SENTRON

7KT/7KM PAC Measuring Devices
A device to suit every requirement

Fully informed at all times – thanks to intelligent measuring technology
The 7KT/7KM PAC measuring devices ensure precise and reliable measurement of power values for infeed, outgoing feeders and individual loads. For further processing of measurement data, the devices are equipped with a wide range of communication options for easy integration in higher-level automation and power management systems.

Universal – worldwide
The portfolio covers measuring devices for every requirement: from simple power measurement through to the monitoring of system status and power quality. A user-friendly and intuitive menu ensures easy commissioning of the device. Universally and globally applicable – thanks to international approvals.

Highlights
- Fast commissioning via intuitive menu
- Easy system connection to higher-level automation and power management systems
- Global application in accordance with IEC/EN and UL norms
Measuring Devices and Power Management

PC-based power management system

Overview

The SENTRON product family offers the user not only power management software in the form of SENTRON powermanager but also the corresponding hardware in the form of 7KM PAC measuring devices and 3WL/3VL circuit breakers for the realization of a complete power management system.

The components are optimally coordinated with each other. For example, special drivers for the SENTRON devices are integrated in the powermanager software so that on the one hand the power data acquisition can take place without any great configuration effort and, on the other hand, the most important measured values or states are indicated by predefined displays.

This reduces the engineering work for the customer and gives the user the assurance of knowing that the device functions are optimally supported in the software.

Benefits

- Transparency of power flows
- Exact knowledge of the consumption profile
- Increase of power efficiency
- Optimization of power supply contracts
- Compliance with contractual terms
- Assignment of power costs to cost centers
- Optimization of plant maintenance
- Identification of critical plant conditions

Field of application

The PC-based energy management system is used wherever power flows need to be transparently displayed and monitored.

Industries

Energy efficiency thanks to power management with consistent monitoring and the resulting optimization measures is important for all industries, e.g. in the manufacturing industry, in non-residential buildings, in the field of services, and in infrastructure projects. This has a particular impact on competitiveness, particularly in view of rising energy prices.

System configuration with powermanager

- Integration of measuring devices by means of predefined device templates for the 7KM PAC family and the 3WL/3VL circuit breakers
- Easy integration of existing modbus-capable detecting devices
- Communication through Standard Ethernet
- Integration of devices with RS 485 interface (ModbusRTU) through Modbus gateway, e.g. the 7KM PAC4200 measuring device can be used as gateway
System configuration

Operation & monitoring
Windows or web clients

Data processing
server

Data detection
Measuring/protection devices

Hardware components

The hardware components of the PC-based energy management system are
- the 7KM PAC measuring devices in this chapter
- the open 3WL circuit breakers in Catalog LV 10.1 · 2012, Chapter 1
- the 3VL molded case circuit breakers in Catalog LV 10.1 · 2012, Chapter 2

Software

The software for the PC-based power management system is powermanager, see Catalog LV 10.1 · 2012, Chapter 13, “Configuring, visualizing and controlling with SENTRON”.

Internet

You can find more information on the Internet at:
www.siemens.com/lowvoltage/energymanagement
Measuring Devices and Power Management

Overview

SIMATIC-based solutions for the process and manufacturing industry

Besides the high level of automation, a key feature of the process and manufacturing industry is a very high power consumption. It is only natural, therefore, to integrate an energy management system in the existing systems. The add-on SIMATIC powerrate for WinCC and PCS 7 makes it possible to provide transparency and control in power distribution and energy costs.

Integration of switching, safety and measuring devices

For complete integration of low-voltage power distribution components in process and SCADA systems, PROFIBUS DP interfaces and function block libraries are available, e.g. the PAC3200 function block library for SIMATIC WinCC and PCS 7. The software add-ons can therefore be used to display all the data supplied from the devices without major engineering work.

PROFINET and PROFIenergy

An increasing number of devices in automation technology offer PROFINET. There is also a Switched Ethernet PROFINET module for the 7KM PAC3200 and PAC4200 measuring device.

PROFIenergy is a “Common Application Profile” from the PNO. Thanks to PROFIenergy it is possible to assemble an energy management system with standardized device interfaces.

Benefits

- Increased energy efficiency due to exact knowledge of the load profile
- Optimization of power supply contracts
- Assignment of power costs to cost centers
- Optimization of plant maintenance
- Identification of critical plant conditions
- Reliable monitoring of the power limit through automatic load management

Field of application

The SIMATIC-based energy management system is used wherever power flows need to be transparently displayed and monitored, and also where it is necessary to effectively intervene above the process control level.

Industries

SIMATIC powerrate is used in all areas in which PCS 7 or WinCC is used and energy efficiency considerations play a major role.

More information

Hardware components

- the 7KM PAC measuring devices in this chapter
- the open 3WL circuit breakers in Catalog LV 10.1 · 2012, Chapter 1
- the 3VL molded case circuit breakers in Catalog LV 10.1 · 2012, Chapter 2

Software components

- SIMATIC powerrate
- PCS 7 function block library PAC3200
- WinCC function block library PAC3200

You can find more information on the Internet at: www.siemens.com/lowvoltage/energymanagement
Overview

Precise measuring with 7KM PAC3100, PAC3200 and PAC4200

The 7KM PAC measuring devices: PAC3200 (left), PAC3100 (center) and PAC4200 (right)

The 7KM PAC measuring devices are used to measure and indicate all relevant network parameters in low-voltage power distribution. They can be used for single-phase measurements as well as for multiphase measurements in 3 and 4-conductor networks (TN, TT, IT).

Power values for main distribution boards, electrical feeders or individual loads are recorded precisely and reliably, and important measured values are supplied in addition for assessing the state of the plant and the quality of the network.

Benefits

7KM PAC measuring device, general

The common features of all measuring devices in the 7KM PAC series:

- Simple mounting and commissioning
- High IP65 degree of protection (front side, when installed) permits usage in extremely dusty and wet environments
- Intuitive operation using 4 function buttons and multilingual plain text displays
- Easy adaptation to different systems using integrated and optional - digital inputs and outputs - communication interfaces
- Worldwide use - min. 8 languages - international approvals - developed and tested to European and international standards
- Low mounting depth

7KM PAC3200 and 7KM PAC4200 measuring device

Additional performance characteristics of the 7KM PAC3200 and 7KM PAC4200:

- Precise energy recording
- Versatile system integration - integrated Ethernet interface - optional communication modules available - multifunctional digital inputs and outputs - limit value monitoring
- Can be directly connected to power supply networks up to 690 V AC (UL-L), CATIII without voltage transformer
- Easy-to-use configuration software included as standard

7KM PAC4200 measuring device

Additional performance characteristics of the 7KM PAC4200:

- Monitoring the plant status and the system quality - basic information for evaluating network quality - logging of plant history in the form of operation, control and system-related events
- Recording of the power range through power averaging (load profile)
- Daily energy meters for apparent, active and reactive energy across 365 days for cut-off date assessment
- Detection of gas, water, compressed air or other energy sources via pulse counter to the digital inputs
- Can be expanded using modules to up to 10 digital inputs and 6 digital outputs
- Meters for apparent, active and reactive energy for the precise detection of the power consumption of a partial process or manufacturing process
- 10/100 Mbit/s Ethernet interface with gateway function for the easy connection of devices with serial RS 485 interface via 7KM PAC RS485 expansion module to an Ethernet network
- Comprehensive convenience indicators, such as user-defined displays, bar and status indicators, phase diagram and list and histogram graphics

Satisfies the accuracy requirements of class 0.2S high-precision meters used by power supply companies according to IEC 62053-22, which are normally reserved for exacting industrial applications.

More information

More information is available on the Internet at: www.siemens.com/lowvoltage/energymanagement
Measuring Devices and Power Management

7KM PAC Measuring Devices

Introduction

Technical specifications

### Device versions

<table>
<thead>
<tr>
<th>Device version</th>
<th>7KM PAC3100</th>
<th>7KM PAC3200</th>
<th>7KM PAC4200</th>
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<tbody>
<tr>
<td>Basic measurement variables</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Voltage, current</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Neutral conductor current</td>
<td>✓</td>
<td>--</td>
<td>✓</td>
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<tr>
<td>Apparent power, active power, reactive power, power factor</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Power factor of the fundamental wave</td>
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<td>--</td>
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</tr>
<tr>
<td>Frequency</td>
<td>Of the reference phase</td>
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<td>✓</td>
</tr>
<tr>
<td>Min/max values</td>
<td>Slave pointer function</td>
<td>✓</td>
<td>--</td>
</tr>
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</table>

### Power measurement

- **Apparent energy**
- **Active energy, reactive energy**
- **Number of tariffs**
- **Daily energy values for 365 days**
- **Consumption recording of a sub-process or manufacturing process**
- **Power averages of the last integration period**
- **Load profile record**
- **Power measuring devices for S0 signal at a digital input**
- **Accuracy class for active energy**
- **Accuracy class for reactive energy**

### Monitoring of state of the plant and quality of the network

- **Configurable displays**
- **Operating hours meter**
- **Sliding mean values**
- **THD voltage, current**
- **Distortion current strength**
- **Phase angle, phase displacement angle**
- **Unbalance**
- **Harmonics in voltage, current**
- **Limit value monitoring**
- **Boolean logic**
- **Event memory for operation, control and system-related events**
- **Battery backup for min / max values**

### System integration and communication

- **Ethernet (integrated)**
  - Protocol: Modbus TCP
  - Gateway: Ethernet <-> RS 485 (Modbus)

- **PROFINET incl. PROFIenergy**
  - PROFIBUS DPV1
  - RS 485
  - Protocol: Modbus RTU
  - 4DI/2DO expansion module
  - Number of expansion modules
  - Integrated digital inputs (DI)
  - Integrated digital outputs (DO)

### Installation plan

- **Dimensions (L x W x D)**
  - In mm: 96 x 96 x 56, 96 x 96 x 56, 96 x 96 x 82
  - Mounting depth: PAC | PAC with expansion module (in mm): 51 | --, 51 | 73, 77 | 99
  - Panel cutout (L x W): In mm: 92 x 92, 92 x 92, 92 x 92

### Standards and approvals

- CE / cULus / C-Tick / GOST
- IEC 61557-12

---

1) This corresponds for example to a duration of 40 days with a measurement period length of 15 minutes.

2) Unbalance with regard to amplitude.

3) Unbalance with regard to amplitude and phase.

4) In conjunction with 7KM PAC RS 485 expansion module

✓ = Available, -- = Not available.
## Selection and ordering data

<table>
<thead>
<tr>
<th>Version</th>
<th>DT</th>
<th>Order No.</th>
<th>Price per PU</th>
<th>PU (UNIT, SET, M)</th>
<th>PS*/ P. unit</th>
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<th>Weight per PU approx. kg</th>
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<td>Screw terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>7KM3 133-0BA00-3AA0</td>
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<td>133</td>
<td>0.325</td>
<td></td>
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## Accessories

### Accessories for 7KM PAC3100/3200/4200

<table>
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<th>Version</th>
<th>DT</th>
<th>Order No.</th>
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<td>7KM PAC TMP mounting plate</td>
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<td></td>
<td></td>
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<tr>
<td>7KM9 900-0YA00-0AA0</td>
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<td>1 unit</td>
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<td>0.105</td>
<td></td>
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</table>

## More information

### Current transformers

Suitable current transformers can be found
- in the Catalog LV 10.1 · 2012, Chapter 2, "Molded case circuit breakers"
- in the Industry Mall, Section: "Industry Automation and Drive Technologies"
  - "Low-Voltage Power Distribution and Electrical Installation Technology"
  - "Protection Equipment"
  - "Molded Case Circuit Breakers"
  - "3VL Molded Case Circuit Breakers"
  - "3VL Molded Case Circuit Breakers up to 1600 A"
  - "Accessories and Spare Parts"

### Software components

For more information about the software components see Catalog LV 10.1 · 2012, Chapter 13 and on the Internet at: www.siemens.com/lowvoltage/energymanagement

* You can order this quantity or a multiple thereof.
# Measuring Devices and Power Management

## 7KM PAC Measuring Devices

### 7KM PAC3200 measuring devices

#### Selection and ordering data

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<thead>
<tr>
<th>Version</th>
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<th>PG</th>
<th>Weight per PU approx.</th>
<th>kg</th>
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<td>A</td>
<td>7KM2 112-0BA00-3AA0</td>
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<td>7KM2 112-0BA00-3AA0</td>
<td>Screw terminals</td>
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<td>7KM2 111-1BA00-3AA0</td>
<td>1</td>
<td>1 unit</td>
<td>133</td>
<td>0.325</td>
<td></td>
</tr>
<tr>
<td>7KM PAC3200 measuring device</td>
<td>Ring terminal lug connection</td>
<td>A</td>
<td>7KM2 112-0BA00-2AA0</td>
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<td>1 unit</td>
<td>133</td>
<td>0.325</td>
<td></td>
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**More information**

For accessories and information about current transformers and software components see Page 7.

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### Selection and ordering data

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<thead>
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<th>PS*/P. unit</th>
<th>PG</th>
<th>Weight per PU approx. kg</th>
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<td>7KM PAC4200 measuring device</td>
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<td>1</td>
<td>1 unit</td>
<td>133</td>
<td>0.450</td>
</tr>
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</table>

**7KM PAC4200 measuring devices**

- **7KM4 212-0BA00-3AA0**
  - Screw terminals
  - Control panel flush-mounting instrument 96 mm x 96 mm
  - Screw terminals for connecting current and voltage
  - AC/DC power supply unit with wide voltage range:
    - $U_{AUX}: 95 \ldots 240 \text{ V AC } \pm 10 \%$, 50/60 Hz
    - $110 \ldots 340 \text{ V DC } \pm 10 \%$
  - Measuring inputs:
    - $U_e$: max. 3 AC 690/400 V, 50/60 Hz
    - $I_e$: /1 A or /5 A

- **7KM4 211-1BA00-3AA0**
  - Screw terminals
  - Control panel flush-mounting instrument 96 mm x 96 mm
  - Screw terminals for connecting current and voltage
  - DC power supply unit with extra-low voltage:
    - $U_{AUX}: 22 \ldots 65 \text{ V DC } \pm 10 \%$
  - Measuring inputs:
    - $U_e$: max. 3 AC 500/289 V, 50/60 Hz
    - $I_e$: /1 A or /5 A

- **7KM4 212-0BA00-2AA0**
  - Ring terminal lug connection
  - Control panel flush-mounting instrument 96 mm x 96 mm
  - Cable lug terminals for connecting current and voltage
  - AC/DC power supply unit with wide voltage range:
    - $U_{AUX}: 95 \ldots 240 \text{ V AC } \pm 10 \%$, 50/60 Hz
    - $110 \ldots 340 \text{ V DC } \pm 10 \%$
  - Measuring inputs:
    - $U_e$: max. 3 AC 690/400 V, 50/60 Hz
    - $I_e$: /1 A or /5 A

### More information

For accessories and information about current transformers and software components see Page 7.

* You can order this quantity or a multiple thereof.
Expansion modules for 7KM PAC measuring devices

Overview

From left to right:
- Expansion module 7KM PAC Switched Ethernet PROFINET
- Expansion module 7KM PAC PROFIBUS DP
- Expansion module 7KM PAC RS485
- Expansion module 7KM PAC 4DI/2DO

Expansion modules act as communication interfaces for 7KM measuring devices. Communication modules are plugged in at the back of the measuring device. The device identifies the module automatically and presents the parameters of relevance for this module for selection in the parameterization menu.

7KM PAC Switched Ethernet PROFINET expansion module

The 7KM PAC Switched Ethernet PROFINET expansion module is a plug-in communication module for the 7KM PAC3200 and PAC4200 measuring devices.
- Standardized PROFIenergy interface to the measured variables
- The measured variables can be individually selected using a GSDML file. This enables the use of cost-effective S7-CPPs
- Easy parameter assignment using the device display and STEP 7
- Integrated Ethernet Switching permits networking with short cables without additional switches
- Direct integration in production machine networks using IRT (IRT = Isochronous-Real-Time)
- Full support of PROFINET IO (DHC, DNS, SNMP, SNTP)
- Device replacement without PG in the PROFINET network using LLDP
- Deterministic reversing time through ring redundancy (MRP)
- Modbus TCP for communication with 7KM powermanager or powerconfig
- 2 x Ethernet (RJ45) sockets
- Baud rates 10 and 100 Mbit/s
- Protocols PROFINET IO, PROFIenergy and Modbus TCP
- No external auxiliary power necessary
- Additional display via the device display and via LEDs on the module

All measurement variables from 7KM PAC3200 and PAC4200 are individually selected and cyclically transmitted by means of the GSDML file. This enables optimum use of the process image of the PROFINET controller, e.g., CPU 315-2 PN/DP of SIMATIC S7.

The measured variables can be read out in acyclic mode using PROFIenergy, a PNO protocol profile. Thanks to PROFIenergy it is possible to assemble an energy management system with devices from various manufacturers using PROFINET.

7KM PAC PROFIBUS DP expansion module

The 7KM PAC PROFIBUS DP expansion module has the following features:
- Pluggable communication modules for 7KM PAC3200 and PAC4200 measuring devices
- Parameterizable from the front of the device or using parameterization software
- Using PROFIBUS DPV1, data can be transferred in both cyclic and acyclic modes
- Easy engineering thanks to integration into SIMATIC STEP 7 and/or simple integration via GSD file for other programming systems
- Optimum use of process image of a control for selection of individual measurement values for cyclical transfer
- All baud rates from 9.6 kbit/s up to 12 Mbit/s are supported
- Connection through 9-pole Sub-D connector according to IEC 61158
- No external auxiliary power necessary
- Additional display via the device display and via LEDs on the module

7KM PAC RS485 expansion module

The 7KM PAC RS485 expansion module has the following features:
- Pluggable 7KM PAC RS485 communication module for 7KM PAC3200 and PAC4200 measuring devices
- Parameterizable from the front of the device or using parameterization software
- Support for the Modbus RTU protocol
- Plug and play
- Baud rates 4.8 / 9.6 / 19.2 and 38.4 kbit/s are supported.
- Connection by means of 6-pole screw terminals
- No external auxiliary power necessary
- Status indication by LED on the module

The 7KM PAC RS 485 expansion module is required for the gateway function of the 7KM PAC4200 to achieve simple devices with RS 485 interface, such as the 7KM PAC3100, via Ethernet (Modbus TCP).

7KM PAC 4DI/2DO expansion module

The 7KM PAC 4DI/2DO expansion module is used to expand the 7KM PAC4200 measuring device to up to 10 digital inputs and 6 digital outputs.

It offers the following features:
- Up to two 7KM 4DI/2DO modules can be plugged onto a PAC4200
- The 7KM PAC 4DI/2DO modules mean that the internal digital inputs and outputs can be expanded by up to 8 inputs and 4 outputs
- The 4DI/2DO expansion modules can be parameterized via the front of the device or via the powerconfig configuration software
- The digital inputs can be used without external voltage sources. They are self-powered
- All functions of the integrated multifunctional inputs/outputs on the 7KM PAC4200 are also available in the 7KM PAC 4DI/2DO expansion module
- Inputs and outputs can be used as an S0 interface conforming to IEC 62053-31
- The connection is made via a 9-pole screw terminal
- No external auxiliary power supply is required
## Selection and ordering data

<table>
<thead>
<tr>
<th>Version</th>
<th>DT</th>
<th>Order No.</th>
<th>Price per PU</th>
<th>PU (UNIT, SET, M)</th>
<th>PS*/ PG</th>
<th>Weight per PU approx.</th>
<th>kg</th>
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<tr>
<td>7KM PAC Switched Ethernet PROFINET expansion module</td>
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<td>7KM PAC 4DI/2DO expansion module</td>
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</table>

## More information

**Software components**

For more information about the software components, see Catalog LV 10.1 · 2012, Chapter 13 and on the Internet at: www.siemens.com/lowvoltage/energymanagement
Overview

Setting the parameters of a SENTRON device

The powerconfig software is the new combined commissioning and service tool for communication-capable SENTRON measuring devices and circuit breakers.

The PC-based tool makes the parameterization of the devices easier, which gives rise to a considerable time saving, particularly when several devices have to be set up.

With powerconfig the 3WL and 3VL circuit breakers and the 7KM PAC measuring devices with expansion modules can be parameterized, documented, operated and monitored using various communication interfaces.

Benefits

- Parameterization, documentation, operation and monitoring in one software
- Documentation of measured values and settings
- Clear presentation of the available parameters including plausibility testing of the inputs
- Display of the available device statuses and measured values in standardized views
- Project-oriented storage of device data
- Consistent operation and usability
- Support of the various device communication interfaces (Modbus RTU, Modbus TCP)
- Supported languages: English and German
- Read-out and saving of device recordings (device-dependent)
- Update of the device firmware and loading of language packs (device-dependent)
- No programming knowledge required for operation
- Communication via PROFIBUS and PROFINET and connection to STEP7 (available soon)

Field of application

System requirements

Hardware requirements
- Processor: Intel Pentium III, 1 GHz (or better)
- RAM: at least 512 MB
- Hard disk: at least 1 GB free
- Color monitor with a minimum resolution of 1024 x 768 pixels

Supported operating systems
- Microsoft Windows XP Prof. 32Bit SP3. MUL OS
- Microsoft Windows 7 Professional (32Bit)
- Microsoft Windows 7 Ultimate (32Bit)
- Microsoft Windows 7 Home Basic (32Bit)

Required framework:
- Microsoft .NET V3.5 SP1

More information

powerconfig is available free of charge at
http://support.automation.siemens.com/WW/view/com/50241697

You can find more information on the Internet at:
www.siemens.com/sentron
Overview

The counters (power meters) are used to record the amount of electrical energy exported or imported. Siemens compact counters are designed as modular devices for alternating current and can be mounted on standard mounting rails. They comply with the counter standard EN 50470 (Part 1 and 3) and come with an LCD display.

Three-phases counters are available up to 125 A and in versions with transformer connections (…/5 A to 10000/5 A).

Counters store active and reactive energy, and comply with accuracy class 1 (for active energy).

All counters have a pulse output (S0) and are designed for 2-tariff measurements. The calibrated versions are in accordance with the new Measuring Instruments Directive 2004/22/EC (MID).

At the same time the counters have an integrated optical interface (IrDA) for connecting communication modules, which enables their integration in a range of other systems, such as power management systems.

Technical specifications

<table>
<thead>
<tr>
<th>7KT PAC1500 three-phase counters</th>
<th>7KT1 540</th>
<th>7KT1 542</th>
<th>7KT1 543</th>
<th>7KT1 545</th>
<th>7KT1 546</th>
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<tbody>
<tr>
<td>Standards</td>
<td>EN 50470-1, EN 50470-3, EN 62053-23, EN 62053-31</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Direct connection</td>
<td>--</td>
<td>80 A</td>
<td>125 A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Transformer current connection</td>
<td>.../5 A</td>
<td>--</td>
<td>--</td>
<td></td>
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</tr>
<tr>
<td>General data</td>
<td></td>
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<tr>
<td>• Enclosures</td>
<td>Acc. to DIN 43880 MW</td>
<td>4</td>
<td>4</td>
<td>6</td>
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<tr>
<td>• Mounting</td>
<td>Acc. to EN 60715 mm</td>
<td>35</td>
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<td></td>
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<tr>
<td>• Mounting height</td>
<td>mm</td>
<td>70</td>
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<tr>
<td>Function</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>• Connection</td>
<td>Single-phase or three-phase</td>
<td>Number of conductors</td>
<td>4</td>
<td>2 ... 4</td>
<td>2 ... 4</td>
</tr>
<tr>
<td>• Storage of setting and counter reading</td>
<td>Through (EEPROM)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>• Rate</td>
<td>for active and reactive energy</td>
<td>T1/T2</td>
<td>T1/T2</td>
<td>T1/T2</td>
<td></td>
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<tr>
<td>Supply (through measuring terminals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rated control supply voltage $U_n$</td>
<td>V AC</td>
<td>230</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Voltage range</td>
<td>V</td>
<td>184 ... 276</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rated frequency $f_n$</td>
<td>Hz</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rated power dissipation $P_v$</td>
<td>VA (W)</td>
<td>≤ 8 (0.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring accuracy (at 23 ±1 °C)</td>
<td>Based on nominal value</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Active energy and active power</td>
<td>Acc. to EN 50470-3</td>
<td>Class B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Reactive energy and reactive power</td>
<td>Acc. to EN 62053-23</td>
<td>Class 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring inputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Connection type</td>
<td>Transformer TA-TC .../5 A</td>
<td>Direct</td>
<td>Direct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Voltage $U_i$</td>
<td>Phase/phase</td>
<td>V</td>
<td>400</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Operating range voltage</td>
<td>Phase/N</td>
<td>V</td>
<td>230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Current $I_{id}$</td>
<td>A</td>
<td>--</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>• Current $I_{n}$</td>
<td>A</td>
<td>5</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>• Current $I_{min}$</td>
<td>A</td>
<td>0.05</td>
<td>0.25</td>
<td>0.25</td>
<td></td>
</tr>
<tr>
<td>• Operating range current ($I_{id} ... I_{max}$)</td>
<td>Direct connection</td>
<td>Transformer connection</td>
<td>A</td>
<td>--</td>
<td>0.003 ... 6</td>
</tr>
<tr>
<td>• Transformer current</td>
<td>Primary current of the transformer</td>
<td>A</td>
<td>5 ... 10000</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>• Smallest input step</td>
<td>A</td>
<td>5</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>• Frequency</td>
<td>Hz</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Input ripple form</td>
<td></td>
<td>Sinusoidal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Operational starting current $I_{st}$</td>
<td>mA</td>
<td>3</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>S0 interface</td>
<td>Acc. to EN 62053-31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pulse outputs for absorbed for active and reactive energy $T_1 + T_2$</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• Pulse count for input current $I_{max}$</td>
<td>Pulses/kWh</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Can be set on transformer</td>
<td>Pulses/kWh</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR interface</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• At the side for connecting communication modules</td>
<td>M-Bus / Modbus RTU / RS 485 / KNX</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
### Selection and ordering data

<table>
<thead>
<tr>
<th>Mounting width</th>
<th>U_{\text{in}}</th>
<th>I_{\text{max}}</th>
<th>DT</th>
<th>Order No.</th>
<th>Price per PU (UNIT, SET, M)</th>
<th>PU unit</th>
<th>PST/ P. unit</th>
<th>PG</th>
<th>Weight per PU approx.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>V AC</td>
<td>A AC</td>
<td>MW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>kg</td>
</tr>
<tr>
<td>7KT PAC1500 three-phase counters</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Digital measuring devices</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• For transformer connection, double rate</td>
<td>230</td>
<td>transformer /5</td>
<td>4</td>
<td>B</td>
<td>7KT1 540</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.289</td>
</tr>
<tr>
<td>• For transformer connection, double rate, calibrated version (MID)</td>
<td>230</td>
<td>transformer /5</td>
<td>4</td>
<td>B</td>
<td>7KT1 542</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.293</td>
</tr>
<tr>
<td>• For direct connection, double rate</td>
<td>230</td>
<td>80</td>
<td>4</td>
<td>B</td>
<td>7KT1 543</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.419</td>
</tr>
<tr>
<td>• For direct connection, double rate, calibrated version (MID)</td>
<td>230</td>
<td>80</td>
<td>4</td>
<td>B</td>
<td>7KT1 545</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.419</td>
</tr>
<tr>
<td>• For direct connection, double rate</td>
<td>230</td>
<td>125</td>
<td>4</td>
<td>B</td>
<td>7KT1 546</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.678</td>
</tr>
<tr>
<td>• For direct connection, double rate, calibrated version (MID)</td>
<td>230</td>
<td>125</td>
<td>4</td>
<td>B</td>
<td>7KT1 548</td>
<td>1</td>
<td>1 unit</td>
<td>047</td>
<td>0.690</td>
</tr>
</tbody>
</table>

* You can order this quantity or a multiple thereof.
Overview

The 7KT PAC1500 counters (power meters) are used to record the amount of electrical energy exported or imported. They comply with the counter standard EN 50470 (Part 1 and 3) and come with an LCD display.

The PAC1500 single-phase counters for direct connection are available up to 80 A. They store both active and reactive energy and all comply with accuracy class 1 (for active energy).

All counters have a pulse output (S0) and are designed for 1-tariff or 2-tariff measurements depending on the version.

The calibrated versions are in accordance with the new Measuring Instruments Directive 2004/22/EC (MID). At the same time the counters – except version 7KT1 530 – have an integrated optical interface (IrDA) for connecting communication modules.

Technical specifications

<table>
<thead>
<tr>
<th>7KT PAC1500 single-phase counters, Direct connection up to 80 A</th>
<th>7KT1 530</th>
<th>7KT1 531</th>
<th>7KT1 533</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standards</td>
<td>EN 50470-1, EN 50470-3, EN 62053-23, EN 62053-31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General data</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Enclosures</td>
<td>Acc. to DIN 43880</td>
<td>MW</td>
<td>2</td>
</tr>
<tr>
<td>• Mounting</td>
<td>Acc. to EN 60715</td>
<td>mm</td>
<td>35</td>
</tr>
<tr>
<td>• Mounting height</td>
<td>mm</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Function</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Operating mode</td>
<td>Single-phase loads</td>
<td>Conductors</td>
<td>2</td>
</tr>
<tr>
<td>• Storage of setting and counter reading</td>
<td>Through (EEPROM)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>• Rate</td>
<td>for active energy</td>
<td>T1</td>
<td>T1 + T2</td>
</tr>
<tr>
<td></td>
<td>For reactive energy</td>
<td>T1</td>
<td>T1 + T2</td>
</tr>
<tr>
<td>Supply (through measuring terminals)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Rated control supply voltage $U_n$</td>
<td>V AC</td>
<td>230</td>
<td></td>
</tr>
<tr>
<td>• Voltage range</td>
<td>V</td>
<td>184 ... 276</td>
<td></td>
</tr>
<tr>
<td>• Rated frequency</td>
<td>Hz</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Measuring accuracy (at 23 ± 1 °C)</td>
<td>Based on nominal value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Active energy and active power</td>
<td>Acc. to EN 50470-3</td>
<td>Class B</td>
<td></td>
</tr>
<tr>
<td>• Reactive energy and reactive power</td>
<td>Acc. to EN 62053-23</td>
<td>Class 2</td>
<td></td>
</tr>
<tr>
<td>Measuring inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Connection type</td>
<td>Phase/N</td>
<td>Direct</td>
<td></td>
</tr>
<tr>
<td>• Operating range voltage</td>
<td>Phase/N</td>
<td>V AC</td>
<td>184 ... 276</td>
</tr>
<tr>
<td>• Current $I_{ref}$</td>
<td>A</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>• Current $I_{min}$</td>
<td>A</td>
<td>0.75</td>
<td></td>
</tr>
<tr>
<td>• Operating range current ($I_{ul} ... I_{max}$)</td>
<td>Direct connection</td>
<td>A</td>
<td>0.025 ... 80</td>
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<tr>
<td>• Frequency</td>
<td>Hz</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>• Current waveform</td>
<td>Sinusoidal</td>
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<td></td>
</tr>
<tr>
<td>• Operational starting current $I_{st}$</td>
<td>mA</td>
<td>25</td>
<td></td>
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<tr>
<td>S0 interface</td>
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<td></td>
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<tr>
<td>• Pulse outputs for absorbed active and reactive energy</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Pulse count</td>
<td>Pulses/kWh</td>
<td>1000</td>
<td></td>
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<tr>
<td>IR interface</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• At the side for connecting communication modules (M-Bus / Modbus RTU / RS 485 / KNX)</td>
<td>--</td>
<td>Yes</td>
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</table>

Selection and ordering data

<table>
<thead>
<tr>
<th>$U_n$</th>
<th>$I_{max}$</th>
<th>Mounting width DT Order No.</th>
<th>Price per PU PU (UNIT, SET, M)</th>
<th>PSY/P. P. unit</th>
<th>PG</th>
<th>Weight per PU approx. kg</th>
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</thead>
<tbody>
<tr>
<td>V AC</td>
<td>A AC MW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>80 2 B</td>
<td></td>
<td>7KT1 530</td>
<td>1 1 unit</td>
<td>047</td>
<td>0.164</td>
</tr>
<tr>
<td>230</td>
<td>80 2 B</td>
<td></td>
<td>7KT1 531</td>
<td>1 1 unit</td>
<td>047</td>
<td>0.164</td>
</tr>
<tr>
<td>230</td>
<td>80 2 B</td>
<td></td>
<td>7KT1 533</td>
<td>1 1 unit</td>
<td>047</td>
<td>0.190</td>
</tr>
</tbody>
</table>

* You can order this quantity or a multiple thereof.

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Measuring Devices and Power Management
7KT PAPAC Measuring Devices

7KT PAC1500 single-phase counters

Digital counters
• For direct connection, single rate 230 80 2 B 7KT1 530 1 1 unit 047 0.164
• For direct connection, double rate 230 80 2 B 7KT1 531 1 1 unit 047 0.164
• For direct connection, double rate, calibrated version 230 80 2 B 7KT1 533 1 1 unit 047 0.190
Overview

Expansion modules for 7KT PAC1500 counters, from left to right: Expansion modules for M-Bus, Modbus RTU, RS 485 and Instabus KNX

Expansion modules are used as communication interfaces for 7KT PAC1500 counters. They have the following features:

- The expansion modules can be selected independently of the counter. Retrofitting of already installed counters is therefore possible if required.
- Data transmission between the counters and the expansion modules takes place through the IrDA infrared interface.
- The expansion modules are placed alongside the counters in the installation direction so that their IrDA interfaces lie exactly opposite.

Selection and ordering data

<table>
<thead>
<tr>
<th>Version</th>
<th>Mounting width</th>
<th>Order No.</th>
<th>Price per PU</th>
<th>Weight per PU approx.</th>
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<tbody>
<tr>
<td>Expansion module M-Bus</td>
<td>1B</td>
<td>7KT1 908</td>
<td>0.050</td>
<td></td>
</tr>
<tr>
<td>For connecting 7KT PAC1500 counters to M-Bus</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion module Modbus RTU</td>
<td>1B</td>
<td>7KT1 907</td>
<td>0.085</td>
<td></td>
</tr>
<tr>
<td>For connecting 7KT PAC1500 counters to Modbus RTU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion module RS 485</td>
<td>1B</td>
<td>7KT1 903</td>
<td>0.080</td>
<td></td>
</tr>
<tr>
<td>For connecting 7KT PAC1500 counters via RS 485 to 7KT1 391 LAN couplers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expansion module KNX</td>
<td>1B</td>
<td>7KT1 900</td>
<td>0.064</td>
<td></td>
</tr>
<tr>
<td>For connecting 7KT PAC1500 counters to Instabus KNX</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

M-Bus communication modules (7KT1 908)
- Power supply through bus cable
- Baud rates: 300 to 9600 kbit/s
- Status indication by LED on the module
- Can be parameterized using M-Bus Master software

Modbus expansion modules (7KT1 907)
- Power supply: 230 V AC
- Baud rates: 4.8 / 9.6 / 19.2 and 38.4 kbit/s are supported
- Status indication by LED on the module
- Can be parameterized using RS 485 Master software

RS 485 expansion modules (7KT1 903)
- Power supply: 230 V AC
- Status indication by LED on the module

7KNX/EIB expansion modules (7KT1 900)
- Power supply through the KNX/EIB bus cable
- Status indication by LED on the module

* You can order this quantity or a multiple thereof.
Overview

Features
- Measuring devices with LED display
- For direct (80A) and transformer connection (/5A)
- Display of 38 measured values
- 9 display levels, each with 6 display units (one level freely configurable)
- Password-protected menu setting
- S0 pulse output
- Integrated RS485 interface (for connecting to the 7KT1391 LAN coupler or communication using Modbus RTU)

Technical specifications

<table>
<thead>
<tr>
<th>7KT PAC3000 measuring devices without communication</th>
<th>7KT1 310</th>
<th>7KT1 311</th>
</tr>
</thead>
<tbody>
<tr>
<td>7KT PAC3000 multicounters with RS 485 interface (Modbus RTU / LAN couplers)</td>
<td>7KT1 340</td>
<td>7KT1 341</td>
</tr>
</tbody>
</table>

Standards
- EN 50470-1, EN 50470-3, EN 62053-23, EN 62053-31, IEC 61010-1

General data
- Enclosures: Acc. to DIN 43880
- Mounting: Acc. to EN 60715
- Mounting height: mm

Supply
- Rated control supply voltage $U_n$: V AC 230
- Operating range: $\times U_n$ 0.8 ... 1.2
- Rated frequency: Hz 50
- Rated power dissipation $P_v$: VA < 5

Measuring accuracy
- Voltage: % ± 1
- Current: % ± 2
- Power outputs: % ± 1
- Active energy: According to IEC 50470-3
- Reactive energy: Acc. to IEC 62053-23
- p.f.: % ± 2
- Frequency: % ± 0.2

Measuring inputs
- Connection type: Direct, Transformers /5 A
- Voltage $U_n$: V
  - Phase/phase: 400
  - Phase/N: 230
- Operating range voltage:
  - Phase/phase: V
    - 87 ... 480
  - Phase/N: V
    - 50 ... 276
- Current $I_n / I_{ref}$
  - A: 5
    - 1 or 5
  - A: 0.0015 ... 80
    - 0.003 ... 6
- Operating range current
  - A: --
    - 5 ... 10000
  - A: --
    - 1 or 5
- Transformer current
  - Smallest input step
  - Hz 50

S0 interface
- Pulse outputs: For active and reactive energy T1 and T2
  - At 80 A, max.
  - Depending on the transformer factor, adjustable, max.
- Pulse count
  - Pulses/MWh: 500
  - Pulses/kWh: --
7KTPAC Measuring Devices

7K PAC3000 measuring devices

<table>
<thead>
<tr>
<th>7K PAC3000 measuring devices without communication</th>
<th>7K PAC3000 multicounters with RS 485 interface (Modbus RTU / LAN couplers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7KT1 310</td>
<td>7KT1 311</td>
</tr>
<tr>
<td>7KT1 340</td>
<td>7KT1 341</td>
</tr>
</tbody>
</table>

Modbus RTU interface (only for 7KT1 340 - 7KT1 341)

- Transmission rate: kbit/s
  - 9.6-19.2

Ambient conditions

- Mechanical environment: M1
- Electromagnetic environment: E2
- Operating temperature: °C
  - -10 ... +55
- Temperature limits for storage and transport: °C
  - -25 ... +70
- Relative humidity (without condensation): %
  - < 80
- Vibrations: Sinus amplitude at 50 Hz mm
  - ± 0.075
- Degree of protection: Installed device, front side/terminals
  - IP20

1) For installation in a distribution board with at least IP51 degree of protection.

**Selection and ordering data**

<table>
<thead>
<tr>
<th>$U_e$</th>
<th>$I_e$</th>
<th>$U_c$</th>
<th>Mounting width</th>
<th>DT</th>
<th>Order No.</th>
<th>Price per PU</th>
</tr>
</thead>
<tbody>
<tr>
<td>V AC</td>
<td>A AC</td>
<td>V AC</td>
<td>MW</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**7K PAC3000 measuring devices**

For the display of 35 electrical values, of which 5 or 6 values can be continuously displayed.
For three-phase, 3/4 conductor connection, with S0 interface

**Without communication interface**

- **Standard rail mounting**
  - For direct connection
    - 3 × 230/400
    - 80
    - 230
    - 6
    - B
    - 7KT1 310
  - For transformer connection 5 ... 5000 A, adjustable in 5 A steps, secondary current 5 A
    - 3 × 230/400
    - transformer /5
    - 230
    - 6
    - B
    - 7KT1 311

**With RS 485 interface and RTU Modbus protocol or for connection to LAN networks via 7KT1 391 LAN coupler**

- **Standard rail mounting**
  - For direct connection
    - 3 × 230/400
    - 80
    - 230
    - 6
    - B
    - 7KT1 340
  - For transformer connection 5 ... 5000 A, adjustable in 5 A steps, secondary current 5 A
    - 3 × 230/400
    - transformer /5
    - 230
    - 6
    - B
    - 7KT1 341

*You can order this quantity or a multiple thereof.*
Overview

A LAN coupler supports worldwide data retrieval from 7KT PAC measuring devices and counters, provided there is a LAN link to the Internet.

Up to 30 devices can be linked with a LAN coupler via a Web browser, such as Firefox. In turn, the LAN coupler is connected to a LAN.

Data communication between the LAN coupler and the PC takes place using the TCP/IP protocol.

Field of application

Suitable 7KT PAC measuring devices and counters

The following measuring devices and counters can be connected to the LAN coupler:

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7KT1 543</td>
<td>7KT PAC1500 digital three-phase counters for direct connection 80 A, double rate</td>
</tr>
<tr>
<td>7KT1 545</td>
<td>7KT PAC1500 digital three-phase counters for direct connection 80 A, double rate, calibrated version</td>
</tr>
<tr>
<td>7KT1 540</td>
<td>7KT PAC1500 for transformer connection .../5 A, double rate</td>
</tr>
<tr>
<td>7KT1 542</td>
<td>7KT PAC1500 for transformer connection .../5 A, double rate, calibrated version</td>
</tr>
<tr>
<td>7KT1 546</td>
<td>7KT PAC1500 digital three-phase counters for direct connection 125 A, double rate</td>
</tr>
<tr>
<td>7KT1 548</td>
<td>7KT PAC1500 digital three-phase counters for direct connection 125 A, double rate, calibrated version</td>
</tr>
<tr>
<td>7KT1 544</td>
<td>7KT PAC1500 for transformer connection .../5 A, double rate</td>
</tr>
<tr>
<td>7KT1 541</td>
<td>7KT PAC1500 for transformer connection .../5 A, double rate, calibrated version</td>
</tr>
<tr>
<td>7KT1 547</td>
<td>7KT PAC1500 digital 1-phase counters</td>
</tr>
<tr>
<td>7KT1 539</td>
<td>7KT PAC1500 digital 1-phase counters, calibrated version</td>
</tr>
<tr>
<td>7KT1 531</td>
<td>7KT PAC3000 measuring devices for direct connection</td>
</tr>
<tr>
<td>7KT1 533</td>
<td>7KT PAC3000 measuring devices for transformer connection .../5 A</td>
</tr>
</tbody>
</table>

Connecting the devices to a 7KT 391 LAN coupler

Technical specifications

<table>
<thead>
<tr>
<th>7KT1 391 LAN couplers</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Standards</th>
<th>IEE 802.3 AS, IEC 60950, EN 61000-6-2, EN 61000-6-3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>General data</th>
<th>Acc. to DIN 43880</th>
<th>4 modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>Acc. to EN 60715</td>
<td>Mounting onto standard mounting rail (35 mm)</td>
</tr>
<tr>
<td>Mounting height</td>
<td>mm</td>
<td>70</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supply</th>
<th>VA</th>
<th>≤ 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated power dissipation $P_v$</td>
<td>V AC</td>
<td>230</td>
</tr>
<tr>
<td>Rated control supply voltage $U_c$</td>
<td>$0.9 \ldots 1.10$</td>
<td></td>
</tr>
<tr>
<td>Operating range</td>
<td>Hz</td>
<td>50</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>Hz</td>
<td>45 ... 65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Limitation by LAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>System start</td>
<td>Automatic upon switching on</td>
</tr>
<tr>
<td>LAN server identification</td>
<td>Over the IP address of the PC</td>
</tr>
<tr>
<td>Transmission rate</td>
<td>Windows XP/Vista/7</td>
</tr>
<tr>
<td>Operating system</td>
<td>IE 7.8; Mozilla Firefox 3.09 / 3.5.3 / 3.6; Opera 9.64 / 10 / 10.5; Safari 3.2.2 /4.0.5; Google Chrome 3.0.195.27.</td>
</tr>
</tbody>
</table>
# Measuring Devices and Power Management

## LAN Couplers

### 7KT1 391 LAN couplers

<table>
<thead>
<tr>
<th>LAN interface</th>
<th>7KT1 391 LAN couplers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• HW interface</td>
<td>Connection RJ 45</td>
</tr>
<tr>
<td>• SW interface</td>
<td>TCP/IP</td>
</tr>
</tbody>
</table>

**Interface to the measuring devices**

- **RS 485 terminals**
- **Version**
- **Minimum cross-section** mm²: 2 × 0.2 or 2 × AWG 24
- **Maximum line capacity** pF/m: < 50
- **Impedance** W: 100
- **Maximum overall cable length** m: ≤ 1200
- **Type of installation**: Serial

**Measuring devices can be connected directly**
- **Number** 30

**Environmental conditions**

- **Temperature**
  - During operation: °C -10 ... +55
  - Storage and transport: °C -25 ... +70
- **Relative humidity**
  - During operation: % ≤ 80
- **Vibrations**
  - Sinus amplitude at 50 Hz: mm ± 0.25
- **Safety class** acc. to IEC 60950: III
- **Degree of protection** Installed device front side (terminals): IP20

### Selection and ordering data

<table>
<thead>
<tr>
<th>Version</th>
<th>U&lt;sub&gt;c&lt;/sub&gt;</th>
<th>Mounting width</th>
<th>DT</th>
<th>Order No.</th>
<th>Price per PU</th>
<th>PU (UNIT, SET, M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V AC</td>
<td>MW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LAN couplers**

For connection of up to 30 devices over RS 485

- 230 V AC
- 4
- B

- **7KT1 391**

<table>
<thead>
<tr>
<th>Price ($)</th>
<th>Order No.</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 047</td>
<td>0.212</td>
</tr>
</tbody>
</table>

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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>In the case of software products, it is also necessary to comply with the export designation of the relevant data medium.</td>
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<td></td>
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<tr>
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