For further technical product information:

Configuration Manual

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

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Energy management in accordance with ISO 50001

Overview

A systematic approach to energy efficiency

The standard ISO 50001 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

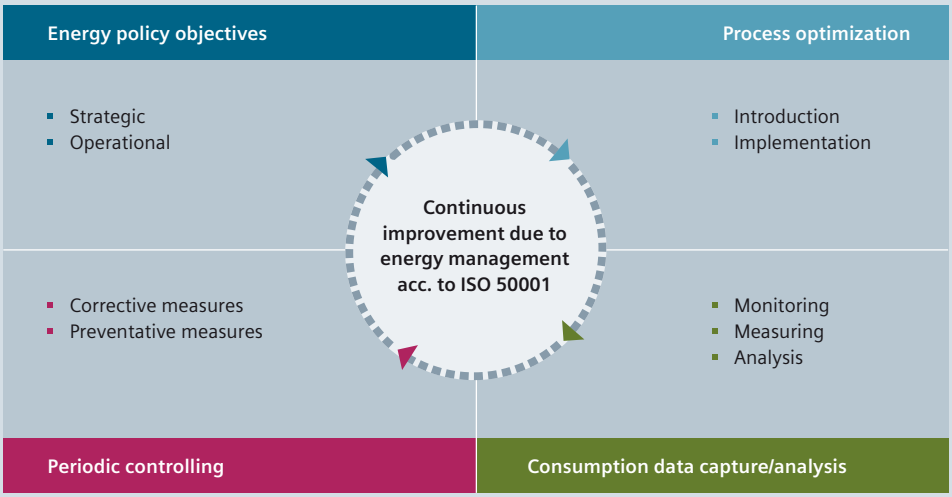
As a first step, an energy manager must be identified and nominated. He will then evaluate captured data, and derive and implement appropriate optimization measures. He will report the achieved results to corporate management.

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.

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 measuring devices in MID version

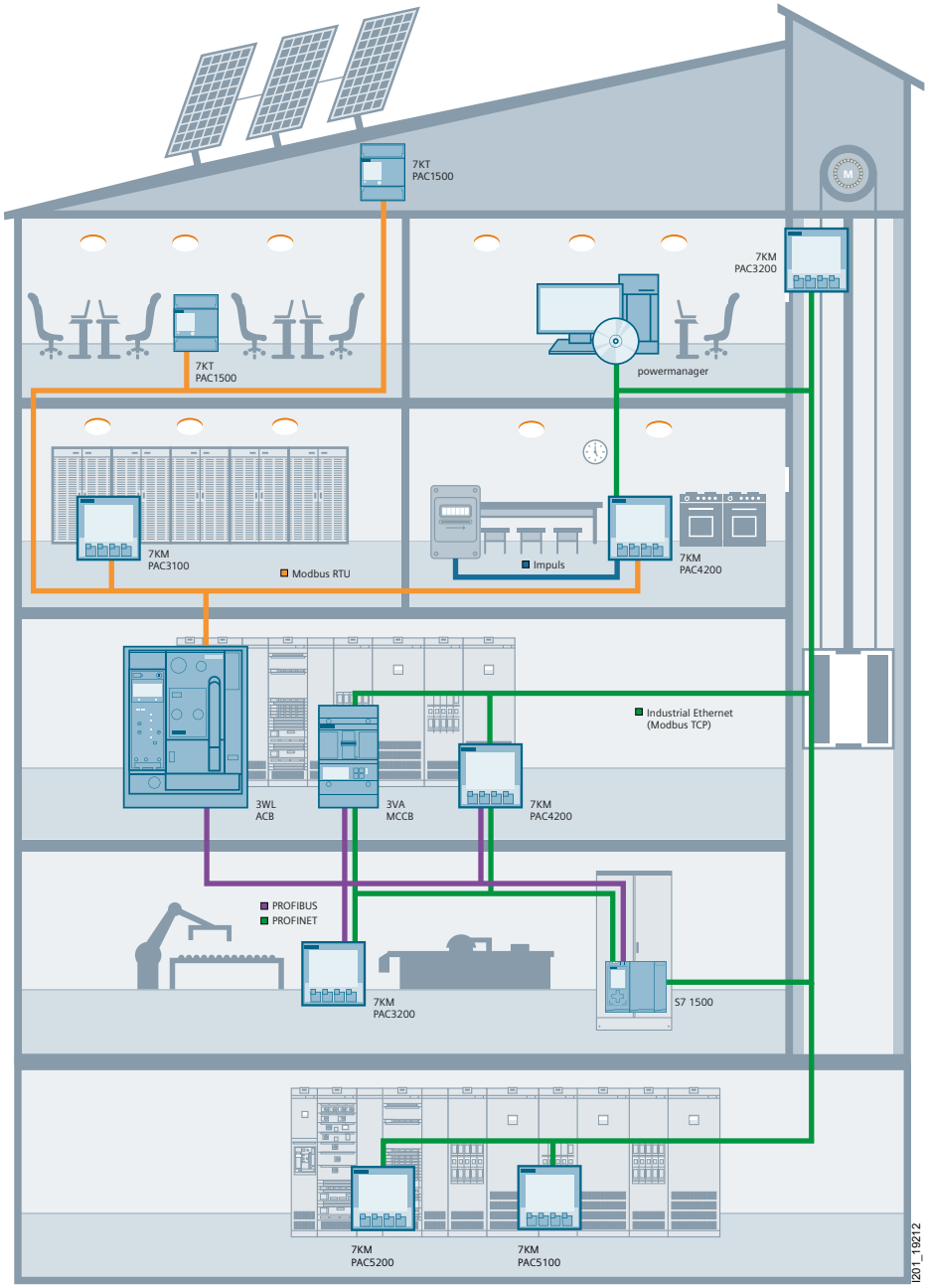
Derivation of optimization measures through transparency of the energy flows

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



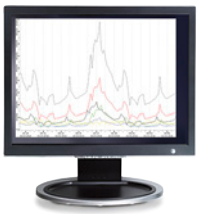
Energy management in accordance with ISO 50001

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

Overview

7KT PAC, 7KM PAC measuring devices and 3VA molded case circuit breakers with ETUs of the 8-series

	7KT PAC1500	7KM PAC3100	7KM PAC3200	7KM PAC4200	7KM PAC5100	7KM PAC5200	3VA ETU8..
							
	The entry-level solution when it comes to energy measurement	The cost-effective solution for digital measurement	The specialist solution for precise energy measurement	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
Measuring range/connection							
Max. input voltage L-L/L-N	400 V/230 V	480 V/276 V	690 V/400 V[1]	690 V/400 V[1]	690 V/400 V	690 V/400 V	690 V/400 V
Transformer connection version	x/5 A	x/5 A	x/1 A/x/5 A	x/1 A/x/5 A	x/1 A/x/5 A	x/1 A/x/5 A	Integrated
Direct connection version	80 A/125 A	–	–	–	–	–	–
DC power supply unit with extra-low voltage version	–	–	22 ... 65 V	22 ... 65 V	–	–	24 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 ✓	✓ I ✓ I ✓	✓ I ✓ I ✓	✓ I ✓ I ✓
Extended measured quantities							
• Distortion factor THD (voltage, current)	–	–	✓[3]	✓	✓	✓	✓
• Harmonics (voltage, current)	–	–	–	3. ... 31.	2. ... 40.	2. ... 40.	–
• 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	–	–	–	> 4000 events	✓	✓	✓
Gateway function	–	–	–	✓	–	–	–
Reporting acc. to EN 50160	–	–	–	–	–	✓	–
Integrated fault recorder	–	–	–	–	–	✓	–
System integration and communication							
Digital inputs/digital outputs	–	2/2	1/1	2/2	0/2	0/2	–
S0 interface	✓	✓	✓	✓	–	–	Optional
4DI/2DO expansion module	–	–	–	Optional	–	–	Optional
M-Bus	Optional	–	–	–	–	–	–
Instabus KNX	Optional	–	–	–	–	–	–
Modbus RTU	Optional	✓	Optional	Optional	–	–	Optional
Ethernet with Modbus TCP	–	–	✓	✓	✓	✓	✓
PROFIBUS DPV1	–	–	Optional	Optional	–	–	Optional
PROFINET IO/ PROFIenergy	–	–	Optional	Optional	–	–	Optional
Parameterization software	✓	powerconfig	powerconfig	powerconfig	powerconfig	powerconfig	powerconfig
Integration of power monitoring system	powermanager	powermanager	powermanager	powermanager	powermanager	powermanager	powermanager
Web servers	–	–	–	–	✓	✓	–
General data							
Measuring accuracy, active energy, reactive energy	1 I 2	1 I 3	0.5 S I 2	0.2 S I 2	0.5 S I 2	0.5 S I 2	2 S I 2[4]
MID version	✓	–	–	–	–	–	–
Installation	Standard mounting rail	Front mounting	Front mounting	Front mounting	Front mounting/standard mounting rail		See Chap. 2
Dimensions in MW (1 MW = 18 mm) or in mm	2 / 4 / 6 MW	96 × 96 × 56	96 × 96 × 56	96 × 96 × 82	96 × 96 × 100	96 × 96 × 100	96 × 96 × 82[5]

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) For display via DSP800, see chapter "Molded Case Circuit Breakers"

✓ Available / possible -- Not available / not possible

Hardware and software components

Accessories for 7KM 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 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



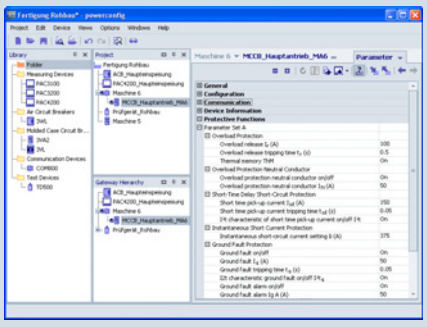


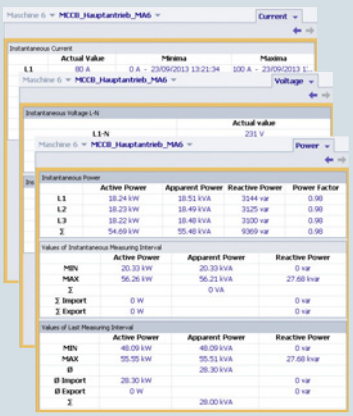
	7KM PAC expansion modules				**Standard mounting rail adapter**
	Switched Ethernet	PROFIBUS DP	RS 485	4DI/2DO	7KM PAC TMP2
	For 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	For 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	For 7KM PAC3200, 7KM PAC4200 and 3VA COM100/COM800	For 7KM PAC4200 (number 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	--

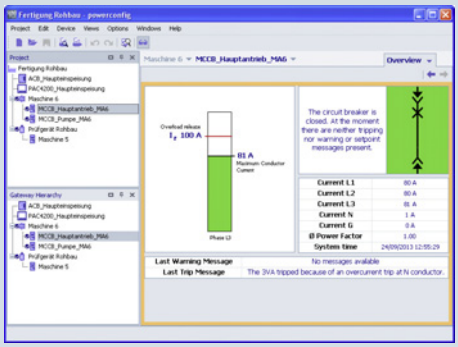
11

The powerconfig software for commissioning

	Software tool for the 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

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:

- Independent power monitoring software
- Can be operated using a Windows PC and measuring devices with Ethernet connection
- Easy getting started with basic license, can be extended with flexible licensing concept according to customer requirements
- Fully scalable, relative to number of devices and software functions
- Ensures optimum integration of 7KT/7KM PAC measuring devices, as well as 3WL/3VA/3VL circuit breakers and 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

PC-based power monitoring system

Application

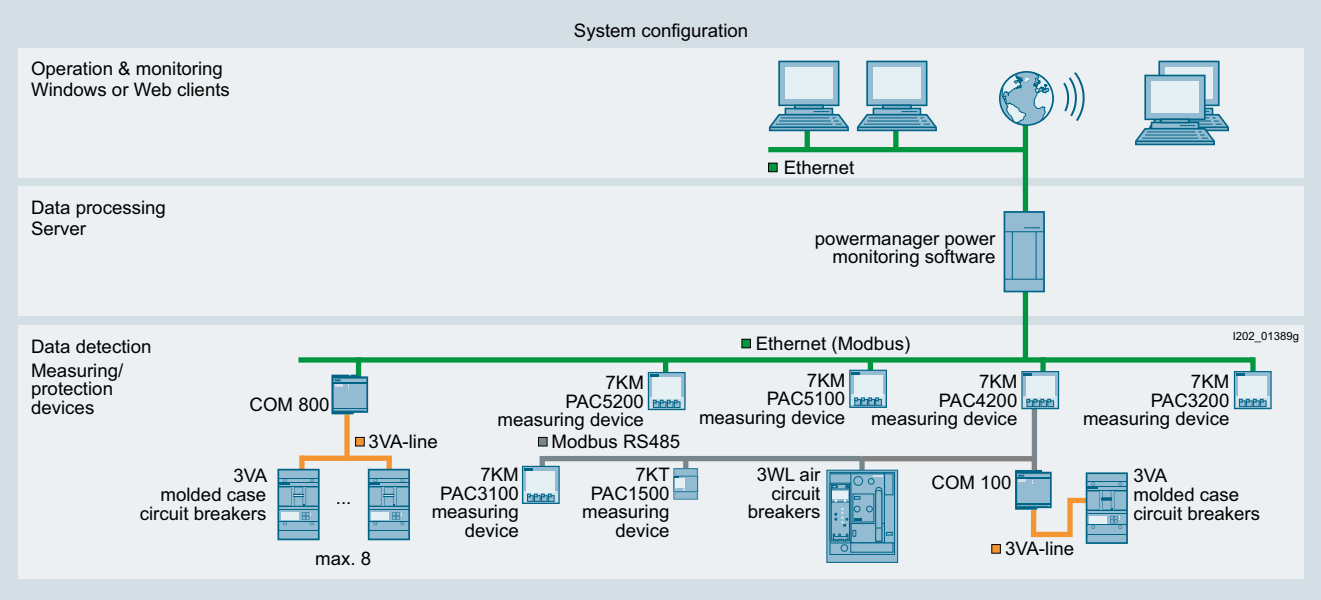
Industries

An energy-efficient production system enhances both the image and the productivity of the 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
- Easy integration of existing modbus-capable measuring devices
- Communication through Standard Ethernet
- Integration of devices with RS 485 interface (ModbusRTU) through Modbus gateway, e.g. the 7KM PAC4200 measuring device can be used as the gateway



Typical topology of a power monitoring system

More information

TÜV certification

The TÜV certificate is available from

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

Components of the PC-based power monitoring system

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

- 7KM PAC measuring devices, see this chapter
- 3WL air circuit breakers, see chapter "Air Circuit Breakers"
- 3VL molded case circuit breakers, see chapter "Molded Case Circuit Breakers"
- 3VA molded case circuit breakers, see chapter "Molded Case Circuit Breakers"

Software of the PC-based power monitoring system

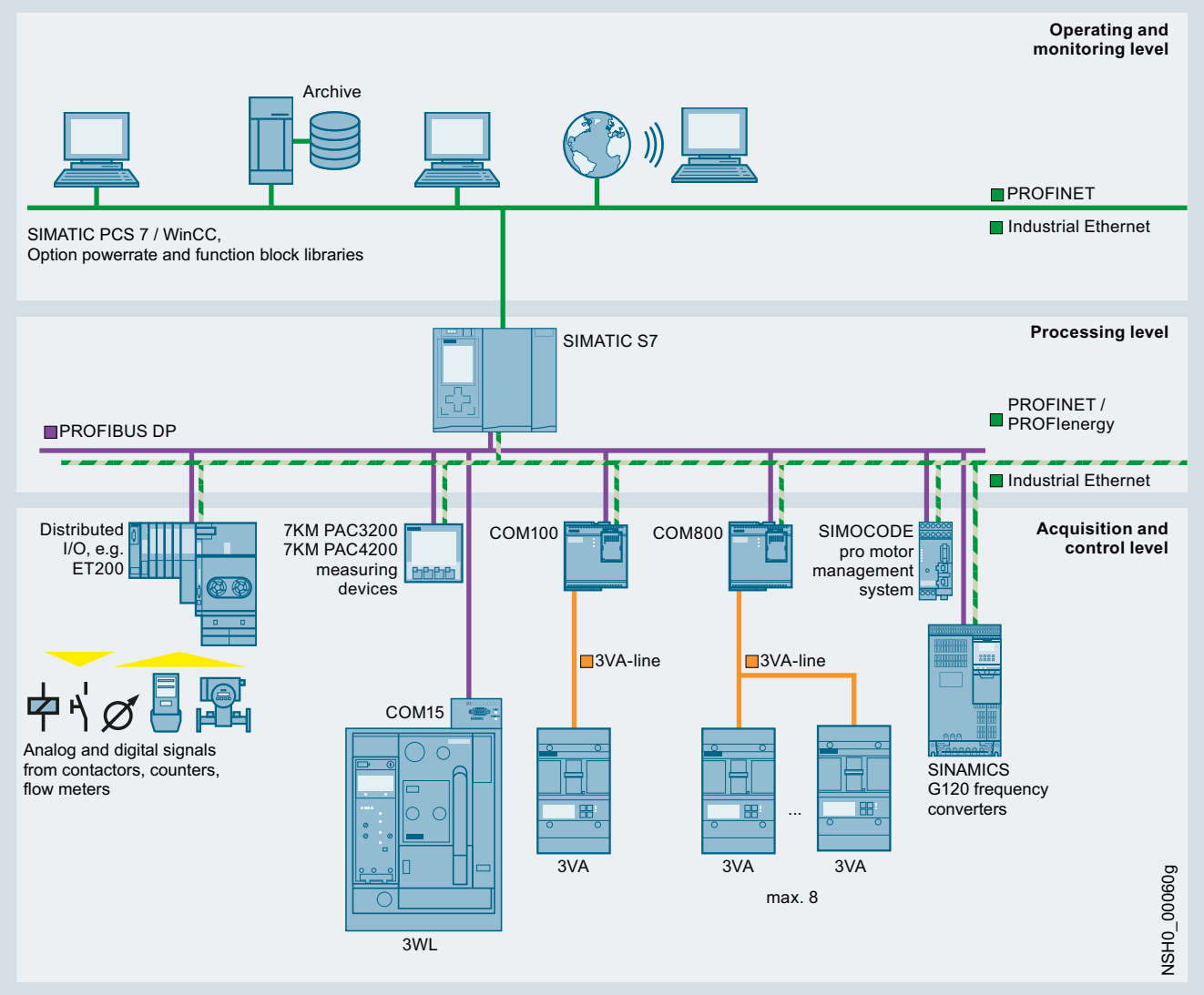
The software of the PC-based power monitoring system is powermanager, see chapter "Software".

Powermanager system packages with software and hardware are an easy and low-cost way to get started in 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 through 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 7KM PAC3200/4200 measuring devices
  - 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

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 this chapter
- 3WL air circuit breakers, see chapter "Air Circuit Breakers"
- 3VL molded case circuit breakers, see chapter "Molded Case Circuit Breakers"
- 3VA molded case circuit breakers, see 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 the software components, see chapter "Software"

Internet

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

Overview

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	11/14	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.	Measurement 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	11/15	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 components 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	11/17	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 components 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** *NEW* 2 versions: • Control panel instrument with graphics display • Standard rail instrument without display	11/19	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** *NEW* 2 versions: • Control panel instrument with graphics display • Standard rail instrument without display	11/20	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. Display of over 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	✓	--	✓

Introduction

Devices		Page	Application	Standards	Used in		
					Non-residential buildings	Residential buildings	Industry
	**7KM PAC expansion modules**	11/23	• 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). • 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 the PROFIBUS DPV1 • 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 it supports the Modbus RTU protocol. • 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 61784-2 IEC 61158 RS 485 IEC 62053-31	✓	--	✓
7KT PAC measuring devices							
	**7KT PAC1500 three-phase measuring device** 7KT154	11/26	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 device** 7KT153	11/28	For the 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	11/29	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**	11/30	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	✓	--	✓

Devices		Page	Application	Standards	Used in		
					Non-residential buildings	Residential buildings	Industry
Other measuring devices							
	**Digital measuring devices** 7KT111, 7KT112	11/32	Voltage and current measurement with large 3-digit LEDs for monitoring incoming/outgoing currents and device currents in order to prevent plant overload.	DIN 43751-1, DIN 43751-2	✓	--	✓
	**Time and pulse counters for standard rail mounting** 7KT58	11/34	For monitoring operating hours and starting operations for the planning of preventative maintenance tasks and preventing sudden shutdowns	IEC 60255-6, EN 60255-6 (VDE 0435-301) UL 94	✓	✓	✓
	**Time counters for front-panel mounting** 7KT55, 7KT56	11/36	For monitoring operating hours and starting operations for planning preventative maintenance tasks and preventing sudden shutdowns.	IEC 60255-6, EN 60255-6 (VDE 0435-301)	✓	✓	✓
Accessories							
	**4NC current transformers**	11/37	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**	11/40	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)	✓	--	✓
	**7KT90 measuring selector switches**	11/41	For switching over the phases for voltmeters and ammeters		✓	--	✓

11

7KM PAC3100 measuring devices

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.

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.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx. kg
 7KM3133-0BA00-3AA0	**7KM PAC3100 measuring device** Control panel instrument, 96 x 96 mm Screw connections for current and voltage connection AC/DC wide-range 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	0.469

More information

For current transformers, see page 11/37 or see chapter "Switch Disconnectors"

For other accessories, see page 11/22

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

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

Benefits

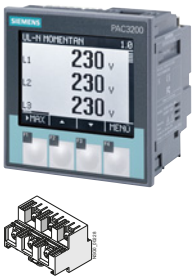
- Simple mounting and commissioning
- High IP65 degree of protection (front side, when installed) permits usage in extremely dusty and wet environments
- Intuitive operation using 4 function buttons and multilingual plain text displays
- Easy adaptation to different systems using integrated and optional
  - 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

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 connected directly to power supply systems up to 690 V AC (UL-L) and CATIII without voltage transformers (with the exception of devices with power supply units with extra-low voltage)
- User-friendly configuration software powerconfig, see chapter "Software"

7KM PAC3200 measuring devices

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
 7KM2112-0BA00-3AA0	**7KM PAC3200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for current and voltage connection AC/DC wide-range 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	0.451
 7KM2111-1BA00-3AA0	**7KM PAC3200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for current and voltage connection 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 connections for current and voltage connection AC/DC wide-range 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 11/37 or see chapter "Switch Disconnectors"

For other accessories, see page 11/22

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

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

Benefits

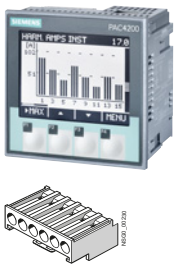
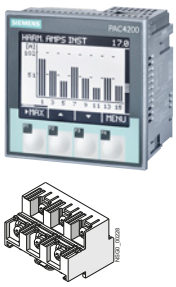
- Simple mounting and commissioning
- High IP65 degree of protection (front side, when installed) permits usage in extremely dusty and wet environments
- Intuitive operation using 4 function buttons and multilingual plain text displays
- Easy adaptation to different systems using integrated and optional
  - 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

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 connected directly to power supply systems up to 690 V AC (UL-L) and CATIII without voltage transformers (with the exception of devices with power supply units with extra-low voltage)
- User-friendly configuration software powerconfig, see chapter "Software"
- Monitoring of plant status and 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 the 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 0.2S high-precision meters used by power supply companies according to IEC 62053-22, which are normally reserved for exacting industrial applications

7KM PAC4200 measuring devices

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
 7KM4212-0BA00-3AA0	**7KM PAC4200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for current and voltage connection AC/DC wide-range 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	0.543
 7KM4211-1BA00-3AA0	**7KM PAC4200 measuring device** Control panel instrument, 96 x 96 mm Screw connections for current and voltage connection 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 connections for current and voltage connection AC/DC wide-range 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 11/37 or see chapter "Switch Disconnectors"

For other accessories, see page 11/22

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 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 of plant status and 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.	Price per PU	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 current and voltage connection AC/DC wide-range 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-range 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 11/37
or see chapter "Switch Disconnectors"

* You can order this quantity or a multiple thereof.

7KM PAC5200 measuring devices NEW

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.	Price per PU	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 current and voltage connection AC/DC wide-range 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-range 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 11/37
or see chapter "Switch Disconnectors"

* You can order this quantity or a multiple thereof.

Selection and ordering data

For 7KM PAC3100/3200/4200

	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
 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 • RS 485 terminal block for 7KM PAC3100		7KM9900-0SA00-0AA0		1	1 unit	1DD	0.118

More information

Current transformers

For current transformers, see page 11/37

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 breaker servers of the 3VA molded case circuit breaker:

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

For further details, see 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 quantities 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.	--	✓	✓	--	--	✓

7KM PAC expansion modules

Version		Use in					
		7KM PAC					3VA
		PAC3100	PAC3200	PAC4200	PAC5100	PAC5200	COM800/ COM1100
	**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** 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** 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.	Price per PU	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

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* You can order this quantity or a multiple thereof.

7KT PAC1500 three-phase measuring devices

Overview

7KT PAC1500 three-phase measuring devices 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	Number 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 inputs					
• Connection type			Transformer TA-TC .../5 A	Direct	Direct
• Terminal capacitance, operational and main current paths	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
• Operating range current (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		

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 three-phase measuring device**										
	Digital measuring device										
	• For transformer connection, double tariff	230	Transformer /5	4		**7KT1540**		1	1 unit	1DD	0.257
	• For transformer connection, double tariff, MID	230	Transformer /5	4		**7KT1542**		1	1 unit	1DD	0.254
	• 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

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

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 measuring device, single-phase 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 For reactive energy		T1 T1	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 inputs				
• Connection type	Phase/N		Direct	
• Terminal capacitance, operational and main current paths	Rigid, min. (max.)	mm^2	1.5 (35)	1.5 (35)
	Flexible min. (max.)	mm^2	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	
• Operating range current (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 absorbed 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	DT	Article No. www.siemens.com/product?Article No.	Price per PU	PU (UNIT, SET, M)	PS*/ P. unit	PG	Weight per PU approx.
		MW							kg
 7KT1908	**7KT PAC M-Bus expansion module** For connecting 7KT PAC1500 measuring devices to M-Bus	1		**7KT1908**		1	1 unit	1DD	0.055
 7KT1907	**7KT PAC Modbus RTU expansion module** For connecting 7KT PAC1500 measuring devices to Modbus RTU	1		**7KT1907**		1	1 unit	1DD	0.084
 7KT1903	**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
 7KT1900	**7KT PAC KNX expansion modules** For connecting 7KT PAC1500 measuring devices to Instabus KNX	1		**7KT1900**		1	1 unit	1DD	0.063

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

7KT LAN couplers

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.

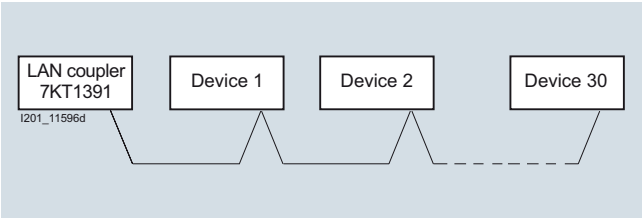
Application

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			
• Enclosure	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 ranges		Hz	45 ... 65
Function			
• System start			Automatic upon switching on
• LAN server identification			Over 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	≤ 1200
	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 over RS 485									
		230	4		**7KT1391**		1	1 unit	1DD	0.215

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* You can order this quantity or a multiple thereof.

Digital voltmeters and ammeters

Overview

Digital measuring devices: Left: 7KT1 voltmeter, right: 7KT1 ammeter

These devices for measuring voltages and currents can be used for monitoring incoming and outgoing currents or device currents in electric plants.

They are suitable for direct connection in a single-phase system or with measuring transducers in three-phase systems.

The measuring ranges of the ammeter are set locally at the device using a coding switch.

Benefits

- The ammeters have 14 measuring ranges from 0 A to 20 A and 0 A to 999 A, which can be set using a coding switch. This ensures universal application.

Technical specifications

			7KT1110	7KT1120
Standards			DIN 43751-1, -2	
Rated voltage U_e		V AC	230	
Primary operating range	x U_e		0.9 ... 1.15	
Rated frequency		Hz	50/60	
Rated operational power P_S		VA	<2	
7+1-segment display			3 digits	
Measuring range				
• Voltage	Direct measurement	V AC	12 ... 600 (U_n)	--
• Current	Direct measurement	A AC	--	0.4 ... 20 (I_n)
	Transformer measurement	A AC	--	25/5, 40/5, 50/5, ...1000/5
Lower display value	From the full-scale value	%	2	
Measuring resistance				
• Current	Direct measurement 20 A	mΩ	--	5
	Transformer measurement	mΩ	--	10
• Voltage	Direct measurement 600 V	MΩ	1	--
Measuring frequency		Hz	45 65	
Measuring cycle		/s	4	
Measuring accuracy	At 23 °C ±1 °C	%	± 0.5 ± 1 digit	
Temperature influence		%/°C	±0.03	
Overload capability				
• Voltage	Continuous	V	1.2 x U_n	--
	Short-time for 1 s	V	1.3 x U_n	--
• Current	Continuous, direct	A	--	1.1 x I_n
	Short-time for 1 s, direct	A	--	10 x I_n
Terminals	±screw (Pozidriv)		1	
Conductor cross-sections	Rigid, max.	mm^2	1 × 6/2 × 4	
	Flexible, with end sleeve, min.	mm^2	0.75	
Degree of protection			IP20, with connected conductors	
Permissible ambient temperature			IP20, with connected conductors	
• Operation		°C	-10 ... +55	
• Storage		°C	-40 ... + 70	

Selection and ordering data

	Version	U_e	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
	**Digital voltmeters**									
	Measuring range 12 ... 600 V AC	230	2		**7KT1110**		1	1 unit	1BK	0.214
	**Digital ammeters for direct and transformer connection**									
	Measuring range Direct: 0.4 ... 20 A Transformer: 0.1 ... 1000 A/5	230	2		**7KT1120**		1	1 unit	1BK	0.224

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* You can order this quantity or a multiple thereof.

Time and pulse counters for standard rail mounting

Overview

Time counters: Left: Electromechanical, right: Electronic

Time and pulse counters are used for the reliable monitoring of production and service times, which enables the exact planning and monitoring of production sequences, maintenance cycles and warranty times.
As well as the proven electromechanical time and pulse counters for mounting in distribution boards, we also supply digital time and pulse counters.
The fields of application for both counter types are very diverse, such as the recording of operating hours of machines, systems or building management systems, as well as pulse counting for general volume flow counting, registration of starting frequencies, starting cycles or production quantities in systems and machines.

Benefits

- Time and pulse counters help to plan maintenance intervals, which safeguard and ensure high plant availability
- Versions without zero position and with electric or manual zero position for all applications
- Flexible application of the digital counters for power supplies of 12 V to 150 V DC and 24 V to 240 V AC in a single device

Technical specifications

			7KT5801	7KT5802	7KT5803	7KT5804	7KT5806	7KT5807
Standards **Approvals**			DIN VDE 0435-110; EN 60255-6; UL 863 UL 863, UL File No. E300537, CSA C22.2 No. 6 and 55					
Rated control supply voltage U_c		V AC V DC	-- 12 ... 24	24 --	115	230	115	230
Primary operating range	At 50/60 Hz	× U_c	0.9 ... 1.1					
Rated frequency		Hz	--	50			60	
Rated power dissipation P_v		VA	< 1		< 2			
Method of operation	Counting of		Hours					
Display	Drum-type register	h	00000.00					
Terminals	±screw (Phillips)		1					
Conductor cross-sections	Rigid Flexible, with end sleeve, min.	mm^2 mm^2	1.5 0.75					
Permissible ambient temperature		°C	-10 ... +70					
Degree of protection	Acc. to EN 60529		IP20, with connected conductors					
Safety class	Acc. to EN 61140/VDE 0140-1		II					
Permissible humidity		%	< 80					

			7KT5811	7KT5812	7KT5814	7KT5821	7KT5822	7KT5823	7KT5833
Standards **Approvals**			DIN VDE 0435-110; EN 60255-6; UL 863 UL 863, UL File No. E300537, CSA C22.2 No. 6 and 55						
Rated control supply voltage U_c		V AC V DC	-- 12 ... 24	24 --	230 --	24 ... 240 12 ... 150			
Primary operating range	At 50/60 Hz	× U_c	0.9 ... 1.1						
Rated frequency		Hz	--	50/60					
Rated power dissipation P_v		VA	< 1		< 2	< 1			
Method of operation	Counting of		Pulses			Hours			Pulses
Display	Drum-type register		0000000			--			--
	LCD	h	--			000000.0			--
			--			--			0000000
Counting frequency		Hz	10			--			10
Pulse duration		ms	50			--			50
Resetting	Electrical		--				Yes		
	Mechanical		--					Yes	
Terminals	±screw (Phillips)		1						
Conductor cross-sections	Rigid Flexible, with end sleeve, min.	mm^2 mm^2	1.5 0.75						
Permissible ambient temperature		°C	-10 ... +70						
Degree of protection	Acc. to EN 60529		IP20, with connected conductors						
Safety class	Acc. to EN 61140/VDE 0140-1		II						
Permissible humidity		%	< 80						

Selection and ordering data

		U_c	Frequency	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	Hz	MW							kg
	**Time counters**										
	Mechanical counting mechanism, display 00000.00 h without resetting										
		12 ... 24 DC	--	2		7KT5801		1	1/60 units	1BK	0.094
		24 AC	50			7KT5802		1	1 unit	1BK	0.093
		115 AC				7KT5803		1	1 unit	1BK	0.092
		230 AC				7KT5804		1	1 unit	1BK	0.093
		115 AC	60			7KT5806		1	1 unit	1BK	0.091
		230 AC				7KT5807		1	1 unit	1BK	0.093
	Pulse counters										
	Mechanical counting mechanism, display 0000000 ⎍ without resetting										
		12 ... 24 DC	--	2		7KT5811		1	1 unit	1BK	0.092
		24 AC	50/60			7KT5812		1	1 unit	1BK	0.094
		230 AC				7KT5814		1	1 unit	1BK	0.094
	**Electronic time counters**										
	LCD 000000.0h without resetting										
		12 ... 150 DC, 24 ... 240 AC	-- 50/60	2		7KT5821		1	1 unit	1BK	0.090
	With electrical resetting										
		12 ... 150 DC, 24 ... 240 AC	-- 50/60			7KT5822		1	1 unit	1BK	0.087
	With electrical and mechanical resetting										
		12 ... 150 DC, 24 ... 240 AC	-- 50/60			7KT5823		1	1 unit	1BK	0.087
	Electronic pulse counters										
	LCD 0000000 ⎍										
	With electrical and mechanical resetting										
		12 ... 150 DC, 24 ... 240 AC	-- 50/60	2		7KT5833		1	1 unit	1BK	0.087

More information

Time counters count the time in hours with an accuracy of two decimal places (hundredths of hours). The pulse counter adds the number of pulses, e.g. the making operations of devices.

A power supply is required at terminals 1 and 2 of the electronic counters so that the device can constantly display the measured values. Once terminal 3 is supplied with voltage (for DC "+"), the counting procedure starts. If terminal 4 is supplied short-time with voltage (for DC "+"), the counter is reset.

In the case of electronic counters, the counting result is saved indefinitely in the event of a power failure (EEPROM). On recovery of the power, the counting is continued from the saved value. As well as a modern design, the electronic counter has a 7-digit LCD, which can be reset electrically or manually.

* You can order this quantity or a multiple thereof.

Time counters for front-panel mounting

Overview

Time counters: Left: Counting mechanism, right: Counting mechanism with front frame

Time and pulse counters for control cabinets, control systems and mechanical engineering are used, e.g. in boilers, machine tools or compressors. The pulse counters count the starting frequencies. This supports planning for preventative maintenance.

In-time and regular maintenance is the best protection against unexpected shutdowns.

Benefits

- Time and pulse counters help to plan maintenance intervals, which safeguard and ensure high plant availability

Technical specifications

			7KT5500	7KT5501	7KT5502	7KT5503	7KT5504	7KT5505
Standards			DIN VDE 0435-110; EN 60255-6					
Rated control supply voltage U_c		V AC V DC	-- 10 ... 80	115 --	230	115	230	24
Rated frequency		Hz	--	50		60		50
Front-panel mounting • Without masking frame 55 × 55 mm • With masking frame 55 × 55 mm	Switchboard cutout	mm × mm Ø mm	$45.2 \times 45.2^{+0.3}$ $50.2^{+0.3}$					

			7KT5600	7KT5601	7KT5602	7KT5603	7KT5604
Standards			DIN VDE 0435-110; EN 60255-6				
Rated control supply voltage U_c		V AC V DC	-- 10 ... 50	115 --	230	115	230
Rated frequency		Hz	--	50		60	
Front-panel mounting	Switchboard cutout	mm × mm	$68^{+0.5} \times 68^{+0.5}$				

Selection and ordering data

	U_c	Frequency	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	Hz	MW							kg
	**Time counters**									
	Mechanical counting mechanism, display 00000.00 h, for front-panel mounting, front frame 48 x 48 mm									
	10 ... 80 DC	–			7KT5500		1	1 unit	1BK	0.058
	24 AC	50			7KT5505		1	1 unit	1BK	0.057
	115 AC				7KT5501		1	1 unit	1BK	0.055
	230 AC				7KT5502		1	1/60 units	1BK	0.059
	115 AC	60			7KT5503		1	1 unit	1BK	0.057
	230 AC				7KT5504		1	1 unit	1BK	0.058
	For front-panel mounting, front frame 72 x 72 mm With narrow frame according to DIN 43700									
	10 ... 50 DC	–	2		7KT5600		1	1 unit	1BK	0.134
	115 AC	50			7KT5601		1	1 unit	1BK	0.138
	230 AC				7KT5602		1	1 unit	1BK	0.131
	115 AC	60			7KT5603		1	1 unit	1BK	0.134
	230 AC				7KT5604		1	1 unit	1BK	0.134
	Covers for 7KT55 time counters									
	55 × 55 mm				7KT9020		1	1 unit	1BK	0.004
	Sealing rings for 7KT9020 covers									
	IP43 installation in switchboards with smooth surfaces (1 set = 5 units)				7KT9000		1	1 set	1BK	0.004
	Terminal covers for 7KT56 time counters									
	Degree of protection, IP20, with connected conductors				7KT9021		1	1 unit	1BK	0.007

* You can order this quantity or a multiple thereof.

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.

4NC current transformers

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
Rating	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 1 500 A								
Rated secondary current 1A								
Class 3								
• For circular conductors with max. diameter 17.5 mm								
• For busbars up to max. 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
Class 1								
• For circular conductors with max. diameter 17.5 mm								
• For 1 busbar up to max. 12 × 10 mm								
100	2.5		**4NC5117-0CC20**		1	1 unit	1CL	0.334
150	2.5		**4NC5121-0CC20**		1	1 unit	1CL	0.326
200	5		**4NC5122-0CE20**		1	1 unit	1CL	0.356
250	5		**4NC5123-0CE20**		1	1 unit	1CL	0.341
• For circular conductors with max. diameter 28 mm								
• For 1 busbar up to max. 30 × 10 mm								
• For 2 busbars up to max. 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
• For circular conductors with max. diameter 36 mm								
• For 1 busbar up to max. 50 × 10 mm								
• For 2 busbars up to max. 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
• For circular conductors with max. diameter 45 mm								
• For 1 busbar up to max. 60 × 10 mm								
• For 2 busbars up to max. 60 × 10 mm								
• For 3 busbars up to max. 60 × 5 mm								
1000	10		**4NC5431-0CH20**		1	1 unit	1CL	0.647
1250	10		**4NC5433-0CH20**		1	1 unit	1CL	0.681
1500	10		**4NC5434-0CH20**		1	1 unit	1CL	0.702

4NC5112-0BC20

4NC5117-0CC20

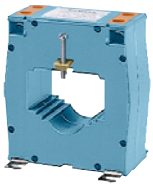
4NC5222-0CE20

4NC5325-0CE20

4NC5431-0CH20

* You can order this quantity or a multiple thereof.

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 max. 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 max. 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 max. 30 × 10 mm								
	• For 2 busbars up to max. 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 max. 50 × 10 mm								
	• For 2 busbars up to max. 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 max. 60 × 10 mm								
	• For 2 busbars up to max. 60 × 10 mm								
	• For 3 busbars up to max. 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

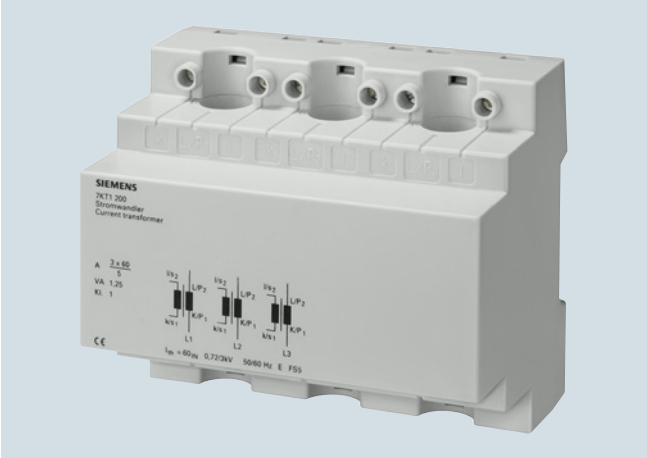
More information

For other current transformers for measuring purposes,
see chapter "Switch Disconnectors"

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

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 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 × I_e		
Thermal continuous current		A	1 × 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	0.543
			3 × 150				**7KT1202**		1	1 unit	1BK	0.558

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* You can order this quantity or a multiple thereof.

Overview

Measuring selector switch (voltmeter selector switch)

Measuring selector switches are used as CO contacts of the phases for voltages and currents in three-phase systems for voltmeters and ammeters.

The design of these switches is adapted to match the modular installation devices. They support use in compliance with EN 60947-3.

Benefits

The devices have a rated insulation voltage of 660 V. This permits use in many systems.

Selection and ordering data

	U_e	I_e	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	A AC	V AC	MW							kg
	**Voltmeter selector switches**										
	400	12	6	3		**7KT9010**		1	1/48 units	1BK	0.137
	**Ammeter selector switches for operation with current transformer**										
	400	12	6	3		**7KT9011**		1	1 unit	1BK	0.137

* You can order this quantity or a multiple thereof.

Notes