholds and delays
- Optional relay output control and alarming (load control)
- 1-cycle response time (20 ms @ 50 Hz)

Event & Data Recording

- Non-volatile memory: 48 days for 2 daily TOU records, half-hourly writing of 4 parameters, over 100 events recorded during the period
- Event recorder for internal diagnostic events and setup changes
- Two data recorders – periodic data logs plus automatic daily energy and max-demand profile log

Display

- 3-row (2×4 characters + 1×5 characters) bright LED display, adjustable brightness and update rate
- Auto-scroll with adjustable page exposition time; auto-return to a default page
- LED bar graph showing percent load against a user-definable nominal load current

Real-Time Clock

- Standard meter clock: non-backed, ~1 min/month error @ 25°C, 30-second retention
- TOU module clock: battery-backed, ~7 s/month error @ 25°C (±2.5 ppm), 36-month retention

Feature Capabilities (continued)

Voltage Input Options

- Direct measurement: 0–670 V DC
- Extended range to 1500 V DC via the SATEC Voltage Ratio Module (VRM)
- Ranges above 1500 V DC on application – measuring up to 3000 V DC

Current Options

- DC shunts – 50, 60, 75 or 100 mV (shunt dependent)

Digital & Analogue I/O

- TOD (TOU+4DI) – 4 digital inputs, 1 ms scan, battery-backed RTC; last 5 input-change events with timestamps
- DIOR – 4 digital inputs, 2 relay outputs, 1-cycle update; unlatched, latched, pulse and KYZ; solid-state or electromechanical
- 12DIOR – 12 digital inputs, 4 relay outputs, optional Ethernet or additional RS-485 port
- 4AO – 4 optically isolated analogue outputs (0–20 mA / 4–20 mA / 0–1 mA / ± 1 mA), 1-cycle update
- 8DI – 8 digital inputs, 1 ms scan time

Communication

- On-board: standard 2-wire RS-485
- Optional: Ethernet (10/100Base-T), 4G modem, multipurpose RS-232/422/485, PROFIBUS
- Client (Modbus/TCP over Ethernet or 4G): TCP notification client for event/periodic reports to a remote server; ExpertPower™ client on a subscription basis
- Protocols: Modbus RTU, SATEC ASCII, DNP 3.0 (Level 2), IEC 60870-5-101 (standard), IEC 60870-5-104 (requires Ethernet)

Unique Design & Meter Security

- Pass-through CT connection for minimal burden
- Built-in auxiliary terminal for loose CT wires
- Dual panel mounting – 92×92 mm square or 4-inch round cutout
- Password security protecting meter setups and accumulated data from unauthorised changes

Software Support & Firmware

- **Power Analysis Software (PAS)** – SATEC's free configuration and data-acquisition tool
- **ExpertPower™** – SATEC's internet-based energy management platform (subscription)
- **eXpertConnect™ App** – mobile connection to the meter for configuration, readings and diagnostics
- Firmware upgrade via a serial or Ethernet port

Specifications

ENVIRONMENTAL CONDITIONS

Operating temperature	–30°C to 60°C (–22°F to 140°F)
Storage temperature	–40°C to 85°C (–40°F to 185°F)
Humidity	0–95% RH, non-condensing

CONSTRUCTION & MATERIALS

Weight	0.70 kg (1.54 lb)
Dimensions [H×W×D]	114×114×109 mm (4.5×4.5×4.3")
Case enclosure	PC/ABS blend plastic
Front panel	PC plastic
PCB	FR4 (UL94-V0)
Terminals	PBT (UL94-V0)
Plug-in connectors	Polyamide PA6.6 (UL94-V0)
Packaging case	Carton & Stratocell® (PE foam) brackets
Labels	Polyester film (UL94-V0)

DISPLAY

Type	High-brightness 7-segment LED, two 4-digit + one 5-digit window
Bar graph	3-colour LED, 40–110% load
Keypad	6 push buttons

VOLTAGE INPUTS

Nominal voltage (L-N)	0–670 V DC • use VRM above 670 V DC*
Over-voltage withstand	1000VAC continuous, 2000VAC for 1 s
Input impedance	1 MΩ
Wire size	Up to 12 AWG (3.5 mm ²)

CURRENT INPUTS

Type	DC shunts
Wire size	12 AWG (3.5 mm ²)
Galvanic isolation	3500VAC

POWER SUPPLY

120/230V AC-DC option	85–265V AC 50/60/400 Hz, 88–290VDC • 9VA burden • 2500VAC isolation (input to ground)
12VDC option	9.5–18V DC • 4VA burden • 1500VDC isolation
24/48VDC option	18.5–58VDC • 4VA burden • 1500VDC isolation • up to 12 AWG (3.5 mm ²) wire

REAL-TIME CLOCK

Standard meter clock	Non-backed • ~1 min/month error @ 25°C • 30 s retention
TOU module clock	Battery-backed • ~7 s/month error @ 25°C (±2.5 ppm) • 36-month retention

* Measuring up to 3000 V DC on application.

Specifications (continued)

OPTIONAL RELAY OUTPUTS

Electromechanical (4DI/DO or 12DI/DO)	2 or 4 relays, 5A/250VAC or 5A/30VDC, 1 contact (SPST Form A)
Galvanic isolation	3000VAC (contacts-coil) • 750VAC (open contacts)
Operate / release time	10 ms max / 5 ms max
Wire size	14 AWG (1.5 mm ²)
Solid-state (4DI/2DO)	2 relays, 0.15A/250V AC/DC, 1 contact (SPST Form A)
Galvanic isolation	3750VAC 1 min
Operate / release time	1 ms max / 0.25 ms max

OPTIONAL DIGITAL INPUTS

Type	4 or 12 inputs (4DI/2DO or 12DI/4DO module); dry contact, internally wetted @ 24VDC, or wet contact @ 250VDC (12DI/4DO only)
Sensitivity	Open >100 k Ω • closed <100 Ω
Galvanic isolation	3750VAC 1 min
Scan time	1 ms

OPTIONAL ANALOGUE OUTPUTS

Ranges (on order)	± 1 mA • 0–20 mA • 4–20 mA • 0–1 mA
Isolation	2500VAC 1 min
Accuracy	0.5% FS
Update time	1 cycle

COMMUNICATION PORTS

COM1 – RS-485 (built-in)	Optically isolated
Isolation / baud	3000VAC 1 min • up to 115.2 kbps
Protocols	Modbus RTU, DNP3, SATEC ASCII, IEC 60870-5-101
COM2 (optional module)	
Ethernet	Transformer-isolated 10/100BaseT • Modbus/TCP (502), IEC 60870-5-104, DNP3/TCP (20000) • 4 simultaneous connections
Cellular port	Modbus/TCP (502), DNP3/TCP (20000) • SMA connector
PROFIBUS DP (IEC 61158)	RS-485 isolated • 9600 bit/s–12 Mbit/s auto-detect • 32 bytes in/out
RS-232/422/485	Isolated • up to 115.2 kbps • Modbus RTU, DNP3, SATEC ASCII, IEC 60870-5-101

Standards Compliance

Accuracy

- Complies with AS/IEC 62053-41, Class 0.5/1.0 – accuracy subject to DC shunt input
- Meets ANSI C12.20-1998, Class 10, 0.5%
- Complies with IEC 61557-12 (PMD): Total DC Power 0.5 • Total DC Energy 0.5 • DC Current 0.05 • DC Voltage 0.05

Electromagnetic Immunity

- Complies with IEC 61000-6-2
- IEC 61000-4-2 level 3 – electrostatic discharge
- IEC 61000-4-3 level 3 – radiated electromagnetic RF fields
- IEC 61000-4-4 level 3 – electrical fast transient
- IEC 61000-4-5 level 3 – surge
- IEC 61000-4-6 level 3 – conducted radio frequency
- IEC 61000-4-8 – power-frequency magnetic field
- Meets ANSI/IEEE C37.90.1 – fast transient SWC

Electromagnetic Emission

- Complies with IEC 61000-6-4 – radiated/conducted Class A
- Complies with IEC CISPR 22 – radiated/conducted Class A

Safety & Construction

- UL File No. E236895
- Meets IEC 61010-1:2006

AC & Impulse Insulation

- Complies with IEC 62052-11 – 2500VAC for 1 minute
- 6kV/500Ω @ 1.2/50 μs impulse

Ordering Information

MODEL	–	CURRENT	–	DISPLAY	–	POWER	–	PROTOCOL	–	MOUNTING	–	TEST/CERT
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MODEL	
DC energy power version	PM130E-DCC
CURRENT INPUTS	
DC shunt	RS5
DISPLAY RESOLUTION	
Low resolution – 1A, 1V	—
High resolution – 0.01A, 0.1V	H
POWER SUPPLY	
85–265V AC & 85–290V DC	ACDC
9.5–18V DC	1DC
18.5–58V DC (24VDC, 48VDC)	23DC
COMMUNICATION PROTOCOL	
Modbus and DNP 3.0	—
Modbus and IEC 60870-5-101/104†	870
MOUNTING	
Panel mount (standard)	—
DIN rail mounting	DIN
TESTING AND CERTIFICATE	
Full functional test, calibration at various work loads & detailed test report	—
All of the above plus ISO 17025 and ILAC certified calibration certificate	CC

† –104 requires Ethernet – does not work over a cellular network.

Ordering Information (continued)

EXPANSION MODULE — MAX. 1 PER INSTRUMENT, ORDER SEPARATELY

4 Analogue Outputs: $\pm 1\text{mA}$ / 0–20mA / 0–1mA / 4–20mA / 0–3mA / $\pm 3\text{mA}$ / 0–5mA / $\pm 5\text{mA}$	A01-A08
Ethernet (TCP/IP)	ETH
PROFIBUS	PRO
RS232/422/485	RS232
4G Modem** – G=Europe, V=Verizon (US), A=AT&T (US), T=Telstra (AUS)	T4x
4 Digital Inputs / 2 Relay Outputs, 250V/5A AC	DIOR
4 Digital Inputs / 2 SSR Outputs, 250V/0.1A AC	DIOS
TOU + 4 Digital Inputs (RTC battery)	TOD
8 Digital Inputs (dry contact)	8DI
12 Digital Inputs / 4 Relay Outputs, 250V/5A AC	12DIOR
12DIOR digital input rating – DRC, 48V, 125V or 250V	DRC / 48V / 125V / 250V
12DIOR communication port – none, RS-485 or Ethernet	— / 485 / ETH

** Does not support the 870 protocol; supplied with a bendable antenna.

PLACE AN ORDER



To place an order or request a quotation for the PM130E DC, contact the SATEC Australia sales team, or scan the QR code.

PHONE +61 2 4774 2959
EMAIL sales@satec-global.com.au
ONLINE satec-global.com.au/contact

DOCUMENT REVISION HISTORY

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TBV1.1	17 September 2026