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SENTRON

Power monitoring made simple

Catalog LV 14

Edition 2017

siemens.com/powermonitoring

Related catalogs

Low-Voltage Power Distribution and   LV 10
Electrical Installation Technology
SENTRON • SIVACON • ALPHA
Protection, Switching, Measuring and Monitoring
Devices, Switchboards and Distribution Systems

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ALPHA FIX   LV 52
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PDF/print (E86060-K1852-A101-A2-7600)

Contents

Air circuit breakers • MCCBs • MCBs • Residual current protective devices / AFDDs • Fuse systems • Overvoltage protection devices • Switch disconnectors • Switching devices • Transformers, power supply units and socket outlets • Busbar systems • Measuring devices and power monitoring • Monitoring devices • Software • Switchboards • Busbar trunking systems • System cubicles, system lighting and system air-conditioning • Distribution boards / Power distribution boards • Molded-plastic distribution systems • 8WH2 spring-loaded terminals

Miniature circuit breakers • Residual current protective devices • Fuse systems • Switch disconnectors • Switching devices • ALPHA FIX terminal blocks • DELTA profil • Medium-Voltage components

Circuit breakers • Air circuit breakers/Molded case switches • Molded case circuit breakers • Miniature circuit breakers • Fuse systems • Switch disconnectors • Switching devices • Socket outlets • Busbar systems • Measuring devices and power monitoring • Molded-plastic distribution systems • Terminal blocks

iPo plug-in terminals • iPo installation terminals • Spring-loaded terminals • Combination plug-in terminals • Insulation displacement terminals • Screw terminals • Accessories for terminal blocks

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Products for Automation and Drives   CA 01
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DVD

E86060-D4001-A510-D7-7600

Catalog PDF / Response E-mail

Catalog PDF
Digital versions of the catalogs are available in the Information and Download Center.
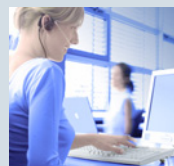
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www.siemens.com/lowvoltage
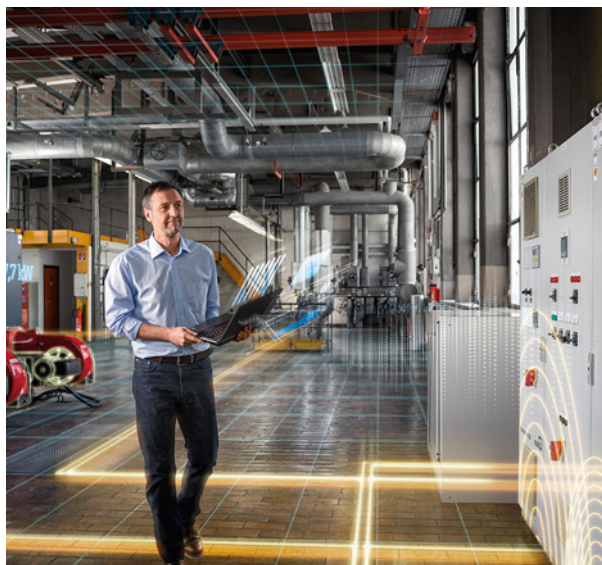
Technical Support

Expert advice on technical questions with a wide range of demand-optimized services for all our products and systems.

www.siemens.com/lowvoltage/contact

Power monitoring made simple

SENTRON

Catalog LV 14 · 2017

Supersedes:
Catalog LV 14 · 2016

Refer to the Industry Mall for current updates of this catalog:
www.siemens.com/industrymall

The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.: E86060-D4001-A510-D7-7600

Please contact your local Siemens branch.

PEFC/04-31-0835

Printed on paper from sustainably managed forests and controlled sources.

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The products and systems listed in this catalog are developed and manufactured using a certified quality management system in accordance with EN ISO 9001:2008.

Our products lay the foundations for safe, reliable and efficient electrical infrastructure at medium and low-voltage levels in buildings and industrial applications.

Our portfolio includes, among other devices, distribution boards, communication-capable protection, switching, measuring and monitoring devices, as well as switches and socket outlets.

Our components reliably protect against accidents, faults and fires caused by electricity. Furthermore, they allow consumers to utilize electrical power in a sustainable and responsible manner and support automated operation of buildings and industrial applications.

Software tools, comprehensive data provision and professional online support ensure efficient engineering.

Electrical power distribution – integrated, safe and efficient

The increasing level of automation in buildings and industry introduces novel requirements for electrical power distribution and make the underlying technologies ever more complex. Our components and systems are perfect for integration into networked environments and significantly increasing the efficiency of your business processes: communication-capable, flexible and failsafe devices combine with digital engineering to enable optimized solutions - for any application.

Solutions for the future

We support you throughout the entire value chain with our end-to-end portfolio, from the planning stages right through to the operation, as well as when it comes to measures for modernizing and expanding your electrical energy distribution systems.

Our tested and certified components, systems and software packages allow for ever-suitable and efficient solutions in both centralized and distributed power systems the world over and can be perfectly integrated into building automation and industrial automation applications.

Comprehensive support

At the same time, you benefit from our broad portfolio of personalized and automated maintenance and support services.

Clear ordering channels, transparent product availability data and high delivery reliability coupled with swift global spare part provision, comprehensive online services, expert consulting and fast, efficient and reliable processes ensure that you are optimally covered throughout the entire product life cycle.
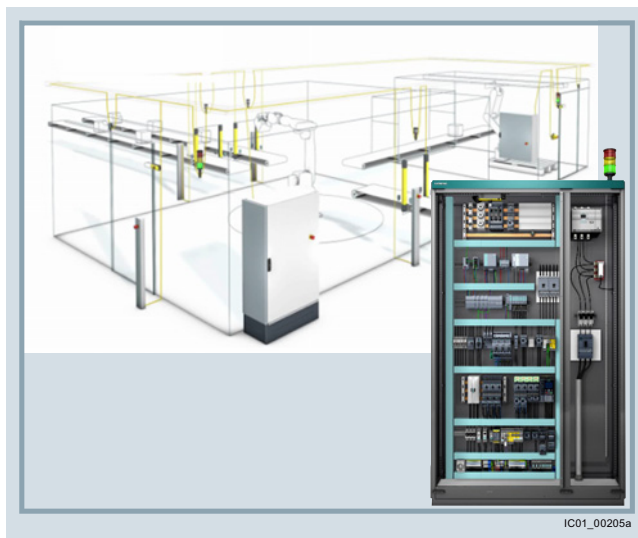
Planning Efficiency

■ **Overview**

With Planning Efficiency, Siemens supplies answers to typical questions that often present themselves in electrical planning:

- What is the appropriate product for my application?
- Where can I find product data?
- How can I make processes more efficient and save more time?

The entire electronic support offered by Siemens is merged under Planning Efficiency. At each phase of the project, online functions make the everyday work of the planners easier and more efficient. Planning Efficiency focuses on optimizing the control cabinet configuration among other things.

Especially in this early phase, up to 80% of time and costs can be saved.

IC01_00205a

In order to supply the planners with all they need and to simplify the modern electrical planning of every aspect of the control cabinet configuration, the electrical support of Planning Efficiency focuses on four benefits:

- Finding the right product faster using intuitive product selection
- Time savings of up to 80% with universal product data for your CAE and CAD systems
- User-friendly compilation of project-specific documentation
- Comprehensive support – at any time, whatever your location

Process phases

At each phase of the process, Siemens provides comprehensive online functions free of charge.

This ensures that all the necessary information and product data are available around the clock at any location worldwide.

| Concept & selection | Mechanical design | Electrical design | Plant documentation | Ordering | Installation / service / commissioning / diagnostics |

Configurators for products and systems

With just a few mouse clicks, you will find yourself guided by the configurator to a suitable product or system. Simply enter the relevant parameters and select your individual solution.

CAx Download Manager

The CAx Download Manager can supply you with all the necessary CAx file types for the products of your choice for use in all common CAE and CAD systems. The data contained in the files is continuously updated. The whole process involves only four selection steps and is free of charge. All the files you select will then be compiled into a zip file and made available for you to download for further use. This results in a time saving of up to 80% because there is no need for manual data collection thanks to the universal manufacturer data for all commonly used CAE and CAD systems.

My Documentation Manager

To provide support when creating the plant documentation, we have developed a manual configurator.
My Documentation Manager enables you to assemble the standard-compliant plant documentation individually with just a few clicks of the mouse. Simply select the required sections from the existing manuals of the installed Siemens products.

### EPLAN Electric P8 Macro – a big plus for EPLAN users

Using the EPLAN Electric P8 Macro in .edz exchange format (EPLAN Data Archived Zipped) the overall time required for data integration can be further reduced. With just a few clicks, the data types for any number of article numbers can be imported and combined. In this way, it is possible for the installed Siemens products to be displayed across different pages of the circuit diagram quickly and easily.
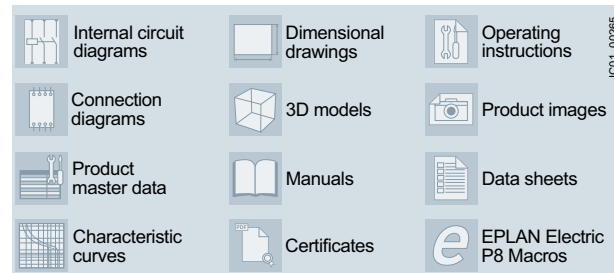
At a glance

Without Planning Efficiency a lot of time would often be lost due to manual data transmission. Now you are able to concentrate on the essentials. All necessary information and product data is provided by Siemens for easy retrieval.

This makes the control cabinet configuration process more efficient and simplifies your everyday work.
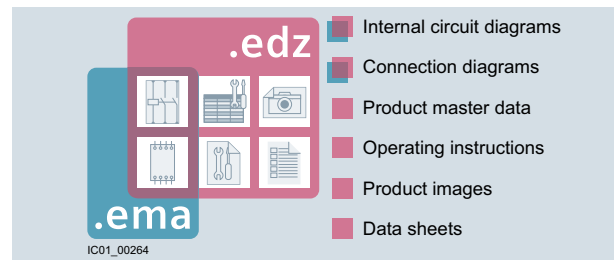
For more information, go to www.siemens.com/planning-efficiency.
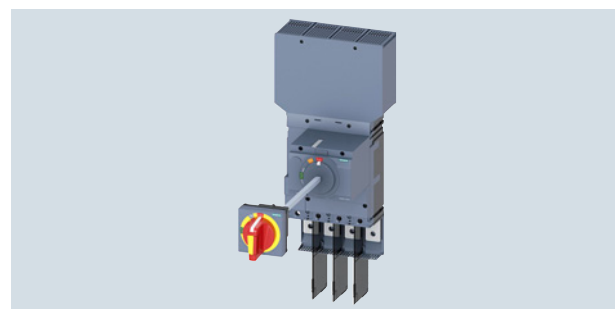
The configurator supplies the appropriate 3D models and dimension drawings for the control cabinet construction diagram.

Internal circuit diagrams	Dimensional drawings	Operating instructions
Connection diagrams	3D models	Product images
Product master data	Manuals	Data sheets
Characteristic curves	Certificates	EPLAN Electric P8 Macros

IC01_00265

The CAx Download Manager makes 11 universal data types available, as well as the EPLAN Electric P8 macro.

.edz
.ema

- Internal circuit diagrams
- Connection diagrams
- Product master data
- Operating instructions
- Product images
- Data sheets

IC01_00264

The EPLAN Electric P8 macro in .edz exchange format offers even more compared to the .ema exchange format.

Planning Efficiency

Find out more about Planning Efficiency in our informative videos

Technical Support

The Technical Support for low-voltage power distribution and electrical installation technology assists you with all your technical queries about our products and systems – both before and after delivery.

Still have questions?

Our experts will help you with competent specialist support

Technical Support

Planning · Configuration · Ordering · Commissioning · Operation · Service · Information

Competent and fast specialist advice on:

- Product selection
- Commissioning
- Issues during operation
- Possible special versions
- Special requirements
- Product features
- Device communication

I20I_19185

Get all the information you need – with just one click

Industry Online Support – get up-to-date information online fast

www.siemens.com/online-support

In the Product Support area, you will find FAQs, manuals, certificates, applications & tools etc.
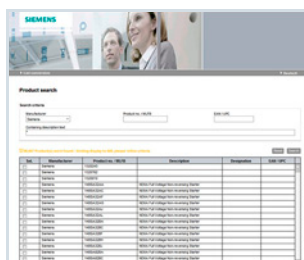
www.siemens.com/lowvoltage/product-support
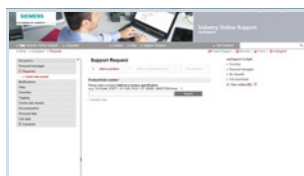
Support Request – the quickest route to the experts

www.siemens.com/lowvoltage/technical-support

Using the Support Request form on the Industry Online Support portal, you can send your query directly to our Technical Support team.

Conversion tool – the easy and efficient way of finding successor products

www.siemens.com/conversion-tool

The benefits for you

- Response within 4 hours in 93% of cases
- Direct support from an experienced team of engineers and technicians

SITRAIN – Training for Industry

With SITRAIN, you benefit from practical training directly from the manufacturer.

Our certified trainers are active in more than 60 countries and can help you and

your employees develop their skills.

Competence through training

Information on our training courses
can be found at

www.siemens.com/lowvoltage/training

Requirement for taking part in the courses:
Basic principles of electrical engineering and power distribution

I201_19565

Circuit breaker courses

LV-CBMAIN
Maintenance and operation of
SENTRON 3WL circuit breakers:
2 days

LV-CBPROJ
Basic principles of configuring and
selecting SENTRON circuit breakers:
1 day

→ **LV-CBCOM**
Communication with
SENTRON components: 1 day

→ **LV-SENVER**
Advanced course on
SENTRON products: 1 day

Power monitoring courses

LV-EMSENTB
Energy management (Basic): 2 days

→ **LV-EMSENTE**
Energy management (Expert): 1 day

Switchboard courses

LV-ALPHAPB
ALPHA 3200
Switchboard installation: 1 day

LV-SIVAS4
SIVACON S4
Power distribution boards: 2 days

LV-ALPHATA
ALPHA 3200
Technology and software: 1 day

The benefits for you

• Flexible plant adaptation
  to market requirements
• Ensuring quality
  standards in production
• Reliable engineering and
  commissioning
• Shorter commissioning,
  maintenance and service times
• Exclude expensive faulty
  planning right from the outset
• Reduce downtimes and
  rectify faults more quickly

Still have questions?
Get all the information you need –
with just one click

Always here for you: our comprehensive support

Information	Planning/order	Operation/service	Training
– Website	– Industry Mall	– Siemens Industry Online Support (SIOS)	– SITRAIN Portal
– Catalogs and brochures	– Configuration	– My Documentation Manager	– Siemens Power Academy
– Newsletters	– SIMARIS planning tools	– Technical support	– BT Academy
– Image database	– CAx-Download Manager	– Support request	

I201_19079

We support you from the planning stages to commissioning to operation.

siemens.com/lowvoltage

Introduction

For further technical product information:

Introduction

1

■ **Overview**

Power monitoring made simple

Simplified installation, a wide range of measuring devices, and easy-to-use software: the system from the SENTRON portfolio is optimally suited for small and medium-sized businesses in industry and infrastructure.

Advantages of our power monitoring system

A scalable system

The power monitoring system requires no expert knowledge for commissioning and is available in small, entry-level starter packages. Both hardware and software can be easily.

Industrie 4.0 and smart buildings

It's not just large companies but SMEs as well that can benefit from digitalization and automation – without incurring high procurement costs. Our power monitoring system gathers the data.

Focus on power quality

A decreasing power quality can cause malfunctions in production facilities and terminal equipment. Our power monitoring system analyzes power quality, thus ensuring higher plant availability.

Audits and standards

Companies have to deal with laws and regulations governing energy efficiency. Our power monitoring system has been certified by the German TÜV, thus providing the basis for energy management in conformance with requirements.

Overview

Power management is a matter for decision at the top level

Responsible use of valuable energy resources

Global climate change, scarce energy resources and the increasing demand for energy mean that there is an urgent need for action. The industrialized nations have therefore committed to continuously reduce their annual CO_2 emissions by 2020. The European Council has set a target of improving energy efficiency by 20 percent by 2020. In Germany, the aim is to reduce energy consumption compared with 2008 by 10 percent by 2020, and by 25 percent by 2050.

The international standard ISO 50001 specifies the basic conditions for establishing a corporate energy management system for improved energy efficiency and sustained reduction in a company's energy consumption. Our TÜV-certified power monitoring system from the SENTRON portfolio provides the technical foundation for this. It enables energy flows to be recorded, visualized and analyzed to derive specific measures for optimizing energy use.

A systematic approach to energy efficiency

The ISO 50001 standard supports companies with a specific process description for introducing a corporate energy management system. Standard-compliant energy management optimizes energy utilization, while continuously enhancing energy efficiency.

Defining energy policy objectives

A central management task is the formulation of an in-house energy policy. It defines relevant strategic and operational objectives. Ongoing planning will include the identification of additional optimization potential for the business areas under scrutiny, and the development of relevant improvement measures.

Introducing process optimization

As a first step, an energy manager must be identified and nominated. He will then evaluate captured data, and derive and implement appropriate optimization measures. He will report the achieved results to corporate management.

Making energy flows transparent

As a second step, basic energy consumption and cost data, as well as information on in-house energy production, must be collected and documented clearly and verifiably. This requires the development of a reliable and precise system for the capture and analysis of consumption data. The objective is to recognize sustainable savings potential, to derive appropriate measures for that potential, and to implement these measures systematically.

Periodic controlling

Periodic checks will ensure that your energy management system functions correctly, and that objectives are reached. Corrective and preventative measures can then be implemented as needed.
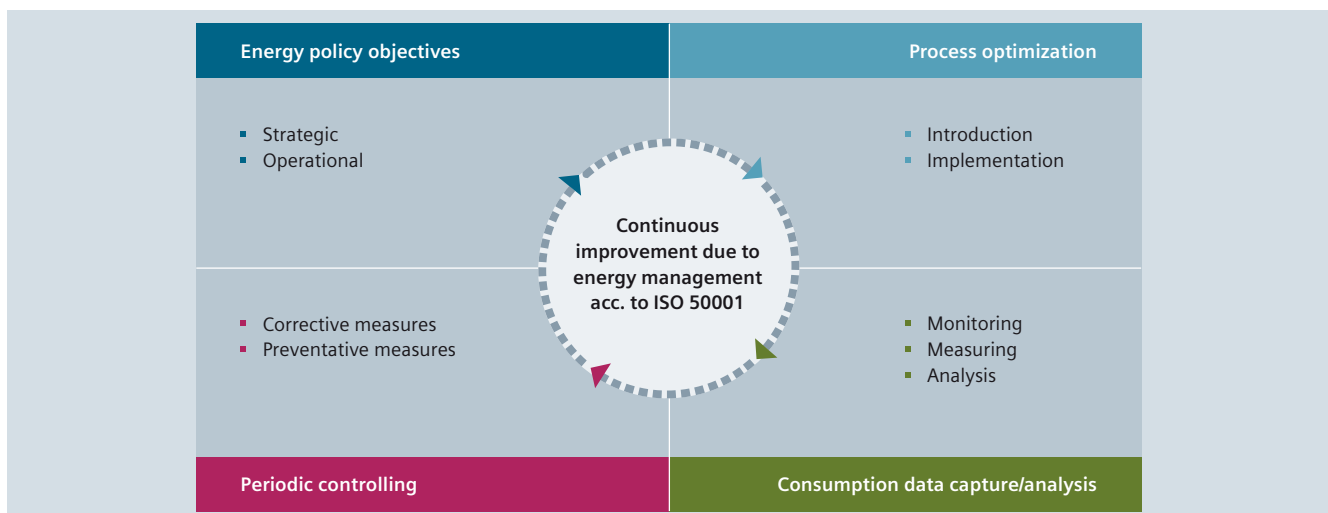
Introduction of a corporate energy management system in accordance with ISO 50001 for continuous improvement of energy efficiency by reducing energy consumption and costs.

Introduction

1

Energy management in accordance with ISO 50001

Providing the basis with power monitoring

The power monitoring system from the SENTRON portfolio is suitable for infrastructure, industrial applications, and buildings. The 7KT/7KM PAC measuring devices record the data of outgoing feeders or individual loads.

The 3WL/3VA/3VL circuit breakers supply measured values and important information for diagnostics, fault detection, and maintenance via standardized bus systems.

With the powermanager power monitoring software, the recorded measured values can be easily visualized, analyzed, archived, and monitored.

Recording of generated energy using MID measuring devices

Derivation of optimization measures through transparency of the energy flows

Increased availability of energy through monitoring of critical states in the power supply

Increased system availability through continuous monitoring of switching states

Increased productivity through optimization of energy consumption and energy costs

Transparency at the infeed thanks to seamless recording of the power supply quality
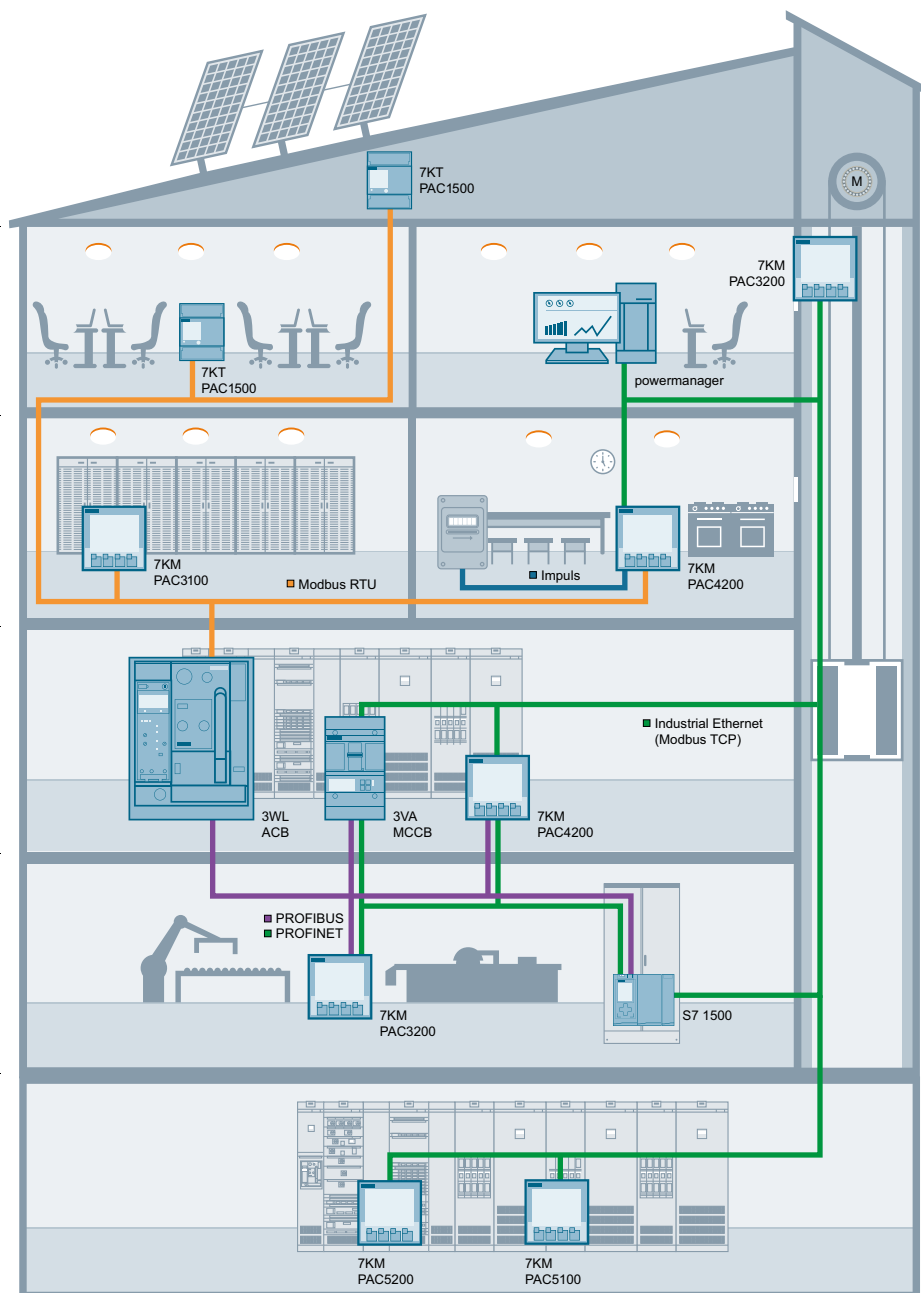
Continuously increasing energy efficiency

Precise cost center accounting for consumers

- Precise allocation of energy costs to cost centers
- Benchmarking between different cost centers
- Increased energy awareness

Detection of energy guzzlers, reduction of load peaks
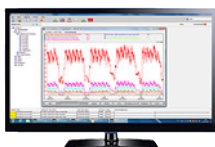
- Detection of energy-intensive processes and loads
- Cost savings created by amending the power supply agreement
- Tax savings by seamless documentation of application-specific consumption

Protection of sensitive areas for high plant safety

- Avoidance of equipment failures due to overload
- Protection of sensitive devices against harmonics
- Early intervention possible by means of notifications

Monitoring of protective devices for high system availability

- Increased system availability
- Optimization of maintenance
- Fast response to service call-outs

Multi-site power monitoring

- Centralized, multi-site power monitoring via standard IT networks
- Benchmarking of various corporate units increases energy awareness
- Improvement of power supply conditions by bundling supply volumes

Introduction

1

Hardware and software components

■ Overview

Measuring devices and circuit breakers

	7KT PAC1200	7KT PAC1500	7KM PAC3100	7KM PAC3200
		The entry-level solution when it comes to energy measurement	The cost-effective solution for digital measurement	The specialist solution for precise energy measurement
Measuring range/connection				
Max. input voltage L-L/L-N	400 V/230 V	400 V/230 V	480 V/276 V	690 V/400 V[1]
Transformer connection version	x/5 A	x/5 A	x/5 A	x/1 A/x/5 A
Direct connection version	40/63 A	80 A/125 A	–	–
DC power supply unit with extra-low voltage version	–	–	–	22 ... 65 V
Single-phase counter version	–	✓	–	–
Electrically isolated voltage inputs	–	–	–	–
Variant without display (with web server)	–	–	–	–
Measured quantities				
Voltage, current, power, frequency, power factor	✓	✓[2]	✓	✓
Energy measurement				
• Apparent, active, reactive energy	– I ✓ I ✓	– I ✓ I ✓	– I ✓ I ✓	✓ I ✓ I ✓
Extended measured quantities				
• Distortion factor THD (voltage, current)	–	–	–	✓[3]
• Harmonics (voltage, current)	–	–	–	–
• Phase angle/phase chart	–	–	–	–
• Load profile record with time stamp for min/max values	–	–	–	–
• Flicker acc. to IEC 61000-4-15	–	–	–	–
Monitoring functions				
Operating hours counter	–	–	–	✓
Limit monitoring	–	–	–	✓
Logic functions	–	–	–	✓
Event log	–	–	–	–
Gateway function	–	–	–	–
Reporting acc. to EN 50160	–	–	–	–
Integrated fault recorder	–	–	–	–
System integration and communication				
Digital inputs/digital outputs	–	–	2/2	1/1
S0 interface	–	✓	✓	✓
4DI/2DO expansion module	–	–	–	–
M-Bus	–	Optional	–	–
Instabus KNX	–	Optional	–	–
Modbus RTU	–	Optional	✓	Optional
Ethernet with Modbus TCP	✓	–	–	✓
PROFIBUS DPV1	–	–	–	Optional
PROFINET IO/ PROFIenergy	–	–	–	Optional
Parameterization software	✓	✓	powerconfig	powerconfig, TIA-Portal V14
Integration of power monitoring system	powermanager	powermanager	powermanager	powermanager SIMATIC EnergySuite
Web servers	✓	–	–	–
General data				
Measuring accuracy, active energy, reactive energy	2	1 I 2	1 I 3	0.5 S I 2
MID version	–	✓	–	–
Installation	Std. mount. rail.	Std. mount. rail.	Front mounting	Front mounting
Dimensions in MW (1 MW = 18 mm) or in mm	4 MW	2 / 4 / 6 MW	96 × 96 × 56	96 × 96 × 56

[1] With the exception of devices with power supply units with extra-low voltage

[2] On the display – energy and power values only. Additional measured quantities are transmitted via optional expansion modules 7KT Modbus / 7KT M-Bus

[3] THD indication

[4] Measuring accuracy including current transformer

[5] DSP800, see Catalog LV 10, chapter "Molded Case Circuit Breakers"

✓ Available / possible -- Not available / not possible

	7KM PAC4200	7KM PAC5100	7KM PAC5200	3WL	3VA ETU8
	The professional solution for communication/monitoring	The specialist solution for measured value recording	The expert solution for power supply quality	The specialist solution for protection and energy measurement	The specialist solution for protection and energy measurement
	690 V/400 V[1]	690 V/400 V	690 V/400 V	690 V/400 V	690 V/400 V
	x/1 A/x/5 A	x/1 A/x/5 A	x/1 A/x/5 A	Integrated	Integrated
	–	–	–	–	–
	22 ... 65 V	–	–	24 V	24 V
	–	–	–	–	–
	–	✓	✓	–	–
	–	✓	✓	–	–
	✓	✓	✓	✓	✓
	✓ I ✓ I ✓	✓ I ✓ I ✓	✓ I ✓ I ✓	✓ I ✓ I ✓	✓ I ✓ I ✓
	✓	✓	✓	✓	✓
	3. ... 31.	2. ... 40.	2. ... 40.	–	–
	✓	✓	✓	–	–
	✓	–	✓	✓	✓
	–	–	✓	–	–
	✓	–	–	✓	✓
	✓	✓	✓	✓	✓
	✓	✓	✓	–	–
	> 4000 events	✓	✓	✓	✓
	✓	–	–	–	–
	–	–	✓	–	–
	–	–	✓	–	–
	2/2	0/2	0/2	–	–
	✓	–	–	Optional	Optional
	Optional	–	–	Optional	Optional
	–	–	–	–	–
	–	–	–	–	–
	Optional	–	–	Optional	Optional
	✓	✓	✓	✓	✓
	Optional	–	–	Optional	Optional
	Optional	–	–	Optional	Optional
	powerconfig, TIA-Portal V14	powerconfig	powerconfig	powerconfig	powerconfig, TIA-Portal V14
	powermanager SIMATIC EnergySuite	powermanager	powermanager	powermanager	powermanager SIMATIC EnergySuite
	–	✓	✓	–	–
	0.2 S I 2	0.5 S I 2	0.5 S I 2	2 S I 2[4]	2 S I 2[4]
	–	–	–	–	–
	Front mounting	Front installation/standard rail		See LV 10	See LV 10
	96 × 96 × 82	96 × 96 × 100	96 × 96 × 100	96 × 96 × 82[5]	96 × 96 × 82[5]

Introduction

1

Hardware and software components

Accessories for 7KT PAC measuring devices

	7KT PAC expansion modules				**7KT LAN couplers**
	M-Bus	Modbus RTU	RS 485	KNX	Web servers
Specification	Up to 9600 bit/s	Up to 115200 bit/s	For connection to the 7KT LAN coupler	Up to 19200 bit/s	For up to 30 7KT PAC1500 measuring devices

Accessories for 7KM PAC measuring devices

	7KM PAC expansion modules				**Standard mounting rail adapter**
	Switched Ethernet	PROFIBUS DP	RS 485	4DI/2DO	7KM PAC TMP2
	for 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	for 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	for 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	for 7KM PAC4200 (number of digital inputs/outputs per module 4/2)	For 7KM PAC3100/3200/4200 for mounting on a standard mounting rail
Protocol	PROFINET IO PROFIenergy Modbus TCP	DPV1	Modbus RTU	S0 interface	--
Maximum number of connectable expansion modules of the same type	1	1	1	2	--

The powerconfig software for commissioning

	Software tool for efficient commissioning and diagnosis of communication-capable SENTRON components
License	Free use
Supported devices	7KM PAC3100/3200/4200 measuring devices, incl. expansion modules 3WL/3VL/3VA/ATC5300 circuit breakers
General range of functions	The PC-based tool facilitates parameterization of the devices, resulting in substantial time savings, particularly when several devices have to be set up. The device settings can be stored in the PC and printed out. The tool enables monitoring of instantaneous measured quantities, which can be printed out if required. Execution of specific device functions, such as resetting of devices and setting of energy counters.
Supported languages	German, English, Chinese, Spanish, Portuguese
Service functions	Firmware updates and switching of language packs for 7KM PAC measuring devices
Functional scope with 7KM PAC4200 and 3VA	Readout of data stored in the device (events; load profile history; daily energy counters), saved in csv format
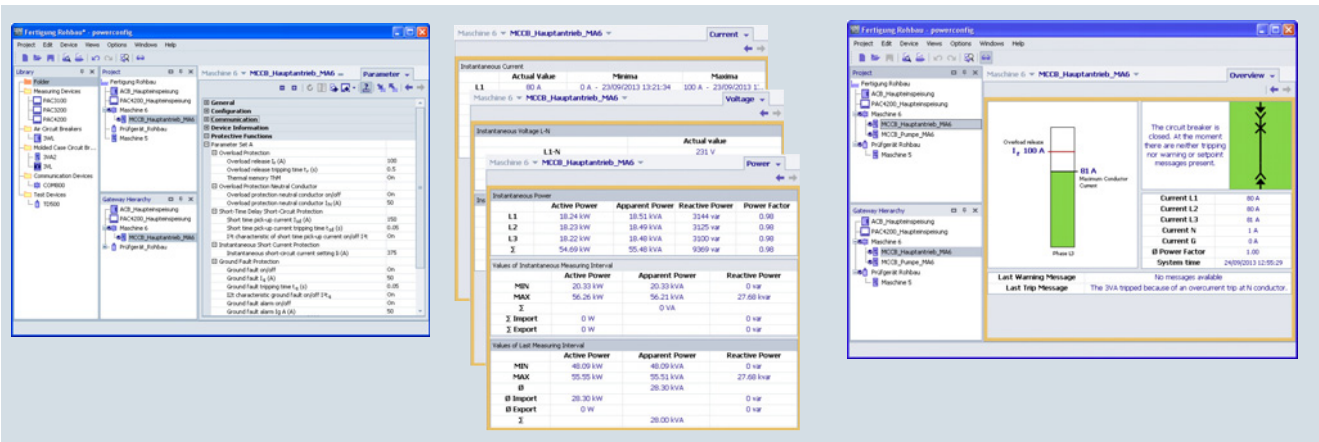
Setting of parameter values

Display of actual measured quantities

Display of the circuit breaker state

For more information about powerconfig, see chapter "Software"

■ **Overview**

Hardware components of the PC-based power monitoring system

Software component of the power monitoring software: powermanager

Power monitoring system with SENTRON components

The TÜV-certified power monitoring system from the SENTRON portfolio consists of the 7KT/7KM PAC measuring devices, the 3WL/3VA/3VL circuit breakers, and the powermanager power monitoring software. This forms the technical basis for supporting a corporate energy management system as specified by ISO 50001.

The hardware and software components are optimally coordinated with each other. For example, special drivers for the SENTRON devices are integrated in the powermanager power monitoring software. They enable energy data to be captured without any great configuration effort and they indicate the key measured values or the status by means of predefined views.

This reduces the engineering overhead. The device functions are optimally supported in the software.

Features of the powermanager power monitoring software

The powermanager power monitoring software constitutes the optimum technical basis for supporting a corporate power monitoring system as specified by ISO 50001 and EN 16247:

• Independent power monitoring software
• Can be operated using a Windows PC and measuring devices with Ethernet connection
• Easy getting started with basic license (Basic Package), can be extended with flexible licensing concept according to customer requirements
• Fully scalable, relative to number of devices and software functions
• Optimum integration of 7KT/7KM PAC measuring devices, 3WL/3VL/3VA circuit breakers, 7KM PAC 5200 power quality devices and and any other Modbus devices
• Support of the various device and communication interfaces (Modbus RTU, Modbus TCP)
• Status display of devices
• Available languages: German, English, Spanish, Portuguese, Italian, French, Turkish, Chinese

Introduction

1

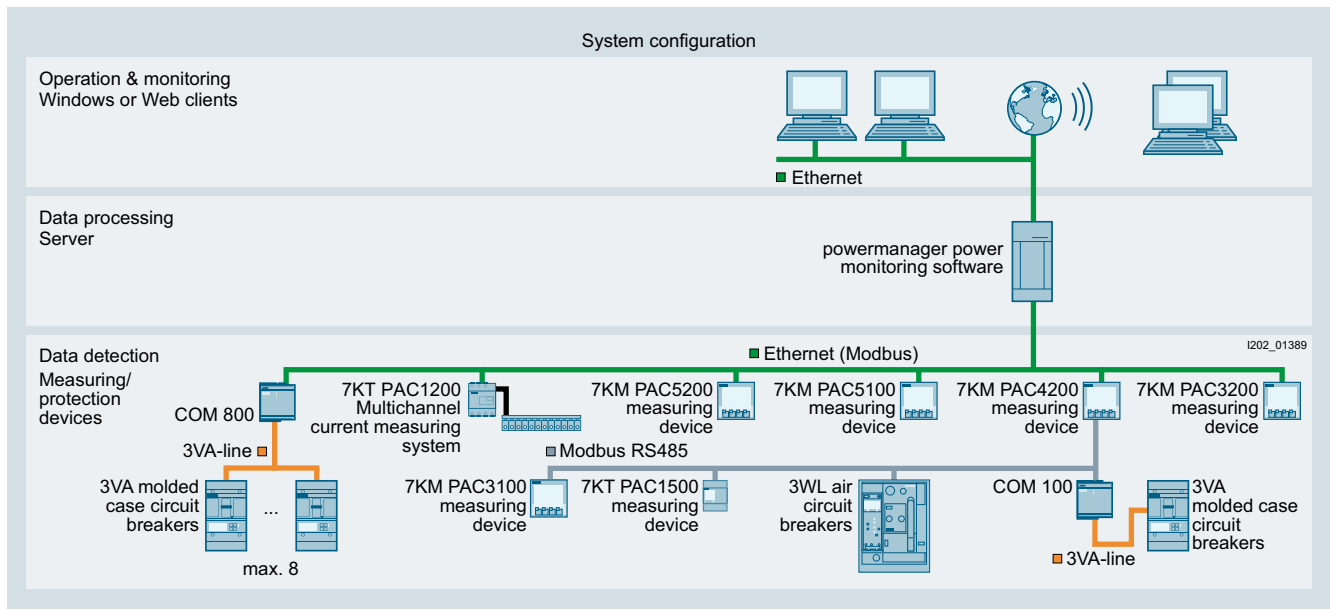## PC-based power monitoring system

■ Application

Industries

An energy-efficient production system enhances both the image and the productivity of a company, and thus its competitiveness.

Power monitoring as the technical basis for energy management for increasing a company's energy efficiency is thus of interest to all areas, from industrial applications to infrastructure, and buildings in the service sector.

System configuration

- Integration of measuring devices by means of predefined device templates for the 7KT/7KM PAC measuring devices and the 3WL/3VA/3VL circuit breakers
- Integration of existing Modbus-capable detecting devices is easy
- 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 the gateway

Typical topology of a power monitoring system

■ More information

TÜV certification

TÜV-tested according to ISO 50001

> Learn more
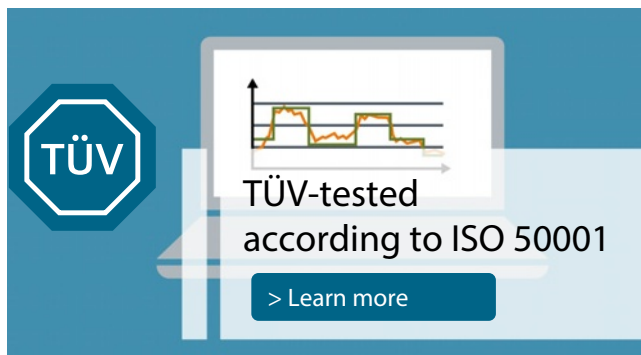
The TÜV certificate is available from

www.siemens.com/tuev-certificate-of-conformity

Hardware of the PC-based power monitoring system

The hardware components of the PC-based power monitoring system are

- 7KM PAC measuring devices; see chapter "Measuring Devices"
- 3WL air circuit breakers; see Catalog LV 10, chapter "Air Circuit Breakers"
- 3VL molded case circuit breakers; see Catalog LV 10, chapter "Molded Case Circuit Breakers"
- 3VA molded case circuit breakers; see Catalog LV 10, chapter "Molded Case Circuit Breakers"

Software of the PC-based power monitoring system

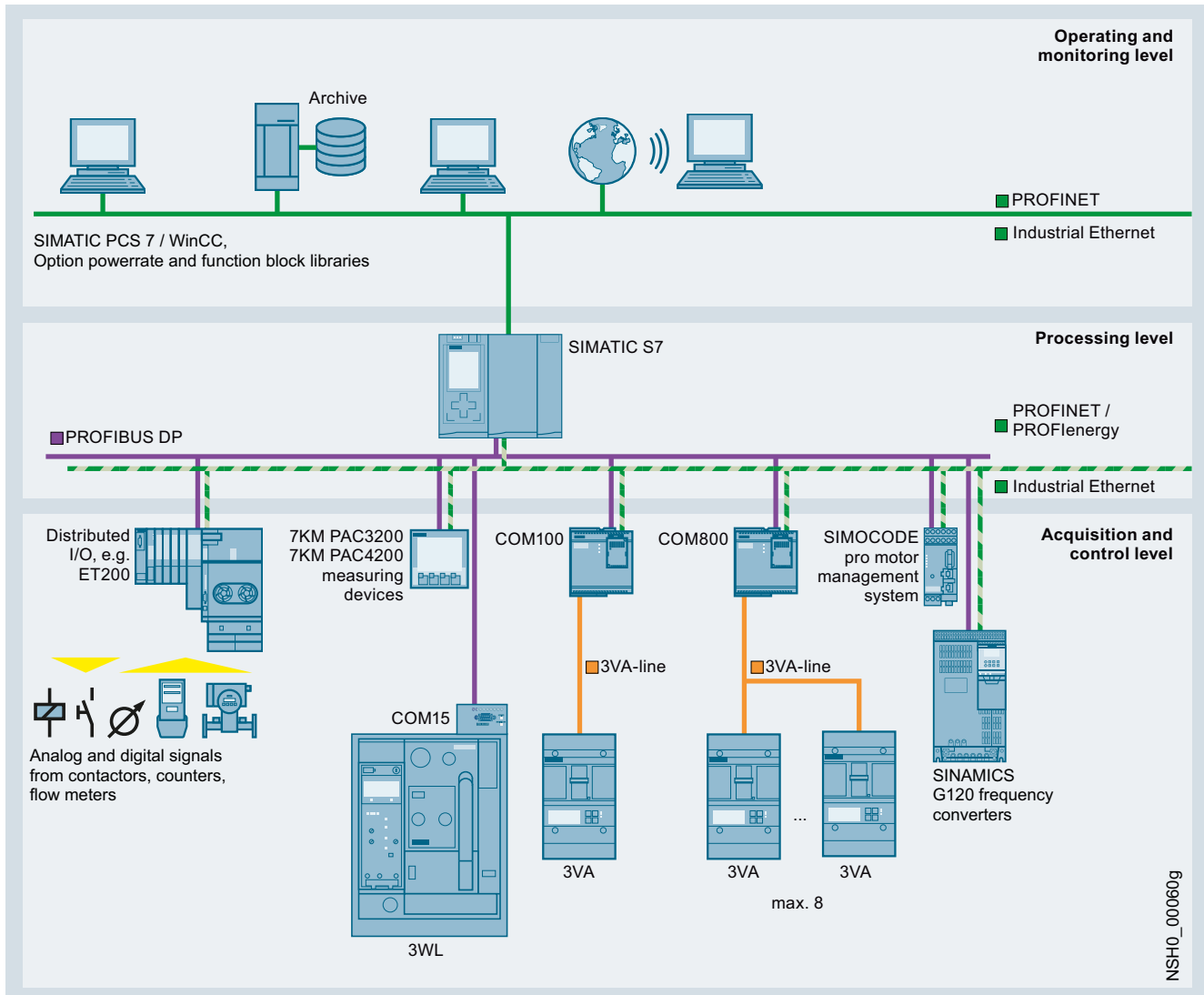The software of the PC-based power monitoring system is powermanager; see chapter "Software".

Powermanager system packages with software and hardware are an easy and low-cost way to get started with a power monitoring system; see chapter "Software".

Internet

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

■ **Overview**

SIMATIC-based solutions for the process and manufacturing industry

A key feature of the process and manufacturing industry is frequently high energy consumption. It therefore makes sense to integrate a power data management system in existing systems.

Communication via PROFIBUS DP

PROFIBUS DP enables integration of a wide range of devices:
- For the protection of distribution boards and loads: Protective devices, such as circuit breakers
- For open-loop and closed-loop control: Frequency converters, motor management systems and soft starters
- For detection
  - Electrical measured quantities: Via the measuring devices 7KM PAC3200/4200
  - Non-electrical measured quantities: Via analog/digital converters

PROFINET and PROFIenergy

An increasing number of devices in automation technology offer PROFINET. The 7KM PAC Switched Ethernet PROFINET expansion module enables the 7KM PAC3200/PAC4200 measuring devices and 3VA circuit breakers to be connected to the automation systems.

PROFIenergy is a "Common Application Profile" from Profibus International. Thanks to PROFIenergy it is possible to create a power data management system with standardized device interfaces.

Function block libraries for SIMATIC PCS 7 and WinCC

The function block library for SIMATIC PCS 7 and WinCC ensures device integration as follows:
- Measured quantities and states can be connected via CFC
- Structured display of measured quantities and protection parameters for the 3WL/3VA/3VL circuit breakers.
- Limit value violations are displayed, archived and acknowledged in the relevant communications system in the usual way
- Circuit breakers can be program-controlled or manually operated with the appropriate user authorization

Introduction

SIMATIC-based power data management system

■ **Benefits**

- Increased energy efficiency due to precise knowledge of the load profile
- Optimization of power supply agreements
- Allocation 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

■ **Application**

The SIMATIC-based power data management system is used in all industries in which PCS 7 and WinCC are used, and the transparency and monitoring of power flows is crucial.

■ **More information**

Hardware components

The hardware components of the SIMATIC-based power data management system are

- 7KM PAC measuring devices; see chapter "Measuring Devices"
- 3WL air circuit breakers; see Catalog LV 10, chapter "Air Circuit Breakers"
- 3VL molded case circuit breakers; see Catalog LV 10, chapter "Molded Case Circuit Breakers"
- 3VA molded case circuit breakers; see Catalog LV 10, chapter "Molded Case Circuit Breakers"

Software components

The software components of the SIMATIC-based power data management system are

- Library 7KM PAC3200 for SIMATIC PCS 7
- Library 7KM PAC3200 for SIMATIC WinCC

For information about all the software components, see chapter "Software"

Internet

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

Weitere technische Produkt-Informationen:

Configuration Manual

Measuring Devices and Power Monitoring
Article No.: 3ZW1012-7KM42-0AC1

Siemens Industry Online Support:

www.siemens.com/lowvoltage/
product-support

→ Beitragstyp:
    Anwendungsbeispiel
    Download
    FAQ
    Handbuch
    Kennlinie
    Produktmitteilung
    Software-Archiv
    Technische Daten
    Zertifikat

Measuring Devices
7KM PAC Measuring Devices

Introduction

■ **Overview**

2

Devices	Page	Application	Standards	Used in		
				Non-residential buildings	Residential buildings	Industry
7KM PAC measuring devices						
7KM PAC3100 measuring device AC/DC wide-range power supply unit, screw connection	2/4	Control panel instrument with graphics display, integrated digital inputs and outputs and an RS 485 interface for the transmission of measured values and configurations. Display of 30 electrical measured values and consumption values in switchboard assemblies, infeeds or outgoing feeders. International standards and multi-lingual displays for worldwide use.	Measuring accuracy for energy acc. to IEC 61557-12	✓	--	✓
7KM PAC3200 measuring device 3 versions: • AC/DC wide-range power supply unit, screw connection • DC power supply unit with extra-low voltage, screw connection • AC/DC wide-range power supply unit, ring cable lug connection	2/5	Control panel instrument with graphics display, integrated digital inputs and outputs and an integrated Ethernet interface for the transmission of measured values and configurations. Display of over 50 electrical measured values for switchboard assemblies, infeeds or outgoing feeders. Dual-tariff measuring devices for precise energy measurement for power import and feedback. The following expansion modules are available: • 7KM PAC Switched Ethernet PROFINET • 7KM PAC RS 485 • 7KM PAC PROFIBUS DP	Measuring accuracy for energy acc. to IEC 62053-22/23 and IEC 61557-12	✓	--	✓
7KM PAC4200 measuring device 3 versions: • AC/DC wide-range power supply unit, screw connection • DC power supply unit with extra-low voltage, screw connection • AC/DC wide-range power supply unit, ring cable lug connection	2/7	Control panel instrument with graphics display, user-defined displays, memory, clock and calendar function, digital inputs and outputs and an integrated Ethernet interface with gateway function to transfer measured values and configurations. Display of over 200 electrical measured values for switchboard assemblies, infeeds or outgoing feeders. Extensive functions for precise energy measurement for power import and feedback and assessment of the system quality. The following expansion modules are available: • 7KM PAC Switched Ethernet PROFINET • 7KM PAC RS 485 • 7KM PAC PROFIBUS DP • 7KM PAC 4DI/2DO	Measuring accuracy for energy acc. to IEC 62053-22/23 and IEC 61557-12	✓	--	✓
7KM PAC5100 measuring device 2 versions: • Control panel instrument with graphics display • Standard rail instrument without display	2/9	Control panel instrument with graphics display and user-defined displays, or instrument for standard rail mounting in accordance with EN 60750, web server for parameterization, visualization and data management, 2 binary outputs, electrically isolated voltage inputs, synchronization via internal RTC clock or externally via NTP, 4 freely parameterizable LEDs for device status or limit violations, as well as integrated RJ45 Ethernet interface. Recording of more than 250 electrical measured values for switchboard assemblies, infeeds or outgoing feeders, extensive functions for precise energy measurement for power import and feedback, and for assessment of the system quality.	Measuring accuracy for energy acc. to IEC 62053-22/23 and IEC 61557-12	✓	--	✓
7KM PAC5200 measuring device 2 versions: • Control panel instrument with graphics display • Standard rail instrument without display	2/10	Control panel instrument with graphics display and user-defined displays or instrument for standard rail mounting in accordance with EN 60750, web server for parameterization, visualization and data management, 2 binary outputs, electrically isolated voltage inputs, flicker in accordance with IEC 61000-4-15, synchronization via internal RTC clock or externally via NTP, 4 freely parameterizable LEDs for device status or limit violations, 2 GB memory, integrated fault recorder, reporting in accordance with EN 50160, rms recorder, as well as integrated RJ45 Ethernet interface. Recording of more than 250 electrical measured values for switchboard assemblies, infeeds or outgoing feeders. Extensive functions for precise energy measurement for power import and feedback and assessment of the system quality.	Measuring accuracy for energy acc. to IEC 62053-22/23 and IEC 61557-12	✓	--	✓

2

Devices	Page	Application	Standards	Used in		
				Non-residential buildings	Residential buildings	Industry
7KM PAC expansion modules	2/13	• The 7KM PAC Switched Ethernet PROFINET expansion module is used to connect the 7KM PAC3200 and 7KM PAC4200 measuring devices and 3VA molded case circuit breakers to Switched Ethernet PROFINET (PROFIenergy).	IEC 61784-2	✓	--	✓
		• The 7KM PAC PROFIBUS DP expansion module is used to connect the 7KM PAC3200 and 7KM PAC4200 measuring devices and 3VA molded case circuit breakers to PROFIBUS DPV1	IEC 61158			
		• The 7KM PAC RS 485 expansion module is used to connect simple devices with RS 485 interface, such as the 7KM PAC3200 and 3VA molded case circuit breaker, and supports the Modbus RTU protocol.	RS 485			
		• 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.	IEC 62053-31			

Measuring Devices
7KM PAC Measuring Devices

7KM PAC3100 measuring devices

2

■ Overview

The 7KM PAC measuring devices are used to measure and display all relevant system parameters in low-voltage power distribution. They can be used for both single-phase and multi-phase measurements in 3 and 4-conductor power supply systems (TN, TT, IT).

They record energy values for main distribution boards, electrical branches or individual loads precisely and reliably, and also supply key measured values for assessment of the state of the plant and the quality of the power supply.

The 7KM PAC3100 measuring device is fitted with an integrated Modbus RTU interface via RS 485, no expansion module is required.

■ Benefits

- 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
  - At least 8 languages
  - International approvals
  - Developed and tested to European and international standards
- Low mounting depth
- User-friendly, free configuration software powerconfig; see below

■ Selection and ordering data

Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
7KM PAC3100 measuring device Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 100 … 240 V AC ± 10 %, 50/60 Hz 110 … 250 V DC ± 10 % Measuring inputs U_e: max. 480/277 V 3 AC, 50/60 Hz I_e: /5 A		**Screw connection** ⊕ **7KM3133-0BA00-3AA0**	1	1 unit	1DD	0.459

7KM3133-0BA00-3AA0

■ More information

For current transformers, see page 2/29 or Catalog LV 10, chapter "Switch Disconnectors"

For other accessories, see page 2/28

powerconfig is available free of charge at http://support.automation.siemens.com/WW/view/en/63452759

For more information about powerconfig, see chapter "Software"

2

■ Overview

The 7KM PAC measuring devices are used to measure and display all relevant system parameters in low-voltage power distribution. They can be used for both single-phase and multi-phase measurements in 3 and 4-conductor power supply systems (TN, TT, IT).

They record energy values for main distribution boards, electrical branches or individual loads precisely and reliably, and also supply key measured values for assessment of the state of the plant and the quality of the power supply.

The 7KM PAC3200 measuring device is fitted with an integrated Modbus TCP interface via Ethernet, no expansion module is required.

Power distribution in the TIA Portal

The devices fit seamlessly into V14 or higher of TIA Portal, thus enabling parameter assignment, commissioning and automation of power distribution in the application itself.

The benefits for you:
• Engineering with one tool only
• Intuitive configuration of power distribution
• Access to measured and diagnostic data

More information:

www.siemens.com/lowvoltage/tia-portal

■ Benefits

• 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
  - At least 8 languages
  - International approvals
  - Developed and tested to European and international standards
• Low mounting depth

Additional performance characteristics of the 7KM PAC3200

• Precise energy measurement
• Versatile system integration
  - Integrated Ethernet interface
  - Optional communication modules available
  - Multifunctional digital inputs and outputs
  - Limit monitoring
• Can be directly connected to power supply networks up to 690 V AC (UL-L), CATIII without voltage transformer (with the exception of devices with power supply units with extra-low voltage)
• User-friendly configuration software powerconfig; see chapter "Software"

Measuring Devices

7KM PAC Measuring Devices

2

7KM PAC3200 measuring devices

■ Selection and ordering data

	Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
							kg
7KM2112-0BA00-3AA0	**7KM PAC3200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** **7KM2112-0BA00-3AA0**	1	1 unit	1DD	0.450
7KM2111-1BA00-3AA0	**7KM PAC3200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage DC power supply unit with extra-low voltage U_{AUX}: 22 … 65 V DC ± 10 % Measuring inputs U_e: max. 500/289 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** **7KM2111-1BA00-3AA0**	1	1 unit	1DD	0.459
7KM2112-0BA00-2AA0	**7KM PAC3200 measuring device** Control panel instrument, 96 x 96 mm Ring cable lug terminals for current and voltage connection AC/DC wide-voltage power supply unit U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Ring cable lug connection** **7KM2112-0BA00-2AA0**	1	1 unit	1DD	0.470

■ More information

For current transformers, see page 2/29 or
Catalog LV 10, chapter "Switch Disconnectors"

For other accessories, see page 2/28

powerconfig is available free of charge at
http://support.automation.siemens.com/WW/view/en/63452759

For more information about powerconfig, see chapter "Software"

* You can order this quantity or a multiple thereof.

2

Overview

The 7KM PAC measuring devices are used to measure and display all relevant system parameters in low-voltage power distribution. They can be used for both single-phase and multi-phase measurements in 3 and 4-conductor power supply systems (TN, TT, IT).

They record energy values for main distribution boards, electrical branches or individual loads precisely and reliably, and also supply key measured values for assessment of the state of the plant and the quality of the power supply.

The 7KM PAC4200 measuring device is fitted with an integrated Modbus TCP interface via Ethernet, no expansion module is required.

Power distribution in the TIA Portal

The devices fit seamlessly into V14 or higher of TIA Portal, thus enabling parameter assignment, commissioning and automation of power distribution in the application itself.

The benefits for you:

- Engineering with one tool only
- Intuitive configuration of power distribution
- Access to measured and diagnostic data

More information:

www.siemens.com/lowvoltage/tia-portal

Benefits

- 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
  - At least 8 languages
  - International approvals
  - Developed and tested to European and international standards
- Low mounting depth

Additional performance characteristics of the 7KM PAC4200:

- Precise energy measurement
- Versatile system integration
  - Integrated Ethernet interface
  - Optional communication modules available
  - Multifunctional digital inputs and outputs
  - Limit monitoring
- Can be directly connected to power supply networks up to 690 V AC (UL-L), CATIII without voltage transformer (with the exception of devices with power supply units with extra-low voltage)
- User-friendly configuration software powerconfig; see chapter "Software"
- Monitoring the plant status and the power supply quality
  - Basic information for evaluating the power supply 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
- Counters 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 easy connection of devices with serial RS 485 interface via expansion module 7KM PAC RS 485 to an Ethernet network
- Comprehensive user-friendly indicators, such as user-defined displays, bar and status indicators, phase diagram and list and histogram graphics
- Satisfies the accuracy requirements of class 0.1 S high-precision meters used by power supply companies according to IEC 62053-22, which are normally reserved for exacting industrial applications

Measuring Devices
7KM PAC Measuring Devices

7KM PAC4200 measuring devices

2

Selection and ordering data

	Version	DT	Article No. www.siemens.com/ product?Article No.		PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
								kg
  7KM4212-0BA00-3AA0	**7KM PAC4200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** **7KM4212-0BA00-3AA0**		1	1 unit	1DD	0.546
  7KM4211-1BA00-3AA0	**7KM PAC4200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage DC power supply unit with extra-low voltage U_{AUX}: 22 … 65 V DC ± 10 % Measuring inputs U_e: max. 500/289 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** **7KM4211-1BA00-3AA0**		1	1 unit	1DD	0.537
  7KM4212-0BA00-2AA0	**7KM PAC4200 measuring device** Control panel instrument, 96 x 96 mm Ring cable lug terminals for current and voltage connection AC/DC wide-voltage power supply unit U_{AUX}: 95 … 240 V AC ± 10 %, 50/60 Hz 110 … 340 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Ring cable lug connection** **7KM4212-0BA00-2AA0**		1	1 unit	1DD	0.544

More information

For current transformers, see page 2/29 or
Catalog LV 10, chapter "Switch Disconnectors"

For other accessories, see page 2/28

powerconfig is available free of charge at
http://support.automation.siemens.com/WW/view/en/63452759

For more information about powerconfig, see chapter "Software"

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

■ Overview

7KM PAC5100 measuring device

The 7KM PAC measuring devices are used to measure and display all relevant system parameters in low-voltage power distribution. They can be used for both single-phase and multi-phase measurements in 3 and 4-conductor power supply systems (TN, TT, IT). They record energy values for main distribution boards, electrical branches or individual loads precisely and reliably, and also supply key measured values for assessment of the state of the plant and the quality of the power supply.

The 7KM PAC5100 measuring device has an integrated Modbus TCP interface via Ethernet and a web server for parameterization, visualization and data management.

■ Benefits

- Simple mounting and commissioning
- Intuitive operation via 4 function keys
- integrated web server for parameterization, display and evaluation
- 4 parameterizable LEDs
- Worldwide use
  - International approvals
  - Developed and tested to European and international standards
- Low mounting depth
- Precise energy measurement
- Versatile system integration
  - Integrated Ethernet interface
  - Multifunctional digital outputs
  - Limit monitoring
- Can be directly connected to power supply networks up to 690 V AC (UL-L), CATIII without voltage transformer
- Electrically isolated voltage inputs
- Monitoring the plant status and the power supply quality
  - Basic information for evaluating the power supply quality
  - Logging of plant history in the form of operation, control and system-related events
- Energy counters for apparent energy, active energy, reactive energy, as well as import, supply, inductive and capacitive
- Comprehensive user-friendly indicators, such as user-defined displays, bar and status indicators
- Measurement up to the 40th individual harmonic of current and voltage

■ Selection and ordering data

|	Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
							kg
 7KM5212-6BA00-1EA2	**7KM PAC5100 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 110 … 230 V AC ± 10 %, 50/60 Hz 24 … 250 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** ⊕ **7KM5212-6BA00-1EA2**	1	1 unit	1DD	0.807
 7KM5212-6CA00-1EA8	**7KM PAC5100 measuring device** Standard rail instrument without display Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 110 … 230 V AC ± 10 %, 50/60 Hz 24 … 250 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** ⊕ **7KM5212-6CA00-1EA8**	1	1 unit	1DD	0.753

■ More information

For current transformers, see page 2/29 or
Catalog LV 10, chapter "Switch Disconnectors"

Measuring Devices
7KM PAC Measuring Devices

7KM PAC5200 measuring devices
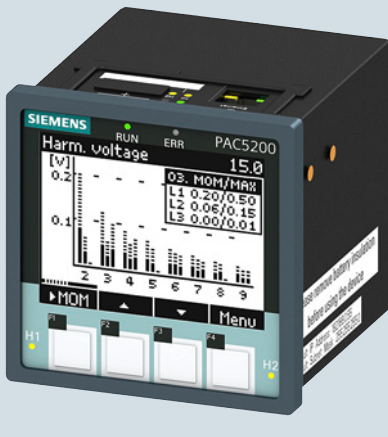
◼ Overview

7KM PAC5200 measuring device

The 7KM PAC measuring devices are used to measure and display all relevant system parameters in low-voltage power distribution. They can be used for both single-phase and multi-phase measurements in 3 and 4-conductor power supply systems (TN, TT, IT).

They record energy values for main distribution boards, electrical branches or individual loads precisely and reliably, and supply key measured values for assessment of the state of the plant and the quality of the power supply.

The 7KM PAC5200 power quality measuring device has an integrated Modbus TCP interface via Ethernet and a web server for parameterization, visualization and data management.

◼ Benefits

- Simple mounting and commissioning
- Intuitive operation via 4 function keys
- 4 parameterizable LEDs
- integrated web server for parameterization, display and evaluation
- Worldwide use
  - International approvals
  - Developed and tested to European and international standards
- Low mounting depth
- Precise energy measurement
- Versatile system integration
  - Integrated Ethernet interface
  - Multifunctional digital outputs
  - Limit monitoring
- Can be directly connected to power supply networks up to 690 V AC (UL-L), CATIII without voltage transformer
- Electrically isolated voltage inputs
- Monitoring the plant status and the power supply quality:
  - Basic information for evaluating the power supply quality
  - Logging of plant history in the form of operation, control and system-related events
  - Flicker acc. to IEC 61000-4-15
- Energy counters for apparent energy, active energy, reactive energy, as well as import, supply, inductive and capacitive
- Comprehensive user-friendly indicators, such as user-defined displays, bar and status indicators
- Measurement up to the 40th individual harmonic of current and voltage
- Integrated 2 GB SD card for recorder functions
- Flexible recorder:
  - Measured value recorder
  - Trend recorder
  - Event recorder
  - Fault recorder
- Integrated PQ recording and reporting in accordance with EN 50160
- Data export:
  - COMTRADE
  - PQDif
- Classification of events
- ITIC /CBEMA evaluation in the device

▪ Selection and ordering data

	Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
							kg
7KM5412-6BA00-1EA2	**7KM PAC5200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 110 … 230 V AC ± 10 %, 50/60 Hz 24 … 250 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** ⊕ **7KM5412-6BA00-1EA2**	1	1 unit	1DD	0.809
7KM5412-6CA00-1EA8	**7KM PAC5200 measuring device** Standard rail instrument without display Screw connections for connecting current and voltage AC/DC wide-voltage power supply unit U_{AUX}: 110 … 230 V AC ± 10 %, 50/60 Hz 24 … 250 V DC ± 10 % Measuring inputs U_e: max. 690/400 V 3 AC, 50/60 Hz I_e: /1 A or /5 A		**Screw connection** ⊕ **7KM5412-6CA00-1EA8**	1	1 unit	1DD	0.754

▪ More information

For current transformers, see page 2/29 or
Catalog LV 10, chapter "Switch Disconnectors"

Measuring Devices

7KM PAC Measuring Devices

Accessories for 7KM PAC

2

■ Selection and ordering data

for 7KM PAC3100/3200/4200

	Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
							kg
7KM9900-0XA00-0AA0	**7KM PAC TMP2 standard mounting rail adapter** Two-tier adapter for mounting a measuring device on a standard mounting rail • Front display • For manual intervention		**7KM9900-0XA00-0AA0**	1	1 unit	1DD	0.397
7KM9900-0YA00-0AA0	**7KM PAC TMP mounting plate** Adapter for mounting a measuring device on standard mounting rail • Display faces backwards towards standard mounting rail • Readout and evaluation of measurements solely via mains operation		**7KM9900-0YA00-0AA0**	1	1 unit	1DD	0.146
7KM9900-0GA00-0AA0	**Compact holder** Device holder for 7KM PAC3100/3200/4200: • 10 holders for 5 PAC devices • For seamless side-by-side mounting of the devices (without spaces)		**7KM9900-0GA00-0AA0**	1	1 unit	1DD	0.148
7KM9900-0SA00-0AA0	**7KM PAC spare parts** Spare parts comprising: • Device holders for panel mounting (2X) • Screw terminal for connection of voltage inputs • Screw terminal for connection of current inputs • Terminal block inputs/outputs for 7KM PAC3100/4200 • Terminal block inputs/outputs for 7KM PAC3200 • Terminal block RS 485 for 7KM PAC3100		**7KM9900-0SA00-0AA0**	1	1 unit	1DD	0.118

■ More information

Current transformers

For current transformers, see page 2/29 or Catalog LV 10, chapter "Switch Disconnectors"

Software components

For more information about the software components see chapter "Software" and on the Internet at www.siemens.com/lowvoltage/powermonitoring

More information

More information is available on the Internet at: www.siemens.com/lowvoltage/powermonitoring

* You can order this quantity or a multiple thereof.

■ **Overview**

Expansion modules are used as communication interfaces and for expanding the digital inputs/outputs for 7KM PAC measuring devices.

The expansion modules are plugged in at the back of the measuring device. The device identifies the module automatically and presents the relevant parameters for this module for selection in the parameterization menu.

Versions

The following expansion modules are available (shown from left to right in the figure on the left):

• 7KM PAC Switched Ethernet PROFINET expansion module
• 7KM PAC PROFIBUS DP expansion module
• 7KM PAC RS 485 expansion module
• 7KM PAC 4DI/2DO expansion module

Connection for 3VA molded case circuit breakers

The following expansion modules can be mounted on the front of the COM800/COM100 data concentrators of the 3VA molded case circuit breaker:

• 7KM PAC Switched Ethernet PROFINET and
• 7KM PAC PROFIBUS DP

For further details, see Catalog LV 10, chapter "Molded Case Circuit Breakers" or in the manual at http://support.automation.siemens.com/WW/view/en/90318775

More information

For more information about the software components see chapter "Software" and on the Internet at www.siemens.com/lowvoltage/powermonitoring

Version		Use in					
		7KM PAC					**3VA**
		PAC3100	PAC3200	PAC4200	PAC5100	PAC5200	COM800/ COM100
7KM PAC expansion modules							
	7KM PAC Switched Ethernet PROFINET expansion module	--	✓	✓	--	--	✓
	The 7KM PAC Switched Ethernet PROFINET expansion module is a plug-in communication module for 7KM PAC3200 and 7KM PAC4200 measuring devices and 3VA molded case circuit breakers.						
	It provides the following features:						
	• Standardized PROFIenergy interface to the measured quantities						
	• The measured quantities can be individually selected using a GSDML file. This permits use of cost-effective S7 CPUs						
	• Easy parameter assignment using the device display and STEP 7						
	• Integrated Ethernet switching allows 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 assembly using LLDP						
	• Deterministic reversing time through ring redundancy (MRP)						
	• Modbus TCP communication						
	• Communication with powermanager or powerconfig						
	• 2 x Ethernet (RJ45) sockets						
	• Transmission 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 measured variables from 7KM PAC3200 and 7KM PAC4200 can be 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 quantities can be read out in acyclic mode using PROFIenergy, a PNO protocol profile. Thanks to PROFIenergy, it is possible to assemble a power monitoring system with devices from various manufacturers using PROFINET.						

Measuring Devices

7KM PAC Measuring Devices

2

7KM PAC expansion modules

Version	Use in					
	7KM PAC					**3VA**
	PAC3100	PAC3200	PAC4200	PAC5100	PAC5200	COM800/ COM1100
7KM PAC PROFIBUS DP expansion module	--	✓	✓	--	--	✓

7KM PAC PROFIBUS DP expansion module

The 7KM PAC PROFIBUS DP expansion module is a plug-in communication module for 7KM PAC3200 and 7KM PAC4200 measuring devices and 3VA molded case circuit breakers.

The 7KM PAC PROFIBUS DP expansion module has the following features:

- Plug-in communication module for measuring devices for connection to PROFIBUS DPV1
- For 7KM PAC3200 and 7KM PAC4200
- Parameterizable via device front or using parameterization software
- Data can be transferred both cyclically and acyclically via PROFIBUS DPV1
- Easy engineering thanks to integration in SIMATIC STEP 7 and/or simple integration via GSD file for other programming systems
- Optimum use of process image of a control system for selection of individual measured quantities for cyclical transfer
- Supports all baud rates from 9.6 kbit/s up to 12 Mbit/s
- 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 RS 485 expansion module	--	✓	✓	--	--	--

7KM PAC RS 485 expansion module

The 7KM PAC RS 485 expansion module has the following features:

- Plug-in 7KM PAC RS 485 communication module for 7KM PAC3200 and 7KM PAC4200 measuring devices and 3VA molded case circuit breakers
- Parameterizable via device front or using parameterization software
- Support for the Modbus RTU protocol
- Plug and play
- Supports transmission rates of 4.8/9.6/19.2 and 38.4 kbit/s
- 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 for communication with simple devices with RS 485 interface, such as the 7KM PAC3100, via Ethernet (Modbus TCP).

7KM PAC 4DI/2DO expansion module	--	--	✓	--	--	--

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 and offers the following features:

- Up to two 7KM PAC 4DI/2DO modules can be plugged onto a 7KM PAC4200.
- The 7KM PAC 4DI/2DO expansion modules mean that the internal digital inputs and outputs can be expanded by up to 8 inputs and 4 outputs.
- The 7KM PAC 4DI/2DO expansion modules can be configured locally at the front of the device or via the powerconfig parameterization software
- The digital inputs can be used without the need for an external power supply as they are self-powered. This is particularly useful for the integration of non-electric measuring devices, such as water or compressed-air counters
- 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**

	Version	DT	Article No. www.siemens.com/ product?Article No.	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
7KM9300-0AE01-0AA0	**7KM PAC Switched Ethernet PROFINET expansion module** Expansion module for 7KM PAC3200 and 7KM PAC4200 (PROFIenergy) and COM100/800 (3VA) breaker data server		7KM9300-0AE01-0AA0	1	1 unit	1DD	0.070
7KM9300-0AB01-0AA0	**7KM PAC PROFIBUS DP expansion module** Expansion module for 7KM PAC3200 and 7KM PAC4200 (PROFIBUS DPV1) and COM100/800 (3VA) breaker data server		7KM9300-0AB01-0AA0	1	1 unit	1DD	0.079
7KM9300-0AM00-0AA0	**7KM PAC RS 485 expansion module** Expansion module for 7KM PAC3200 and 7KM PAC4200 (Modbus RTU) and COM100/800 (3VA) breaker data server		7KM9300-0AM00-0AA0	1	1 unit	1DD	0.074
7KM9200-0AB00-0AA0	**7KM PAC 4DI/2DO expansion module** Expansion module for 7KM PAC4200		7KM9200-0AB00-0AA0	1	1 unit	1DD	0.073
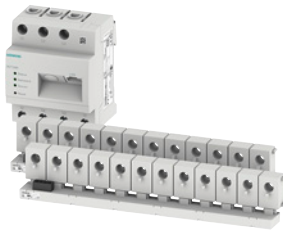
Measuring Devices
7KT PAC Measuring Devices

Introduction

■ **Overview**

Devices	Page	Application	Standards	Used in		
				Non-residential buildings	Residential buildings	Industry
7KT PAC measuring devices						
7KT PAC1200 multichannel current measuring system *NEW* 7KT12	2/17	Measurement of individual feeders – thus direct comparison of consumers. Detection of current peaks – thus avoidance of high energy costs. Web server and app representation – thus plug-and-play visualization of measured values and consumption values		✓	✓	✓
7KT PAC1500 three-phase measuring devices 7KT154	2/22	Measurement of consumption data in three-phase systems of plant sections, offices or holiday apartments.	EN 50470-1, EN 50470-3 EN 62052-23, EN 62053-31	✓	✓	✓
7KT PAC1500 single-phase measuring devices 7KT153	2/24	For measurement of consumption data in single-phase systems, e.g. in industrial plants, offices and apartments in apartment blocks.	EN 50740-1, EN 50470-3, EN 62053-31	✓	✓	✓
7KT PAC expansion modules 7KT19	2/25	Communication interfaces with IrDA infrared interface for 7KT PAC1500 measuring devices. Modules are available for the following bus systems: • M-Bus • Modbus RTU • RS 485 (7KT1391 LAN coupler connection) • KNX/EIB	EN 13321-1, EN 13757 ISO/IEC 14543-3 EN 50090	✓	✓	✓
7KT LAN couplers	2/26	Web server with 2 GB internal storage, for up to 30 7KT15.... measuring devices. Global view and Excel export of current consumption data via LAN or Internet using a web browser such as Firefox.	IEEE 802	✓	--	✓

■ Overview
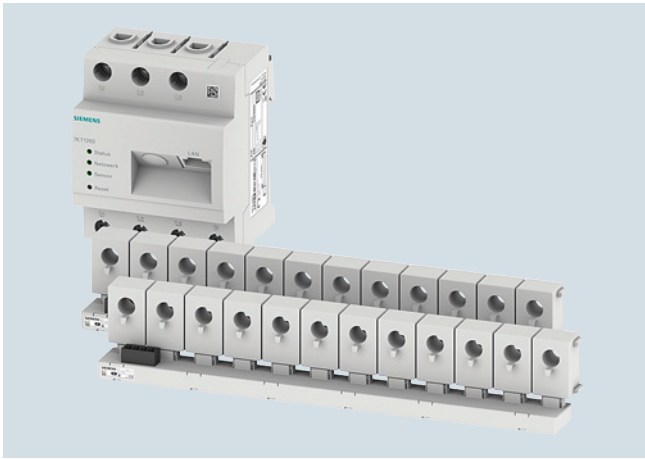
7KT PAC1200 multichannel current measuring system

The 7KT PAC1200 multichannel current measuring system is used for the transparent representation of energy consumption. The current values themselves are measured by means of sensors that are fitted above the miniature circuit breakers. The simple cost center allocation enables maximum transparency over the entire application.

Scalability

The 7KT PAC1200 multichannel current measuring system monitors and displays the energy consumption of up to 96 outgoing feeders. A maximum of eight sensor bars can be configured. Up to eight different, selectable consumption sources can be compared with each other. The system can be scaled to individual needs and application scenarios. The individual sensors can be named individually and compared with each other. The system can be configured flexibly as the number of sensor bars can be varied.

Consumption statistics

The statistics shows the overall consumption of selected sensors. The consumption can be shown both in euros and in kWh. The results can be displayed in the form of a pie chart or a bar chart, depending on selection. The periods that can be selected are as follows:

• Days
• Weeks
• Months
• Year

Both the overall consumption and the individual consumption of a sensor can be displayed.
It is also possible to generate a history so that any deviations can be investigated. To do this, select a date using the button below the chart.

Representation of the current values

Under the navigation item "Current values" you can see how high the consumption at a particular moment in time is. The value behind "Current" indicates this consumption. "Min/Max" indicates the minimum and maximum consumption. The kW values consumed at a certain time are shown in a curve diagram. Here also, either the overall consumption or the consumption of an individual sensor can be displayed. It is also possible to switch between various modes in this view.

• History
• Current reading: for individual sensors
  - Current
  - Voltage
  - Power factor of the individual phases
• Counter reading

Installation in an ALPHA power distribution board, for example

7KT PAC1200 multichannel current measuring system installed

■ Benefits

• Measurement of individual feeders – thus direct comparison of consumers
• Detection of current peaks – thus avoidance of high energy costs
• Web server and app representation – thus plug-and-play visualization of measured values and consumption values
• Scalability – thus number of measuring points can be adjusted to size of the power distribution system
• 1 GB internal memory – thus long-time data recording over one year possible

Measuring Devices
7KT PAC Measuring Devices

7KT PAC1200 multichannel current measuring system *NEW*
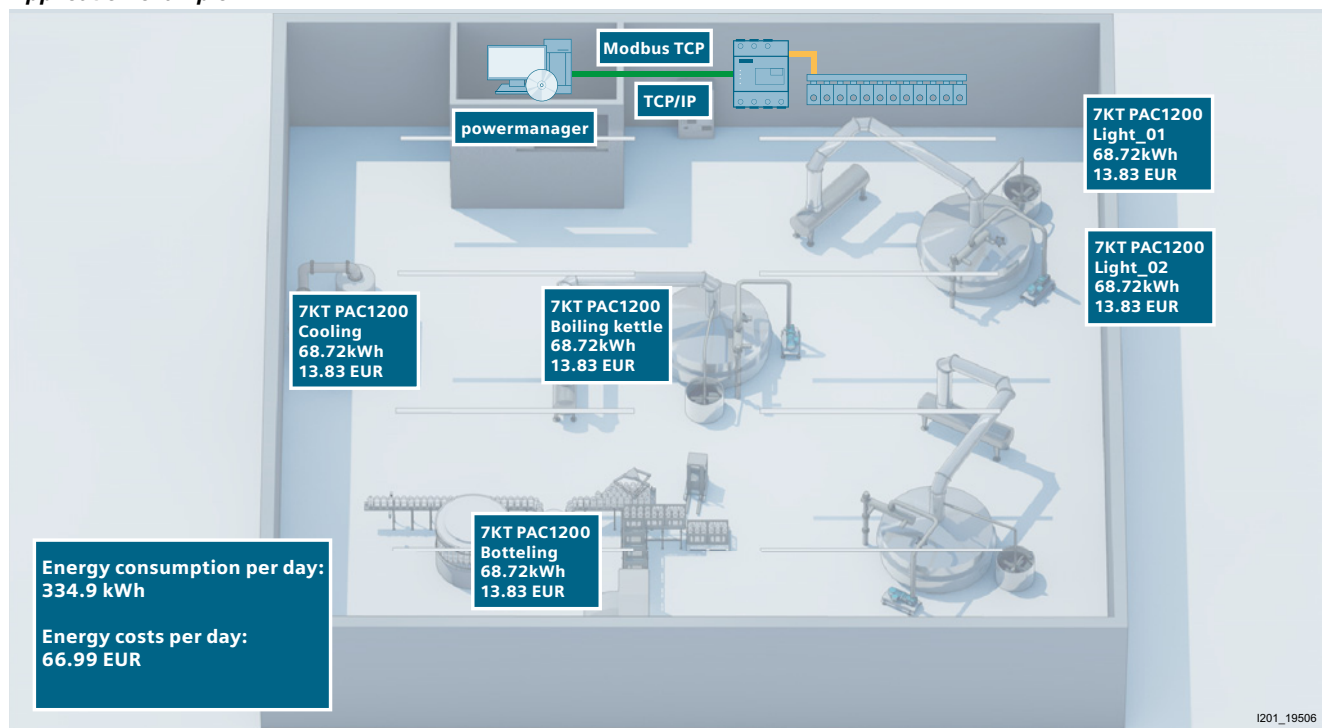
2

■ **Application**

Use cases

Energy measurement on
- Strip lighting
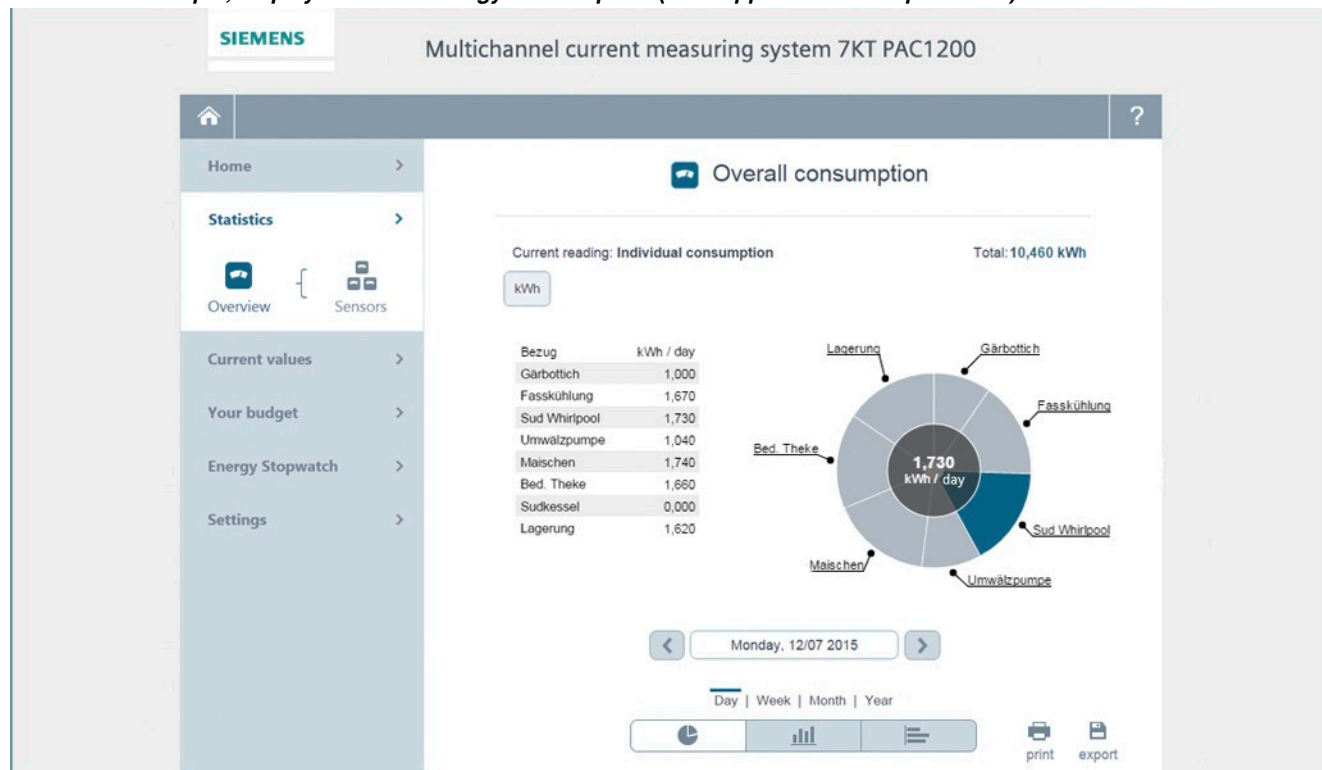- Production machines
- Motors

Fields of application
- Carpenters' and joiners' workshops, locksmiths' shops
- Large bakeries, breweries, slaughterhouses
- Municipal utilities
- Banks, etc.

Application example

Result: For example, display of overall energy consumption (from application example above)

2

■ **Technical specifications**

7KT PAC 1200 multichannel current measuring system		7KT1222 1 x 18 bundle	7KT1223 1 x 24 bundle	7KT1260 Data manager	7KT123./4. Sensor bar	7KT125. Sensor
Product designation		Starter kit	Starter kit	Data manager	Sensor bar	Sensor
Version		2x9 with system, 40 A	2x12 with system, 40 A		3/6/9/12-bar	40 A / 63 A
Measuring input						
• Connection type		--	--	Direct / transformer 5 A	--	--
• Current I_e	A	--	--	63	--	40 / 63
Measuring accuracy		Total accuracy +/- 2% (of full-scale value / class 2)				
Measurable line frequency	Hz	50 +/- 5%	50 +/- 5%	50 +/- 5%	--	--
Communication						
• Sensor bar connection to Data manager		RS 485				--
• Data manager connection to web browser		Ethernet via RJ 45, Modbus TCP protocol (10 / 100 Mbit/s)			--	--
Dimensions and weights						
• Height	mm			85	3-bar: 54.5 6-bar: 105.5 9-bar: 159.5 12-bar: 212.4	32
• Width	mm			70	21	17.7
• Data manager width	MW[1]	4	4	4	--	--
• Depth	mm			32.7	14.8	13
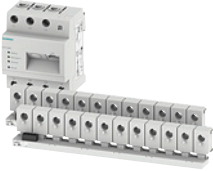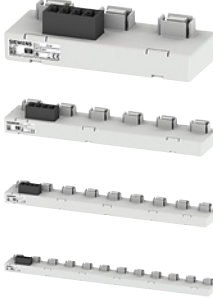
[1] 1 MW = 1 modular width = 18 mm

Measuring Devices
7KT PAC Measuring Devices

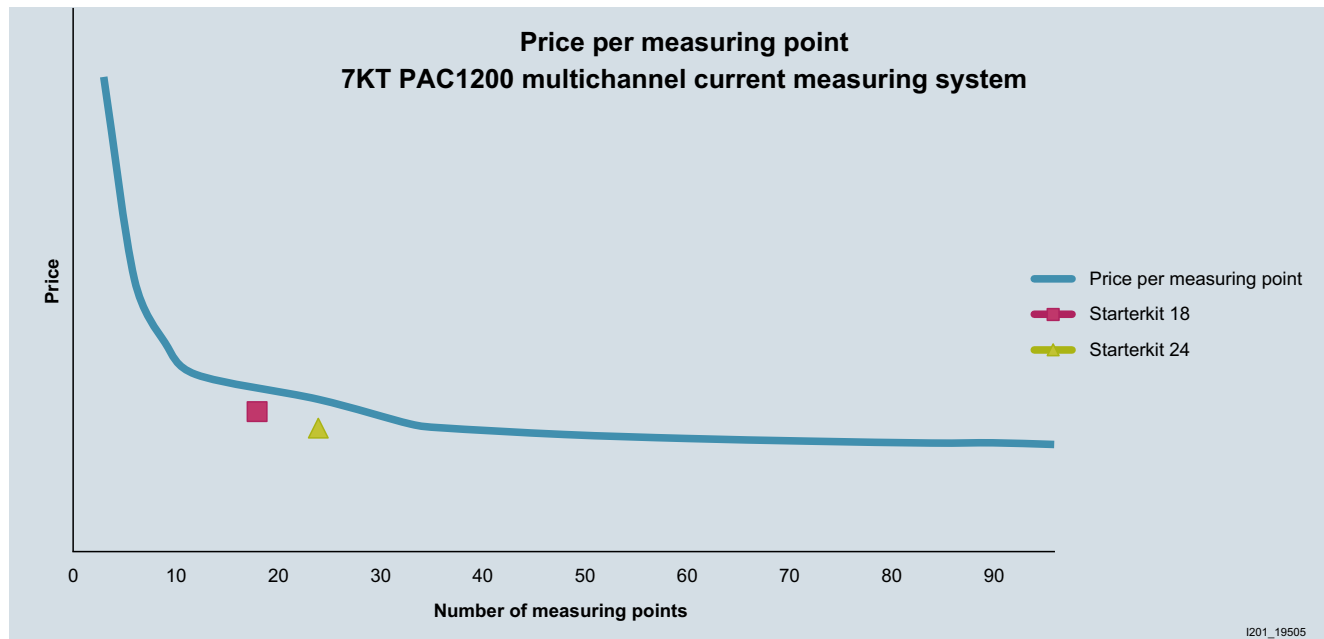**7KT PAC1200 multichannel current measuring system** NEW
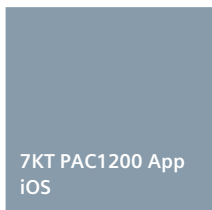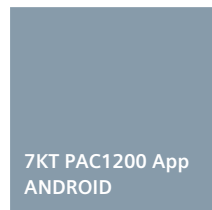
2

Selection and ordering data

	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
7KT PAC1200 multichannel current measuring system Multichannel current measuring system for locating high consumption values and cost center allocation 1 x 18 bundle, containing: • 2 x 9-Sensor bar 7KT1238 • 1 x Data manager 7KT1260 • 18 x Sensors 40 A, 7KT1254		7KT1222		1	1 unit	1BK	1.994
7KT PAC1200 multichannel current measuring system Multichannel current measuring system for locating high consumption values and cost center allocation 1 x 24 bundle, containing: • 2 x 12-Sensor bar 7KT1242 • 1 x Data manager 7KT1260 • 24 x Sensors 40 A, 7KT1254		7KT1223		1	1 unit	1BK	2.222
7KT PAC1200 Data manager Fully integrated smart meter, containing • 3-phase active power and reactive power energy measurement • Measurement of imported energy as balancing counter • Direct connection up to 63 A • Optional use with external measuring transformer for extending the measuring range (e.g. 100 ... 600 A) • Standard rail mounting (4 MW) • Operation / configuration: Web interface • Support of up to 96 sensors for single-phase measurement		7KT1260		1	1 unit	1BK	0.350
7KT PAC1200 Sensor bars							
• 3-Sensor bar		7KT1233		1	1 unit	1BK	0.011
• 6-Sensor bar		7KT1236		1	1 unit	1BK	0.016
• 9-Sensor bar		7KT1238		1	1 unit	1BK	0.024
• 12-Sensor bar		7KT1242		1	1 unit	1BK	0.032
Sensors							
• Sensor 40 A		7KT1254		1	3 units	1BK	0.035
• Sensor 63 A		7KT1255		1	3 units	1BK	0.035

NEW 7KT PAC1200 multichannel current measuring system

2

More information

Procurement costs: The more measuring points (sensors) the lower the costs

**Price per measuring point
7KT PAC1200 multichannel current measuring system**

Price

— Price per measuring point
■ Starterkit 18
▲ Starterkit 24

0　10　20　30　40　50　60　70　80　90

Number of measuring points

I201_19505

Internet

You can find more information on the Internet at
www.siemens.com/powermonitoring

Apple iOS

Download on the App Store

**7KT PAC1200 App
iOS**

Android

GET IT ON Google Play

**7KT PAC1200 App
ANDROID**

Measuring Devices
7KT PAC Measuring Devices

7KT PAC1500 three-phase measuring devices

2

■ Overview

7KT PAC1500 measuring devices, three-phase, for direct connection up to 80 A / 125 A

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

The three-phase measuring devices for direct connection are available up to 125 A and in versions with transformer connections (…/5 A to 10000/5 A).

The measuring devices store active and reactive energy and all comply with accuracy class 1 (for active energy).

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

The measuring devices also 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

7KT PAC1500 three-phase measuring device			7KT1540 7KT1542	7KT1543 7KT1545	7KT1546 7KT1548
Standards			EN 50470-1, EN 50470-3, EN 62053-23, EN 62053-31		
Connection					
• Direct connection			--	80 A	125 A
• Transformer current connection			…/5 A	--	--
General data					
• Enclosure	Acc. to DIN 43880	MW (1 MW = 18 mm)	4	4	6
• Mounting	Acc. to EN 60715		35 mm		
• Mounting height		mm	70		
Function					
• Connection	Single-phase or three-phase	No. of conductors	4	2 ... 4	2 ... 4
• Storage of setting and counter reading	Via (EEPROM)		Yes	Yes	Yes
• Tariffs	For active and reactive energy		T1/T2	T1/T2	T1/T2
Supply (through measuring terminals)					
• Rated control supply voltage U_n		V AC	230		
• Voltage range		V	110... 276		
• Rated frequency f_n		Hz	50		
Measuring accuracy (at 23 ±1 °C)	Based on nominal value				
• Active energy and active power	Acc. to EN 50470-3		Class B		
• Reactive energy and reactive power	Acc. to EN 62053-23		Class 2		
Measuring input					
• Connection type			Transformer TA-TC …/5 A	Direct	Direct
• Terminal capacity	Rigid, min. (max.) Flexible min. (max.)	mm^2 mm^2	1.5 (6) 1.5 (6)	1.5 (35) 1.5 (35)	5 (50) 5 (50)
• Voltage U_n	Phase/phase Phase/N	V V	400 230		
• Operating range voltage	Phase/phase Phase/N	V V	190 ... 480 110 ... 276		
• Current I_{ref}		A	--	5	5
• Current I_n		A	5	--	--
• Current I_{min}		A	0.05	0.25	0.25
• Current operating range ($I_{st} … I_{max}$)	Direct connection Transformer connection	A A	-- 0.003 ... 6	0.015 ... 80 --	0.020 ... 125 --
• Transformer current	Primary current of the transformer Smallest input step	A A	5 ... 10000 5	-- --	-- --
• Input ripple form			Sinusoidal		
• Operational starting current I_{st}		mA	3	15	20
S0 interface	Acc. to EN 62053-31				
• Pulse outputs for absorbed active and reactive energy T1 + T2			Yes		
• Pulse count	For input current I_{max} Automatic for transformers	Pulses/kWh Pulses/kWh	-- 100 - 10 - 1	500 --	500 --
IR interface					
• At the side for connecting communication modules			M-Bus/Modbus RTU/RS 485/KNX		

2

■ **Selection and ordering data**

	U_n	I_{max}	Mount-ing width	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
	V AC	A AC	MW							kg
7KT PAC1500 three-phase measuring device										
Digital measuring device										
• For transformer connection, double tariff	230	Trans-former /5	4		**7KT1540**		1	1 unit	1DD	0.257
• For transformer connection, double tariff, MID	230	Trans-former /5	4		**7KT1542**		1	1 unit	1DD	0.255
• For direct connection, double tariff	230	80	4		**7KT1543**		1	1 unit	1DD	0.409
• For direct connection, double tariff, MID	230	80	4		**7KT1545**		1	1 unit	1DD	0.408
• For direct connection, double tariff	230	125	6		**7KT1546**		1	1 unit	1DD	0.705
• For direct connection, double tariff, MID	230	125	6		**7KT1548**		1	1 unit	1DD	0.710

Measuring Devices
7KT PAC Measuring Devices

2

7KT PAC1500 single-phase measuring devices

Overview

The 7KT PAC1500 single-phase measuring devices (power meters) are used to record the amount of electrical energy and power exported and imported. They comply with the metering equipment standard EN 50470 (Part 1 and 3) and come with an LCD display.

The 7KT PAC1500 single-phase measuring devices for direct connection are available up to 80 A. They store active and reactive energy, and all comply with accuracy class 1 (for active energy).

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

The MID versions comply with the new Measuring Instruments Directive 2004/22/EC. The measuring devices (with the exception of 7KT1530) also have an integrated optical interface (IrDA) for connecting communication modules.

Technical specifications

7KT PAC1500 single-phase measuring device Direct connection up to 80 A			7KT1530	7KT1531 7KT1533
Standards			EN 50470-1, EN 50470-3, EN 62053-23, EN 62053-31	
General data				
• Enclosure	Acc. to DIN 43880	MW	2	
• Mounting	Acc. to EN 60715		35 mm	
• Mounting height		mm	70	
Function				
• Operating mode	Single-phase loads	Conductors	2	
• Storage of setting and counter reading	Via (EEPROM)		Yes	
• Tariff	For active energy		T1	T1 + T2
	For reactive energy		T1	T1 + T2
Supply (through measuring terminals)				
• Rated control supply voltage U_n		V AC	230	
• Voltage range		V	110 ... 276	
• Rated frequency f_n		Hz	50	
Measuring accuracy (at 23 ±1 °C)	Based on nominal value			
• Active energy and active power	Acc. to EN 50470-3		Class B	
• Reactive energy and reactive power	Acc. to EN 62053-23		Class 2	
Measuring input				
• Connection type	Phase/N		Direct	
• Terminal capacity	Rigid, min. (max.)	mm²	1.5 (35)	1.5 (35)
	Flexible min. (max.)	mm²	1.5 (35)	1.5 (35)
• Operating range voltage	Phase/N	V AC	110... 276	
• Current I_{ref}		A	5	
• Current I_{min}		A	0.25	
• Current operating range (I_{st} ... I_{max})	Direct connection	A	0.015 ... 80	
• Current waveform			Sinusoidal	
• Operational starting current I_{st}		mA	15	
S0 interface	Acc. to EN 62053-31			
• Pulse outputs for consumed active and reactive energy			Yes	
• Pulse count		Pulses/kWh	1000	
IR interface				
• At the side for connecting communication modules (M-Bus/Modbus RTU/RS 485/KNX)			--	Yes

Selection and ordering data

	U_n	I_{max}	Mounting width	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
	V AC	A AC	MW							kg
7KT PAC1500 single-phase measuring devices Digital measuring device										
• For direct connection, single tariff	230	80	2		7KT1530		1	1 unit	1DD	0.206
• For direct connection, double tariff	230	80	2		7KT1531		1	1 unit	1DD	0.207
• For direct connection, double tariff, MID	230	80	2		7KT1533		1	1 unit	1DD	0.208

* You can order this quantity or a multiple thereof.

Overview

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

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

- The expansion modules can be selected independently of the measuring device. This means they can also be retrofitted in already installed measuring devices.
- Data transmission between the measuring devices and expansion modules is executed via the IrDA infrared interface.

- The expansion modules are placed alongside the measuring devices in the installation direction so that their IrDA interfaces are exactly opposite each other.

7KT PAC M-Bus expansion module (7KT1908)
- 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

7KT PAC Modbus RTU expansion module (7KT1907)
- 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
- Configurable via RS 485 master software

7KT PAC RS 485 expansion module (7KT1903)
- Power supply: 230 V AC
- Status indication by LED on the module

7KT PAC 7KNX expansion module (7KT1900)
- Power supply through the KNX/EIB bus cable
- Status indication by LED on the module

Selection and ordering data

Version	Mounting width MW	DT	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
7KT PAC M-Bus expansion module For connecting 7KT PAC1500 measuring devices to M-Bus	1		**7KT1908**		1	1 unit	1DD	0.055
7KT PAC Modbus RTU expansion module For connecting 7KT PAC1500 measuring devices to Modbus RTU	1		**7KT1907**		1	1 unit	1DD	0.084
7KT PAC RS 485 expansion module For connecting 7KT PAC1500 measuring devices via RS 485 to 7KT1391 LAN couplers	1		**7KT1903**		1	1 unit	1DD	0.085
7KT PAC KNX expansion module For connecting 7KT PAC1500 measuring devices to Instabus KNX	1		**7KT1900**		1	1 unit	1DD	0.063

7KT1908 · 7KT1907 · 7KT1903 · 7KT1900

Measuring Devices
7KT PAC Measuring Devices

7KT LAN couplers

2

■ Overview

7KT LAN couplers

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

Up to 30 devices can be linked to 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.

■ Application

Suitable 7KT PAC measuring devices

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

	Article No.
Energy measuring devices	
7KT PAC1500 three-phase measuring device	
• For direct connection 80 A, double tariff	7KT1543
• For direct connection 80 A, double tariff, MID	7KT1545
• For transformer connection .../5 A, double tariff	7KT1540
• For transformer connection .../5 A, double tariff, MID	7KT1542
• For direct connection 125 A, double tariff	7KT1546
• For direct connection 125 A, double tariff, MID	7KT1548
7KT PAC1500 single-phase measuring device	
• For direct connection 80 A, double tariff	7KT1531
• For direct connection 80 A, double tariff, MID	7KT1533

Connecting several devices to a 7KT LAN coupler
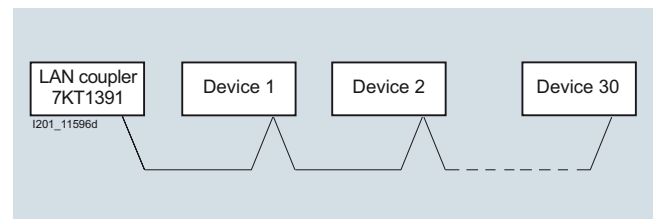
■ Technical specifications

			7KT LAN couplers
Standards			IEEE 802.3 AS, IEC 60950, EN 61000-6-2, EN 61000-6-3
General data			
• Enclosures	Acc. to DIN 43880		4 modules
• Mounting	Acc. to EN 60715		Mounting on standard mounting rail (35 mm)
• Mounting height		mm	70
Supply			
• Rated power dissipation P_v		VA	≤ 10
• Rated control supply voltage U_c		V AC	230
• Primary operating range		× U_c	0.9 ... 1.10
• Rated frequency		Hz	50
• Frequency range		Hz	45 ... 65
Function			
• System start			Automatic upon switching on
• LAN server identification			Via the IP address of the PC
• Transmission rate	Limitation by LAN	Mbit/s	100
• Operating system			Windows XP/Vista/7
• Browser			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.
LAN interface			
• HW interface			Connection RJ 45
• SW interface			TCP/IP

			7KT LAN couplers
Interface to measuring devices			
• HW interface	RS 485 terminals	Number	3 (+/-/shielded twisted pair)
• Line	Version		STP (shielded twisted pair)
	Minimum cross-section	mm^2	2 × 0.2 or 2 x AWG 24
	Maximum line capacitance	pF/m	< 50
	Impedance	W	100
	Maximum overall cable length	m	≤ 1 200
	Type of installation		Serial
Measuring devices can be connected directly		Number	30
Environmental conditions			
• Temperatures	In operation	°C	-10 ... +55
	Storage and transport	°C	-25 ... +70
• Relative humidity	In operation	%	≤ 80
• Vibrations	Sine 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

	Version	U_c	Mounting width	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
		V AC	MW							kg
	LAN couplers For connection of up to 30 devices via RS 485									
		230	4		**7KT1391**		1	1 unit	1DD	0.215

Measuring Devices
Accessories

Introduction

2

■ Overview

Devices		Page	Application	Standards	Used in		
					Non-residential buildings	Residential buildings	Industry
Accessories							
	4NC current transformers	2/29	Window-type current transformers/pin-wound transformers, particularly suitable for long measuring leads, low cable losses	EN 60044-1, VDE 0414-44-1	✓	--	✓
	7KT12 current transformers	2/32	Straight-through transformers for installation in distribution boards and non-contact measuring of primary currents. Ideal for combination with switch disconnectors, measuring devices and counters.	IEC 60044-1, EN 60044-1 (VDE 0414 T 44-1)	✓	--	✓

Overview

4NC53 current transformers

Technical specifications

4NC current transformers for measuring purposes

Standards	EN 60044-1, VDE 0414-44-1
Window-type current transformers	The conductor to be measured (busbar or cable) is passed through the window opening and constitutes the primary circuit of the window-type current transformer.
	Pin-wound transformers: An economical solution especially for small primary currents of 5 ... 75 A are window-type current transformers when the conductor to be measured is pin-wound several times.
Rated primary current I_{pn}	Current transformers can be continuously loaded with 1.3 times the rated primary current (I_{pn}).
Rated secondary current I_{sn}	
1 A	Particularly suitable for longer measuring leads. Cable losses of only 4 % in contrast to 5 A current transformers.
5 A	5 A current transformers generate 25 times the power losses on measuring leads as compared with 1 A current transformers. These stray losses result in higher power in the case of long cables. Only recommended for use with short measuring leads.
Accuracy class	
Class 1	Operation measurement, internal metering
	Current error ±1 % at 1 x I_{pn} and 1.2 x I_{pn}
Class 3	Coarse measurement
	Current error ±3 % at 0.5 x I_{pn} and 1.2 x I_{pn}
Rated power P_n	The rated power of transformers is specified in VA. The actual load rating should be similar to the rated power; a lower actual load rating (underburden) increases the overcurrent factor and measuring devices are not sufficiently protected in case of a short-circuit, a higher actual load rating (overburden) has a negative effect on the accuracy.
	With a frequency of 60 Hz the rated power increases to 1.2 times. With $16^2/_3$ Hz the output power decreases to $^1/_3$ of the rated power.
Maximum voltage for equipment U_m	This is the rms value of the maximum voltage between the conductors of a system. For this voltage the insulation must be rated at normal operating conditions.
	4NC5 current transformers are suitable for 720 V.
Overcurrent limiting factor FS	The overcurrent limiting factor is expressed using the characters FS and a factor, e.g. FS5 or FS10.
	When a short-circuit current flows through the primary winding of a current transformer, the stress on the measuring devices connected to the current transformer is the lower the smaller the overcurrent limiting factor is.
Rated short-time thermal current I_{th}	The rated short-time thermal current I_{th} is the rms value of the primary current with a duration of one second, whose heat effect the current transformer can resist without being damaged in the event of a short-circuited secondary winding.
Rated impulse current I_{dyn}	The rated impulse current I_{dyn} is the highest instantaneous value of the current after a short-circuit whose force the current transformer can resist without being damaged.
	The rated impulse current is specified as peak value.

Measuring Devices
Accessories

2

4NC51 window-type current transformers, used as pin-wound transformers, classes 1 and 3, from 5 A to 75 A

Pin-winding increases the primary current of the current transformer. Consequently, window-type current transformers can also be used for low primary currents.

4NC51 used as
pin-wound transformer

Basic type		4NC5112	4NC5113	4NC5115	4NC5117	4NC5121	4NC5122	4NC5123
Rated primary current	A	50	60	75	100	150	200	250
Power	VA	2.5	2.5	2.5	2.5	2.5	5	5
Primary current to be measured		Number of required pin windings						
	A	Class 3			Class 1			
	5	10	--	--	--	--	--	--
	10	5	6	--	10	--	--	--
	15	--	4	5	--	10	--	--
	20	--	3	--	5	--	10	--
	25	2	--	3	4	6	8	10
	30	--	2	--	--	5	--	--
	40	--	--	--	--	--	5	--
	50	--	--	--	2	3	4	5
	75	--	--	--	--	2	--	--

■ **Selection and ordering data**

4NC current transformers for measuring purposes

Rated primary current I_{pn}	Rating P_n	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
A	VA							kg
Classes 1 and 3, from 50 to 1500 A								

4NC5112-0BC20

Rated secondary current 1 A
Class 3
• For circular conductors with max. diameter 17.5 mm
• For busbars up to 12 × 10 mm

50	2.5		4NC5112-0BC20		1	1 unit	1CL	0.424
60	2.5		4NC5113-0BC20		1	1 unit	1CL	0.434
75	2.5		4NC5115-0BC20		1	1 unit	1CL	0.428

4NC5117-0CC20

Class 1
• For circular conductors with max. diameter 17.5 mm
• For 1 busbar up to 12 × 10 mm

100	2.5		4NC5117-0CC20		1	1 unit	1CL	0.334
150	2.5		4NC5121-0CC20		1	1 unit	1CL	0.320
200	5		4NC5122-0CE20		1	1 unit	1CL	0.358
250	5		4NC5123-0CE20		1	1 unit	1CL	0.341

4NC5222-0CE20

• For circular conductors with max. diameter 28 mm
• For 1 busbar up to 30 × 10 mm
• For 2 busbars up to 25 × 5 mm

200	5		4NC5222-0CE20		1	1 unit	1CL	0.456
250	5		4NC5223-0CE20		1	1 unit	1CL	0.466
300	5		4NC5224-0CE20		1	1 unit	1CL	0.359
400	5		4NC5225-0CE20		1	1 unit	1CL	0.371

4NC5325-0CE20

• For circular conductors with max. diameter 36 mm
• For 1 busbar up to 50 × 10 mm
• For 2 busbars up to 40 × 5 mm

400	5		4NC5325-0CE20		1	1 unit	1CL	0.460
500	5		4NC5326-0CE20		1	1 unit	1CL	0.417
600	5		4NC5327-0CE20		1	1 unit	1CL	0.430
750	5		4NC5328-0CE20		1	1 unit	1CL	0.390

4NC5431-0CH20

• For circular conductors with max. diameter 45 mm
• For 1 busbar up to 60 × 10 mm
• For 2 busbars up to 60 × 10 mm
• For 3 busbars up to 60 × 5 mm

1000	10		4NC5431-0CH20		1	1 unit	1CL	0.664
1250	10		4NC5433-0CH20		1	1 unit	1CL	0.681
1500	10		4NC5434-0CH20		1	1 unit	1CL	0.702

2

4NC51 window-type current transformers, used as pin-wound transformers, classes 1 and 3, from 5 A to 75 A

	Rated primary current I_{pn}	Rating P_n	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
	A	VA							kg
	Rated secondary current 5 A								
4NC5112-2BC20	**Class 3**								
	• For circular conductors with max. diameter 17.5 mm								
	• For 1 busbar up to 12 × 10 mm								
	50	2.5		4NC5112-2BC20		1	1 unit	1CL	0.429
	60	2.5		4NC5113-2BC20		1	1 unit	1CL	0.424
	75	2.5		4NC5115-2BC20		1	1 unit	1CL	0.424
4NC5117-2CC20	**Class 1**								
	• For circular conductors with max. diameter 17.5 mm								
	• For 1 busbar up to 12 × 10 mm								
	100	2.5		4NC5117-2CC20		1	1 unit	1CL	0.336
	150	2.5		4NC5121-2CC20		1	1 unit	1CL	0.324
	200	5		4NC5122-2CE20		1	1 unit	1CL	0.349
	250	5		4NC5123-2CE20		1	1 unit	1CL	0.344
4NC5222-2CE20	• For circular conductors with max. diameter 28 mm								
	• For 1 busbar up to 30 × 10 mm								
	• For 2 busbars up to 25 × 5 mm								
	200	5		4NC5222-2CE20		1	1 unit	1CL	0.461
	250	5		4NC5223-2CE20		1	1 unit	1CL	0.476
	300	5		4NC5224-2CE20		1	1 unit	1CL	0.359
	400	5		4NC5225-2CE20		1	1 unit	1CL	0.374
4NC5325-2CE20	• For circular conductors with max. diameter 36 mm								
	• For 1 busbar up to 50 × 10 mm								
	• For 2 busbars up to 40 × 5 mm								
	400	5		4NC5325-2CE20		1	1 unit	1CL	0.461
	500	5		4NC5326-2CE20		1	1 unit	1CL	0.415
	600	5		4NC5327-2CE20		1	1 unit	1CL	0.435
	750	5		4NC5328-2CE20		1	1 unit	1CL	0.388
4NC5431-2CH20	• For circular conductors with max. diameter 45 mm								
	• For 1 busbar up to 60 × 10 mm								
	• For 2 busbars up to 60 × 10 mm								
	• For 3 busbars up to 60 × 5 mm								
	1000	10		4NC5431-2CH20		1	1 unit	1CL	0.656
	1250	10		4NC5433-2CH20		1	1 unit	1CL	0.650
	1500	10		4NC5434-2CH20		1	1 unit	1CL	0.705

■ **More information**

Other current transformers for measuring purposes;
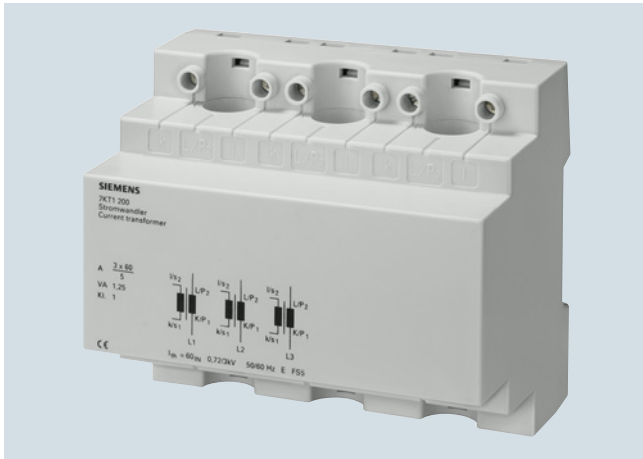see Catalog LV 10, chapter "Switch Disconnectors"

Measuring Devices
Accessories

2

7KT12 current transformers

■ Overview

7KT12 current transformers

The three-phase 7KT12 current transformer can be used in distribution boards according to DIN 43880. The measuring leads are routed vertically through to the standard mounting rail.

This type of current transformer is suitable for infeeds or outgoing lines in connection with the installation of a 5TE8 switch or a 5TE1 disconnector, as the primary connecting leads do not have to be interrupted.

The current transformer is designed for cables of up to 13 mm in diameter, e.g. H07V-R with 50 mm^2 conductor cross-section.
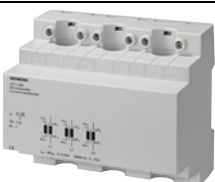
■ Benefits

- The current transformer has accuracy class 1 in accordance with EN 60044-1.
- The versions designed for a transformer ratio of 60/5 A, 100/5 A and 150/5 A enable an even broader range of applications.

■ Technical specifications

			7KT1200	7KT1201	7KT1202
Standards			EN 60044-1		
Secondary rated current strength		A	5		
Accuracy class		Cl.	1		
Rated power		VA	1.25	2.5	3.75
Rated frequency f_n		Hz	50/60		
Thermal current limit I_{th}	Short-time	A	$60 \times I_e$		
Thermal continuous current		A	$1 \times I_e$		
Overcurrent limit factor		FS	5		
Rated impulse withstand voltage U_{imp}		kV	> 3		
Creepage distances and clearances		mm	> 3		
Rated operational voltage U_e		V AC	720		
Rated operational current I_e		A AC	3×60	3×100	3×150
Terminals ±screw (Pozidriv)			PZ 1		
Conductor cross-sections					
- Rigid		mm^2	0.5 ... 4		
- Flexible, with end sleeve		mm^2	0.5 ... 2.5		
Permissible ambient temperature		°C	-5 ... +60		
Resistance to climate	Acc. to EN 60068-1		20/60/4		

■ Selection and ordering data

	U_e	I_e	I_{sec}	Mounting width	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
	V AC	A AC	A AC	MW							kg
Current transformers											
	720	3×60	5	6		**7KT1200**		1	1 unit	1BK	0.535
		3×100				**7KT1201**		1	1 unit	1BK	0.542
		3×150				**7KT1202**		1	1 unit	1BK	0.558

■ More information

Other current transformers for measuring purposes;

Software

3

3

Weitere technische Produkt-Informationen:

Siemens Industry Online Support:
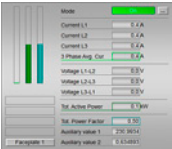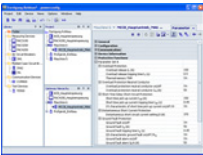www.siemens.com/lowvoltage/product-support

→ Beitragstyp:
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Kennlinie
Produktmitteilung
Software-Archiv
Technische Daten
Zertifikat

Software

Introduction

■ **Overview**

	Article No.	Page
Configuring, visualizing and controlling with SIMATIC		
Block libraries for SIMATIC		
The function block libraries enable seamless integration of the 7KM PAC3200/4200 measuring devices into the world of SIMATIC.		
SIMATIC Modbus/TCP SENTRON PAC *NEW*	**6AV6**	3/3
Software for communication of SIMATIC S7 with devices that support the Modbus/TCP protocol		
PAC/3WL/3VA LIBRARY for SIMATIC PCS 7	**3ZS2**	3/5
The PAC/3WL/3VA function block library enables seamless integration of 3WL/3VA/3VL circuit breakers and 7KM PAC3200/4200 measuring devices into the PCS 7 process world.		
Power monitoring with SIMATIC EnergySuite *NEW*		
EnergySuite	**--**	3/7
Clearly simplified configuration of power-measuring components from the SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE product families substantially reduces configuration effort.		
Configuring, visualizing and controlling with SENTRON		
powermanager	**3ZS2**	3/10
Powermanager power monitoring software for the power monitoring system with the following main points:		
• Identify savings potential		
• Reduce power costs		
• Ensure power availability		
powerconfig	**--**	3/15
Commissioning and service tool for communication-capable measuring devices and circuit breakers with the following main points:		
• Parameterization, documentation, operation and monitoring of 3WL, 3VA and 3VL circuit breakers and 7KM PAC3100/3200/4200 measuring devices using various communication interfaces		
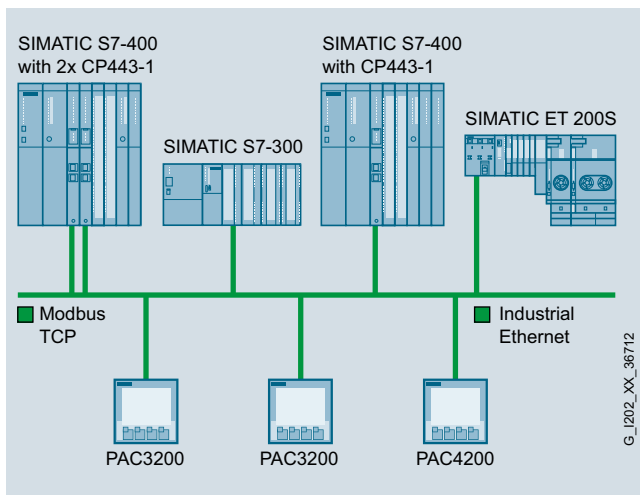
siemens.de/energysuite

Ready for SIMATIC Energy Suite

Overview

- Software for communication of SIMATIC S7 with devices that support the Modbus/TCP protocol
- Expansion or modification of existing plants with SIMATIC automation systems
- Coupling controllers and systems from different manufacturers

System requirements

- Standard SIMATIC STEP 7 tool Version ≥ 5.5 or
- SIMATIC TIA Portal Version ≥11

Benefits

- Simple coupling of SENTRON PAC systems with SIMATIC automation systems via Industrial Ethernet
- No specific Modbus know-how required
- Engineering with the standard SIMATIC STEP 7 tool
- Fast configuration using a wizard

Application

MODBUS is a protocol that is in use around the world, openly disclosed to all users and supported by many manufacturers.

For use in modern networks, MODBUS/TCP was developed on the basis of it. Today, this protocol is an open Internet draft standard that was introduced to the IETF (Internet Engineering Task Force), the organization that is responsible for Internet standardization.

Thanks to this disclosure, any manufacturer and user can implement this protocol, an opportunity that many leading manufacturers have already taken advantage of.

With the increasing expansion of Ethernet communication, both in industry and in the office, MODBUS/TCP is being adopted to an ever greater extent in all industries. Heterogeneous system landscapes are particularly typical areas of use.

Design

Communication with Modbus/TCP stations takes place via the SIMATIC S7 CPU's integrated PN interface.

One SIMATIC S7 controller can communicate simultaneously with several Modbus/TCP stations depending on the number of connection resources the S7-CPU has.

SIMATIC Modbus/TCP SENTRON PAC supports the following CPUs of the SIMATIC S7:

- ET 200
  - IM 151-8 PN/DP CPU
  - IM 154-8 PN/DP CPU
- S7 300/400
  - CPU 314C-2 PN/DP
  - CPU 315-2 PN/DP
  - CPU 317-2 PN/DP
  - CPU 319-3 PN/DP
  - CPU 412-2 PN
  - CPU 414-3 PN/DP
  - CPU 416-3 PN/DP
- SENTRON PAC
  - PAC 3200, firmware V2.2.1 or higher
  - PAC 4200, firmware V1.5.1 or higher

Modbus/TCP products have been released for standard CPUs and for F-CPUs.

Mode of operation

These function blocks are used to enable communication between a SIMATIC-CPU with an integrated PN interface and several 7KM PAC measuring devices.

During communication, the data of the basic type 3 and the energy counters are read and written into S7 data blocks. Furthermore, defined counters in the 7KM PAC measuring device can be reset.

Depending on the license procured, the maximum number of 7KM PAC measuring devices that can be connected is 20, 100 or 512.

Software
Configuring, Visualizing and Controlling with SIMATIC
Block Libraries for SIMATIC

### SIMATIC Modbus/TCP SENTRON PAC   NEW

■ **Technical specifications**

	Modbus/TCP SENTRON PAC
Client functionality	3
Functions	• Reading the values of basic type 3 and of the energy counters
	• Resetting the operating hours counter, the maximum and minimum values and the energy counters
Enabled for multiple instances	
Max. number of parallel function block calls	• Unlimited number of function block calls
	• Number of simultaneously established connections depend on the CPU
Connection configuration	Dynamic connections via TCON and TDISCON
Communication	TSEND / TRCV
Memory requirements (depending on the function block)	
• FB	• 31 ... 36 KB
• IDB	• 7 ... 29 KB
Use in CFC / PCS7 possible	Yes
Redundancy functionality	No
Use of bit memories / timers	No

■ **Selection and ordering data**

Version	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
							kg
SIMATIC Modbus/TCP SENTRON PAC							
Modbus/TCP 20 SENTRON PAC		6AV6676-6MA30-0AX0		1	1 unit	2CP	0.100
• Single license							
• Communication via the integrated PN interface for reading values out of PAC 3200 and PAC 4200 devices,							
• valid for 1 CPU and up to 20 SENTRON PACs							
Modbus/TCP 100 SENTRON PAC		6AV6676-6MA30-1AX0		1	1 unit	2CP	0.100
• Single license							
• Communication via the integrated PN interface for reading values out of PAC 3200 and PAC 4200 devices,							
• valid for 1 CPU and up to 100 SENTRON PACs							
Modbus/TCP 512 SENTRON PAC		6AV6676-6MA30-2AX0		1	1 unit	2CP	0.100
• Single license							
• Communication via the integrated PN interface for reading values out of PAC 3200 and PAC 4200 devices,							
• valid for 1 CPU and up to 512 SENTRON PACs							

■ **Overview**
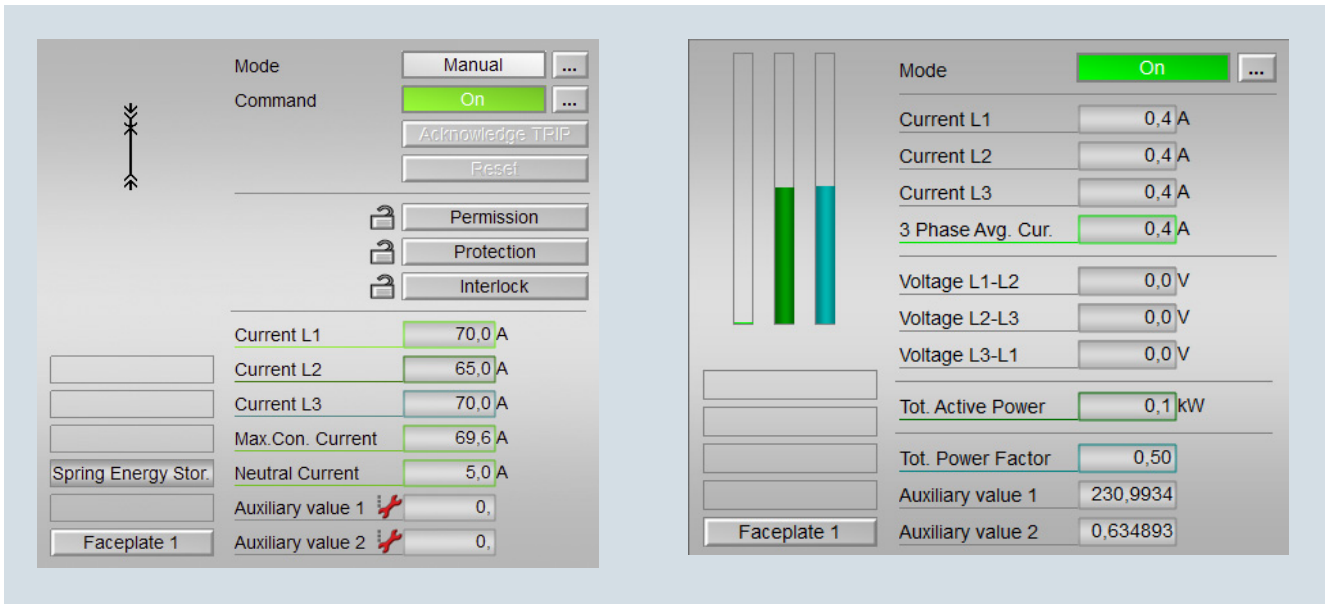
Faceplates for circuit breakers (left) and measuring devices (right)

With a driver block, diagnostics block and faceplates, the PAC/3WL/3VA function block library for SIMATIC PCS 7 enables seamless integration of 3WL/3VA/3VL circuit breakers and 7KM PAC3200/4200 measuring devices into the SIMATIC PCS 7 process control system.

The blocks that run in the CPUs of the controllers supply the faceplates in the operator stations of the process control system with, for example, energy and status data, and they generate signals and manage the connection to the SIMATIC PCS 7 Maintenance Station.

Note:

The PAC/3WL/3VA Library for SIMATIC PCS 7 can be used together with SIMATIC PCS 7 V7.1, V8.0, V8.1 and V8.2. It supports all operating systems of these system versions.

Faceplates

The faceplates of the PAC/3WL/3VA function block library for SIMATIC PCS 7 are used in the operator stations of the process control system as the user interface for the supported measuring devices and circuit breakers. The technologically relevant values and functions of these devices can thus be displayed and operated as SIMATIC PCS 7 objects.

System-side bidirectional communication connections between faceplates and blocks, as well as between blocks, measuring devices and circuit breakers, support display of values in the faceplates and forwarding of input data to the devices.

■ **Benefits**

• Full integration of the 7KM PAC3200/4200 measuring devices and 3WL/3VA/3VL circuit breakers into the SIMATIC PCS 7 process control system
• Connection of all devices via PROFIBUS DPV1 possible
• 7KM PAC3200/4200 measuring devices and 3VA circuit breakers can also be integrated via PROFINET
• 7KM PAC4200 measuring device can be used within the function range of the 7KM PAC3200 measuring device
• Cyclic and acyclic communication (for pure visualization tasks)
• Inputting limit values for monitoring through the driver block
• Resetting values on the device (min/max values)
• Remote switching of the 3WL and 3VL circuit breakers
• Device monitoring and readout of maintenance information
• Automatic information in case of overload, short-circuit and faults
• Reading out and displaying device data

■ **Application**

The PAC/3WL/3VA Library for SIMATIC PCS 7 is used in all industries where PCS 7 is used. Full integration in PCS 7 means that there is no need for a special system environment. Predefined modules and symbols give you the assurance of building on tested and certified product components.

For challenging measurements the 7KM PAC4200 can also be used in the functional scope of the 7KM PAC3200.

In addition to the cyclic connection, there is also an acyclic connection for pure visualization tasks. The process image of the SIMATIC CPUs can be used more efficiently with the acyclic connection.

Software
Configuring, Visualizing and Controlling with SIMATIC
Block Libraries for SIMATIC

PAC/3WL/3VA Library for SIMATIC PCS 7

■ **Selection and ordering data**

SIMATIC PCS 7 V8.0, V8.1, V8.2, SIMATIC PCS 7 V7.1

3

Version	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
Function block library for 7KM PAC3200/4200 measuring devices and 3WL/3VA/3VL circuit breakers [1]							
PAC/3WL/3VA Library for SIMATIC PCS 7		3ZS2787-1CC30-0YG0		1	1 unit	1DD	0.217
• AS blocks and faceplates for integrating the 3WL/3VA/3VL circuit breakers into SIMATIC PCS 7 V7.1, V8.0 and V8.1 (one required for each SIMATIC PCS 7 Operator Station of the single station/server version), with:							
- Engineering license for one SIMATIC PCS 7 Operator Station of the single station/server version							
- Runtime license for one automation system (1 required per automation system, further AS runtime licenses can be ordered separately)							
• Engineering and runtime software, software class A, 2-language (German, English), single license for one installation							
• Type of delivery: Software and electronic documentation on CD, engineering and runtime license as Certificate of License							
AS Runtime license for PAC/3WL/3VA Library for SIMATIC PCS 7		3ZS2787-1CC30-6YH0		1	1 unit	1DD	0.014
• For one automation system in each case							
• Runtime software, software class A, 2-language (German, English), single license for one installation							
• Type of delivery: Runtime license as Certificate of License without software and documentation							

[1] Currently supported SIMATIC PCS 7 versions: see
http:/support.automation.siemens.com

■ **More information**
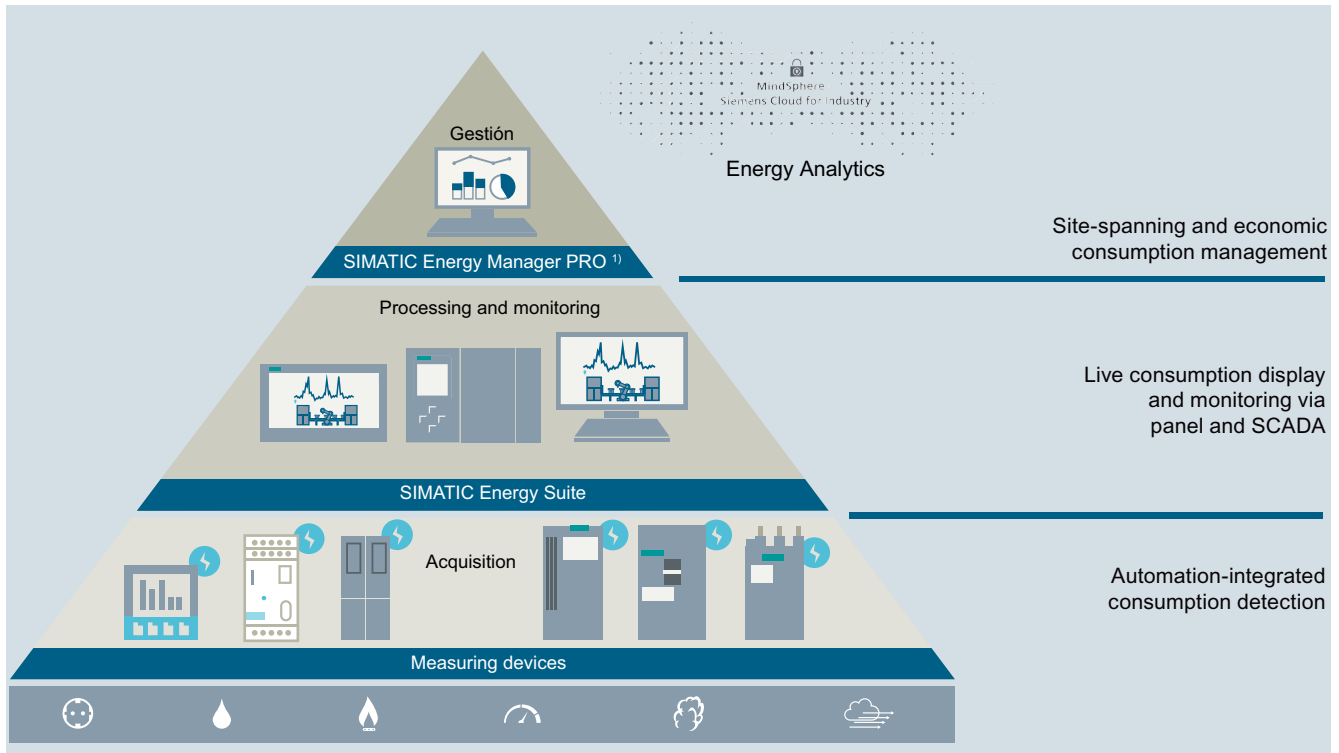
Send support requests to

Siemens AG
Energy Management Division
Low Voltage & Products
Nuremberg
Tel.: +49 911 895-7222
Fax: +49 911 895-7223

www.siemens.com/lowvoltage/technical-support

You can find more information on the Internet at:

http://www.siemens.com/lowvoltage

■ **Overview**

SIMATIC Energy Suite

High energy consumption and automated production are typical of many industries.

Those who wish to take control of their energy costs and who are already looking towards the digital future today, will equip their plants with integrated energy measuring technology, thus anchoring their energy management in the automation of their production operations – where the lion's share of the energy is consumed. As an integrated option for the TIA Portal, SIMATIC Energy Suite efficiently links energy management with automation, thus introducing energy transparency to production operations.

The significantly simplified configuration of power-measuring components from the SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE product families [1] substantially reduces configuration effort. Thanks to consistent interfacing to SIMATIC Energy Manager PRO [2] or to the cloud-based Energy Analytics service, recorded energy data can be expanded seamlessly into a cross-location energy management system.

This way, businesses can also do justice to all other required economic and management energy aspects, from purchasing energy through planning to energy controlling.

siemens.com/ energysuite

Ready for SIMATIC Energy Suite

[1] Products from the SIMATIC, SENTRON, SINAMICS, SIRIUS and SIMOCODE product families. You will find details of currently supported devices here: siemens.com/energysuite-hardware

[2] SIMATIC Energy Manager PRO is the planned and innovative successor of SIMATIC B.Data

Software
Configuring, Visualizing and Controlling with SIMATIC
Power Monitoring with SIMATIC EnergySuite **NEW**

3

EnergySuite

Highlights

- Simple and intuitive configuration instead of programming
- Automatic generation of the PLC energy program
- Convenient integration of measuring components from
- the Siemens portfolio and from other manufacturers
- Integrated into TIA Portal and the automation system
- Archiving in WinCC Professional or PLC
- Seamless interfacing to Energy Manager PRO and Energy Analytics

Molded-case circuit breakers 3VA
siemens.com/3VA

SIRIUS switching devices
siemens.com/sirius

SIMOCODE
siemens.com/simocode

SIMATIC
ET 200 SP AI
energy meters
siemens.com/et200sp

SIMATIC Energy Suite (TIA Portal)

Measuring devices
7KM PAC3200/4200
siemens.com/sentron

SINAMICS
frequency converters
siemens.com/sinamics

SIMATIC Energy Suite
siemens.com/energysuite

MindSphere –
Siemens Cloud for Industry

SIMATIC Energy Manager PRO [1]
siemens.com/energymanager

Energy Analytics
siemens.com/energy-analytics

■ Benefits

The advantages at a glance:
- Generate energy management data automatically
- Integration into TIA Portal and the automation system
- Easily configured

■ More information

For more information on SIMATIC Energy Suite:

www.siemens.com/energysuite

■ Overview

powermanager

Together with the 7KT/7KM PAC measuring devices, the powermanager power monitoring software forms the technical basis for a corporate energy management system in accordance with ISO 50001, and these are some of the functions it offers:

- Identifying savings potential
- Transparency of energy flows
- Cutting energy costs
- Ensuring power availability

powerconfig

Commissioning and service tool for communication-capable measuring devices and circuit breakers from the SENTRON product family with the following advantages:

- Facilitates parameterization of the devices, resulting in considerable time savings, particularly when several devices have to be set up.
- With powerconfig, the 3WL, 3VA, 3VL circuit breakers and the 7KM PAC3100/3200/4200 measuring devices, as well as the ATC5300 transfer control device can be parameterized, documented, operated and monitored using various communication interfaces, as well as tested in the case of the 3VA.

■ More information

You can find more information on the Internet at:

www.siemens.com/powermonitoring

Software
Configuring, Visualizing and Controlling with SENTRON

powermanager

3

Overview

Efficiency in power distribution

SENTRON switching, protection and measuring devices ensure safety and cost effectiveness in power distribution.

The devices are made even more efficient by software products for simple and fast configuration, reliable monitoring, or getting started in energy management – and they contribute in this way to cost savings and increased plant availability.

Characteristic / function	Benefits
Pre-configured project settings	Fast commissioning and easy to get started
Display of load profile and measured variables as a characteristic curve	Derivation of measures for saving energy
Predefined reports for the allocation of consumption and costs to any cost centers	Localizing unnecessary consumption
	Localizing faults quickly
	Increasing energy awareness
Limit monitoring using configurable alarms	Adapting energy consumption
	Avoiding load peaks

Benefits

• Integrated reporting to enable you to get started easily
• Reports available in .xls, .pdf and .csv formats
• Manual and time-driven generation
• Templates for:
  - Cost center allocation
  - Frequency distribution
  - Absolute and total energy consumption
  - Deviation analysis
  - Annual evaluation
  - Standard report
• Email with generated report via SMTP server (with/without login) – without MS Outlook
• Web-based (create, generate, view)
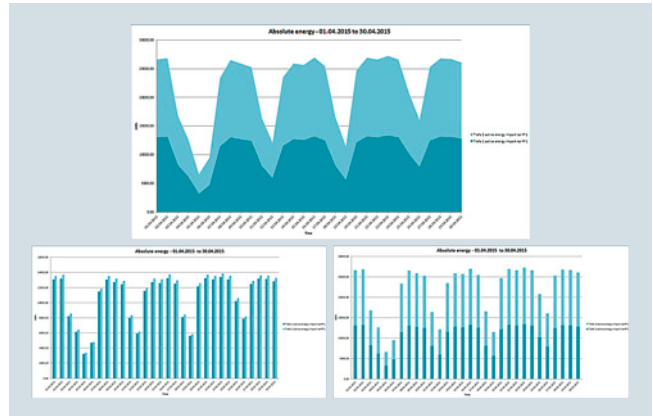
Application
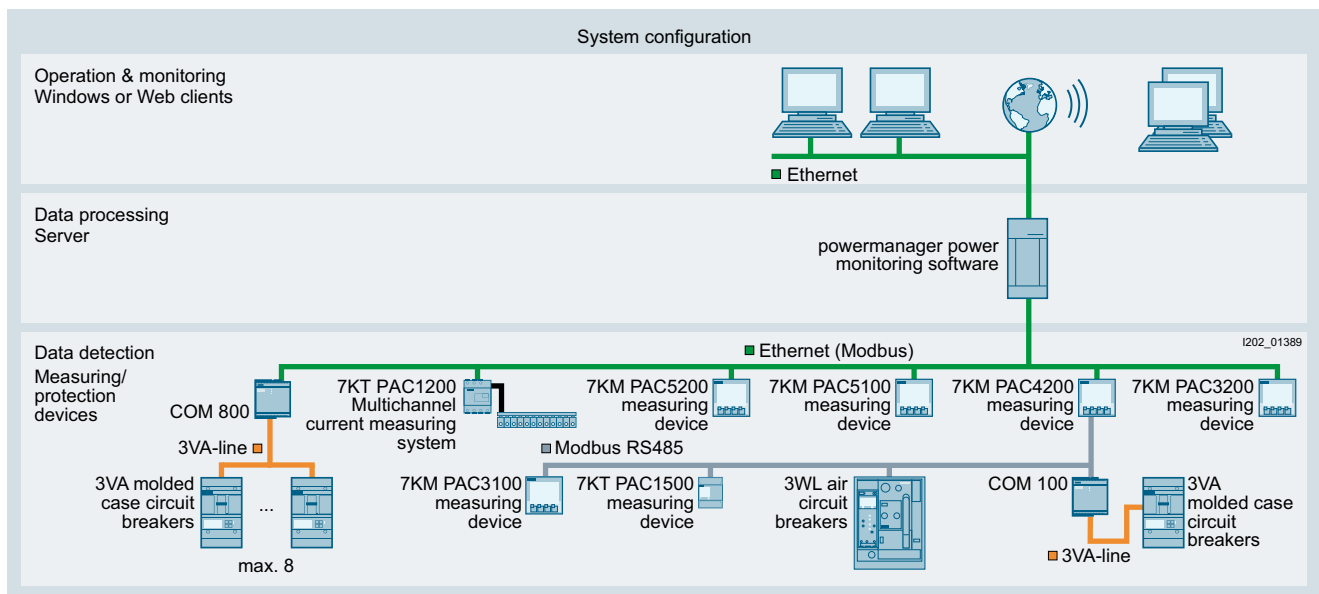
Typical topology of a power monitoring system

■ **Design**

Basic Package

The Basic Package contains the software for installation on a server and client and also up to ten devices and one client. One web and one reports license are also included.

The four option packages can be added to the basic license:

Device Pack

The number of devices can be increased flexibly.

"Expert" option pack

Any number of freely configured system images can be created and displayed.

"Client" option pack

One Windows client serves the purpose of project visualization and configuration of several PCs simultaneously.

The client license resides on the server.

"Distributed Systems" option pack

Linking of several autonomous powermanager systems.

Each system can access and display measured variables and alerts of the other systems.

Software

Configuring, Visualizing and Controlling with SENTRON

powermanager

■ **Function**

- Independent PC-based energy monitoring for the energy monitoring system based on Modbus communication
- Expandable from the simple standard application to a fully flexible customer solution
- Scalable relative to number of devices and software functions
- Optimum integration of 7KT/7KM PAC measuring devices and 3WL/3VL/3VA circuit breakers
- Integration of any third-party devices via a generic Modbus driver
- Recording, display, archiving and evaluation of measured quantities
- Monitoring of status and limits, with generation of signals
- Manual input of energy values
- Virtual computation and devices
- Dashboard displays for a fast overview
- Defined user interfaces and views of measured values/status

- Control of digital outputs and teleswitching
- Load curve display for visualizing archived and online data
- User administration with different authorization levels
- Distributed multi-server structure
- Client-server installation
- Access via web browser
- OPC interface
- Load monitoring
- Basic reporting with templates for a simple introduction to the evaluations
  - Cost center allocation
  - Evaluations of consumption values
  - Deviation analysis
  - Annual evaluation
  - Frequency distribution
- Extended Excel-based reporting for tailored evaluations
- Calculation and display of key performance indicators (KPIs)

Selection and ordering data

Version	DT	Article No. www.siemens.com/ product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
powermanager V3.3							
• **Basic package** Full product license for up to 10 devices, installation for client/server, web access		3ZS2711-0CC30-0YA0		1	1 unit	1DD	0.222
• **Trial license** Up to 10 devices including "Expert" and "Web" option packs Full product license limited to 60 days Available free of charge at https://support.industry.siemens.com/cs/ww/en/view/64850998							
V3.x device expansions							
• **Device Pack (20)** Device expansion license for up to 20 devices		3ZS2711-0CC30-0YD0		1	1 unit	1DD	0.139
• **Device Pack (50)** Device expansion license for up to 50 devices		3ZS2712-0CC30-0YD0		1	1 unit	1DD	0.140
• **Device Pack (100)** Device expansion license for up to 100 devices		3ZS2713-0CC30-0YD0		1	1 unit	1DD	0.140
• **Device Pack (200)** Device expansion license for up to 200 devices		3ZS2714-0CC30-0YD0		1	1 unit	1DD	0.141
• **Device Pack (500)** Device expansion license for up to 500 devices		3ZS2715-0CC30-0YD0		1	1 unit	1DD	0.144
• **Device Pack (1000)** Device expansion license for up to 1000 devices		3ZS2716-0CC30-0YD0		1	1 unit	1DD	0.133
Option packs							
• **"Expert" option pack** Option for creating/displaying any number of freely configured images		3ZS2710-2CC20-0YH0		1	1 unit	1DD	0.142
• **"Client (5)" option pack** Expansion for up to 5 clients		3ZS2710-3CC00-0YD0		1	1 unit	1DD	0.140
• **"Distributed Systems (2)" option pack** Option for connection of 2 autonomous powermanager systems for the exchange of measured values and alarms		3ZS2718-1CC00-0YH0		1	1 unit	1DD	0.142
• **"Distributed Systems (5)" option pack** Option for connection of 5 autonomous powermanager systems for the exchange of measured values and alarms		3ZS2718-2CC00-0YH0		1	1 unit	1DD	0.142
• **"Distributed Systems (10)" option pack** Option for connection of 10 autonomous powermanager systems for the exchange of measured values and alarms		3ZS2718-3CC00-0YH0		1	1 unit	1DD	0.145
powermanager V2.0 to V3.0 update							
• **Update license** From V2.0 Lean to V3.0 (10)		3ZS2711-0CC30-0YE0		1	1 unit	1DD	0.234
• **Update license** from V2.0 Standard to V3.0 (50)		3ZS2712-0CC30-0YE0		1	1 unit	1DD	0.227
• **Update license** from V2.0 Advanced to V3.0 (100)		3ZS2713-0CC30-0YE0		1	1 unit	1DD	0.231
• **Update license** from V2.0 Maximum to V3.0 (200)		3ZS2714-0CC30-0YE0		1	1 unit	1DD	0.226
System packages							
• **System 1** Package comprising - 1 x powermanager Basic Package - 1 x 7KM PAC4200 (+RS 485 module) and - 1 x 7KM PAC3100		3ZS2812-5CC20-0AY0		1	1 unit	1DD	1.310
• **System 2** Package comprising - 1 x powermanager Basic Package - 1 x 7KM PAC4200 (+RS 485 module) and - 1 x 7KT PAC1500 (+Modbus module)		3ZS2812-6CC20-0YA0		1	1 unit	1DD	1.230
• **System 3** Package comprising - 1 x powermanager Basic Package - 3 x 7KM PAC 3200		3ZS2813-2CC20-0YA0		1	1 unit	1DD	1.610

3

Software
Configuring, Visualizing and Controlling with SENTRON

powermanager

■ **More information**

New in Version 3.3

- Easy start to project creation with a host of pre-defined settings
- Modern, intuitive operator interface with a menu structure and 5 different views and tools
- New pre-defined measured value views uniform for all device types (overview, bar view for energy values, trend view)
- Modern color scheme
- New internal reporting system for cost center evaluations, duration curve, deviation analysis, annual evaluation, energy reports, also available via web browser, in pdf/xls format
- Dashboard displays at device and system level
- KPI calculations and displays
- Direct access to support pages on the Internet
- Complete integration of the new 3VA molded case circuit breaker (ETU5, ETU8) including measured values and breaker status
- Supported operating systems: Windows 7, Windows 8.1, Windows 10, Windows Server 2008 R2, Windows Server 2012 R2 (64-bit in each case)
- Supported EXCEL
  - versions: EXCEL 2010, EXCEL 2013 (32-bit in each case) (necessary for advanced reports)

System requirements

Hardware requirements

- Processor: Intel Core i3 processor, 2GHz
- RAM: at least 2 GB RAM
- Hard disk: HDD with 10 GB free storage space
- Display: VGA with at least 1280 x 1024 pixels and 16-bit color intensity

Supported operating systems

- Windows 7: Ultimate / Enterprise / Professional, SP1 (64-bit) Windows 8.1: Enterprise (64-bit) Windows 10: Enterprise Pro
- Windows Server 2008: Server 2008 R2 (64-bit)
- Windows Server 2012: Server 2012 R2 (64-bit)

Supported Excel versions (extended report)

- Excel 2010 (32-bit)
- Excel 2013 (32-bit)

Available in the following languages

English, German, Simplified Chinese, Turkish, Spanish, French, Portuguese, Italian

Internet

Free download for powermanager trial license: see
http://support.automation.siemens.com/WW/view/en/64850998

For more information, see

www.siemens.com/powermanager

www.siemens.com/powermonitoring

German Technical Inspectorate (TÜV) Certificate of Conformity for energy management ISO 50001 and energy audits according to EN 16247-1

The TÜV Certificate of Conformity confirms that 7KM/7KT PAC measuring devices, 3VA molded case circuit breakers, 3WL air circuit breakers and the powermanager power monitoring software support the introduction of a corporate power management system in accordance with ISO 50001. The ISO 50001 energy saving standard defines binding criteria for companies for sustainable energy management.
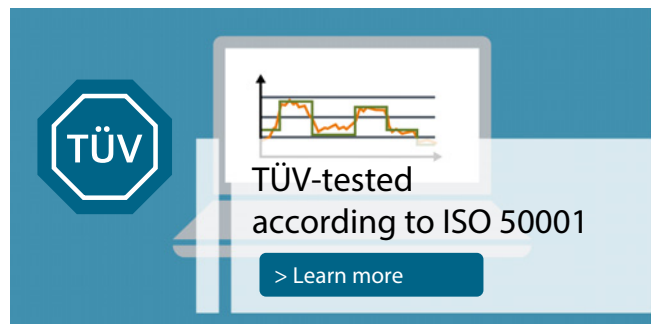
The TÜV certificate is available from

http://w3.siemens.com/powerdistribution/global/SiteCollection-Documents/dokumente-en/SENTRON_Certificate-of-conformi-ty_EN_Text.pdf

◼ Overview

The powerconfig software for commissioning	
	Software tool for efficient commissioning and diagnosis of communication-capable SENTRON components
License	Free use
Supported devices	7KM PAC3100/3200/4200 measuring devices, incl. expansion modules 3WL/3VL/3VA/ATC5300 circuit breakers
General range of functions	The PC-based tool facilitates parameterization of the devices, resulting in substantial time savings, particularly when several devices have to be set up. The device settings can be stored in the PC and printed out. The tool enables monitoring of instantaneous measured quantities, which can be printed out if required. Execution of specific device functions, such as resetting of devices and setting of energy counters.
Supported languages	German, English, Chinese, Spanish, Portuguese
Service functions	Firmware updates and switching of language packs for 7KM PAC measuring devices
Functional scope with 7KM PAC4200 and 3VA	Readout of data stored in the device (events; load profile history; daily energy counters), which are saved in csv format

Setting of parameter values   Display of actual measured quantities   Display of the circuit breaker state

The powerconfig software is the combined commissioning and service tool for communication-capable measuring devices and circuit breakers from the SENTRON product family.
The PC-based tool facilitates parameterization of the devices, resulting in substantial time savings, particularly when several devices have to be set up.

With powerconfig, the 3WL, 3VA and 3VL circuit breakers and the 7KM PAC 3100/3200/4200 measuring devices with expansion modules and the ATC5300 transfer control device can be parameterized, documented, operated, and monitored using various communication interfaces.

◼ Benefits

- Parameterization, documentation, operation and monitoring in one software package, and also testing in the case of the 3VA
- User-friendly documentation of measured values and settings
- Clear presentation of the available parameters including validity testing of the inputs
- Display of the available device statuses and measured values in standardized views
- Parameterization of all electronic 3VA2 components, e.g.
  - ETUs 5-series and 8-series
  - COM800/COM100 breaker data servers
  - EFB300 (External Function Box).
- Support of test functions for 3VA2 using the TD500 test device for all ETUs
- Full support for 3WL air circuit breakers, that is, including display and triggering of curve shapes and all other functions
- Support for the ATC5300 transfer control device
- Project-oriented storage of device data
- Consistent operation and usability
- Support of the various communication interfaces (Modbus RTU, Modbus TCP, PROFIBUS, PROFINET)
- Communication with the 3VA2 circuit breaker via the TD500 at the USB interface, as a further possibility for Modbus TCP, PROFIBUS and PROFINET
- Supported languages: German, English, Chinese, Spanish, and Portuguese

- Read-out and saving of message lists, load profiles and characteristic curves (device-dependent)
- Overview of circuit breaker states with currents and events
- Individually designable system documentation
- Update of the device firmware and loading of language packs (device-dependent)
- No programming knowledge required for operation
- powerconfig can be started on the PC as follows, with communication possible via PROFIBUS and PROFINET:
  - Directly from Windows
  - From STEP 7, V5.5 SP1
  - From TIA Portal with STEP 7 V13

Software
Configuring, Visualizing and Controlling with SENTRON

powerconfig

3

■ **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
• Windows XP: XP with SP3 (32-bit)
• Windows 7 Professional SP1 (32-bit, 64-bit)
• Windows 7 Ultimate SP1 (32-bit, 64-bit)
• Windows 2008 Server (32-bit)
• Windows 8.1 (64-bit)

Required framework
• Microsoft .NET Framework acc. to readme file, currently V4.0

■ **More information**

powerconfig is available free of charge at

http://support.automation.siemens.com/WW/view/en/63452759

You can find more information on the Internet at:

www.siemens.com/sentron

4

Appendix

Catalog notes

■ Overview

Trademarks

All product designations may be registered trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes may violate the rights of the owner.

Amendments

Unless stated otherwise on the individual pages of this catalog, we reserve the right to make changes, in particular to the specified values, measurements and weights.

Dimensions

All dimensions are given in mm.

Illustrations

The illustrations are not binding.

Technical specifications

The technical specifications are for general information purposes only. Always heed the operating instructions and notices on individual products during assembly, operation and maintenance.

Further technical information is available at
www.siemens.com/lowvoltage/product-support

- under "Entry type":
  - Application example
  - Certificate
  - Characteristic
  - Download
  - FAQ
  - Manual
  - Product note
  - Software archive
  - Technical data

Configurators can be found under
www.siemens.com/lowvoltage/configurators

Assembly, operation and maintenance

Always heed the operating instructions and notices on individual products during assembly, operation and maintenance.

Symbols

In the table below, you will find all symbols concerning connections that can occur in this catalog. In combination with orange highlighting, these identify special selection criteria.

Connections	
⊕	Screw connection
⊕	Ring cable lug connection
⊟	Spring-loaded terminals

4

■ Logistics

General

With regard to delivery service, communications and environmental protection, our logistics service ensures "quality from the moment of ordering right through to delivery". By designing our infrastructure according to customer requirements and implementing electronic order processing, we have successfully optimized our logistics processes.

We are proud of our personal consulting service, on-time deliveries and 1-day transport within Germany.

To this end, we supply preferred types marked with ▶ ex works.

We regard the DIN ISO 9001 certification and consistent quality checks as an integral part of our services.

Electronic order processing is fast, cost-efficient and error-free. Please contact us if you want to benefit from these advantages.

Packaging, packing units

The packaging in which our equipment is dispatched provides protection against dust and mechanical damage during transport, thus ensuring that all our products arrive in perfect condition.

We select our packaging for maximum environmental compatibility and reusability (e.g. crumpled paper for protection during transport in packages up to 32 kg) and, in particular, with a view to reducing waste.

With our multi-unit and reusable packaging, we offer you specific types of packaging that are both kind to the environment and tailored to your requirements:

Your advantages at a glance:

- Lower ordering costs.
- Cost savings through same-material type packaging: Low/no disposal costs.
- Reduced time and cost thanks to short unpacking times.
- "Just-in-time" delivery directly to the production line helps reduce stock: Cost savings through reduction of storage areas.
- Fast assembly thanks to supply in sets.
- Standard Euro boxes - corresponding to the Euro pallet modular system - suitable for most conveyor systems.
- Active contribution to environmental protection.

Unless stated otherwise in the "Selection and ordering data" of this catalog, our products are supplied individually packed.

For small parts/accessories, we offer you cost-effective packaging units as standard packs containing more than one item, e.g. 5, 10, 50 or 100 units. It is essential that whole number multiples of these quantities be ordered to ensure satisfactory quality of the products and problem-free order processing.

The products are delivered in a neutral carton. The label includes warning notices, the CE marking, and device descriptions in English and German.

In addition to the Article No. (MLFB) and the number of items in the packaging, the operating instructions order number (Instr.-Order-No.) is also specified. They can be obtained from your local Siemens representative (you will find a list at www.siemens.com/lowvoltage/contact).

Most device Article No.'s can be obtained by means of the EAN barcode to simplify ordering and storage logistics.

The associated master data, too, is available from your local Siemens representative.

Appendix

Ordering notes

Overview

Ordering special versions

When ordering products that differ from the standard versions listed in the catalog, **"–Z"** must be added to the Article No. indicated and the required features must be specified using alphanumeric order codes or plain text.

Ordering very small quantities

When very small orders are placed, the costs associated with order processing are greater than the order value. We therefore recommend that you combine several small orders. Where this is not possible, we regret that we are obliged to make a small processing charge: for orders with a net goods value of less than € 250 we charge an € 20 supplement to cover our order processing and invoicing costs.

Explanations of Selection and Ordering Data

Delivery time class (DT)

DT	Meaning
►	Preferred type
A	Two working days
B	One week
C	Three weeks
D	Six weeks
X	On request

Preferred types are device types that can be delivered immediately ex works, i.e. they are dispatched within 24 hours.

If ordered in normal quantities, the products are usually delivered within the specified delivery times, calculated from the date we receive your order.

In exceptional cases, delivery times may vary from those specified.

The delivery times are valid ex works from Siemens AG (products ready for dispatch).

Shipping times depend on the destination and the method of shipping. The standard shipping time for Germany is one day.

The specified delivery times are correct at the time of going to print and are subject to constant optimization. Up-to-date information can be found at www.siemens.com/industrymall.

Price units (PU)

The price unit defines the number of units, sets or meters to which the specified price and weight apply.

PS/P. unit (packaging size/packaging unit)

The packaging size/packaging unit defines the number, e.g. of units, sets or meters, contained within outer packaging:

- The **first digit** in the PS/P. unit column (packaging size/packaging unit) indicates the minimum order quantity. You can only order this specified quantity or a multiple thereof.
- The **second digit** in the PS/P. unit column (packaging size/packaging unit) specifies the number of units contained within the outer packaging (e.g. in a carton). You must order this quantity or a multiple thereof if you want the items to be delivered in discrete packaging quantities.

Examples:

PS/P. unit	Meaning
1 unit	You can order one item or a multiple thereof.
5 units	Five units are packed in a bag, for example. Because the bags cannot be opened, you can only order a multiple of the quantity contained in the bag: 5, 10, 15, 20 etc.
5/100 units	One carton contains (for example) 20 bags, each containing 5 units, i.e. a total of 100 units. If only cartons are available for delivery, you need to order a multiple of the carton quantity: 100, 200, 300, etc. Ordering a quantity of 220 units would result in the following delivery: two cartons, each containing 100 units (= 200 units) and 4 bags, each containing 5 units (= 20 units).
1 set	A set comprises a defined number of different parts.

Price group (PG)

Each product is allocated to a price group.

Weight

The defined weight is the net weight in kg and refers to the price unit (PU).

Examples

DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS/ P. unit	PG	Weight per PU approx. kg
►	**3NW7013**		1	1/12 units	1BM	0.076

DT:	Preferred type
PU:	One unit (on which price is based)
PS/P. unit:	1 = minimum order quantity / 12 = quantity per carton
PG:	1BM
Weight per PU	76 g, always given in kg

DT	Article No.	Price per PU	PU (UNIT, SET, M)	PS/ P. unit	PG
	3VA1196-3ED26-0AA0		1	1 unit	1CB

DT:	Preferred type
PU:	One unit (on which price is based)
PS/P. unit:	1 = minimum order quantity
PG:	1CB

Note:

The article numbers shown here are examples only. They are not necessarily included in this catalog, nor is it essential that their specifications regarding selection and ordering data be up to date. When ordering, always use the selection and ordering data.

■ **Low-Voltage Power Distribution and Electrical Installation Technology on the WWW**

We regard product support to be just as important as the products and systems themselves.

Visit our website for a comprehensive offering of support for low-voltage power distribution and electrical installation products, such as:

• Overview of the entire product portfolio

• Keeping up to date via newsletters, podcasts, blogs and Twitter

• Access to interesting videos on YouTube

• Contact with partners around the world

• Operating instructions and manuals for direct download

and much more - all conveniently and easily accessible.

www.siemens.com/lowvoltage

■ **Information and Download Center**
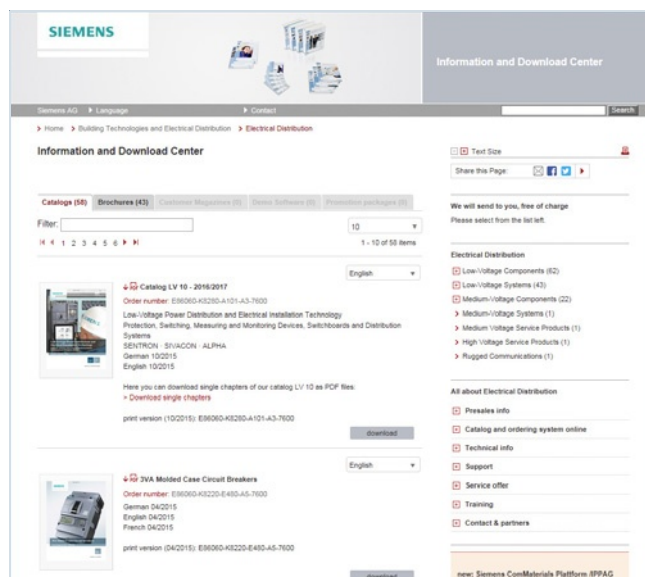
You will find regularly updated informational material (such as catalogs and brochures) for low-voltage power distribution and electrical installations on the Internet at

www.siemens.com/lowvoltage/infomaterial

Here you can order your copy of the available documentation or download it in common file formats (PDF, ZIP).

Appendix

Further documentation

Product selection using the interactive catalog CA 01
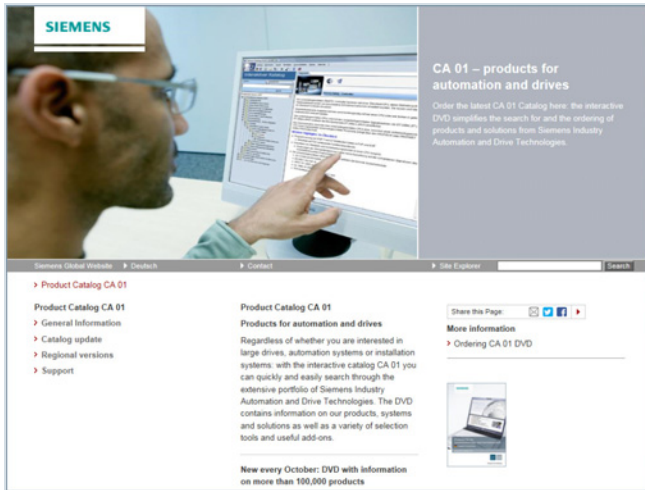
Detailed information together with user-friendly interactive functions:

The CA 01 interactive catalog covers more than 100,000 products thus providing a comprehensive overview of the product range offered by Siemens.

You can find everything you need here for solving automation, switching, installation and drive technology tasks. All information is provided over a user interface that is both user-friendly and intuitive.

After selecting the product of your choice you can order at the press of a button, by fax or by online link.

Information about the interactive catalog CA 01 can be found on the Internet at:

www.siemens.com/automation/ca01

or on DVD.

Industry Mall
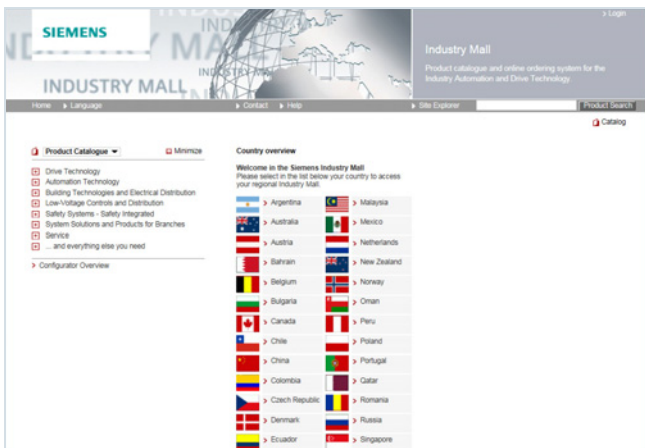
The Industry Mall – for online information, product selection and ordering

- Detailed information including product data, illustrations, certificates and CAx data
- Simple configuring of systems
- Possible to request individualized quotations
- Availability check
- Online ordering facility
- Order tracking/order overview
- Fast access to relevant training offers and services

You can find the Industry Mall on the Internet at

www.siemens.com/industrymall

Industry Online Support

Comprehensive support – at any time, whatever your location

- FAQs, sample applications, information about successor products and product news
- Prompt assistance with technical queries
- Discussions and best practice sharing with other users in the forum
- Provision of high-quality product data for your planning programs
- Faster access to information – with helpful filter and folder functions in mySupport
- Automatic notification service to keep you up to date with the latest information about topics of interest to you

You can find Siemens Industry Online Support on the Internet at

www.siemens.com/online-support

■ **Industry Online Support App**

Main functions at a glance

- Scanning of product codes (EAN/QR and data matrix codes) with direct display of all technical information on the product, including graphic data (CAx data).
- Sending of product information or entries by email, so that the information can immediately be processed at the workplace.
- Submission of queries to Technical Support (Support Requests). With photo function for transmitting detailed information.
- Contents and interfaces available in six languages (German, English, French, Italian, Spanish and Chinese) – including option of temporary switchover to English.
- Offline cache function for all favorites stored in "mySupport". These entries can also be retrieved without network reception.
- Import of PDF documents into a library (e.g. iBooks or similar).

You can find information on the Industry Online Support App on the Internet at

www.siemens.com/industry/onlinesupportapp
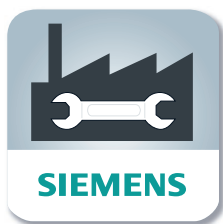
Android:

Industry Online Support App ANDROID

Apple iOS:

Industry Online Support App iOS

Windows:

Industry Online Support App WINDOWS

Appendix

Further documentation

Product configurator
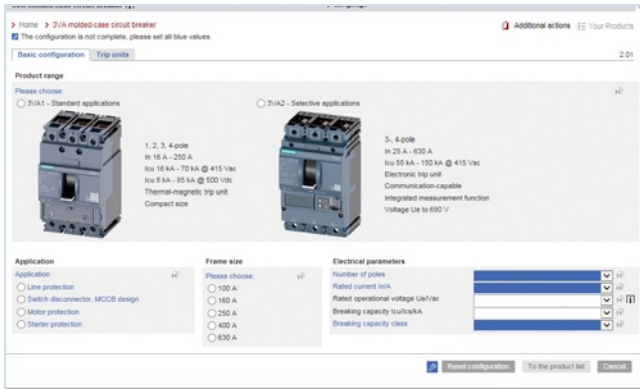
Finding the right product faster

- Complete selection of products and systems based on technical characteristics or application requirements
- Simple, intuitive operation
- Option to save the configuration and order lists in a file format of your choice (txt, pdf, xls, csv)
- Direct transfer of the order list into the shopping cart of the Siemens Industry Mall
- Fast access to product data, diagrams, certificates and CAx data for the selected product and system configuration
- Available in multiple languages for use by customers anywhere in the world

The configurators are available online in the Siemens Industry Mall and offline in Catalog CA 01.
You can find our configurators at the following website:

www.siemens.com/lowvoltage/configurators

CAx Download Manager

Internal circuit diagrams	Dimensional drawings	Operating instructions
Connection diagrams	3D models	Product images
Product master data	Manuals	Data sheets
Characteristic curves	Certificates	EPLAN Electric P8 Macros
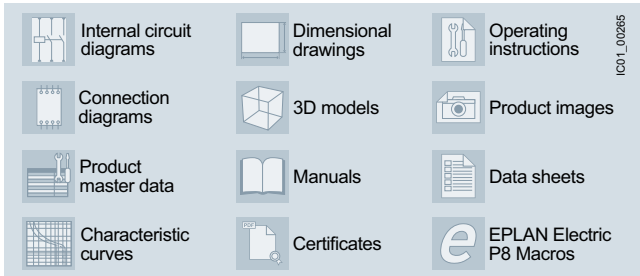
You can find the CAx Download Manager on the Internet at

www.siemens.com/lowvoltage/cax

Time savings of up to 80% with universal product data for your CAE and CAD systems

The CAx Download Manager can supply you with all the necessary CAx file types for the products of your choice for use in all common CAE and CAD systems free of charge in just four selection steps. The data is updated on a daily basis. All your selected files are packed into a zip file which you can download for further use.

Siemens makes up to 12 file types available around the clock to support your mechanical (CAD) and electrical (CAE) planning processes.

- No manual data collection necessary
- Universal manufacturer data for all common CAE and CAD systems
- Standardized documentation is simple to generate
- Choice of different languages for system commissioning anywhere in the world

My Documentation Manager
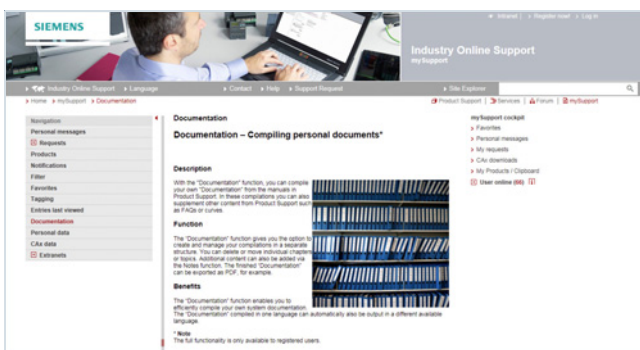
In "mySupport" you can compile individual documentation for your project by dragging and dropping

* e.g. Low Voltage Directive 2006/95/EC and EC Machinery Directive 2006/42/EC

You can find My Documentation Manager on the Internet at

www.siemens.com/lowvoltage/mdm

User-friendly compilation of project-specific documentation

In accordance with directives*, the documentation is part of the plant and requires certification, thus giving the purchaser the right to full plant documentation.

To support you in this, a manual configurator has been developed with which you can put together individual and standard-compliant documentation – fully in accordance with the relevant project-specific requirements.

You can thus select the chapters relevant to the respective project from the available manuals of the installed Siemens components. FAQs, certificates, data sheets and your own content can also be incorporated.

- Compile and structure manuals, data sheets, FAQs and certificates simply by dragging and dropping
- Insert personalized content via the Notes function
- Further processing possible thanks to selectable export formats (pdf, xml, rtf)
- After generating the documentation, automatic translation into the desired language is possible
- Always up-to-the minute thanks to the Update function

■ **Overview**

The quality management system of our "Low Voltage & Products" Business Unit in the "Energy Management" Division complies with the international EN ISO 9001 standard.

The products and systems listed in this catalog are developed and manufactured using a certified quality management system in accordance with EN ISO 9001:2008.

4

Appendix

Overview

Certificates

An overview, updated on a daily basis, of our products certified in accordance with CE, UL, CSA, FM, shipping authorizations etc. for low-voltage power distribution and electrical installation products can be found on the Internet at

www.siemens.com/lowvoltage/certificates

In the **Entry list**, you can **filter the view** in order to quickly find comprehensive information on the following subjects:

• Product or search term
• Date
• Type of certificate (general product approval, test certificates, shipping approval, ...)
• Certificate (confirmations, UL, VDE,...)
• Approval office (TÜV, VDE, UL, ...)
• Country

4

Approval requirements valid in different countries

Siemens low-voltage switchgear and controlgear are designed, manufactured and tested according to the relevant German standards (DIN and VDE), IEC publications and European standards (EN) as well as CSA and UL standards. You will find the standards assigned to the single devices in the relevant certificates at

www.siemens.com/lowvoltage/certificates

In addition to the pertinent VDE, EN and IEC standards, the requirements of the various regulations valid in other countries have also been taken into account in the design of the equipment in some cases, in order that the devices can be deployed globally as far as possible.

In some countries an approval is required for certain low-voltage switchgear and controlgear components. Depending on the market requirements, these devices have been submitted for approval to the authorized testing institutes.

In some cases, CSA for Canada and UL for the USA only approve special versions. Such special versions are listed separately from the standard versions in the relevant parts of this catalog.

For this equipment, there are sometimes limits with regard to the maximum permissible voltages, currents and rated outputs or special approvals and, in some cases, special identification may be required.

For use on board ship, the specifications of the marine classification societies must be observed. In some cases, they require type tests of the components to be approved.

For more information on UL, visit

www.siemens.com/applicationconsulting/ul

If you have any questions concerning UL/CSA approvals, please contact Technical Support:
www.siemens.com/lowvoltage/contact

Appendix

Contacts for low-voltage power distribution and electrical installation technology
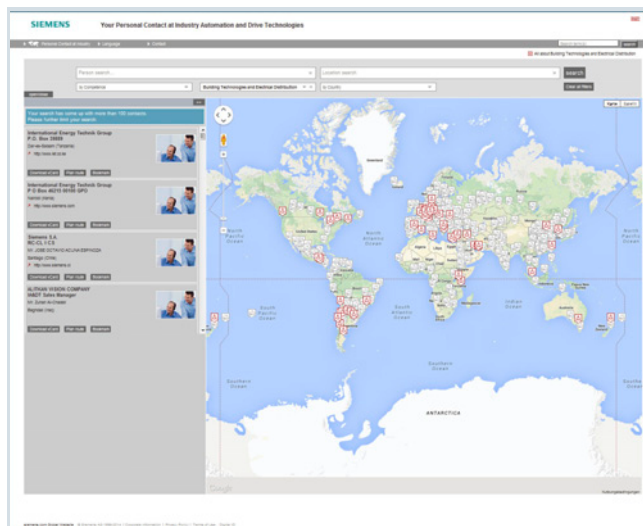
With low-voltage power distribution and electrical installation technology we consistently pursue one goal:

long-term improvement of your competitive ability.

We are committed to this goal. Thanks to our dedication, we are continually setting new standards. In all industries – worldwide.

At your service, locally, around the globe: Partners for consulting, sales, training, service, support, spare parts ... on the entire range of low-voltage power distribution and electrical installation technology.

Your personal contact can be found in our Contact Database at

www.siemens.com/lowvoltage/contact

You start by selecting a
• Required competence
• Product or sector
• Country
• City

or by performing a
• search for a specific location or
• individual.

Unrivaled complete range of services over the entire life cycle
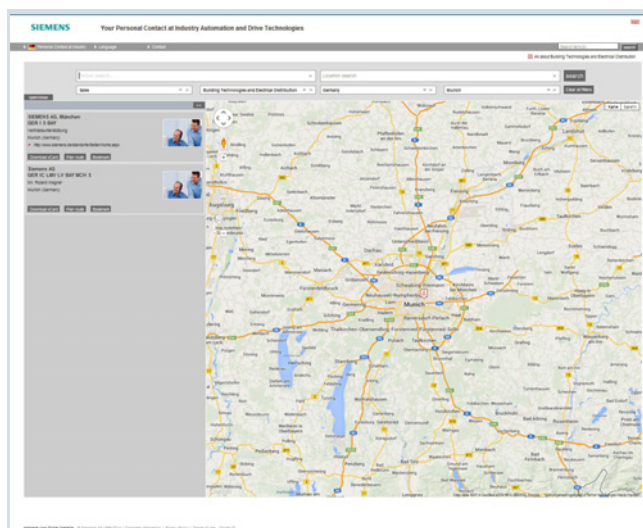
Industry Online Support

Industry Online Support is an extensive information system for all questions relating to products, systems and solutions developed for industry by Siemens.

You will find further information at
www.siemens.com/online-support
www.siemens.com/lowvoltage/product-support

Field Service

Siemens Field Service offers support with all aspects of maintenance – so that the availability of your machines and plants is assured whatever the case.

You will find further information at
www.siemens.com/lowvoltage/contact

Technical Support

The competent consulting service for technical issues with a broad range of customer-oriented services for all our products and systems.

You will find further information at
www.siemens.com/lowvoltage/contact

Spare Parts
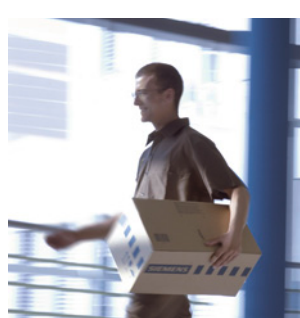
Plants and systems in all industries worldwide are expected to meet ever higher levels of availability.

We can help you rule out unexpected stoppages: with a global network and optimum logistics chains.

You will find further information at
www.siemens.com/lowvoltage/contact

Training

Extend your lead – with practical know-how straight from the manufacturer.

You will find further information at
www.siemens.com/lowvoltage/training

Specification texts

You can obtain qualified, free support to help you produce specifications for technically equipping non-residential and industrial buildings at
www.siemens.com/specifications

4

Appendix

Comprehensive support from A to Z

■ Overview

Product information	
Website	Fast and targeted information on low-voltage power distribution and electrical installation technology: www.siemens.com/lowvoltage
Newsletter	Always up to date about our trend-setting products and systems: www.siemens.com/lowvoltage/newsletter

Product information/product & system selection	
Information and Download Center	Current information (e.g. catalogs and brochures): www.siemens.com/lowvoltage/infomaterial
Industry Mall	Comprehensive information and order platform for the Siemens Industry Basket: www.siemens.com/lowvoltage/mall
CA 01	Every product for automation and drive technology, interactive catalog, DVD

Product and system engineering	
SIMARIS Planning tools	Support in planning and configuring electrical power distribution: www.siemens.com/simaris
SIMARIS configuration configuration software	Support throughout the entire configuration cycle from the configuration of ALPHA distribution boards and SIVACON S4 power distribution boards, cost calculations and quotation preparation, right through to the creation of plant documentation: www.siemens.com/simarisconfig
Software for power loss calculations - SIMARIS therm	Support in performing power loss calculations for the dimensioning of control cabinets: www.siemens.com/simaristherm

Product documentation	
Siemens Industry Online Support	Comprehensive technical information - from planning to configuration and operation: www.siemens.com/online-support www.siemens.com/lowvoltage/product-support
Product configurator	Complete selection of products and systems based on technical characteristics or application requirements: www.siemens.com/lowvoltage/configurators
CAx Download Manager	Collation of CAx data types for standard CAE and CAD systems: www.siemens.com/lowvoltage/cax
My Documentation Manager	Compilation of project-specific documentation: www.siemens.com/lowvoltage/mdm
Image database	Collection of product photographs and graphics, such as dimensional drawings and internal circuit diagrams: www.siemens.com/lowvoltage/picturedb

Product training	
SITRAIN Portal	Comprehensive training program for our products, systems and engineering tools: www.siemens.com/lowvoltage/training

Product hotline	
Technical Support	Support for all technical queries about our products: www.siemens.com/lowvoltage/contact www.siemens.com/lowvoltage/technical-support

4

Overview

Software types

Software requiring a license is categorized into types.
The following software types have been defined:

- Engineering software
- Runtime software

Engineering software

This includes all software products for creating (engineering) user software, e.g. for configuring, programming, parameterizing, testing, commissioning or servicing.

Data generated with engineering software and executable programs can be duplicated for your own use or for use by third-parties free-of-charge.

Runtime software

This includes all software products required for plant/machine operation, e.g. operating system, basic system, system expansions, drivers, etc.

The duplication of the runtime software and executable programs created with the runtime software for your own use or for use by third-parties is subject to a charge.

You can find information about license fees according to use in the ordering data (e.g. in the catalog). Examples of categories of use include per CPU, per installation, per channel, per instance, per axis, per control loop, per variable, etc.

Information about extended rights of use for parameterization/configuration tools supplied as integral components of the scope of delivery can be found in the readme file supplied with the relevant product(s).

License types

Siemens Industry Automation & Drive Technologies offers various types of software license:

- Floating license
- Single license
- Rental license
- Rental floating license
- Trial license
- Demo license
- Demo floating license

Floating license

The software may be installed for internal use on any number of devices by the licensee. Only the concurrent user is licensed. The concurrent user is the person using the program. Use begins when the software is started.
A license is required for each concurrent user.

Single license

Unlike the floating license, a single license permits only one installation of the software per license.

The type of use licensed is specified in the ordering data and in the Certificate of License (CoL). Types of use include for example per instance, per axis, per channel, etc.

One single license is required for each type of use defined.

Rental license

A rental license supports the "sporadic use" of engineering software. Once the license key has been installed, the software can be used for a specific period of time (the operating hours do not have to be consecutive).
One license is required for each installation of the software.

Rental floating license

The rental floating license corresponds to the rental license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Trial license

A trial license supports "short-term use" of the software in a non-productive context, e.g. for testing and evaluation purposes. It can be transferred to another license.

Demo license

The demo license support the "sporadic use" of engineering software in a non-productive context, for example, use for testing and evaluation purposes. It can be transferred to another license. After the installation of the license key, the software can be operated for a specific period of time, whereby usage can be interrupted as often as required.

One license is required per installation of the software.

Demo floating license

The demo floating license corresponds to the demo license, except that a license is not required for each installation of the software. Rather, one license is required per object (for example, user or device).

Certificate of license (CoL)

The CoL is the licensee's proof that the use of the software has been licensed by Siemens. A CoL is required for every type of use and must be kept in a safe place.

Downgrading

The licensee is permitted to use the software or an earlier version/release of the software, provided that the licensee owns such a version/release and its use is technically feasible.

Delivery versions

Software is constantly being updated.
The following delivery versions

- PowerPack
- Upgrade

can be used to access updates.

Existing bug fixes are supplied with the ServicePack version.

PowerPack

PowerPacks can be used to upgrade to more powerful software. The licensee receives a new license agreement and CoL (Certificate of License) with the PowerPack. This CoL, together with the CoL for the original product, proves that the new software is licensed.
A separate PowerPack must be purchased for each original license of the software to be replaced.

Upgrade

An upgrade permits the use of a new version of the software on the condition that a license for a previous version of the product is already held.
The licensee receives a new license agreement and CoL with the upgrade. This CoL, together with the CoL for the previous product, proves that the new version is licensed.
A separate upgrade must be purchased for each original license of the software to be upgraded.

Appendix

Software licenses

■ Overview

ServicePack

ServicePacks are used to debug existing products.
ServicePacks may be duplicated for use as prescribed according to the number of existing original licenses.

License key

Siemens Industry Automation & Drive Technologies supplies software products with and without license keys.

The license key serves as an electronic license stamp and is also the "switch" for activating the software (floating license, rental license, etc.).

The complete installation of software products requiring license keys includes the program to be licensed (the software) and the license key (which represents the license).

Software Update Service (SUS)

As part of the SUS contract, all software updates for the respective product are made available to you free of charge for a period of one year from the invoice date. The contract will automatically be extended for one year if it is not canceled three months before it expires.

The possession of the current version of the respective software is a basic condition for entering into an SUS contract.

You can download explanations concerning license conditions from
www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

4

Appendix

Article No. index incl. export markings

Overview

Article No.	Page	Export markings	
		ECCN	AL
3ZS			
3ZS2710-2CC20-0YH0	3/13	EAR99	N
3ZS2710-3CC00-0YD0	3/13	EAR99	N
3ZS2711-0CC30-0YA0	3/13	EAR99	N
3ZS2711-0CC30-0YD0	3/13	EAR99	N
3ZS2711-0CC30-0YE0	3/13	EAR99	N
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3ZS2715-0CC30-0YD0	3/13	EAR99	N
3ZS2716-0CC30-0YD0	3/13	EAR99	N
3ZS2718-1CC00-0YH0	3/13	EAR99	N
3ZS2718-2CC00-0YH0	3/13	EAR99	N
3ZS2718-3CC00-0YH0	3/13	EAR99	N
3ZS2787-1CC30-0YG0	3/6	N	N
3ZS2787-1CC30-6YH0	3/6	N	N
3ZS2812-5CC20-0AY0	3/13	5D992	N
3ZS2812-6CC20-0YA0	3/13	5D992	N
3ZS2813-2CC20-0YA0	3/13	5D992	N
4NC			
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4NC5113-0BC20	2/30	N	N
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4NC5115-0BC20	2/30	N	N
4NC5115-2BC20	2/31	N	N
4NC5117-0CC20	2/30	N	N
4NC5117-2CC20	2/31	N	N
4NC5121-0CC20	2/30	N	N
4NC5121-2CC20	2/31	N	N
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4NC5123-0CE20	2/30	N	N
4NC5123-2CE20	2/31	N	N
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4NC5223-0CE20	2/30	N	N
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4NC5431-0CH20	2/30	N	N
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4NC5433-0CH20	2/30	N	N
4NC5433-2CH20	2/31	N	N
4NC5434-0CH20	2/30	N	N
4NC5434-2CH20	2/31	N	N
6AV			
6AV6676-6MA30-0AX0	3/4	N	N
6AV6676-6MA30-1AX0	3/4	N	N
6AV6676-6MA30-2AX0	3/4	N	N
7KM			
7KM2111-1BA00-3AA0	2/6	EAR99	N
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7KM3133-0BA00-3AA0	2/4	EAR99	N
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7KM5212-6BA00-1EA2	2/9	EAR99	N
7KM5212-6CA00-1EA8	2/9	EAR99	N
7KM5412-6BA00-1EA2	2/11	N	N
7KM5412-6CA00-1EA8	2/11	N	N
7KM9200-0AB00-0AA0	2/15	EAR99	N
7KM9300-0AB01-0AA0	2/15	EAR99	N
7KM9300-0AE01-0AA0	2/15	EAR99	N
7KM9300-0AM00-0AA0	2/15	EAR99	N
7KM9900-0GA00-0AA0	2/12	N	N
7KM9900-0SA00-0AA0	2/12	EAR99	N
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7KM9900-0YA00-0AA0	2/12	N	N

Article No.	Page	Export markings	
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7KT			
7KT1200	2/32	N	N
7KT1201	2/32	N	N
7KT1202	2/32	N	N
7KT1222	2/20	N	N
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7KT1546	2/23	N	N
7KT1548	2/23	N	N
7KT1900	2/25	N	N
7KT1903	2/25	N	N
7KT1907	2/25	N	N
7KT1908	2/25	N	N

A product's export markings are updated daily at
www.siemens.com/industrymall.

4

Appendix

Conditions of sale and delivery

1. General standards

By using this catalog you can acquire hardware and software products described therein from Siemens AG subject to these conditions of sale and delivery (hereinafter: CSD). Please note: the scope, the quality and the conditions for supplies and services, including software products, by any Siemens group or Regional Company having a registered office outside of Germany, shall be subject exclusively to the General Terms and Conditions of the respective Siemens entity. These CSD apply exclusively for orders placed with Siemens AG, Germany.

1.1 For customers with a seat or registered office in Germany

For customers with a seat or registered office in Germany, the following shall be subordinate to these CSD

- the "General Terms of Payment"[1] and
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office in Germany"[1] and
- the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1] for other deliveries and services.

1.2 For customers with a seat or registered office outside of Germany

For customers with a seat or registered office outside of Germany, the following shall be subordinate to these CSD

- the "General Terms of Payment"[1] and
- for software products, the "General License Conditions for Software Products for Automation and Drives for Customers with a Seat or Registered Office outside of Germany"[1] and
- the "General Conditions for Supplies of Siemens Industry for Customers with a Seat or Registered Office outside of Germany"[1] for other deliveries and services.

2. Prices

The prices are in € (Euro) ex works, excluding packaging.

The sales tax (value added tax) is not included in the prices. It shall be debited separately at the respective rate according to the applicable legal regulations.

Prices are subject to change without prior notice. We will debit the prices valid at the time of delivery.

To compensate fluctuating prices of raw materials (for example silver, copper, aluminum, lead, gold, dysprosium and neodymium), surcharges are calculated on a daily basis for products containing these raw materials using the metal factor. A surcharge for the particular raw material is added to the price of a product if the basic quotations for this raw material are exceeded.

Each product's metal factor dictates for which raw materials the metal surcharges are calculated, from which quotation and with which calculation method (weight or percentage method).

An exact explanation of the metal factor can be found on the page entitled "Metal surcharges".

The surcharge will be calculated (except in the case of dysprosium and neodymium) on the basis of the official price on the day prior to receipt of the order or prior to the release order for calculation of the surcharge.

In the event of placement of an order, the relevant three-month average price from the quarter prior to order receipt or the release order shall be used with a one-month buffer to calculate the dysprosium and neodymium surcharge ("rare earths") (you will find details in the aforementioned explanation of the metal factor).

3. Additional terms and conditions

All dimensions are in mm. In Germany, according to the German law on units in metrology, data in inches only apply to devices for export.

Illustrations are not binding.

Insofar as there are no remarks on the corresponding pages of this catalog - especially with regard to data, dimensions and weights given - these are subject to change without prior notice.

4. Export regulations

We shall not be obligated to fulfill this agreement if such fulfillment is prevented by any impediments arising out of national or international foreign trade or customs requirements or any embargoes or other sanctions.

Export of the products listed in this catalog may be subject to authorization. In delivery information, we label authorization obligations according to German, European and US export lists. Goods labeled with an "AL" not equal to "N" are subject to European or German export authorization when being exported out of the EU. Goods labeled with "ECCN" not equal to "N" are subject to a US re-export authorization.

Please note that you can also preview the export designations in the respective product description via our "Industry Mall" online catalog system. The deciding factors, however, are the AL or ECCN export designations indicated on order confirmations, delivery notes and invoices.

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If required to conduct export control checks, you, at our request, shall promptly provide us with all information pertaining to particular end customers, destination and intended use of goods, works and services provided by us, as well as any relevant export control restrictions.

The products listed in this catalog may be subject to European/German and/or US export regulations. Therefore, any export requiring a license is subject to approval by the competent authorities.

Errors excepted and subject to change without prior notice.

[1] You can download the text of the Siemens AG terms and conditions of trade at

www.siemens.com/automation/salesmaterial-as/catalog/en/terms_of_trade_en.pdf

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Token fee: 2.00 €

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