Reliable and Precise Control over Electrical Characteristics and Power

SENTRON PAC3200 power monitoring device

power management

www.siemens.com/powermanagementsystem

SIEMENS

When, where and how much power is consumed?

SENTRON PAC3200 makes consumption transparent

A sustainable reduction of power costs first requires an analysis of the electrical system's current consumption and power flows. Our SENTRON PAC3200 power monitoring device provides you with the required information as it precisely and reliably detects the power values of electrical feeders and individual consumers. In addition, it measures the most important electrical parameters such as current, voltage and power.

The SENTRON PAC3200 power monitoring device can be employed wherever electric power is consumed. It detects various measurements and visualizes them on a graphical LCD display.

For further processing of the measured data, the SENTRON PAC3200 can be very easily connected to supervisory automation and power management systems. Amongst others, also to our software packages SIMATIC PCS 7 powerrate and SIMATIC WinCC powerrate.

Power measuring with SENTRON PAC3200

The SENTRON PAC3200 power monitoring device detects the active, reactive and apparent power per phase and for the overall system. Power values can both be determined for high as well as low tariff. The SENTRON PAC3200 measures ratings and power values via the four quadrants – i.e. power import and export are measured separately. Furthermore, the SENTRON PAC3200 facilitates the detection of a measuring period's average values for active and reactive power. These values can, for example, be further processed into load curves in a power management system. Typically, 15-minute values are used for this purpose.

Precise measuring with SENTRON PAC3200

The SENTRON PAC3200 power monitoring device is a panel-mounting device with a size of 96 x 96 mm. The installation depth merely amounts to space-saving 51 mm.

The SENTRON PAC3200 detects more than 50 electrical measurements such as voltages, currents, ratings, power values, frequency, power factor, symmetry and THD. In addition to the instantaneous measured value, the minimum and maximum values of the measurements are detected and stored in the memory. The SENTRON PAC3200 is dimensioned for measuring applications in single- or multi-phase networks – with and without neutral conductor.
A particularity of this device is that it supports the direct measuring of phase voltages up to 830 V. The SENTRON PAC3200 can thus be employed in 690 V networks without any problems. Furthermore, measuring via voltage transformers is possible with the transformation ratio respectively adjustable. The current inputs are dimensioned for measuring on /1 A or /5 A current transformers.

The measuring accuracy for active power and ratings amounts to 0.5%, that for voltages to 0.3% and that for currents to 0.2%. This is an unrivaled level of accuracy within this device class.

The measuring accuracy allows for the monitoring of up to six measurements for an upper or lower limit value. Via the integrated logic function, the six measured value monitorings can be interlinked. The SENTRON PAC3200 is already equipped with one multifunctional digital input and output each as a standard. The output can be used as pulse, alarm or switching output.
The input can, for example, be used for pulse counting or for switchover between high and low tariff detection.

Full graphical LCD display to indicate:
- Display title or designation of the displayed measurements
- Phase
- Measured value
- Unit
- Labeling of function keys

4 function keys for device operation with context-sensitive key description on the display

Example of operating menu:
The texts can be displayed in several languages, which can be selected directly on the device. The large graphical LCD display facilitates reading even from great distances. For optimum readability – also with poor light conditions – the SENTRON PAC3200 comes with a gradually adjustable background illumination.

Communication via Ethernet

The SENTRON PAC3200 is equipped with an Ethernet interface as a standard. Therefore, no additional hardware is required, which saves space and costs. The device can thus be configured and measured data transmitted via LAN networks. The Siemens system protocol SEAbus TCP and Modbus TCP are available for selection. An Ethernet interface accommodated in a device of this performance class is a very special and trend-setting feature.

Configuration with the SENTRON powerconfig software

For configuration, the free SENTRON powerconfig software is enclosed with the device. A direct connection is established between the configuration PC and the measuring device. With the help of the software, the various parameters can be very easily set in the power monitoring devices. This is particularly advantageous if many devices are to be parameterized similarly.

Power management and SENTRON PAC3200

The SENTRON PAC PROFIBUS DP can be easily integrated in any power management system or PROFIBUS-based automation system with the best available PROFIBUS DP expansion module. With communication, the SENTRON PAC3200 transmits measured values to the superior systems, where the data can be further processed for display or control tasks.

Siemens offers the SIMATIC PCS 7 powerrate and SIMATIC WinCC powerrate power management software packages. The SENTRON PAC3200 power monitoring device can be easily connected to this software. The software packages facilitate a transparent and structured overview of the power flows. This allows for a cost-by-cause allocation of power consumptions and costs. Furthermore, atypical operating states can be promptly detected.

SENTRON PAC PROFIBUS DP expansion module for data transmission via PROFIBUS DP with transmission rates of up to 12 Mbit/sec.

Terminal blocks for voltage measuring, current measuring, auxiliary voltage and digital input and output.

Rapid device mounting without tools due to latching retainers. The device is provided with a sealing rubber as a standard. With screw mounting, IP65 is attained on the front.

Highlights at a glance

- **Broad application range**
  Due to large function and performance scope
  – Direct connection to industrial networks up to 690 V, CATIII
  – Optional measuring via voltage transformers
  – Connection to current transformers x/1 A or x/5 A
  – Application in systems with UL/CSA requirements
  – Application in harsh environments: dust and splash water protection (IP65) through standard spray-on sealing
- **Minimum space requirements**
  Due to compact design: 96 x 96 x 56 mm (W x H x D); installation depth: 51 mm or 73 mm with expansion module
- **Basis for accurate cost allocation**
  Due to high power measuring accuracy:
  Class 0.5S in acc. with IEC 62053-22 for active power
- **Sound readability also with poor light conditions**
  Due to large, illuminated graphical LCD display
- **Easy operation**
  Due to intuitive user guidance with multi-lingual plain text displays
- **Rapid mounting**
  Due to easily latching retainers, also mounting without tools possible
- **Comprehensive consumption detection**
  Due to 10 power counters for active, reactive and apparent power, high and low tariff, import and export

Functional features

Instantaneous effective values		
Voltage	Phase-phase/phase-neutral	✓
Currents	Per phase	✓
Apparent, active and reactive power	Per phase and total	✓
Power factor	Per phase and total	✓
Network frequency		✓
THD for voltage and current	Per phase	✓
Min./max. values	minimum & maximum function	✓
Average values	Over all phases	✓
Power detection via counters		
Active power	Import/recovery; high/low tariff	✓ / ✓
Reactive power	Positive/negative; high/low tariff	✓ / ✓
Apparent power	High/low tariff	✓
Power demand per measuring period	Average rating for active and reactive power	✓
Measuring period selectable		1 to 60 min.
Min./max. rating values within the measuring period		✓
Hours counter	Consumer runtime	✓
Universal counter	E.g. detecting power pulses of external counters, etc.	✓
Fault limits		
Voltages / currents		±0.3% / ±0.2%
Ratings		±0.5%
Active power		Class 0.5S in acc. with IEC 62053-22
Reactive power		Class 2 in acc. with IEC 62053-23
Monitoring functions		
Limit value monitoring		Up to 6 limit values
Simple logic functions for linkage of limit value		✓
Phase asymmetry	Voltage and current	✓
Communication		
Ethernet	Integrated	10 Mbit/sec
Protocols	Siemens system protocol and others	SEAbus TCP Modbus TCP
PROFIBUS DP	Optional expansion module • Parameterization via device front • Selection of measurements transmission via device database file • Support of all baud rates from 9.6 Kbit/sec to 12 Mbit/sec	✓

Inputs/outputs		
Digital input	Multifunctional	1
Digital output	Multifunctional	1
General		
Password protection		✓
Technical data		
Two-quadrant (import) / four-quadrant (import and recovery) measuring		4Q
Measuring in single-/multi-phase networks		1ph, 2ph or 3ph
Applicable for network type		TN, TT, IT
Signal detection		Consistent
Voltage inputs	Direct connection up to max. delta/star without transformer	690 V / 400 V CATIII
Current inputs	Settable on device	x/1 A or x/5 A
Auxiliary voltage	AC DC	95 ... 240 V AC (±10%) 140 ... 340 V DC (±10%)
Dimensions	L x W x D in mm Installation depth without module (mm) Installation depth with module (mm)	96 x 96 x 56 51 73
Degree of protection	Front Rear	IP65 IP20
Operating temperature	°C	–5 ... +55
Display	Type Resolution (pixels)	Background-illuminated graphical LCD 128 x 96
Text displays	Multilingual	9 languages (German, English, Portuguese, Spanish, Italian, French, Turkish, Russian, Chinese)
Approvals		
UL/CSA	Tested in accordance with: UL 61010-1 Safety of Electrical Equipment for Measurement, Control, and Laboratory Use; Part 1: General Requirements, Second Edition CAN/CSAC22.2 No. 61010.1, Safety of Electrical Equipment for Measurement, Control, and Laboratory Use, Second Edition	E314880

Order information

Product	U_c	Order No.
SENTRON PAC3200 power monitoring device	95 ... 240 V AC 50/60 Hz ±10% 140 ... 340 V DC ±10%	**7KM2112-0BA00-3AA0**
SENTRON PAC PROFIBUS DP expansion module	---	**7KM9300-0AB00-0AA0**

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For technical questions, please contact:
Technical Assistance
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E-mail: technical-assistance@siemens.com

Siemens AG
Industry Sector
Industry Automation
P.O. Box 48 48
90327 NUREMBERG
GERMANY

www.siemens.com/lowvoltage

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