



PAC3100 Power Meter

Basic monitoring of electrical power systems

The PAC3100 is a powerful compact power monitoring device that is suitable for use in industrial, government and commercial applications, where basic metering and energy monitoring is required. The meter may be used as a stand alone device monitoring over twenty-five parameters or as part of an industrial control, building automation or global power monitoring system.

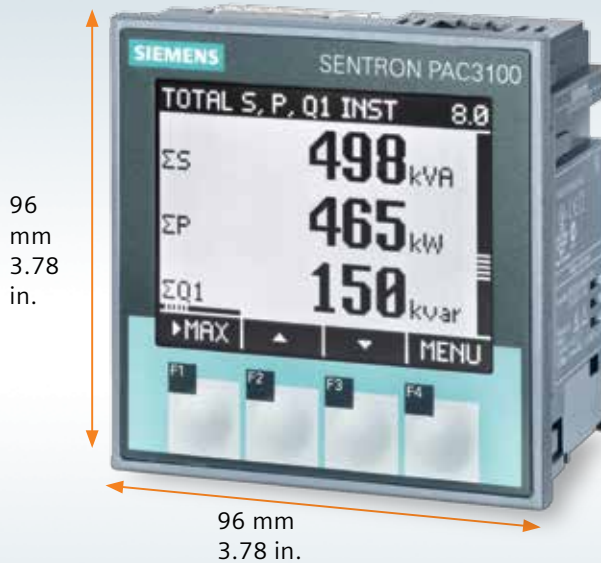
Metering and monitoring applications range from simple analog volt and amp meter replacements to stand-alone sub-billing or cost allocation installations.

The PAC3100 has many features not usually found in this price class of meters. A large graphical display supports multiple languages and easy to use menus that can be used to set up the meter as well as a PC based program, SENTRON powerconfig, that can be used to pre-configure one or

multiple units. The meter also has built in Modbus RTU communications via a RS485 interface. The meter comes standard with two digital inputs and outputs. One output is suitable for pulse output for export/import real and reactive energy. The other output is controllable from an outside source by way of a Modbus register. The PAC3100 meets or exceeds ANSI C12.16 (1%) specification for revenue meters.

The PAC3100 can also be used to support LEED certification and provide the needed energy metering data for federal or local government energy reduction programs.

The PAC3100 provides open communications using Modbus RTU and digital I/O for easy integration into any local or remote monitoring system to indicate values and status. Simple configuration of the meter can be done from the front display or by using a PC with SENTRON powerconfig setup software, supplied with the meter.



Full Graphic LCD Display to indicate:

- Display title or designation of the displayed measurements
- Phase
- Measured value Unit
- Labeling of function keys



Example of operating menu:

With an easy-to-read adjustable back lit LCD display, the PAC3100 can be commissioned in only two steps. After selecting the language and setting two parameters (voltage and current inputs), the meter is ready for use.¹⁾

When, where and how much power is consumed?

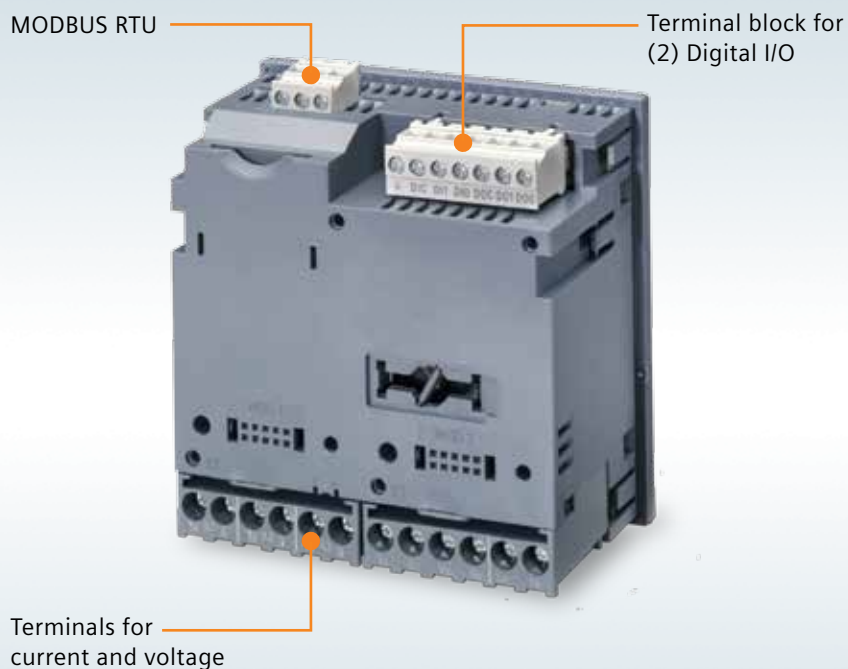
PAC3100 makes consumption apparent

To accomplish a sustainable reduction of power costs, you must first analyze the electrical system's current consumption and power flows. The PAC3100 power meter precisely and reliably delivers the required information of power values to put you on the path to reduce your power cost.

Applications summary

- Replace multiple analog meters
An ideal replacement for analog meters. Use it for stand-alone metering in custom panels, switchboards, switchgear, gensets, motor control center and UPS systems, PDU, RPPs, etc.

Beside the ability to measure energy data, the device can also track the status of a breaker due to the two built-in digital inputs. This makes the meter a cost effective solution to monitor the energy consumption in a branch as well as the status of the protective device.



- **Basic Metering**
The PAC3100 offers high-accuracy power, energy and demand measurements. These revenue accurate values can be used for bill verification, monitoring backup power on critical systems and offering cost-effective energy solutions.
- **Cost allocation / Energy monitoring**
Perfect for monitoring right down to the tool level, the meter can help monitor cost centers, identify opportunities for demand control and check energy consumption patterns.
- **Automation integration**
Monitor critical equipment processes and tie directly to the Siemens family of PLCs and automation networks.
- **Sub-metering**
Low cost, high accuracy and simple retrofit installation enables economical measurement of commercial and residential tenant space. Integrate the PAC3100 with existing energy management systems and RTUs.

Reduce energy onsumption by eliminating previously uncontrolled expenses.

Power management and PAC3100

The PAC3100 can easily be integrated into a power management system using Modbus RTU. With communication, the PAC3100 transmits measured values to the supervisory systems, where the data can be further processed for display and control.

Siemens offers a low cost Powermanager or enterprise level WinPM.Net power monitoring software which can provide easy integration to the PAC3100 meter. Powermanager or WinPM.Net provide standard overview displays allowing detailed analysis of the electrical power, which allows for easy allocation of power consumption and cost. Additionally, unexpected operating conditions can be detected on a timely basis.

¹⁾ Languages included as standard in the meter are English, German, French, Spanish, Italian, Portuguese, Polish, Turkish, Russian and Chinese.

Functional features

| Instantaneous values | | |
|---|--|---|
| Voltage | Phase-phase / phase-neutral | ✓ |
| Currents | Per phase including neutral current total | ✓ |
| Apparent, active and reactive power (kW, kVAR, kVA) | Per phase and total | ✓ |
| Power factor | Total | ✓ |
| Frequency | 45...64 Hz | ✓ |
| Min. / max. values | Voltage – phase-phase, phase-neutral Current / Power / Power factor Frequency Three phase average voltage and current | ✓ |
| Average values | Voltage – phase-phase, phase-neutral Voltage min. / max. for phase-phase-phase-neutral Current Current min. / max. | ✓ |
| Energy measurement | | |
| Real (active) energy (kWh) | Import / export | ✓ / ✓ |
| Reactive energy (KVARh) | Positive / negative; high / low tariff | ✓ / ✓ |
| Energy demand per measuring period | Three phase average rating for active and reactive power | 1 to 60 min. |
| Min. / max. rating values within the measuring period | | ✓ |
| Measurement accuracy | | |
| Voltages | | ±1% |
| Currents | | ±1% |
| Active Power | | ±1% |
| Reactive Power | | ±3% |
| Active energy | | Class 1 according to IEC 61557-12 and IEC62053-21 |
| Reactive energy | | Class 3 according to IEC61557-12 and IEC62053-23 |
| Communication | | |
| Modbus RTU | Standard <ul style="list-style-type: none"> • Parameterization via device front or with SENTRON powerconfig software • Transition of data via MODBUS register based points | <ul style="list-style-type: none"> • Support of all baud rates from 4800, 9600, 19.2K and 38.4K BPS (4.8 / 9.6 / 19.2 and 38.4 kB/sec) |
| Standard Inputs / Outputs | | |
| Integrated Digital input | 30 Vdc / 2.5 mA | 2: wet, no external power needed |
| Integrated Digital output | 30 Vdc max. / 10-27mA; 130 mA max. | 2 |
| General | | |
| Password protection | | ✓ |

Functional features (continued)

| Inputs / Outputs | | |
|---|---|--|
| Input voltage / at digital input • at DC / maximum | | 30 V |
| Number of digital outputs | | 2 |
| Number of digital inputs | | 2 |
| Digital output version | | Switching or pulse output function |
| Design of the switching input | | Self-supplied |
| Type of switching output | | bidirectional |
| Input current / at digital input • initial value for signal<1>-recognition • Full-scale value for signal<0> recognition • for signal <1> / minimum | | 2.5 mA 0.5 mA 2.5 mA |
| Output current • at digital output / with signal <0> / maximum • at digital output / for signal <1> / minimum • at digital output / for signal <1> / maximum • at the digital outputs / at DC / limited to 100 ms / maximum • at the digital outputs / at DC / maximum | | 0.2 mA 10 mA 27 mA 130 mA 30 mA |
| Output delay / at digital output • for signal <0> to <1> / maximum • for signal <1> to <0> / maximum | | 5 ms 5 ms |
| Operating conditions for digital inputs / external voltage supply | | No |
| Operating voltage / as output voltage / at DC / maximum permissible | | 30 V |
| Property of the output / Short-circuit proof | | Yes |
| Input delay time / at digital input • for signal <0> to <1> / maximum • for signal <1> to <0> / maximum | | 30 ms 30 ms |
| Internal resistance / at the digital outputs | | 55 Ω |
| Load resistance / at digital input • initial value for signal<0>-recognition • Full-scale value for signal<1> recognition | | 100 000 Ω 1 000 Ω |
| Measuring category / for digital signals | | CATI |
| Switching frequency / at digital output / maximum | | 17 Hz |
| Technical data | | |
| Two-quadrant (import) / four-quadrant (import and export) measuring | | 4Q |
| Measurement types | | 1 ph, 2 ph or 3 ph |
| Applicable for network type | | TN, TT, IT |
| Sampling rate | 64 samples/cycle, all channels measured simultaneously | |
| Measured voltage | Direct connection up to max. delta/bye without transformer | 690 V / 400 V (CAT III) |
| Current inputs | Settable on device | 5A nominal |
| Power supply | AC/DC | 100...240V AC (±10%) / 110...250V DC (±10%) |
| Dimensions | L x W x D in mm Installation depth (mm) | 96 x 96 55 mm / 2.0 in. |
| Degree of protection | Front Rear | IP65, NEMA 12 IP20, NEMA 1 |
| Operating temperature | °C / °F | -10...+55 / +14...+131 |
| Display | Type | Background-illuminated graphic LCD |
| Resolution (pixels) | | 128 x 96 |
| Text displays | | Multilingual |

Functional features (continued)

| Connections | |
|--|--|
| Type of electrical connection | |
| • at the inputs for supply voltage | screw-type terminals |
| • at the measurement inputs for voltage | screw-type terminals |
| • at the measurement inputs for current | screw-type terminals |
| Mechanical Design | |
| Height | 96 mm |
| Height / of the display | 54 mm |
| Width | 96 mm |
| Width | |
| • of the display | 72 mm |
| Depth | 56 mm |
| Mounting position | vertical |
| Installation depth | 51 mm |
| Mounting type / panel mounting | Yes |
| Material thickness / of the control panel | |
| • maximum | 4 mm |
| Net weight | 469 g |
| Environmental conditions | |
| Degree of pollution | 2 |
| Installation altitude / at height above sea level / maximum | 2 000 mm |
| Standard | |
| • for EMC for industrial sector | IEC 61000-6-2 respectively IEC 61326-1:2005, table 2 |
| • for EMC against unloading | IEC 61000-4-2 |
| • for EMC against high frequency fields | IEC 61000-4-3 |
| • for EMC against conducted disturbance variables via HF fields | IEC 61000-6-4 |
| • for EMC against magnetic fields with power engineering frequencies | IEC 61000-4-8 |
| • for EMC against quick, transient electrical disturbances | IEC 61000-4-4 |
| • for EMC against voltage drops and interruptions | IEC 61000-4-11 |
| • for EMC against surge voltages | IEC 61000-4-5 |
| • for pulse emitter | according to IEC62053-31 |
| • for cyclic, environmental damp heat check | IEC 60068-2-30 |
| • for environmental coldness check | IEC 60068-2-1 |
| • for environmental dry heat check | IEC 60068-2-2 |
| Relative humidity / at 25 °C / without condensation / during operation | |
| • minimum | 5 % |
| • maximum | 95 % |

Functional features (continued)

| Ambient temperature | |
|---|--|
| • during operation / minimum | -10 °C |
| • during operation / maximum | 55 °C |
| • during storage / minimum | -25 °C |
| • during storage / maximum | 70 °C |
| Certificates | |
| Certificate of suitability | |
| • as EC declaration of conformity | IEC 61010-1: 2001 (2nd Ed.) with Corr. 1, EN 61010-1: 2001 (2nd Ed.) and DIN EN 61010-1:2002 with "Berichtigung 1" |
| • as approval for Canada | UL 61010-1, 2nd Ed. CAN/CSA-C22.2 NO. 61010-1-04 |
| • as approval for USA | UL 61010-1, 2nd Ed. CAN/CSA-C22.2 NO. 61010-1-04 |
| • Approval Australia | Yes |
| Reference identifier / acc. to DIN EN 61346-2 | P |

General Product Approval

Declaration of Conformity



Order information

| Product | Order Number ¹⁾ |
|--|----------------------------|
| PAC3100 compression terminals AC/DC | 7KM3133-0BA00-3AA0 |
| Adapter Plate for 4700/4720 meter cutout | 93-47ADAPTER |
| PAC3xxx/4xxx Meter Front Facing DIN Rail adapter | 7KM99000XA000AA0 |

1) Omit dashes from part numbers when ordering except on 93-47ADAPTER.

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