SATEC

PM126

DATASHEET

MULTIFUNCTIONAL POWERMETER WITH COLOR GRAPHICAL DISPLAY

The PM126 is a multi-functional power meter and Class 0.5S energy meter, supporting TOU.
Featuring a color graphical display, it supports multi-language display and graphical representation for the harmonic spectrum, waveform recordings and so forth It is a high-performance solution for public/ commercial building, industry, energy & infrastructure, grid & utility customers.

The unit measures a range of parameters, including power quality indicators, such as asymmetric components, unbalance, wave analysis, max/min with time stamp, demand and max demand, threshold alarm, SOE event log, etc. Is serial RS485 port is the built-in default. A second communication port is available, as either a second RS485 port or an ETH port. Function extensions like 8DI/6DO/2AO/2PO… are available on demand.

FEATURES

- Real-time measurement: current, voltage, active power / reactive power / apparent power/ power by phase, power factor, frequency, load type, load rate, four-quadrant power, etc.
- TOU energy: Class 0.5S four-quadrant active and reactive energy, import/export/total/net active/reactive energy; 6 time zones with 4 tariffs * 12
  periods each;
- Demand and max demand: current / power real-time demand, max demand;
- Time stamped Max/min values: L-L/L-N voltage, current, active/reactive/apparent power, power factor, frequency, unbalance and THD, which can be reset on the display.
- Threshold alarming: High/low threshold and delay setting. Once exceeded, it will trigger alarm, DO and event log.
- Asymmetric component: positive/negative/zero sequence component: current/voltage unbalance; phase angle; displayed on color graphical display;
- Harmonic: THD, 2nd-63rd harmonic analysis, THFF, K factor, crest factor, etc. Harmonic values and spectrum can be displayed.
- Waveform recording and display: real-time current/voltage waveform, waveform recording according to preset conditions, up to 10 logs.

Measured parameters			PM126E	PM126EH
REAL TIME	Voltage	V1, V2, V3, VLN avg, V12, V23, V31, VLL average	■	■
	Current	I1, I2, I3, I average	■	■
	Active power	P1, P2, P3, P Total	■	■
	Reactive power	Q1, Q2, Q3, Q Total	■	■
	Apparent power	S1, S2, S3, S Total	■	■
	Power factor	PF1, PF2, PF3, PF	■	■
	Load type	L/C/R,four-quadrant indication	■	■
	Frequency	F	■	■
PHASOR	Asymmetric component	positive/negative/zero sequence (voltage & current)		■
	Phase angle	Voltage / Current phase angle		■
ENERGY	Active	import/export/total/net	■	■
	Reactive	import/export/total/net	■	■
	TOU	6 time zones, 12 periods, 4 tariffs, present/ last month, import/export EP & EQ		■
DEMAND	Real-time current	I1, I2, I3, average		■
	Real-time power	Psum, Qsum, Ssum		■
	Current max	I1 max,I2 max, I3 max, Iavg max		■
	Power max	Psum, Qsum, Ssum		■
	Setting	Interval and numbers of sliding windows		■
	Forecast	active/reactive/apperent power forecast		■
MAX/MIN	Time stamped Max/ Min	VLL,VLN, I, P,Q,S,PF,F,ITHD,VTHD	■	■
POWER QUALITY	Unbalance	Voltage, current	■	■
	Voltage THD	THD V1,THD V2,THD V3,THD Vavg	■	■
	Current THD	THD I1,THD I2,THD I3,THD Iavg	■	■
	Individual Harmonic V	Up to 63rd: Values and spectrum		■
	Individual Harmonic I	Up to 63rd: Values and spectrum		■
	Crest Factor V	Crest Factor		■
	THFF V	THFF		■
	K Factor I	K Factor		■
	Advanced power quality analysis	Voltage sag & swell, fluctuation & flicker, frequency fluctvuation and recording, interharmonic analysis		■

Measured parameters			PM126E	PM126EH
ALARM	Off-limit alarming	10 channels, any parameters, threshold & delay setting, DO output setting	■	■
	Automate monitoring	PT phase loss, CT phase loss, PT phase reversal, CT phase reversal		■
TIME	Real-time clock	Year month date hour minute second	■	■
	Real-time waveforms	Voltage, Current, 78us transient	■	■
	Waveforms capture	Phase voltage manual operation/ condition capture, Phase current manual operation/ condition capture		■
	Number of logs	10		■
LOG	Opration log	Password change, last power-on, last power-off, total oporation time		■
	Event log	DI status change and time, 20 SOE logs		■
	Alarm log	16		■
	Data log	1-1440min interval setting, 15 customized variables, Default: I1, I2, I3, V1, V2, V3, EP total, EQ total, VTHD, ITHD;		■
WIRING	Current polarity	Adjustable by communication or the display	■	■
COM	RS485	MODBUS-RTU SLAVE	■	■
	2nd RS485	MODBUS-RTU SLAVE/MASTER		□
	ETH	MODBUS-RTU SLAVE		□
OTHERS	Alarm indication	high/low threshold alarm LED indication	■	■
	Status bar	Date, clock, F,PF, EP total display	■	■
	Infrared	Infrared based on PIR technology, security alarm detection	■	■
	ISP	Online software update	■	■
	HMI	3.2 inch TFT true color, -20℃~+70℃; Multi-language	■	■

□ - optional

TECHNICAL SPECIFICATIONS

INPUT RATINGS

VOLTAGE INPUTS

Nominal voltage (L-N/L-L)	100/400V AC
Operating range (L-N/L-L)	Nominal voltage + 25% tolerance
Burden for: 400V 100V	 < 0.2 VA < 0.04 VA
Over-voltage withstand	800V AC continuous, 2,500V AC @ 1 second
Galvanic isolation	> 2,000V AC
Wire size	up to 2.5mm²

CURRENT INPUTS (VIA CT)

Input	5A
Wire size	up to 2.5mm²
Galvanic isolation	2,500V
Operating range	Continuous 10A RMS
Burden	< 0.2 VA @ In=5A
Overload withstand	20A RMS continuous, 100A RMS for 1 second

SAMPLING RATE MEASUREMENT

Sampling rate	up to 256 samples/cycle

POWER SUPPLY

Rated input	220V AC @ 50/60 Hz with +20% / -50% tolerance
Galvanic isolation	> 2,000V

BUILT-IN I/O

DIGITAL INPUTS

4 Digital Inputs Dry Contact, internally wetted @ 5V DC	
Sensitivity	Open @ input resistance >100 k Ω Closed @ Input resistance < 100 Ω
Galvanic isolation	4000V AC 1 min
Internal power supply	5V DC
Scan time	1 ms

THYRISTOR OUTPUTS (SO)

2 thyristor outputs rated at 1A/100-250V AC	
Galvanic isolation	2,000V AC 1 min
Operate time	1 ms max.
Update time	1 cycle

COMMUNICATION

SERIAL PORT (built in)

RS-485 optically isolated port	
Isolation	2,000V AC @ 1 min
Baud rate	2,400 - 38,400 bps
Supported protocols	Modbus RTU

ETHERNET PORT

Transformer-isolated 10/100BaseT Ethernet port	
Supported protocols	Modbus/TCP (Port 502)
Num. of simultaneous connections	1
Connector type	RJ45 modular
Isolation	1,000V DC @ 1min

OTHER CHARACTERISTICS

REAL TIME CLOCK

- Battery-backed clock
- Accuracy / typical error:
  7 seconds per month @ 25°C (±20 ppm)
- Typical clock retention time: 36 months

DISPLAY

3.2'' / 63.84 × 47.88mm
4 push button Keypad

ENVIRONMENTAL CONDITIONS

Operating temperature	-20°C to 75°C
Storage temperature	-40°C to 85°C
Humidity	5 to 95% non-condensing

CONSTRUCTION

Weight	0.40kg
Dimensions [H×W×D]	96x96x75

STANDARDS COMPLIANCE

ACCURACY

- Complies with IEC62053-22, class 0.5S:
  - Total Apparent Power 0.5%
  - Total Active Energy 0.5%
  - Total Reactive Energy 2%
  - Frequency 0.1 Hz
  - Current 0.2%
  - Voltage 0.2%
  - Power Factor 0.5%
  - THDV, THDI 5%

ELECTROMAGNETIC IMMUNITY

- IEC 61000-4-2 level 3:
  Electrostatic Discharge
- Designed to comply with
  IEC 61000-4-3 level 3:
  Radiated Electromagnetic RF Fields
- IEC 61000-4-4 level 3:
  Electric Fast Transient
- IEC 61000-4-5 level 3: Surge
- Designed to comply with IEC 61000-4-6
  Conducted Radio Frequency
- Designed to comply with IEC 61000-4-8:
  - Power Frequency
  - Magnetic Field
- Designed to comply with 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 AND IMPULSE INSULATION

- Complies with IEC 62052-11:
  2500V AC during 1 minute
- 6KV/500Ω @ 1.2/50 µs impulse