SIEMENS

Low-Voltage Power Distribution and Electrical Installation Technology

Software
SENTRON powermanager

Getting Started

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Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
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indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ CAUTION
with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

CAUTION
without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

NOTICE
indicates that an unintended result or situation can occur if the relevant information is not taken into account.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Introduction

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1.1 Purpose of this document

This Getting Started introduces you to the use of the SENTRON powermanager software. Step-by-step instructions explain the installation and basic functions:

● Installation of the SENTRON powermanager from the Product CD on a server PC

● Basic functions of the SENTRON powermanager

– Configuration

– Reporting

– Display of trends

After working through the Getting Started, you will have a viable application based on the supplied standard project "powermanager".

Required basic knowledge

You require the following to understand the Getting Started:

● General knowledge of the areas of automation and electrical engineering

● Knowledge of the use of personal computers with the Windows operating system

Area of validity

The Getting Started applies to SENTRON powermanager V3.0.

Conventions

The Getting Started uses the following abbreviations:

● ALM for Siemens Automation License Manager

● SPM for Siemens SENTRON powermanager V3.0

● Server for the server PC on which the SPM is operated

1.2 Technical Support

For further assistance, refer to

Technical Support on the Internet:

Internet address of Technical Support (http://www.siemens.com/lowvoltage/technical-support)

1.3 Further documentation

You can find further details in the following documents:

- Manual for Siemens Automation License Manager

- Online help of the Siemens Automation License Manager

- Online help of the SENTRON powermanager V3.0

- Configuration manual, system manual and device manuals for the SENTRON PAC1500, PAC3100, PAC3200 and PAC4200 Power Monitoring Devices

- Product Support, SENTRON powermanager in the Internet (http://siemens.com/powermanager/faq)

System overview   2

Application

The SENTRON powermanager is used to acquire, monitor, evaluate, represent and archive energy data of the SENTRON PAC1500 E-counters, the SENTRON PAC3100, PAC3200, PAC4200 Power Monitoring Devices, the SENTRON 3WL and 3VL circuit breakers, as well as any Modbus TCP enabled measuring devices.

SENTRON powermanager offers the following functions for this:

- Tree view of the customer's system (project tree)
- Measured value display with pre-defined user views
- Alarm management
- Demand curve
- Reporting, different report types e.g. cost center report
- Load monitoring
- Reaction plans
- Power peak analysis (available as of SENTRON powermanager V3.0 SP1)
- Support of distributed estates (systems)
- Archiving system
- User administration

Pre-defined standard

The SPM is delivered with standard projects. This pre-definition allows immediate use of the SPM without system configuration.

Device integration

The SPM supports the following devices:

- SENTRON PAC1500 E-counters. The device has an integrated optical interface (IrDA). Using a Modbus RTU communication module, it can be connected to the SPM by means of the gateway functionality of the PAC4200 or via any Modbus gateway.
- SENTRON PAC3100 Power Monitoring Device firmware version 1.0 or higher. The device can be connected to the SPM via the gateway functionality of the PAC4200 or any Modbus gateway.
- SENTRON PAC3200 Power Monitoring Device firmware version 2.0.x or higher. The device can be connected direct to the SPM via the integral Ethernet interface using Modbus TCP.

- SENTRON PAC4200 Power Monitoring Device firmware version 1.2 or higher. It can be connected direct to the SPM via the integral Ethernet interface using Modbus TCP.

- SENTRON 3VL molded-case circuit breakers. The device can be connected to the SPM via the gateway functionality of the PAC4200 or any gateway.

- SENTRON 3WL air circuit breaker. The device can be connected to the SPM via the gateway functionality of the PAC4200 or any gateway.

Other devices

Any Modbus-enabled measuring devices can be connected direct to the SPM via Ethernet (Modbus TCP) or gateway (e.g. SENTRON PAC4200) using the RS485 interface.

2.1 Multi-language capability

SENTRON powermanager V3.0 or higher comes with support for four languages:

- German

- English

- Spanish

- Portuguese

Windows and dialogs, and also the designations of the measured variables included in the standard version, are translated to the local language.

You can name all creatable objects in the local language.

Installation

<div style="text-align: right; font-size: 3em;">3</div>

3.1 Overview

Installation of the SPM requires preparatory work for licensing.

Proceed as follows:

1. Install the Siemens Automation License Manager 5.1 (ALM) on the server if not already available.

2. Install the SENTRON powermanager V3.0 on the server.

3. Transfer the License Keys for operating the SENTRON powermanager V3.0 to the server. Use the ALM for this purpose.

The instructions for the tasks listed are shown in the following chapters.

Note

30-day Trial License.

The SPM product CD contains a 30-day trial license. The trial license permits configuration of a maximum of 10 devices. The ALM is required to operate the SPM with the Trial License.

3.2 Installing the Automation License Manager

The ALM manages the License Keys you have received for operating the SPM.

The SPM can be operated in accordance with the conditions of use of the license if the ALM finds the valid license keys on the computer used.

Installation preparations

Check that the ALM is already installed on the computer.

To find out whether ALM has already been installed select
Start > Siemens Automation > Automation License Manager

If this is the case, continue with the Chapter "Transferring the license keys (Page 15)".

The ALM is included on the Product CD of the SPM.

Installation steps

Proceed as follows to install the ALM:

1. Close all applications before starting the installation.

2. Insert the Product CD into the drive of the server.

3. Cancel the automatically started installation of the SPM.

Note

Cancel installation of the SPM.

The Product CD automatically starts installation of the SPM. The Autostart function assumes the ALM is already available.

---

4. Go to the "\ALM" folder

5. Double-click on the file "Setup.exe".

   Installation of the ALM starts.

6. Follow the installation instructions. Enter the requested information in the dialog boxes:

   – Language of the user interface

   – Agreement with the license conditions

   – Scope of the installation

     Select the "Typical" setup type!

   – Installation path

     Accept the suggested path!

7. Restart the computer if so requested by the Setup program.

Result: Following successful installation, the Windows program list contains the entry "Start > Siemens Automation > Automation License Manager".

No further installation tasks are required to operate the ALM.

3.3 Installing the SENTRON powermanager

The Getting Started describes installation of the SPM from the Product CD.

Requirements for operating

Minimum requirements of the hardware and software

The computer and the operating system must meet minimum requirements for operation of the SPM.

Information on this can be found in the "readme.pdf" document in the SENTRON powermanager installation directory "..\powermanagerV3.0\help".

Microsoft Excel for reporting

Microsoft Excel is required for reporting.

Information on the required Excel versions can be found in the "readme.pdf" document in the SENTRON powermanager installation directory "..\powermanagerV3.0\help".

Windows Group Membership

Users of the SPM must be members of the Windows users group "Power Users".

Installation requirements

Administration rights

Installation of the SPM requires administrator rights.

Installation paths without spaces

Note

Paths must not contain spaces!

You can copy the contents of the Product CD to a folder on the server or the connected network to start the installation from there. In this case, ensure there are no spaces in the entire folder path.

The path name of the target folder where you install the SPM must also contain no spaces.

Installation steps

Proceed as follows to install the SPM from the Product CD:

1. Close all applications before starting installation of the SPM.

2. Insert the Product CD into the drive of the server.

   The SPM setup starts automatically.

   If the setup program does not start automatically, proceed as follows:

   – Open the root folder of the Product CD

   – Double-click on the file "Setup.exe"

3. Follow the installation instructions. Enter the requested information in the dialog boxes:

   – Declaration of agreement with the license conditions

   – User Name

   – Installation path

     Accept the suggested path:

     C:\Programs\Siemens\SENTRON

     If you want to change the path, please note that spaces are not permissible in the path name.

   – Scope of the installation

     Select the setup type "Complete"!

Result: Following successful installation, the Windows program list contains the entry: "SENTRON > SENTRON powermanager V3.0".

No further installation tasks are required to operate the SPM.

3.4 Transferring the license keys

You can find the license keys for operating the SPM on the supplied USB stick. You have received additional USB sticks with the appropriate license keys for options or expansion packages.

Transfer the license keys from the USB stick to the server.

Requirements

The ALM is installed on the server on which the SPM is to be operated.

Transferring the licenses by dragging & dropping

You can easily drag & drop the license keys to the server:

1. Insert the USB stick into the server.

2. Start the ALM:

   Windows program list > Siemens Automation > Automation License Manager

3. In the ALM, select the menu item "View > Management".

4. Select the license keys on the USB stick. Drag the license keys from the USB stick to the server while holding down the left mouse key.

Result: The server has the license keys for operating the SPM.

Starting and stopping the project

<div style="text-align: right; font-size: 3em;">4</div>

4.1 Overview

Preconfigured projects

The SPM standard contains three pre-configured projects:

- powermanager
- powermanager_demo
- powermanager_template

"powermanager" project

The "powermanager" project is the standard project of the SPM. The Getting Started shows how you can use this project in active operation.

"powermanager_demo" project

The "powermanager_demo" project is a demonstration project. It illustrates the graphical display options and interactive call-up of information.

You cannot create your own devices in this project.

"powermanager_template" project

The "powermanager_template" project is a project template. You can use this to create new projects.

Note

Ensure that the "powermanager_template" project remains unchanged.

Otherwise, it will no longer meet the purpose of a project template.

Adapting the archive size

In the default project "powermanager", the size of the archive is dimensioned for 100 devices. If you would like to archive more devices or significantly more measured values per device, you must adjust the archive size.

Instructions on how to do this are available in the section entitled "Adapting the archive size (Page 162)".

4.2 Starting the "powermanager" project

Proceed as follows to start the "powermanager" project:

1. Open the SPM console:

   Windows program list > SENTRON > SENTRON powermanager V3.0" > Console

   The SPM opens the "Console" window and also the "Log Viewer" window.

   Close the Log Viewer. It is not required within the scope of the Getting Started.
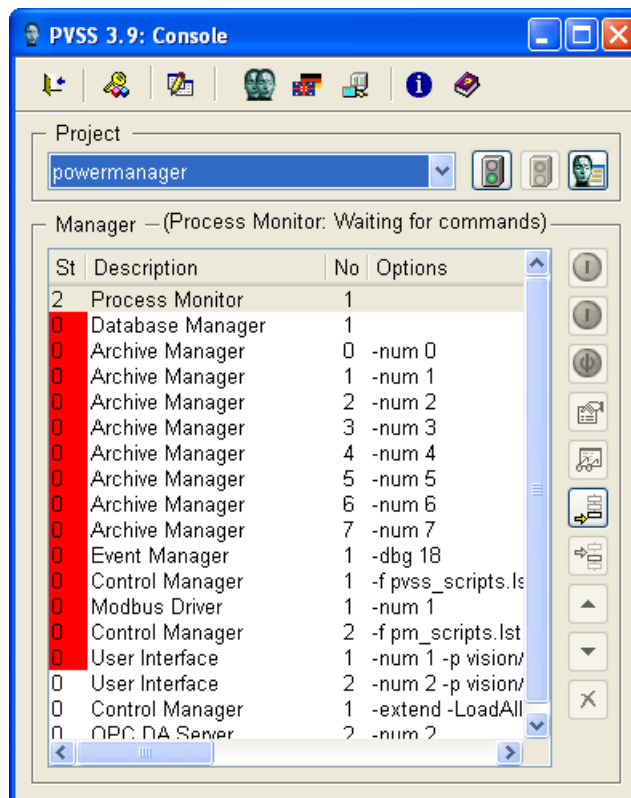
Figure 4-1   SPM console, all processes stopped

The console lists the involved processes in the "Manager" area. The left column "St" indicates the process status:

0, red: Process is stopped
1, yellow: Process is started
2, green: Process has been started and is running

2. Using the drop-down arrow in the "Project" area of the "Console" dialog, select the project you wish to start.

3. Start the project. To do so, click on the "Start project" traffic light icon.

4. Wait until all processes have been started. The last started process "User Interface" opens the dialog box for user login.
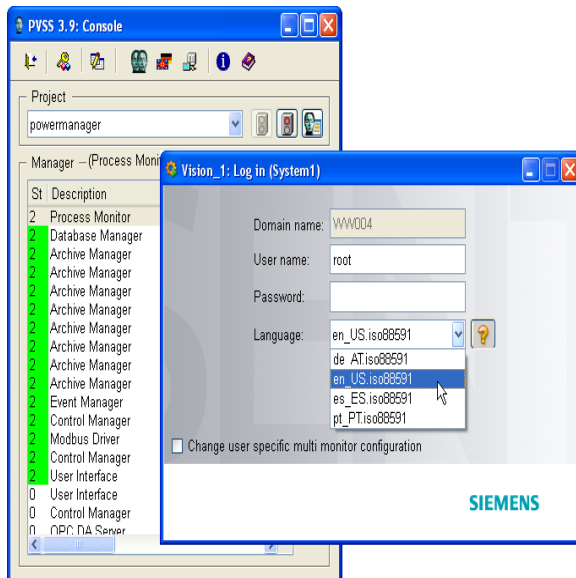
Figure 4-2   SPM console, all processes started, "Log in" dialog opened

5. Log in as the "root" standard user.

Enter the user name of the standard user in the "Login" dialog window: "root"

Do not enter a password.

Select one of the languages offered in the "Language" box.

Click on the "Login" icon.

Result: The SPM opens the "Base panel" window.

NOTICE

When the SPM is delivered, the standard user "root" has no password. Assign a password to the standard user "root".

Otherwise, access to the SPM is unprotected.

You can find information on password assignment in the section entitled "Creating users (Page 164)".

4.3 Stopping the "powermanager" project

Note

Organizational preparations must be made for the purpose of stopping a running project.

A project stop interrupts ongoing data acquisition.

Proceed as follows to stop a project.

1. Ensure the project stop is permissible.

2. Open the SPM console.

3. To do so, click on the "Stop project" traffic light icon.

   The SPM demands confirmation of the stop: "Warning. Are you sure to stop all managers?"

   Confirm with "Yes" if you are sure.

Result: The SPM stops the project. The status color of the processes changes from green to red. The "Process monitor" process remains active or at "green" status.

4.4 Closing the SPM console

The processes visible in the SPM console are background processes. Opening or closing the console window has no effect on the "started" or "stopped" process state. Data acquisition continues to run when the console is closed.

Proceed as follows to close the SPM console:

1. Click on the "Close console" icon in the SPM console.

Configuration

<div style="text-align: right; font-size: 3em;">5</div>

5.1 Overview

How to configure a device

Follow the steps below if you are configuring a device in SENTRON powermanager for the first time:

1. Map the structure of the plant to the project tree. To do this, split the project tree into areas and sectors.

   For information, please refer to "Project tree (Page 25)".

2. Create the device in the project tree.

   For information, please refer to "General configuration functions (Page 27)".

3. Configure the device.

   Information on this can be found in the sections entitled "Configuring a device (Page 37)" and "Devices (Page 39)" in the device-related subsections.

4. Start communication between the SENTRON powermanager and the device.

   For information, please refer to "Starting and stopping communication (Page 37)".

5. Display the measured values.

   For more information, refer to the section entitled "Devices (Page 39)", in the device-related sections.

5.2   Base panel

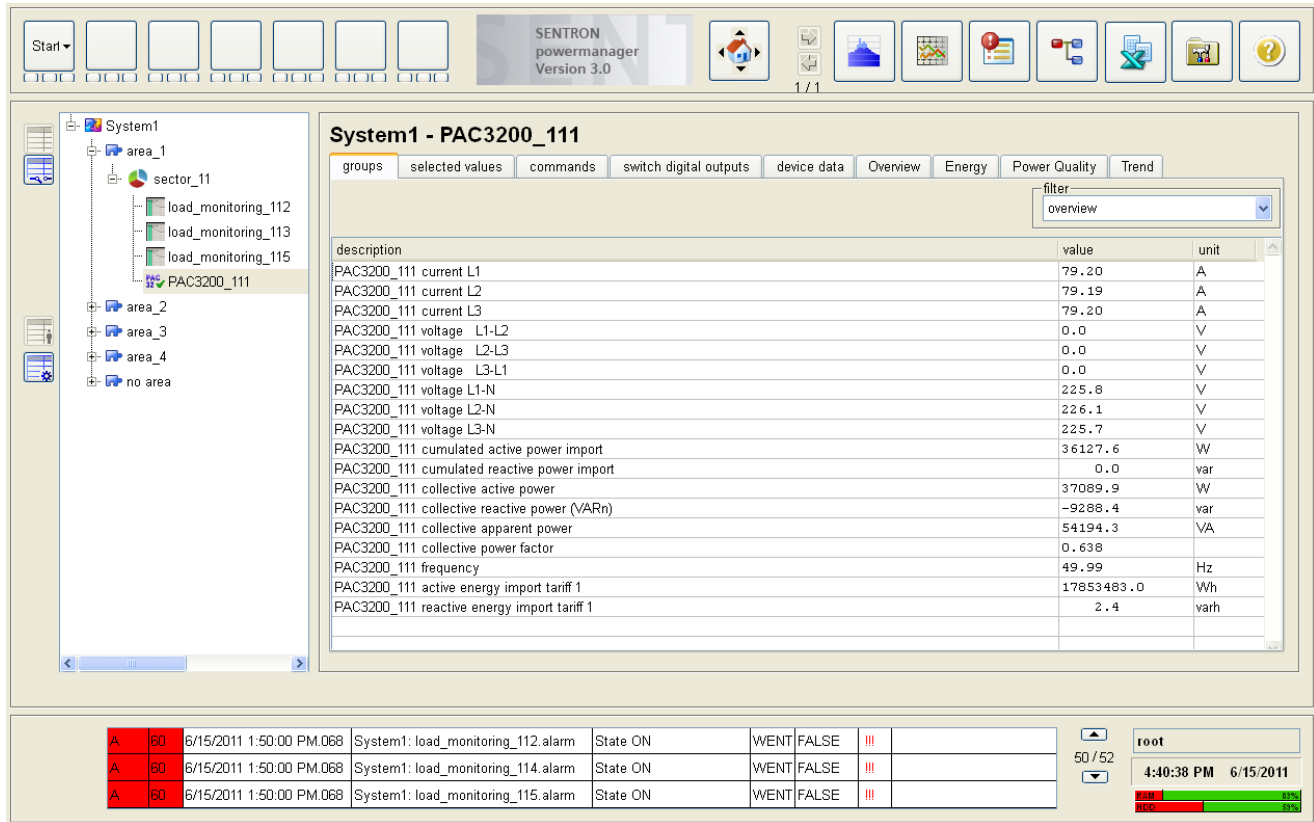The base panel is the operator interface of the currently running project.

Figure 5-1   Base panel

Buttons in the header area

The buttons in the header area of the base panel call up connected applications.

- The "Power peaks" button starts the power peak analysis.

  For additional information on the power peak analysis, please refer to "Power peak analysis (Page 89)".

- The "Variable trend" button starts the trend display.

  You can find further information on displaying trends in the section entitled "Displaying trends (Page 151)".

- The "Reporting" button starts the SPM report generator.

  You can find further information on the SPM report generator in the section entitled "Reporting (Page 99)".

Buttons on the left-hand edge of the window

- The pair of buttons "Standard View" and "View reaction plans" toggles between the two views.

  For additional information on reaction plans, please refer to "Reaction plans (Page 73)".

- The pair of buttons "Project-specific designation" and "Internal designation" switches between the internal and language designations of the objects belonging to the project tree.

  You can find further information on this subject in the section entitled "Internal and project-specific object names (Page 35)".

Project tree

The project tree on the left side of the base panel represents the system. Areas, sectors and devices are represented as a tree.

You can find further information on this subject in the section entitled "Project tree (Page 25)".

Display and configuration area, tabs

The center area displays measured data and device data and allows you to send control commands. From the runtime view, you can switch to the "Device Engineering" configuration view.

- Runtime
  - Display of measured data
  - Display of device data
  - Manual device control
- Device engineering
  - Configuration of the devices in SENTRON powermanager. The engineering area is set against a blue background for visual highlighting.
- Other data views
  - e.g. load monitoring, reaction plans, filter management, performance optimization.

Event/alarm messages

The table at the bottom of the window lists alarms and warnings that require acknowledgment and those that do not require acknowledgment.

5.3 Project tree

5.3.1 Representation of the plant in the project tree

Overview

The project tree maps the plant. The project tree root branches to areas. Areas branch into sectors. Sectors branch into sub-sectors. Up to 6 branching levels are possible.

Devices can be attached in sectors and at all sector levels.

When the application is installed, the project tree contains the root "System1" and the "no area" area.
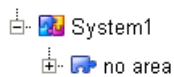
Figure 5-2   Project tree root, "No area" area

Project tree root

The project tree root represents the complete system. When the application is installed, the root is called "System1".

Several cross-area functions are exclusively accessible via the shortcut menu of the project tree root:

- Area administration
- Filter settings
- System settings
- Driver settings
- Mass parameterization

Areas

Areas subdivide the entire plant at the first subdivision level.

Figure 5-3   Project tree, areas

"No area" area

The "No area" area accommodates devices that you cannot assign clearly to an area.

A device created in the project tree root is automatically moved to the "No area" area.

Sectors

Sectors subdivide areas.

A sector, in turn, can be subdivided into sectors. Subdivision is possible up to 5 sector levels.
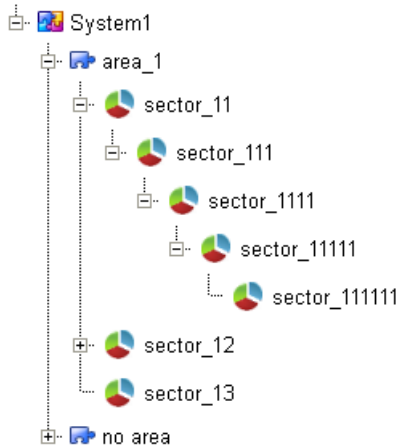
Figure 5-4   Project tree, sectors

Devices

At the area or sector level, you can attach devices to the project tree.
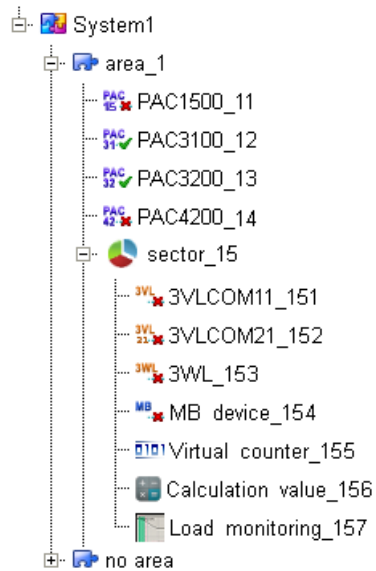

Figure 5-5   Project tree, devices

A device created in the project tree root is automatically moved to the "No area" area.

5.3.2   General configuration functions

Overview

Use the following functions to manage objects in the project tree:

- Create
  - Area
  - Sector
  - Device
- Copy or move
  - Sector
  - Device
- Rename
- Delete

Creating an area

Proceed as follows to create an area in the project tree:

1. Right click on the project tree root. Select "Create area" from the shortcut menu.

2. Assign a unique and meaningful name to the new area.

Note

Internal name

Assign the internal name when creating a new area. The system assumes the internal name as the project-specific name for all languages. Then, you have the option to change the automatically generated project-specific name.

You can find information on distinguishing internal and project-specific names in the section entitled "Internal and project-specific object names (Page 35)".

---

3. Click on the "Apply" icon.

Result: The newly created area appears in the project tree.

4. Assign the project-specific name to the new area. To do this, use the "Rename" shortcut menu command. See below for further information.

Creating a sector

When creating a new sector assign the project-specific name. The system automatically generates the internal name. You cannot change the internal name.

You can find information on distinguishing internal and project-specific names in the section entitled "Internal and project-specific object names (Page 35)".

Proceed as follows to create a sector in the project tree:

1. Right click on the area in which you wish to create the new sector. Or right click on the sector in which the new sub-sector is to be created.

   Select "Create sector" from the shortcut menu.

   The system opens a dialog for assigning the project-specific name.
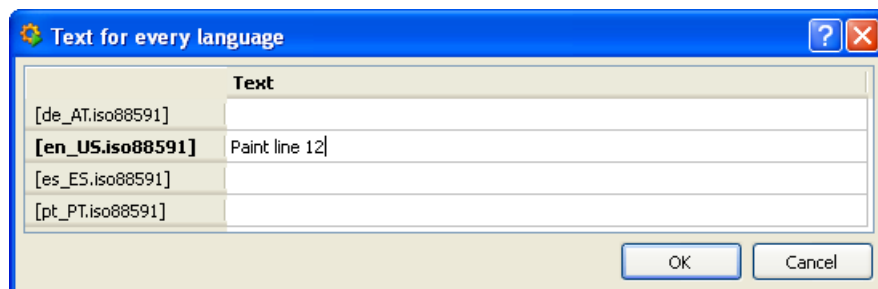
Figure 5-6   Creating a sector and assigning the project-specific name

2. Assign a project-specific name to the new sector in the language you commonly use.

   The name may contain blanks and special characters.

   You can add other languages straight away or later.

3. Select "OK" to confirm creation.

   Result: the newly created sector appears in the project tree.

Use the "Rename" shortcut menu command to add project-specific names in other languages after creation.

Creating a device

A device can be created in an area or a sector. Devices that you create in the project tree root are moved automatically to the "No area" area.

Proceed as follows to create a device:

1. Right-click on the area or sector in which the device is to be created.

   Select "create device" from the shortcut menu.

2. Select the device type.

Figure 5-7   Creating a device, shortcut menu with selection of device types

3. Assign a unique and meaningful name to the new device.

Note

Internal name

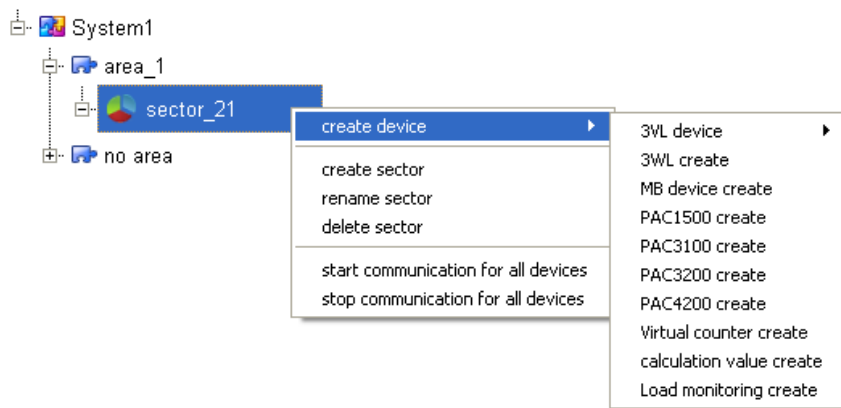When you create a device you assign the internal name. The system assumes the internal name as the project-specific name for all languages. Then, you have the option to change the automatically generated project-specific name.

You can find information on distinguishing internal and project-specific names in the section entitled "Internal and project-specific object names (Page 35)".

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4. Click on the "Apply" icon.

   Wait until the SPM has created the device. Creation of the new device can take some time depending on the device and the project size.

   Result: The created device appears in the project tree. **The device is known in the system, but is not configured.**

   You can find instructions on how to configure the individual devices in the sections entitled "Configuring a device (Page 37)" and "Devices (Page 39)".

5. Assign the project-specific name to the device. To do this, use the "Rename" shortcut menu command. See below for further information.

Copying or moving objects using Drag & Drop

Within the project tree you can move or copy sectors or devices with the "Drag&Drop" function.

Copied devices use the internal name of the original object. The name contains a numerically incremented suffix as a distinguishing feature: "<name>_1", "<name>_2", etc.

A copied or moved sector takes all included sub-sectors and devices along with it.

Proceed as follows:

1. Select the object you want to move or copy with the left or right-hand mouse button and keep the key depressed.

2. Drag the object to the target position while holding down the mouse button. Release the mouse button at the target position.
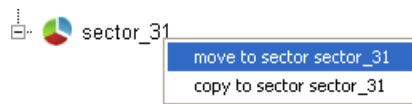
Figure 5-8   Project tree, moving or copying an object

Decide on one of the "Move" or "Copy" functions. You can cancel the operation with the "ESC" key.

3. The system asks you to confirm the action. Confirm with "Yes" or cancel the action with "No".

4. Assign a project-specific name to the new object. To do this, use the "Rename" shortcut menu command. See below for further information.

Multiple selection

Multiple selection is possible:

- Proceed as follows to select several successive objects in the project tree:

  Press the "SHIFT" key and keep it depressed. Click on the first and last objects in the desired series of objects.

Figure 5-9   Project tree, contiguous multiple selection

- Proceed as follows to select several objects scattered in the project tree: Press the "CTRL" key and keep it depressed. Click on the objects.
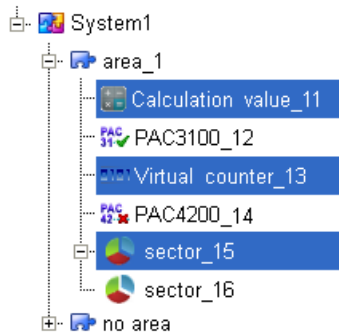
Figure 5-10   Project tree, scattered multiple selection

Mixed selection

Mixed selection of sectors and all device types is possible.

Renaming

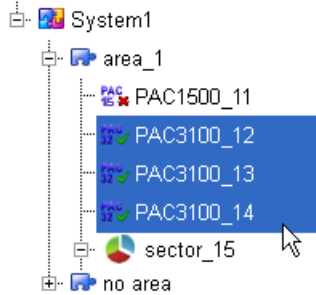Each object in the project tree has an internal and a project-specific name. For information, please refer to "Internal and project-specific object names (Page 35)".

The project-specific names of areas, sectors or devices can be changed at any time.

It makes sense to rename them

● after creation of a new area or a device

● after copying a sector or a device.

The "Rename" function also enables you to

● assign the object names in foreign-language user interfaces.

Proceed as follows:

1. In the project tree, right click on the area, sector or device you wish to rename.

2. Click on the " ... Rename" shortcut menu command.
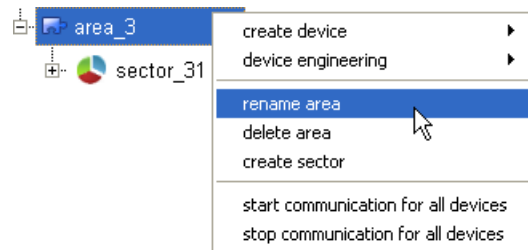
Figure 5-11   Project tree, renaming an object

3. In the dialog window, change the object name in the languages you use.

    Then select "OK" to confirm the change.
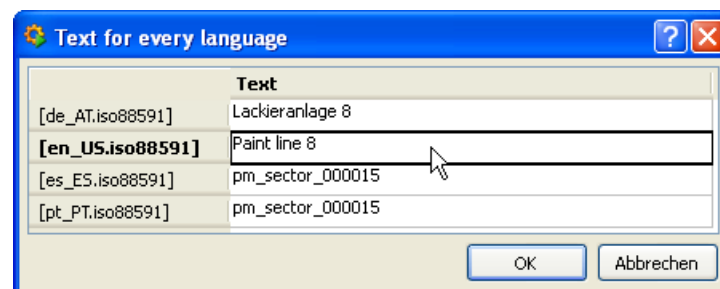
Figure 5-12   Renaming an area, sector or device

Result: the modified name of the language currently in use is visible in the project tree.

Deleting

You can delete devices, complete sectors or complete areas from the project tree.

For sectors and areas, you must specify what is to be done with the attached devices. The system offers complete deletion or transfer of devices to the next level. The devices belonging to a deleted area are moved to the "No area" area.

A device that is to be deleted must have no links. The system sends an error message if the device is in use, for example in a processing unit or in a reaction plan.

Proceed as follows:

1. In the project tree, right click on the area, sector or device you wish to delete.

2. Click on the " ... Delete" shortcut menu command.
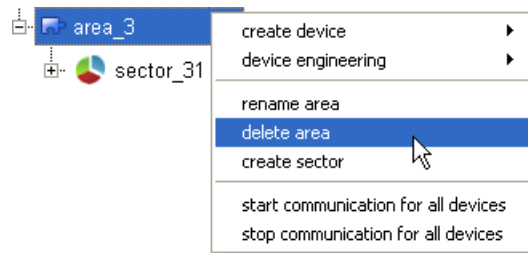
Figure 5-13   Project tree, deleting an object

The system asks you to confirm deletion.

3. When deleting a sector or an area, decide whether to also delete or move the devices attached underneath it.
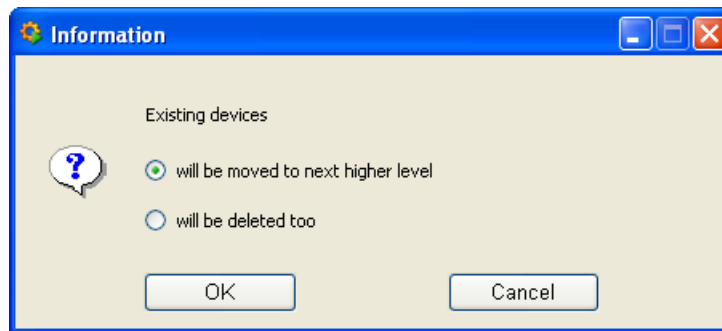
Figure 5-14   Project tree, deleting an area or a sector

4. Then select "OK" to confirm deletion.

Multiple selection

Multiple selection is possible for devices.

5.3.3 Internal and project-specific object names

Each object in the project tree has an internal and a project-specific name.

Internal name

● The internal name is a system-wide unique identifier.

● The name must not contain any blanks or special characters.

● Internal names cannot be changed later.

Project-specific name

● The project-specific name designates the object on the user interface.

● Project-specific names are not necessarily unique.

● Blanks and special characters are permissible.

● Project-specific names can be changed at any time.

● Project-specific names support the user interface's multiple language capability.

Assigning a name when creating areas or devices

You assign the internal name when creating areas or devices. The system uses the internal name as the project-specific name.

When creating a new sector assign the project-specific name. The system generates the internal name.

You will find more information in the section entitled "General configuration functions (Page 27)".

Switching between internal and project-specific designations

The base panel contains two buttons for switching between internal and project-specific designations.

You will find more information in the section entitled "Base panel (Page 22)".

5.4 Displaying measured values

The measured values of the configured devices can be displayed:

- Per device
- Across all devices a sector
- Across all devices of an area
- Across all devices of the plant

You can restrict the view by using previously defined filters or filters you have defined for the specific application.

Displaying measured values of a device

Proceed as follows to display the current measured values and other data of a device.

1. Make sure that the standard view is activated. Click on the "Standard View" button in the base panel.

2. Left-click on the device in the project tree.

   The "Groups" tab is opened in the runtime area.

3. Select a group in the "filter" field.

You can find further information on runtime display of the various device types in the section entitled "Devices (Page 39)".

Displaying the measured values of several devices

Follow the steps below to display the measured values of several devices.

1. Make sure that the standard view is activated. Click on the "Standard View" button in the base panel.

2. In the project tree, click on a sector, an area or on the project tree root.

   The "Selected values" tab opens in the runtime area.

3. Select a filter in the "Filter" box.

The standard installation contains the "No filter" and "Default" filters. Define application-specific filters to restrict the view. You will find further information on filter definition in the section entitled "Filter administration (Page 82)".

5.5 Configuring a device

Open device engineering

After creating a new device, the SPM immediately opens device engineering for subsequent configuration.

If you have closed device engineering after creating a new device, proceed as follows to open it:

1. Right-click on the device you want to configure.

2. Select "device engineering" from the shortcut menu.

Result: The device engineering tabs are visible set against a blue background.

You will find information on configuration of the individual device types in the section entitled "Devices (Page 39)".

5.6 Starting and stopping communication

Overview

Communication of the SPM with the connected devices must be explicitly started or stopped.

Starting and stopping are possible for an individual device, for all devices of a sector, an area or the entire system mapped in the project tree.

The project tree shows the communication status. The device symbol that precedes the device name contains a red X or a green checkbox check.
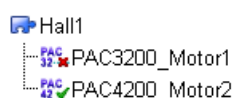
Red X	SPM has no connection with the device
Green checkbox check	Communication running

Starting or stopping communication of the SPM with an individual device

Proceed as follows to start communication:

1. Right-click in the project tree on the device.

   Select "communication > start communication" from the shortcut menu.

Result: The device symbol changes from "red X" to "green check". Communication between the SPM and the device is established.

Proceed as follows to stop communication:

1. Right-click in the project tree on the device.

   Select "communication > stop communication" from the shortcut menu.

Result: The device symbol changes from "green check" to "red X". Communication between the SPM and the device has been stopped.

Starting communication of the SPM with all devices

Proceed as follows to start communication for all devices of a sector, an area or the entire system:

1. in the project tree, right click on a sector, an area, or the project tree root.

   Select "start communication for all devices" from the shortcut menu.

Result: The device symbols of all start-ready devices change from "red X" to "green check". Communication between the SPM and these devices is established.

5.7 Devices

5.7.1 Overview

The following sections describe the configurable devices. On the base panel, measured data, control data and configuration data are distributed over several tabs. The table below shows the scope.

Below, the tabs are not described multiple times. You will find the description of the tabs existing for all devices, e.g. "Groups", in the section entitled "Power monitoring devices, E-counters, circuit breakers (Page 40)".

Base panel tabs

Table 5- 1   Tabs of the configurable devices

Tabs	3VL	3WL	MB device[1]	PAC 1500	PAC 3100	PAC 3200	PAC 4200	VC[2]	RW[3]
Runtime display									
Groups	X	X	X	X	X	X	X	X	X
Selected values	X	X	X	X	X	X	X	X	X
Harmonics		X						X	
Commands	X	X		X	X	X	X		
Switch digital outputs					X	X	X		
Reset	X								
Device data	X	X		X	X	X	X		
Device engineering									
Counter configuration (1)								X	
Calculation value configuration									X
Communication+units	X	X	X	X	X	X	X		X
Configuration	X	X	X	X	X	X	X	X	X
Extended configuration	X	X	X	X	X	X	X	X	
Alert configuration			X		X	X	X		
Counter configuration (2)			X						
Further tabs									
Overview						X	X		
Energy						X	X		
Power Quality						X	X		
Trend						X	X		

1) MB device: generic Modbus device 2) VC: virtual counter 3) RW: calculation value

5.7.2 Power monitoring devices, E-counters, circuit breakers

5.7.2.1 Runtime display

Runtime display, "groups" tab

The "groups" tab lists all measured variables with name, current measured value and defined unit.

Figure 5-15   PAC4200, "Groups" tab, measured variables with group assignment

The measured variables are assigned to groups. The "filter" list field menu shows the choice of groups.

Groups:

- Overview: Summary of the most important values
- Voltage
- Current values
- Power factor
- THD
- Power values
- Energy values

Runtime display, "selected values" tab

The "selected values" tab lists all pre-selected measured variables with description, current measured value and defined unit.

The selection is defined in device engineering, "Configuration" tab, "Display" column and can be modified to suit each user's needs

selected values		
description	**value**	**unit**
PAC3200_207_extern voltage L1-N	229.7	V
PAC3200_207_extern voltage L2-N	230.0	V
PAC3200_207_extern voltage L3-N	229.7	V
PAC3200_207_extern voltage L1-L2	0.0	V
PAC3200_207_extern voltage L2-L3	0.0	V
PAC3200_207_extern voltage L3-L1	0.0	V
PAC3200_207_extern current L1	77.05	A
PAC3200_207_extern current L2	77.05	A
PAC3200_207_extern current L3	77.07	A
PAC3200_207_extern collective active power	34639.5	W
PAC3200_207_extern collective apparent power	53028.9	VA
PAC3200_207_extern collective reactive power (VARn)	-8257.3	var
PAC3200_207_extern cumulated active power import	32285.2	W
PAC3200_207_extern cumulated reactive power import	0.0	var
PAC3200_207_extern collective power factor	0.665	
PAC3200_207_extern frequency	50.01	Hz
PAC3200_207_extern active energy import tariff 1	24960281.4	Wh
PAC3200_207_extern counter (configurable)	90971	
PAC3200_207_extern reactive energy import tariff 1	2.4	varh

Figure 5-16   PAC3200, "Selected values" tab

Runtime display, "harmonics" tab

The "Harmonics" tab is only available for the SENTRON PAC4200 Power Monitoring Devices and the SENTRON 3WL circuit breakers.

The dynamic bar chart shows the harmonic proportions related to the basic oscillation optionally up to the 17th or 31st harmonic for voltage PH-PH, voltage PH-N or current, with instantaneous and maximum values.

For individually selectable harmonics, the exact numbers and time stamps can be displayed.

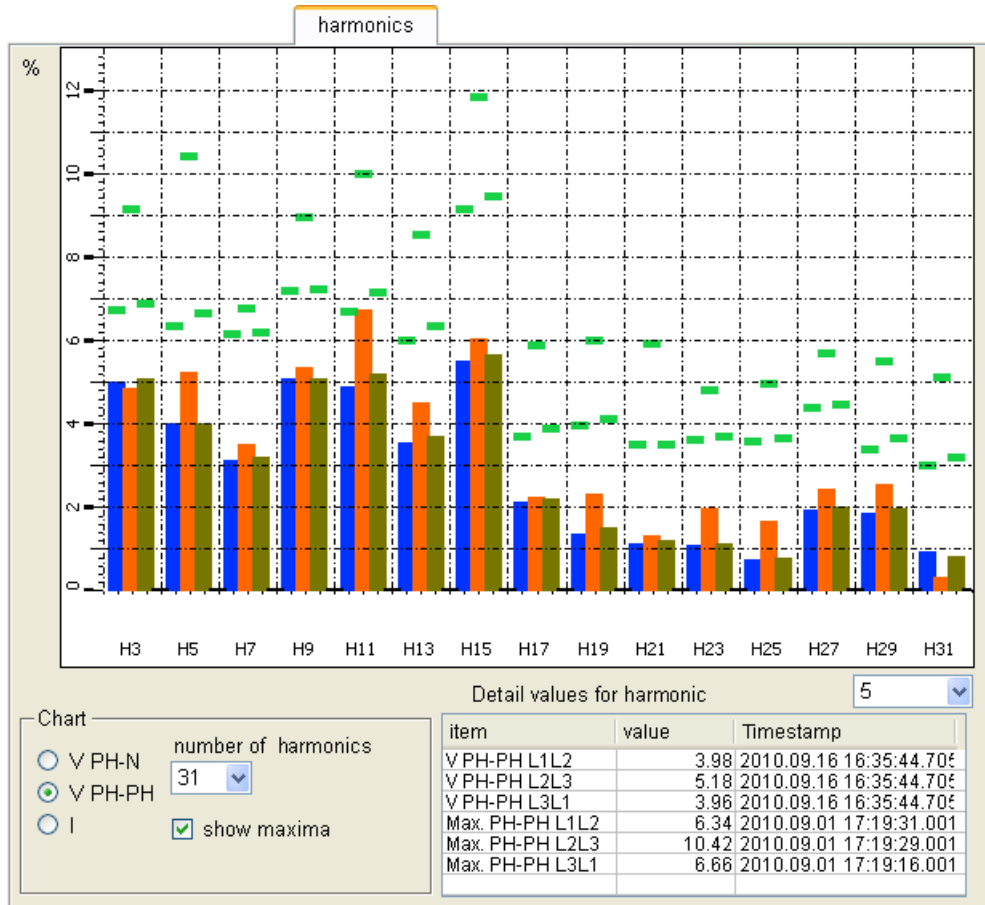Figure 5-17   PAC4200, "Harmonics" tab

Runtime display, "commands" tab

The "commands" tab contains command buttons that immediately affect the device.

The commands can only be transferred if password protection is switched off on the device. If password protection is switched on, the message "Password protection is activated" appears.

The selected command must be confirmed or canceled in a dialog window.

Runtime display, "Switch digital outputs" tab

You can switch the digital outputs of the PAC3200 and PAC4200 devices on the "Switch digital outputs" tab. To do this, the outputs must be parameterized as "Remote output".
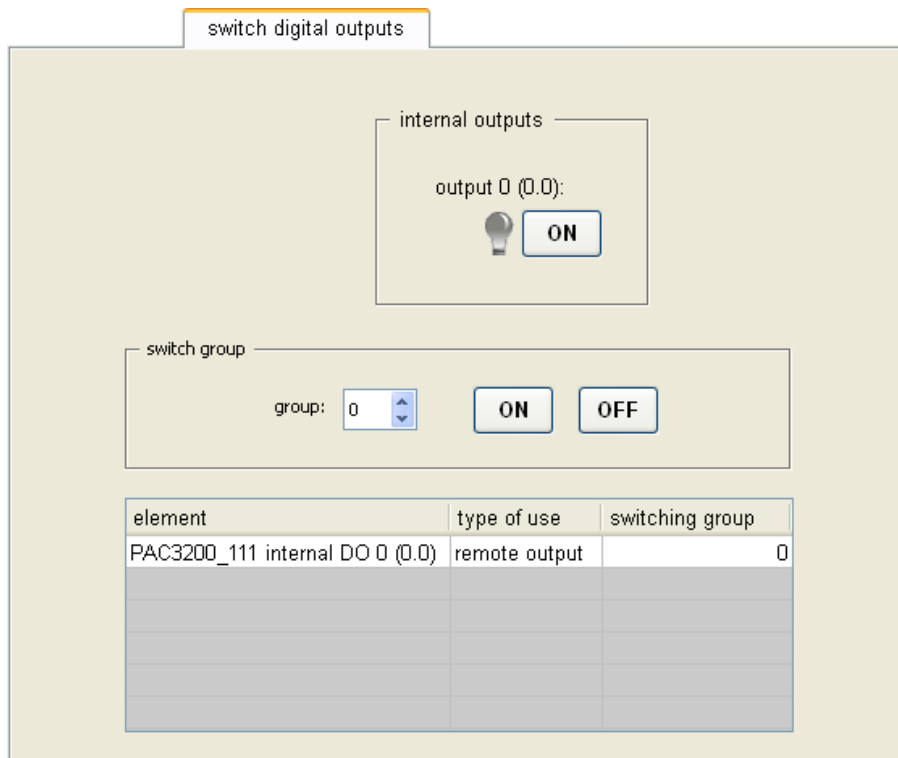
Figure 5-18   PAC3200, "Switch digital outputs" tab

A lamp icon indicates the switching state:

Icon	
	(1) Signal of the digital output is "high".
	(0) Signal of the digital output is "low".

The button on the right of the lamp icon issues the switching command:

- "OFF" switch off
- "ON" switch on

In the case of the PAC3200 and PAC4200 devices, several outputs of a vector group can be assigned and can be switched via the vector group. You can assign an output to a vector group directly in the PAC device with the SENTRON powerconfig software, for example.

Runtime display, "device data" tab

The "device data" tab shows

● Device-specific data, e.g. the firmware version

● Parameterization data, e.g.

– Type of use of digital input DI 0.0 ("Use of DI 0.0")

– Period duration and number of periods configured for calculating the load profile ("Load profile subinterval count", "Load profile subinterval length")

– Identifier of the device connection type ("Type of connection")

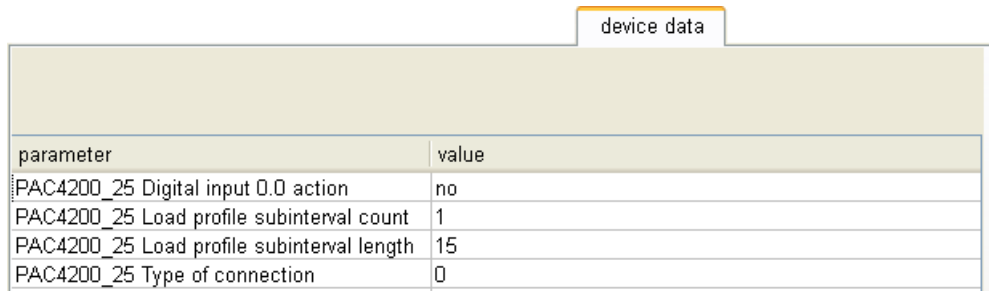| parameter	value
PAC4200_25 Digital input 0.0 action	no
PAC4200_25 Load profile subinterval count	1
PAC4200_25 Load profile subinterval length	15
PAC4200_25 Type of connection	0

Figure 5-19   "device data" tab (extract)

Runtime display and further tabs of the PAC3200 and PAC4200 devices

As from SENTRON powermanager V3.0, there are additional tabs for the PAC3200 and PAC4200 Power Monitoring Devices, namely:

● "Overview"

● "Energy"

● "Power Quality"

● "Trend"

On these tabs you can track further measured values in relation to specific topics.

5.7.2.2   Device engineering

Configuring a device

The SPM sets up a standard configuration for each newly created device. You only have to specify the IP address.

The device engineering permits the following application-specific configuration settings:

● Setting up a device as a gateway

● Modification of the measured variable units

● Modification of the measured variable names

● Selection of the measured variables for display on the SPM interface

● Selection of the measured variables for archiving

- Selection of the measured variables for alert triggering with modification of the alert limits and assignment to alert classes

- Modification of the message texts

Device engineering, "Communication + Units" tab

Figure 5-20   Device engineering, "Communication + Units" tab

Boxes

- "IP address"

  IP address of the device.

- "gateway communication"

  If the checkbox is activated, the device serves as a gateway for connecting sub-networked Modbus RTU devices.

  – The IP address of the gateway must be specified in the "IP address" field.

  – "access point": The SENTRON PAC4200 Power Monitoring Device or a standard gateway can be used as gateway. The slot into which the SENTRON Expansion module PAC RS485 is plugged must be specified for the PAC4200.

  – "Unit address": Modbus address of the device in the Modbus RTU subnetwork.

- "units and factors"

  The SPM standard records all measured variables in the base units.

  You can change the unit. Deactivate the "Inherit area settings" option box to open the "Unit" and "Divisor" columns for writing. Modify, for example, the active power unit from watts to kilowatts and set the relevant divisor to "1000".

Note

Modification of the unit only affects the SPM interface and not the archived values.

The unit can be converted for reporting in the report template. For information, please refer to "Datapoints (Page 131)".

As an alternative, conversion is possible using a virtual counter. For information, please refer to "Virtual counter (Page 51)".

Device engineering, "Configuration" tab

Note

Incomplete display.

To make the table entries fully visible on the "Configuration" tab, communication of the SPM with the device must be started once.

You will find information on starting communication in the section entitled "Starting and stopping communication (Page 37)".

The "Configuration" tab defines the following attributes for all measured variables:

- Group assignment
- Designation of the interface of the SPM
- Display on the interface of the SPM yes/no
- Archiving yes/no
- Alerts, triggering yes/no, limits and alert classes

Proceed as follows to adapt the standard configuration to your requirements:

1. Revoke write protection. For this purpose, deactivate the checkbox "inherit area settings".

   The grid of the table changes color to purple.

2. Modify the values as desired.

3. Save the change. Click on the Save icon.

4. Confirm the prompt with "OK".

PAC4200_25						
Communication+Units	Configuration	Extended configuration		Alert configuration		
group	element	display	address	archive	alert	
current	PAC4200_25 neutral current	☑	☑	☐	☐	
current	PAC4200_25 neutral current demar	☐	☑	☐	☐	
current	PAC4200_25 unbalance current	☐	☑	☐	☐	
power	PAC4200_25 active power L1	☐	☑	☐	☐	
power	PAC4200_25 active power L1 dema	☐	☑	☐	☐	
power	PAC4200_25 active power L2	☐	☑	☐	☐	
power	PAC4200_25 active power L2 dema	☐	☑	☐	☐	
power	PAC4200_25 active power L3	☐	☑	☐	☐	
power	PAC4200_25 active power L3 dema	☐	☑	☐	☐	
power	PAC4200_25 apparent power L1	☐	☑	☐	☐	
power	PAC4200_25 apparent power L1 de	☐	☑	☐	☐	
power	PAC4200_25 apparent power L2	☐	☑	☐	☐	
power	PAC4200_25 apparent power L2 de	☐	☑	☐	☐	
power	PAC4200_25 apparent power L3	☐	☑	☐	☐	
power	PAC4200_25 apparent power L3 de	☐	☑	☐	☐	
power	PAC4200_25 collective active powe	☐	☑	☑	☐	
power	PAC4200_25 collective active powe	☐	☑	☐	☐	
power	PAC4200_25 collective apparent po	☐	☑	☑	☐	
power	PAC4200_25 collective apparent po	☐	☑	☐	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☑	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☐	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☑	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☐	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☑	☐	
power	PAC4200_25 collective reactive pov	☐	☑	☐	☐	
nower	PAC4200 25 max. active nower L1	☐	☑	☐	☐	

☑ inherit area settings

☑	Yes, switched on
☐	No, switched off

Figure 5-21   Device engineering, "Configuration" tab

Columns

- "group"

  The SPM arranges the measured variables in groups. The "group" column shows the assignment.

  The groups are available for selection in the runtime mode, "Groups" tab, "Filter" box.

- "element"

  Device name and designation of the measured variable in the language that was selected when logging in.

  The designation can be changed on the "Extended configuration" tab.

- "display"

  Selection of the measured variables displayed on the "Selected values" tab.

  The restriction to "Selected values" is also effective in the display of all devices belonging to a sector, an area or the overall plant. Filters for the cross-device display setting do not deactivate the selection. You will find further information on filters in the section entitled "Filter administration (Page 82)".

  The selection does not modify the scope of display on the "Groups" tab.

- "address"

  Measured variables that the SPM fetches from the device (polling).

- "archive"

  Measured variables that the SPM archives.

- "alert"

  The measured variables that are monitored for limit values.

  Deactivation of an alert resets user-specific modification of alert limits "high alert" and "low alert" to the pre-defined standard.

- "high alert"

  Upper limit that triggers an alert if exceeded.

  The change to the default value automatically activates the checkbox in the "alert" column.

- "low alert"

  Lower limit that triggers an alert if violated.

  The change to the default value automatically activates the checkbox in the "alert" column.

- "Alert class"

  An alert can be assigned to an alert class. You can find further information on this subject in the section entitled "Alert classes (Page 71)".

- "Unit"

  Unit of the measured variable as supplied by the device.

  The unit cannot be changed. You can find the subset of modifiable units on the "Communication + Units" tab in the "units and factors" area.

Device engineering, "Extended configuration" tab

On the "Extended configuration" tab, you can modify the designations of the measured variables for the German SPM user interface and all other languages offered by default. The table fields are open for writing.

The "reset to default values" switch resets all changes to the delivery status of the SPM standard.

Device engineering, "Alert configuration" tab

On the "Alert configuration" tab, you can define message texts for the status of the device's digital inputs.

5.7.3 Generic Modbus device

5.7.3.1 Overview

With the generic Modbus device you can link any Modbus-enabled measuring devices to the SENTRON powermanager.

As from SENTRON powermanager V3.0, you can measure:

- Up to 50 measured variables
- 10 status messages
- 5 power demand values
- 5 counted values

Power and energy values can be displayed in groups.

5.7.3.2 Device engineering

Stipulations

The following specifications are necessary or possible for device configuration.

- Name of the measured value
- Transformation type
- Index
- Specification of the Modbus Function Code
- Specification of a factor with which the supplied measured value is to be multiplied
- Unit of the measured value
- Specification of a message text for the status messages

Support of free interval lengths
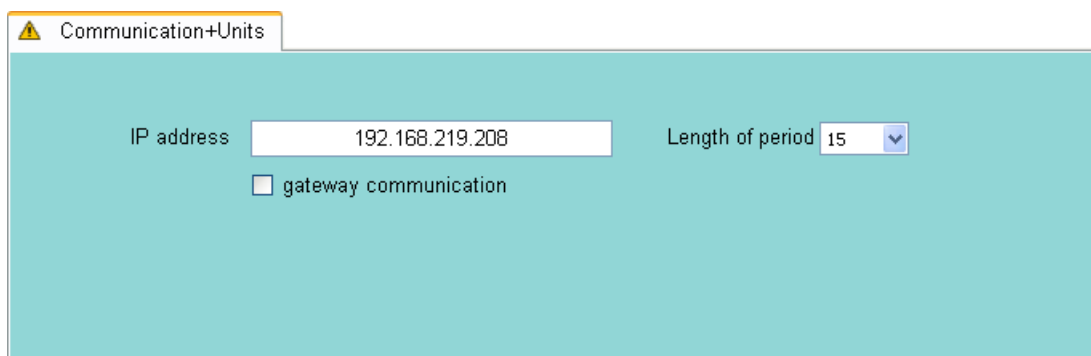
> **Note**
> **Support of free interval lengths**
> This function is available as from SENTRON powermanager Service Pack V3.0 SP1.

The values that have been parameterized as power demand values in the generic Modbus device are restamped in the system. For restamping, you must enter an interval length. The interval length cannot be read directly out of the device. It must be entered in device engineering, on the "Communication+Units" tab.

The new interval length applies as from the time of parameterization. The interval length is not subjected to a plausibility check. Due to the process type, the system always synchronizes the interval to the full hour.

Figure 5-22   Generic Modbus device, "Communication+Units" tab

Overflow limits

The counters' overflow limits can be parameterized in device engineering, on the "Counter configuration" tab.

5.7.4   Virtual counter

5.7.4.1   Overview

A virtual counter records:

- Active energy
- Reactive energy
- Counter units of the universal counter

The virtual counter is provided for calculating demand values. You can add or subtract demand values or convert units.

With virtual counters, you can make demand values from third-party devices available for report analysis.

A virtual counter can be used, among other things, to convert the unit of a count value to another one, e.g. Wh to kWh.

Created virtual counters are available for selection in SPM reporting under the datapoint type "pmVirtCounter".

5.7.4.2 Device engineering

Assign an energy counter or universal counter to the virtual counter. Define the unit and the corresponding conversion factor.
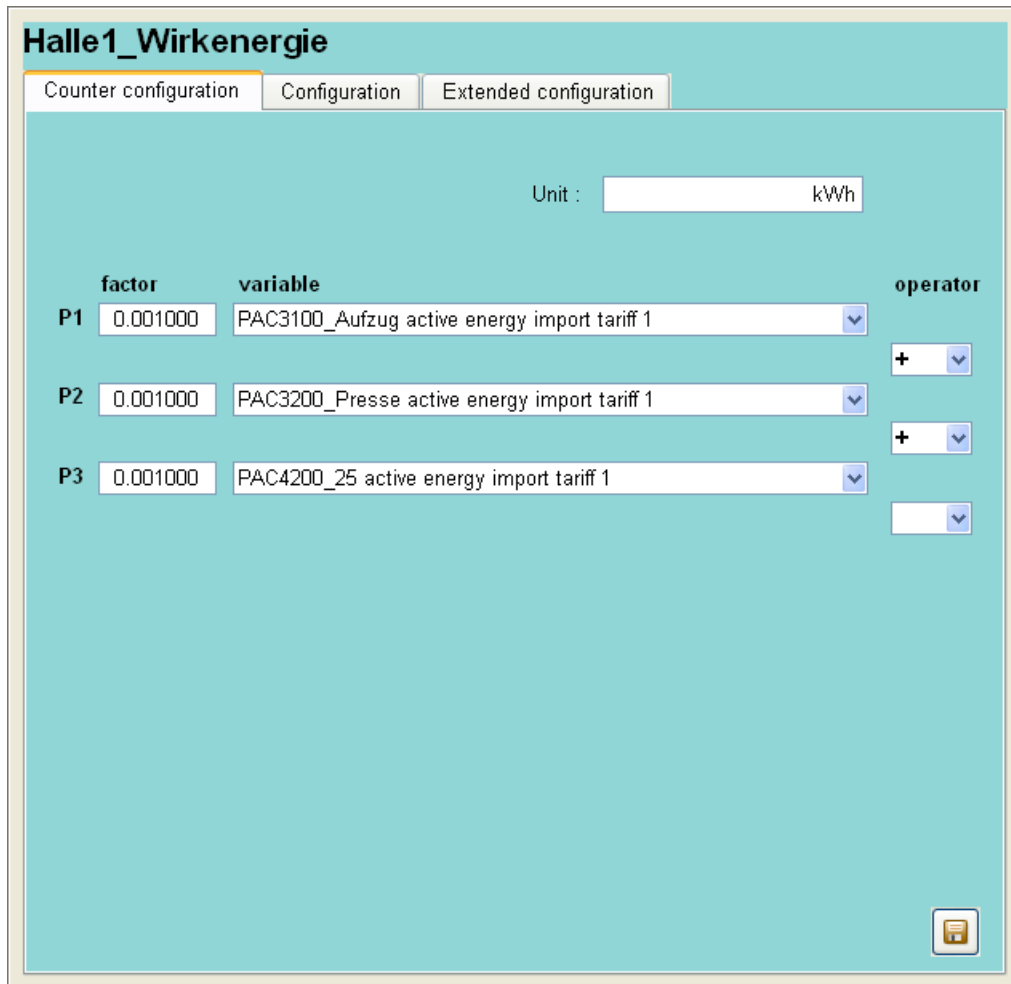
Figure 5-23   Conversion from Wh to kWh and summation of three energy counters on one group counter

Boxes

- "Unit"

    – Unit counted by the universal counter of the connected device, e.g. "m3" for cubic meters.

    – Unit of the energy counter; e.g. "kWh" or "MWh" for converting the counted watt-hours to larger units.

- "factor"

    The factor is freely selectable; useful for converting the unit, among other things, e.g. conversion from watt-hours to kilowatt hours with factor 0.001.

- "variable"

  Universal counter or energy counter.

- "operator"

  Operators for adding or subtracting counters.

  The selection of an operator opens another set of fields.

5.7.5 Calculation value

5.7.5.1 Overview

The "Calculation value" object allows you to group and convert a maximum of 10 freely selected measured values using a freely definable formula.

Figure 5-24   Calculation value

Effect of using calculation units

A device can be deleted only if it is not used in any calculation unit.

5.7.5.2 Device engineering

Structure of the formula

Variable

The measured values can be selected by means of the selection tree. Every selected measured value is assigned a variable identifier "p1, "p2", etc. The variables must be used in the calculation formula.

Operators

The mathematical operators "+", "-", "*" and "/" are permissible for addition, subtraction, multiplication and division, and the following Boolean functions:

Notation 1	Notation 2	Function
OR	||	OR
AND	&&	AND
XOR	^	EXCLUSIVE OR
NOT	|	NOT

Brackets

Expressions can be bracketed.

Formula in the "Function" box

You create the formula in the "Function" box. Pay attention to upper and lower case. A variable identifier used here that does not correspond to any measured value has the value 0.

The formula must be syntactically correct. The function is checked for validity before it is saved.

Examples

p1 + p2 + p3

(p1 + p2) / 1000

(p1 || p2) && p3

5.7.6 Load monitoring

5.7.6.1 Overview

Electricity supply contracts contain provisions on the kilowatt-hour rate and the demand rate. The demand rate is calculated according to the maximum imported power. For the consumer, it therefore makes sense to avoid power peaks and to distribute the power demand uniformly throughout the day.

Monitoring

Load monitoring enables

● Monitoring of energy use

● Response to deviations from the planned target

Orientation variables

Load monitoring supplies two orientation variables for estimation of consumption behavior:

● Correction power

● Forecast energy consumption

Correction power

The correction power is the power that has to be connected or disconnected to optimally exploit the energy volume agreed for the current tariff interval. It informs you about whether the energy imported in the tariff interval is within the contractually agreed limits and is exploiting them optimally.

Forecast energy consumption

Load monitoring forecasts the energy consumption to be expected at the end of the tariff interval. The forecast is corrected for each calculation interval and becomes more exact with each calculation interval.

Tariff interval/calculation interval

The tariff interval is subdivided into a number of calculation intervals that can be selected. The correction power and the consumption forecast are determined for each calculation interval.

Response

Load monitoring supports reactive measures by means of:

● Switching bits

● Alerts

Switching bits

Load monitoring sets the following switching bits. Triggering depends on the defined limit curve.

- Element switchNo: bit is set if the correction power is within the limit curve or the first or last calculation interval is calculated.

- Element switchOff: bit is set when load has to be deactivated.

- Element switchOn: bit is set when load has to be activated.

The switching state can be queried in reaction plans.

You can find more information on configuration of the limit curve in "Device engineering (Page 62)".

For additional information on reaction plans, please refer to "Reaction plans (Page 73)".

Alerts and warnings

An alert or a warning can be optionally configured for each switching bit. You configure it when defining the limit curve.

You can find more information on configuration of the limit curve in "Device engineering (Page 62)".

5.7.6.2 Runtime display

"Overview" tab

The "Overview" tab shows the monitored datapoint's consumption development in the current tariff interval:

- Actual energy consumption
- Forecast energy consumption
- Timing
- Correction value

The values are shown as graphical bar percentage values or as absolute numeric values.
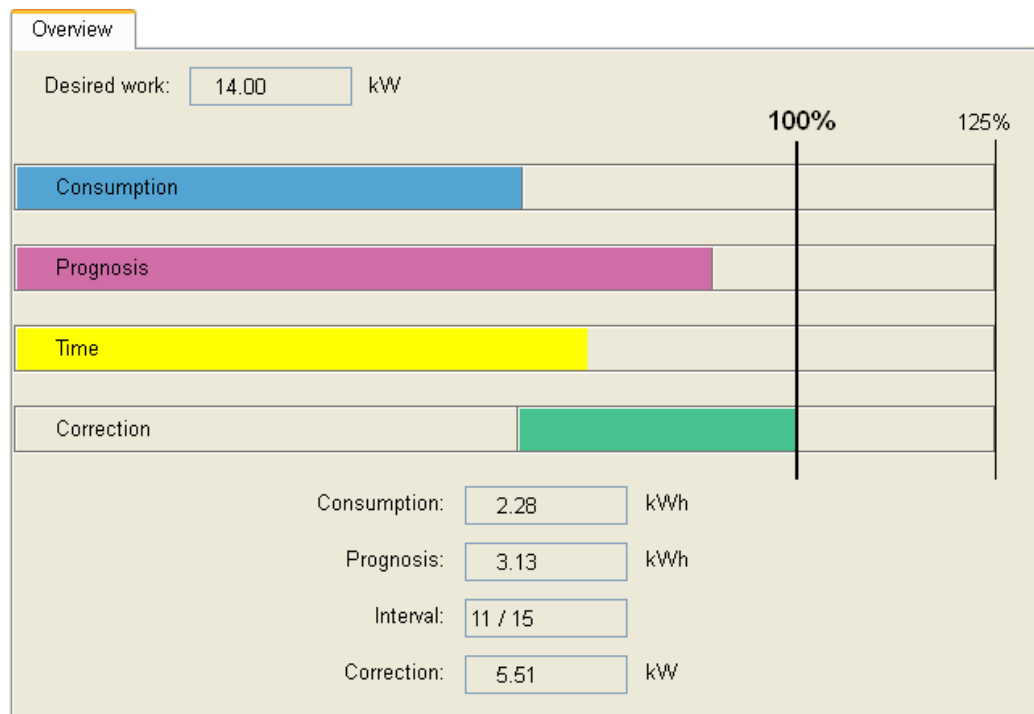
Figure 5-25   Load monitoring, "Overview" tab

Bar chart

All values as percentages.

- "100%"

  The 100% mark identifies the energy setpoint.

- "Consumption"

  The blue "Consumption" bar shows the actual percentage energy consumption in the current tariff interval. The reference quantity is 100% of the setpoint.

  The bar grows from left to right along with the calculation intervals (min/max pointer).

  Up to 125% violation of the setpoint can be displayed in the graphic. The bar's color changes to red if the display limit is exceeded.

- "Forecast"

  The purple "Forecast" bar shows the forecast consumption in the current tariff interval. The forecast is corrected for each calculation interval.

  The bar grows from left to right along with the calculation intervals (min/max pointer).

  Up to 125% violation of the setpoint can be displayed in the graphic. The bar's color changes to red if the display limit is exceeded.

- "Time"

  The yellow time bar visualizes the timing in the current tariff interval. The 100% mark identifies the tariff interval end time. The bar ends at the 100% mark when the last calculation interval is reached.

- "Correction value"

  This bar visualizes the positive or negative power correction value. The actual power must be adjusted by this value to optimally correspond to the setpoint.

  – Red bar, growing to the right from the 100% mark: negative correction value. Power that has to be switched off to keep to the setpoint.

  – Green bar, growing to the left from the 100% mark: positive correction value. Power that can be activated without exceeding the setpoint.

Invalid values are shown in magenta.

Boxes

- "Interval"

  Calculation intervals. The first value specifies the last completed calculation interval. The second value shows the number of calculation intervals into which the tariff interval is subdivided.

"Energy profile" tab

The "Energy profile" tab visualizes the deviation between actual consumption and rated consumption during the current tariff interval.
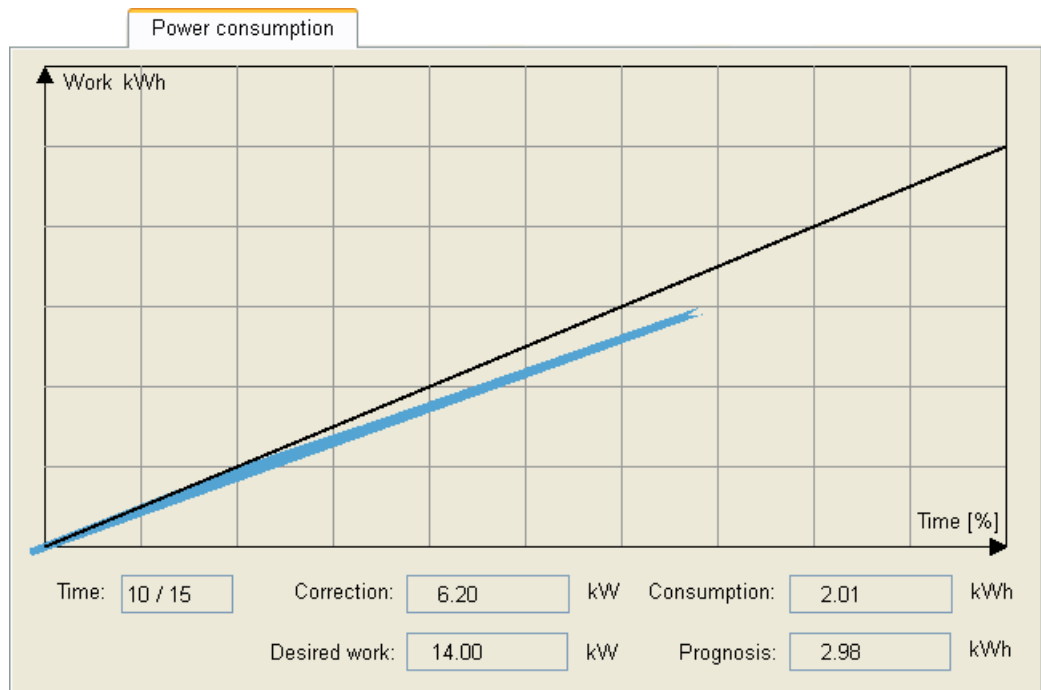
Figure 5-26   Load monitoring, "Energy profile" tab

Graphic

All values are absolute values.

- Right-hand axis

  Time curve of the tariff interval.

- Vertical axis

  Imported energy in kWh.

- Black graph

  Consumption setpoint, always linear.

- Colored graph

  Actual consumption. The color shows the deviation from the setpoint:

  – Blue: value below setpoint. Positive correction power in the current calculation interval.

  – Red: value above setpoint. Negative correction power in the current calculation interval.

  – Magenta: invalid value in the current calculation interval.

"Daily trend" tab

The "Daily trend" tab shows the power demand of the monitored load in the course of the day.
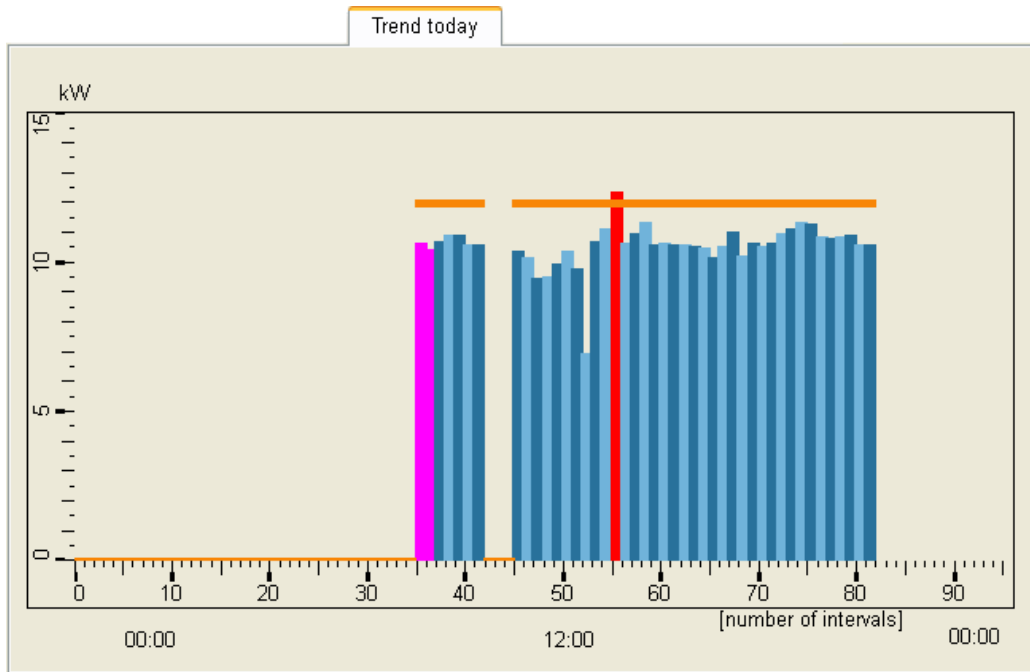
Figure 5-27   Load monitoring, "Daily trend" tab

- Right-hand axis

  Time axis from 0 to 24 h, subdivided into tariff intervals, e.g. 96 15-minute tariff intervals.

- Vertical axis

  Power in kW.

- Orange horizontal axis

  Defined power setpoint.

- Blue column

  Average actual output of one tariff interval.

- Red column

  Tariff interval with the highest actual power in the course of the day.

- Magenta-colored column

  Tariff interval with invalid values.

"Previous day's trend" tab

The "Previous day's trend" tab shows the power demand of the monitored loads in the course of the previous day.

The display corresponds to the daily trend.

The previous day's trend is not displayed if no data is available for the previous day or if the calculation interval length has changed with respect to the previous day.

"Limit curve" tab

The "Limit curve" tab shows:

● Determined correction power values of the calculation intervals in the course of the current tariff interval.

● Parameterized limit curve. The limit curve defines the limit correction power. It is necessary to exceed the limit correction power for a switching recommendation. The purpose of limit definition is to smooth brief power spikes, thus reducing the number of switching recommendations.

Superpositioning of the two curves results in the calculation intervals with the switching recommendation that takes effect.
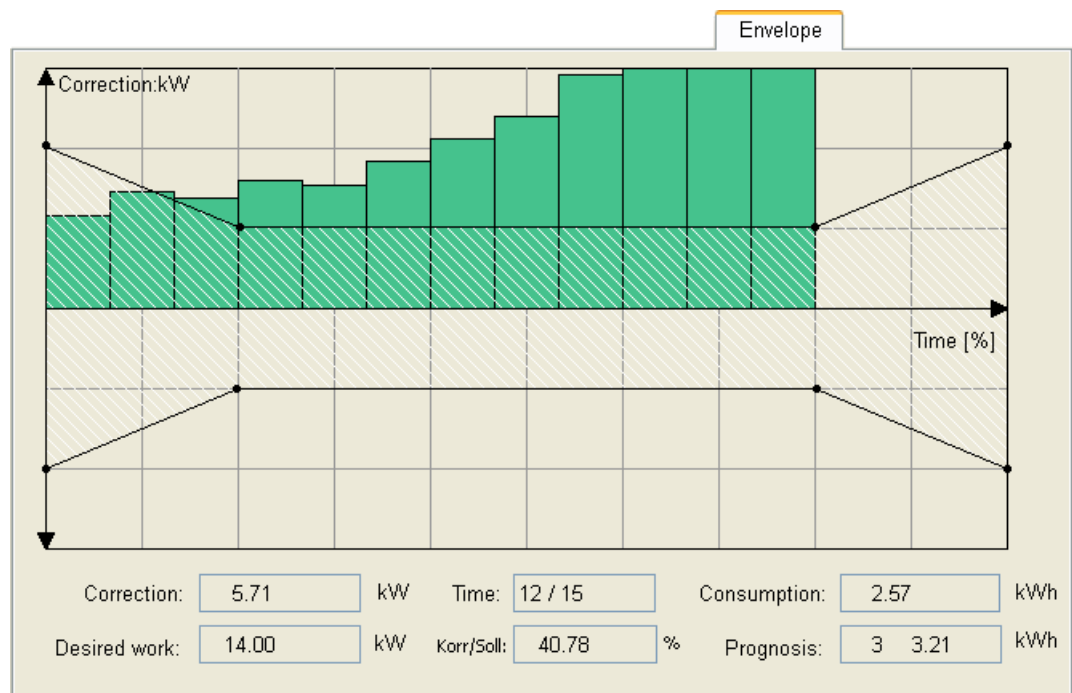
Figure 5-28   Load monitoring, "Limit curve" tab

Limit curve

The limit curve shows the defined positive and negative limits within which no switching recommendation is given.

The limit curve can be configured in device engineering, on the "Limit curve" tab.

● Right-hand axis

Time curve of the tariff interval.

● Vertical axis

Correction power in kW.

● Colored column

Correction power of the calculation interval.

– Upright, green (> 0): positive correction power in the calculation interval.

– Suspended, red (< 0): negative correction power in the calculation interval.

5.7.6.3   Device engineering

Overview

A "load monitoring" unit created in the project tree monitors precisely one datapoint. The following configuration settings are necessary:

● Selection of the datapoint

● Definition of the tariff interval and of the calculation interval

● Definition of the setpoint, either constant or variable in the course of the day

● Definition of the limit curve

● Definition of the response

The configuration is accessible at any time via the "Device engineering" menu item in the shortcut menu. Device engineering is opened automatically when a new configuration is created.

Configuration changes take effect when adopted with the "Accept" button. The tariff interval running at the time when changes are adopted is not complete and is therefore marked as invalid.

Note

Only positive power values

You are advised to use positive power values only for load monitoring. Otherwise, you may run into display problems.

"Parameterization" tab

Figure 5-29   Load monitoring, "Parameterization" tab

Monitored datapoint

The boxes in the "Datapoint selection" area allow you to narrow down, in steps, the data source that is to be monitored.

● "Device type"

    The list provides the PAC1500, PAC3100, PAC3200, PAC4200 types and a generic Modbus device for selection.

● "Instance name"

    The list provides all devices created in the project tree of the previously selected device type for selection.

● "Datapoint element"

    Monitored data source. The list provides the momentary power values of the previously selected device for selection.

The button on the right of the "Datapoint selection" area alternatively enables selection of the data source in the project tree's structure.

Interval settings

The boxes in the "Interval settings" area define the lengths of the tariff and calculation intervals.

● "Tariff interval"

Tariff interval of the utility company, which can be specified in minutes and seconds.

● "Calculation interval"

Interval length of a calculation interval, which can be specified in minutes and seconds.

The tariff interval must be capable of integral division by the calculation interval.

One hour must be capable of integral division by the tariff interval.

The tariff interval can last a maximum of 60 minutes.

Setpoint

A setpoint that is constant or variable throughout the day can be assigned to the monitored datapoint. A so-called "schedule" must be set up for the variable setpoint.

● "Set value"

A setpoint that is constant throughout the day is assigned to the datapoint. Selecting this option activates the entry in the "Setpoint" box and opens the box for input.

● "Schedule"

A setpoint that is variable throughout the day is assigned to the datapoint. Selecting this option activates the currently valid schedule.

● "Setpoint"

The momentary power in kW. The value is active when you select the "Set value" option.

The smallest calculated setpoint is 1 kW.

For additional information on schedules, please refer to "Schedule (Page 67)".

"Para limit curve" tab

The limit curve defines the limit correction power. It is necessary to exceed the limit correction power for a switching recommendation.

The purpose of limit definition is to smooth brief power spikes, thus reducing the number of switching recommendations.

Figure 5-30   Load monitoring, "Para limit curve" tab

Positive and negative limit correction power

On the "Para limit curve" tab you define the upper and lower envelope curve for the positive and the negative limit correction power. The curves are based on 4 interpolation points each. The symmetrical "tub shape" is typical.

- "Parameterization type"

  The limit curve can be defined according to:

  - Power in kW

  - Percentage of the setpoint

- "Max. correction value"

  The maximum correction value determines the displayable value range in the diagram.

  The limits of the interpolation points "P1" to "P4" must not exceed the maximum correction value.

- "Envelope 1"

  Positive envelope, limit definition for the positive correction power.

- "Envelope 2"

  Negative envelope, limit definition for the negative correction power.

- "P1", "t1" to "P4", "t4"

  The boxes define the curve's interpolation points.

  The parameterized curve is shown schematically in the bottom part of the tab.

Alerting

Sending alerts or warnings can be activated on the "Para limit curve" tab. Sending is triggered by the system's internal switching bits. In turn, which switching bits the system sets depends on the defined limit curve.

"Alerting" area, 4 option buttons:

- "Do not switch"

  "switchNo" switching bit is set. Load neither needs to be connected nor disconnected.

- "switch off"

  "switchOff" switching bit is set. Load must be deactivated.

- "Connect"

  "switchOn" switching bit is set. Load can be connected.

- "Soon" - "Limit %"

  Load must soon be switched off because the percentage threshold in the "limit %" box has been reached.

  The value in the "Limit %" box refers to the energy consumption setpoint in the tariff interval. 100 % corresponds to the setpoint.

5.7.6.4 Schedule

Purpose

For each tariff interval in the course of a day, a schedule defines the rated power of the monitored datapoint. Thus, the planned rated power may vary in intervals and can increase or decrease at definable times of the day.

The number of tariff intervals is calculated by the system. The schedule's timing breakdown is prepared accordingly. For example, if a 15-minute tariff interval is configured, the schedule contains 96 intervals.

A schedule applies to any chosen calendar period. For all days without an assigned individual schedule, the system accesses a default schedule.

The time difference between summer and winter time is not considered in the schedule. The changeover days must be configured separately.

To create or edit schedules, you must explicitly activate an edit mode. This prevents inadvertent parameterization errors.

Path and file name

The system subdivides contiguous calendar periods into days and writes a file into the

<Project>\data\EC_TimeTable

directory with the file name

<Name of load monitor>_YYYYMMDD.csv

The calendar-independent default schedule contains the "default" sequence instead of the date:

<Name of load monitor>_default.csv

Calling up the "Edit schedule" dialog box

Proceed as follows:

1. Activate the "schedule" option box in device engineering. Click on the "Edit" button.

If a schedule exists, it is used automatically and the table is filled with it. Otherwise, a message appears.

"Edit schedule" dialog box

The "Edit schedule" dialog box allows you to create and edit timetables.

The schedules can be defined for a prolonged period of time and are stored for each day.
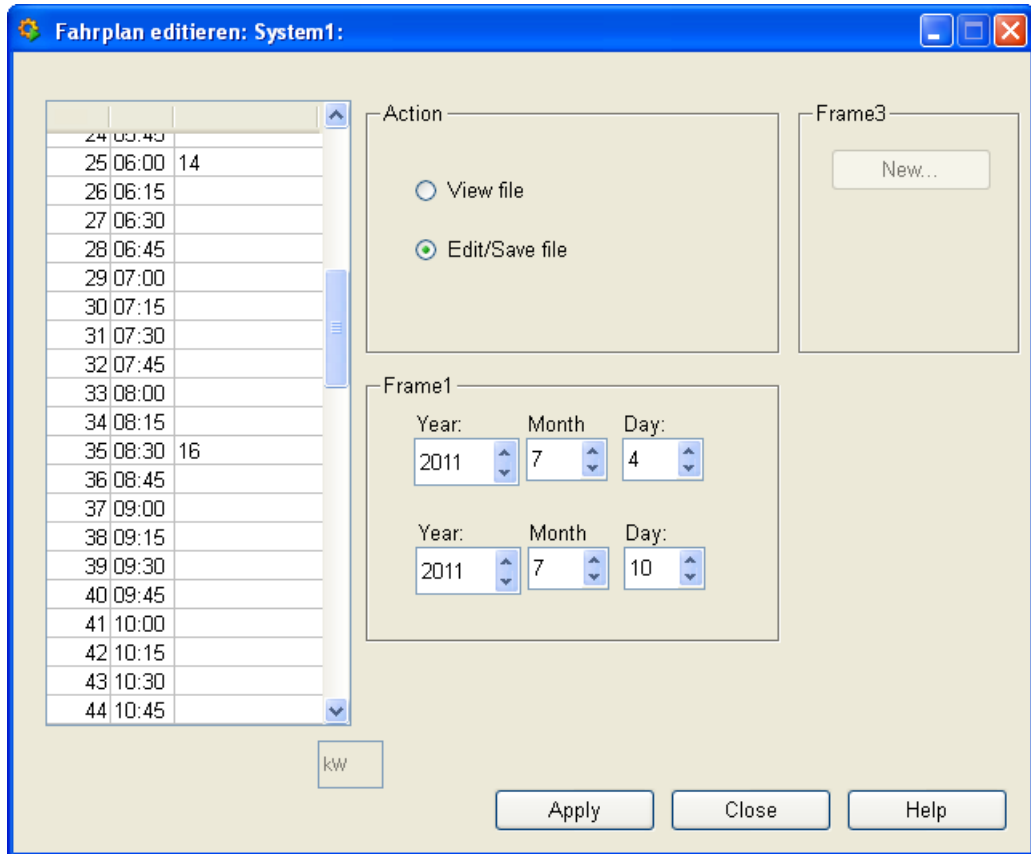
Figure 5-31   Schedule

Table on the left in the "Edit schedule" window

Daily schedule that is valid for the currently selected date.

- "No." column

    nth tariff interval in the course of the day. The number of tariff intervals is calculated and specified by the system.

- "Time" column

    Start time of the tariff interval.

- "Setpoint"

    Power setpoint of the monitored datapoint in the tariff interval.

"Action" area

Differentiation between the display and edit modes.

- "File view" option box

  Activates the display mode. Initial setting when the window is launched.

- "File edit/save" option box

  Activates the edit mode.
  Opens the "Setpoint" table box for writing.
  In the "Period" area, opens the bottom boxes "Year", "Month", "Day" for writing
  Activates the "Accept" button.

"Period" area

In the display mode, only the top date boxes "Year", Month" and "Day" are open. The visible schedule is assigned to the chosen calendar date.

In the edit mode, the bottom date fields are additionally open. The top and bottom calendar dates specify the calendar period to which a schedule can be assigned. The top calendar date specifies the From day and the bottom calendar date specifies the To day.

Creating a schedule

Proceed as follows:

1. Check whether an individual schedule already exists for the target period. The schedule table has the heading "Default schedule" when the default schedule is visible. The table does not have a heading when an individual schedule is assigned to the currently selected day.

2. Activate the "Edit/save file" option box.

3. In the "Period" area, define the calendar period in which the defined schedule is to apply. Enter the From date in the top date boxes "Year", "Month" and "Day" and enter the To date in the bottom boxes.

4. Set up the schedule in the table. Define the power setpoint of the monitored datapoint for each tariff interval.

   Empty "Setpoint" boxes adopt the value of the previous filled box. If a constant setpoint is to apply all day, it suffices to fill the setpoint box of the first interval at the start of the day.

   If the setpoint box of the first tariff interval at the start of the day is not filled, the value entered on the "Parameterization" tab applies.

5. Then click on the "Accept" button.

Result: The system creates the schedule files.

Creating a default schedule

If no default schedule exists, an error message is issued when you launch the "Edit schedule" dialog box.

Proceed as follows to create a default schedule:

1. Create a schedule for any day. Assign the setpoints that are to apply for the default schedule.

2. In Windows Explorer, go to the directory: <Project>\data\EC_TimeTable

3. Identify the file of the newly created schedule.

   The date YYYYMMDD in the file name corresponds to the date value in the dialog box.

4. Rename the file.

   The file pertaining to the default schedule contains the "default" sequence instead of the date:

   <Name of load monitor>_default.csv

Creating a blank table

The "New" button in the "Edit table" area empties all setpoint fields of the currently selected schedule. This action is only possible in the display mode.

To fill the blank table, you must switch to the edit mode.

5.8 Alert classes

Alerts are subdivided into alert classes.

SENTRON powermanager provides four defined alert classes.

Assignment to an alert class

Perform configuration in device Engineering, "Configuration" tab in the "Alert", "High alert", "Low alert" and "Alert class" columns.

A measured value has precisely one alert-triggering upper limit ("High alert") and one alert-triggering lower limit ("Low alert"). One alert is assigned to precisely one alert class. The high and low limits of a measured value cannot be assigned to different alert classes.

Figure 5-32   Alert classes

Available alert classes

The following alert classes are available:

Table 5- 2   Alert classes

List box in device engineering	Alert class (DPE)	Abbreviation	Priority	Color	Type of acknowledgement
Warning NQ	Warning does not require acknowledgment	WANQ	50	Yellow	Cannot be acknowledged
Warning	Warning requires acknowledgement	WA	50	Yellow	CAME or WENT requires acknowledgement
Alert NQ	Alert does not require acknowledgement	ANQ	60	Red	Cannot be acknowledged
Alert	Alert requires acknowledgement	A	60	Red	CAME or WENT requires acknowledgement

● Abbreviation: displayed in the base panel's alert area; 1st column.

● Priority: displayed in the base panel's alert area; 2nd column.

● Color: displayed in the base panel's alert area; 1st and 2nd columns.

- "Cannot be acknowledged": the alert area can only be in the "CAME" or "no alert" state. The normal state is only achieved by a going value change. Acknowledgement is not necessary and also not possible.

- "CAME or WENT requires acknowledgement": each alert range can be in one of the four states:

  - "came/unacknowledged"

  - "came/acknowledged"

  - "went/unacknowledged"

  - "No alert"

The normal state is only achieved by a going value change AND by acknowledging. For acknowledging, however, either the "came" alert must be acknowledged in the "came/unacknowledged" state or the "went" alert must be acknowledged in the "went/unacknowledged" state.

Alert coding

Table 5- 3   Alert coding

Color	Cycle	Meaning
yellow	Flashing rapidly	Pending, unacknowledged warning
yellow	Flashing slowly	No longer pending, unacknowledged warning
yellow	Uninterrupted	Pending, acknowledged warning
Red	Flashing rapidly	Pending, unacknowledged alert
Red	Flashing slowly	No longer pending, unacknowledged alert
Red	Uninterrupted	Pending, acknowledged alert

5.9 Reaction plans

5.9.1 Overview

Automated switching of digital outputs

SENTRON powermanager can switch the interfaced devices' digital outputs automatically. Automation requires configuration of so-called reaction plans.

Target – function – source

A reaction plan consists of three parts: target, function and source.

Target: the target of a reaction plan is a digital output. The output must be configured on the device as "Remote output".

Function: the function denotes the type of triggering. The switching operation can be triggered as follows:

● Digital input of a device

● Alert of a measured value

● Switching bit of a load monitor

Source: any datapoint element (DPE) that provides the selected function serves as the source.

Together, the function and the source are the switching condition.

Assigning the target and condition

A separate reaction plan is needed for every digital output that is to be switched automatically.

A maximum of one condition can be assigned to one target. One condition can be assigned to several targets.

Validity

The system checks the validity of the source and target when a reaction plan is configured.

The reaction plan is not checked during the runtime. Later changes in the system, e.g. modification of the digital output's type of use, lead to incorrect parameterization. Messages pointing out such arising parameterization errors are displayed to users when they reopen the configuration view for reaction plans.

5.9.2 Opening and closing

Opening

Proceed as follows to display reaction plans:

1. In the base panel, click on the "View reaction plans" button on the left of the project tree.

2. Narrow down the display. To do this, click in the project tree on a device, a sector, an area or the project tree root.

   – Root: display of all digital outputs of all devices in the system

   – Area: display of all digital outputs of all devices in the chosen area

   – Sector: display of all digital outputs of all devices in the chosen sector

   – Device: display of all digital outputs of the selected device.

Return to the standard view

Proceed as follows to return to the base panel's runtime view:

1. In the base panel, click on the "Standard view" button on the left of the project tree.

5.9.3 Configuring

The reaction plans are listed in tables on two tabs.

The "Parameterize outputs" tab shows:

- Assignment of the target, function and source

- Switching status of the source

The status of the source can be inverted by means of a switching command.

output's area.sector	output	use type	function	source's area.sector	source	source state	inverted
area_1.sector_11	PAC3200_111 digital o	remote output	alarm	area_1.sector_11	PAC3200_111 freque	OFF	NO
area_2.sector_21	PAC3200_211 digital o	rotation	digital input	area_2.sector_21	PAC3200_211 State	OFF	NO
area_2.sector_21	PAC3200_214 digital o	remote output	Load monitoring	area_1.sector_11	System1:lload_monit	OFF	NO
area_2.sector_21	PAC4200_212 digital o	not used	--	--	--	--	--
area_2.sector_21	PAC4200_212 digital o	not used	--	--	--	--	--

Figure 5-33   "Parameterize outputs" tab

The "Switch outputs" tab shows:

- Switching status of the target

Switching of the digital output can be forced by means of a switching command.

Scope

The table lists the existing digital outputs. In addition to the configured reaction plans, incorrectly parameterized, deactivated or still potentially configurable reaction plans are visible.

The scope is limited to the level selected in the project tree. All digital outputs existing in the system are listed when the project tree root is selected.

A digital output only appears once in the list. Therefore, only ever one condition can be assigned to one output.

Sorting

When it is opened, the table is automatically sorted in ascending order according to digital outputs, i.e. the first two columns "Output area.sector(s)" and "Output".

Sorting is possible according to all columns. Clicking on the column header sorts the table in ascending or descending order, while clicking once again inverts the sort order.

Active reaction plan

A reaction plan is created and active in the runtime system when a function and a source are assigned to a digital output. The "Function" column provides the following functions:

- Binary input

- Alert

- Load monitoring

Selection of a function compels selection of the associated source. The system opens a corresponding selection dialog. A function can be reassigned at any time. The source for a selected function can be changed later.

An existing reaction plan is deactivated by selecting the function

- "No function"

The columns for sources that are not assigned are blank "--".

"Remote output" prerequisite

The "Type of use" column shows the type of use of the digital output that has been set on the device, either directly or with configuration software.

Digital outputs can only be parameterized if they have been configured as a "Remote output". The "Function" column only offers functions for selection if this prerequisite is met. Otherwise, the "Function" and "Source..." columns are blank "- -".

Non-executable parameterization

A configured reaction plan becomes non-executable if the type of use of the digital output is modified later, either directly on the device or via the SENTRON powerconfig configuration software. In this case, a different value is visible in the table instead of the "Remote output" type of use.

The system uses color coding to identify reaction plans that have become non-executable. The reaction plan, i.e. the existing assignment of the target, function and source, is retained.

Table 5- 4   Color coding of reaction plans that have become non-executable

Color	Error class	Meaning
Red	1	The output is configured as "Remote output". It cannot be switched.
Yellow	2	An alert has been selected as the source, but the associated alert handling is not activated. The alert cannot arrive, and so the reaction plan is never executed.
Gray	3	The address of the source or of the target is deactivated. Changes are not registered by the system or the switching command is not forwarded to the device.

Switching commands are executed until the reaction plan is deleted. The "No function" function cancels assignment of the source.

The output remains in its last state if communication with the source is interrupted. The output status changes accordingly as soon as communication with the source is functioning again and it has assumed or assumes a status other than before interruption of communication.

The digital output remains in its state if communication with the digital output is interrupted. The output status changes accordingly as soon as communication with the output is functioning again and the source has assumed or assumes a status other than before interruption of communication.

Behavior in distributed systems

If the digital input of a remote device (non-local device in a distributed system) is linked to the digital output of a local device in a reaction plan and the distributed system is no longer accessible, e.g. due to a communication disruption, the local device internally maintains the last output state.

Please note: if the input state of the remote device changes during the communication disruption, e.g. due to a status change of the input, the local device cannot recognize this status.

Logical inversion

In the "Inverted" column you can activate logical inversion of the switching state. Inversion changes the output status achieved to the opposite one.

"Parameterize outputs" tab

The columns of the "Parameterize outputs" tab are sorted in the order Target – Function – Source.

The "Function" and "Source..." columns are opened only if the digital output is correctly configured as "Remote output".

- "Output area.sector(s)" and "output"

  Digital output of the device that is attached in the designated area and sector of the project tree.

  Display only.

- "Type of use"

  Configured type of use of the digital output. Configuration of a reaction plan requires the "Remote output" type of use.

  Display only.

- "Function"

  Trigger for the switching operation of the digital output:

  – Digital input of a device

  – Alert of a measured value

  – Switching bit of a load monitor

  Clicking in the table cell opens a list box, which offers the trigger types for selection. Clicking on a list entry opens the corresponding dialog for selection of the source.

- "Source area.sector(s)" and "Source"

  Datapoint element that is attached in the designated area and sector of the project tree and that provides the selected function.

  Left-clicking on a cell opens a selection dialog.

- "Status of the source"

  "OFF" or "ON". The meaning depends on the chosen function.

- "Inverted"

  The box allows logical inversion of the switching state.

  "YES" logical inversion is switched on

  "NO" logical inversion is switched off.

"Switch outputs" tab

The "Switch outputs" tab shows the switching status of the digital output. Changeover can be compelled with a switching command.

With the exception of the "Cmd." box, all boxes are display boxes.

- "Output area.sector(s)" and "output"

  Digital output of the device that is attached in the designated area and sector of the project tree.

- "Status"

  Switching state of the digital output.

  "OFF" signal of the digital output is "low".

  "ON" signal of the digital output is "high".

- "SG"

  Vector group.

- "Type of use"

  Configured type of use of the digital output. Configuration of a reaction plan requires the "Remote output" type of use.

- "Cmd."

- Command for switching the digital output.

  "OFF" switches the signal of the digital output to "low". Accordingly, the display in the "Status" column changes from "ON" to "OFF".

  "ON" switches the signal of the digital output to "high". Accordingly, the display in the "Status" column changes from "OFF" to "ON".

Saving the configuration

The "Save settings" button saves the modified configuration in the database.

The system asks you to confirm the action.

A dialog box appears with a warning if the configuration contains errors.

Restoring the configuration

The "Reload original configuration" button discards all changes that have been made since the last backing up and places the last backed-up configuration in the table.

The system asks you to confirm the action.

5.9.4 Selecting a source

"Binary input" function

The "Binary input" function forwards the status of the digital input to the digital output:

● The digital output switches to the "ON" status if the digital input switches to the "ON" status.

● The digital output switches to the "OFF" status if the digital input switches to the "OFF" status.

All digital inputs of all devices in the source system are offered as a "binary input", regardless of their parameterization:

● PAC4200: at least two digital inputs. Up to 10 digital inputs if 2 DI/DO modules are fitted.

● PAC3200: 1 digital input

● PAC3100: 2 digital inputs

● Generic Modbus device: 10 digital inputs

Selection tree for digital inputs

A filtered view of the project tree serves to select the source. Clicking on the "Binary input" value in the "Function" column opens the "Selection tree for binary inputs" dialog box.

Figure 5-34   Selection tree for digital inputs

The "OK" button transfers the selected source to the table of reaction plans and closes the dialog. The "Cancel" button cancels selection.

"Alert" function

The "Alert" function switches the digital output depending on the alert, which is triggered by a specific event.

The high and low limits of the analog values that have an alert configuration are available for selection, regardless of whether or not the alert itself is activated.

Alerts that are not activated are shown in gray in the list of reaction plans. They do not trigger a reaction plan.

Selection tree for alerts

A filtered view of the project tree serves to select the source. Clicking on the "Alert" value in the "Function" column opens the "Selection tree for alerts" dialog box.
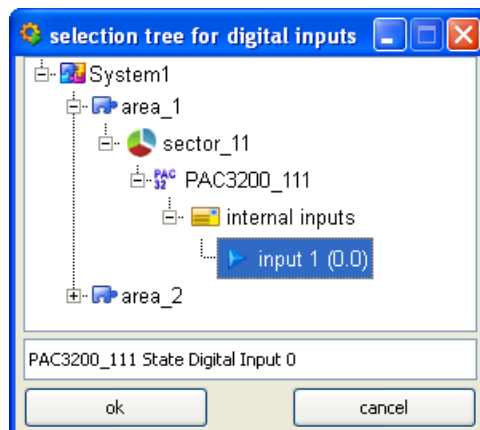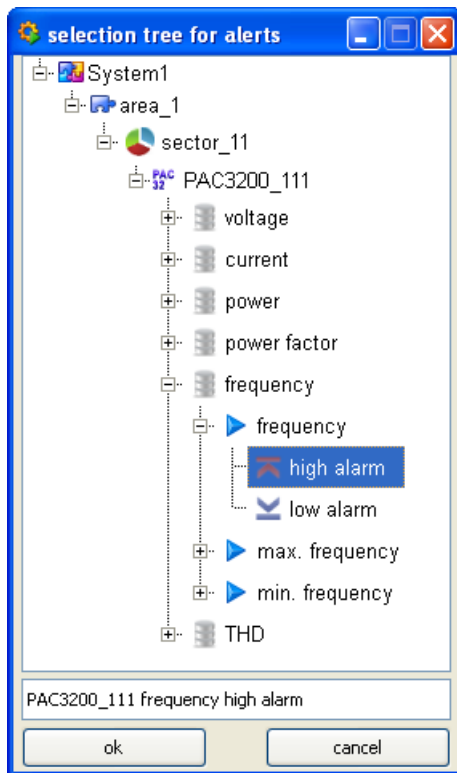

Figure 5-35   Selection tree for alerts

The "OK" button transfers the selected source to the table of reaction plans and closes the dialog. The "Cancel" button cancels selection.

"Load monitoring" function

The "Load monitoring" function switches the digital output depending on the switching recommendation of the assigned load monitor. The switching recommendation is represented by the "switchNo", "switchOff" and "switchOn" switching bits.

- switchNo

  The SwitchNo bit is set when the correction power is within the configured limit curve.

- switchOff

  The switchOff bit is set when load has to be deactivated to presumably avoid exceeding the setpoint in the tariff interval and the correction power lies outside the limit curve.

- switchOn

  The switchOn bit is set when load can be connected without presumably exceeding the setpoint in the tariff interval and the correction power lies within the limit curve.

Selection tree for load monitoring

A filtered view of the project tree serves to select the load monitoring function and the switching bits. Clicking on the "Load monitoring" value in the "Function" column opens the "Selection tree for load monitoring" dialog box.
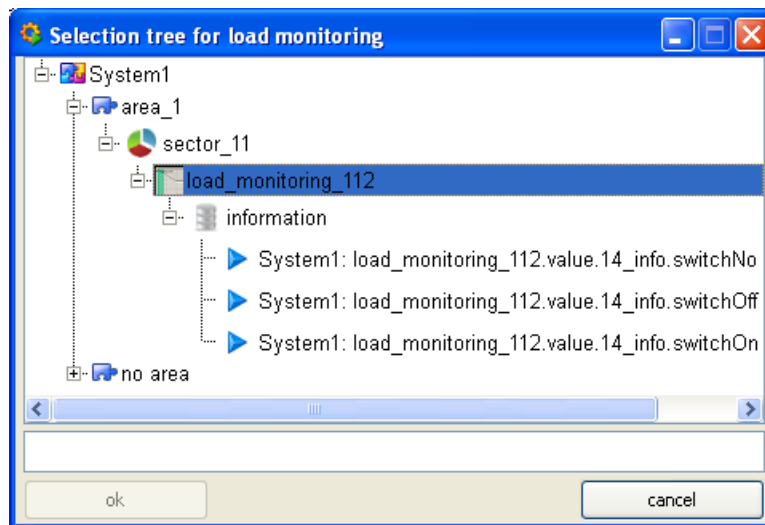
Figure 5-36   Selection tree for load monitoring

5.9.5   Deleting devices

To delete a device from the system, you must first check whether one of its elements is used as a source or target in a reaction plan. If this is the case, the system sends a corresponding message with instructions on what to do.

You cannot delete the device until the corresponding reaction plans have been deleted.

5.10 Filter administration

5.10.1 Overview

With the aid of user-defined filters, the scope of the measured quantities displayed in the base panel can be restricted to individual views.

Filter examples:

- Current values of all devices belonging to a specific sector
- Voltage values supplied by all devices of the "PAC4200" type
- Total active power of all devices in the system with "heating" as part of their names

Using filters

User-defined filters are available at the sector, area and overall system (project tree root) levels. The required filter can be selected in the base panel, "Filter" box.

Filter administration and configuration

Use filter administration to define new filters or to modify existing ones. You can reach filter administration via the project tree root's shortcut menu.

5.10.2 Using filters

Proceed as follows to apply a user-defined filter:

1. Open the base panel's "standard view".

2. In the project tree, select the level to which a filter is to apply: root, area or sector.

3. Select the required filter in the "Filter" box.

Result: the base panel shows the filtered datapoints of the selected project tree branch.

The system remembers the assignment of the project tree branch and filter. Use "No filter" to return to the unfiltered overall view.

Note

No user-defined filters available

No user-defined filters have been created if the selection box contains only the "Default" and "No filter" filters. In this case, create a filter first.

5.10.3   Managing filters

Opening filter administration

Proceed as follows to open filter administration:

1. Right click on the project tree root. Click on the "Filter administration" entry in the shortcut menu.
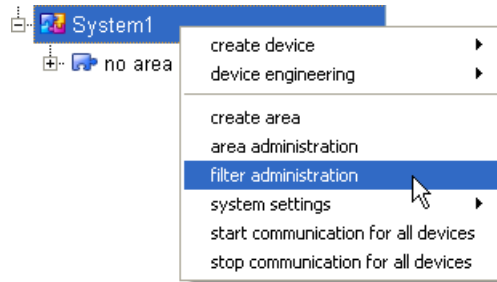
Figure 5-37   Project tree root, selecting filter administration

Filter administration view

Filter administration is horizontally split into three areas.
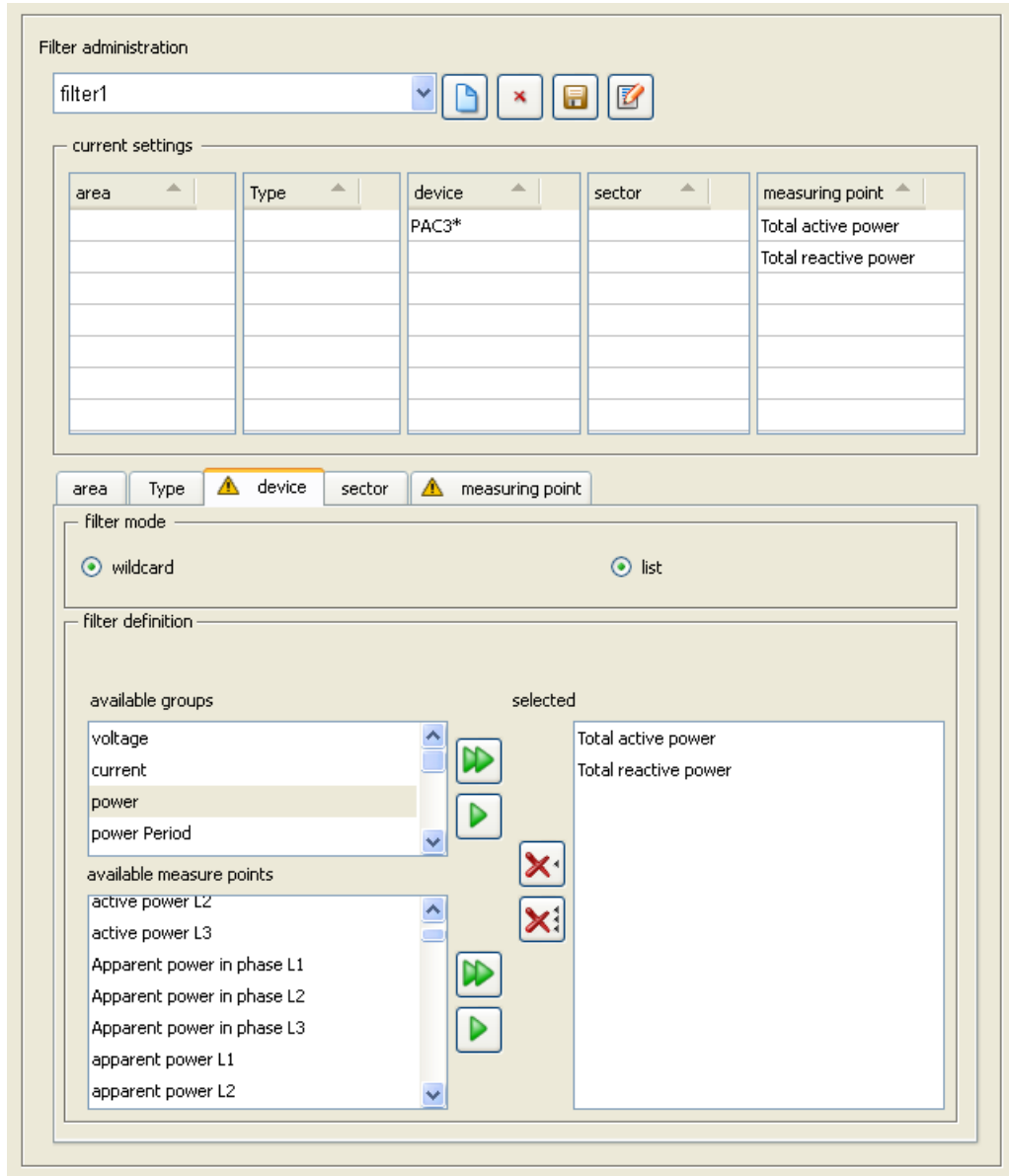
Figure 5-38   Filter administration

Basic functions

The area at the top provides four basic functions:

- Create filter

- Delete filter

- Save filter settings

- Rename filter

Current filter settings

The middle area, "Previous settings", shows the settings of the currently selected filter.

Configuration elements

The bottom areas, "Filter mode" and "Filter definition", contain the elements for configuration of filters.

Creating a new filter

Proceed as follows:

1. Click on the "Create new filter" button

   Give the filter a unique name. Select "Accept" to confirm.

   Result: The name you have assigned appears in the "Filter administration" box. The filter is known in the system, but is still blank.

2. Formulate the filter conditions in the bottom area.

3. Save the filter. Click on the button:

   You can change the filter's name to adapt it to a different language.

Modifying an existing filter

Proceed as follows:

1. Select the filter you wish to edit in the "Filter administration" box.

2. Formulate the filter conditions in the bottom area.

3. Save the filter.

Deleting a filter

Proceed as follows:

1. Select the filter you wish to delete in the "Filter administration" box.

2. Click on the "Delete filter" button.

Powermanager prompts you to confirm deletion.

You cannot delete the "Default" filter.

Renaming a filter

Proceed as follows:

1. Select the filter you wish to rename in the "Filter administration" box.

2. Click on the "Rename filter" button.

3. Enter the new name in the dialog box.

The dialog box shows several languages for selection. Change the name in the required target language.

5.10.4 Configuring filters

Types of definitions

Filter administration offers two methods of configuring filter settings:

- Choosing selection criteria from pre-defined lists.
  To do this, select the "List" option.

- Definition of text sequences that act by way of a full text search.
  To do this, select the "Wildcard" option.

The two kinds of filter definition can be combined.

Areas

The filter conditions are split into 5 areas and, accordingly, are distributed to 5 tabs:

- "Area"

  Areas that are created in the project tree.

- "Type"

  Device types.

- "Device"

  Devices that are created in the project tree.

- "Sector"

  Sectors that are created in the project tree.

- "Measured value"

  All retrievable measured values.

For the "List" filter definition type, the tabs provide the area-specific lists for selection.

A text sequence of the "Wildcard" filter definition type is effective in the area in which it has been created.

Language dependence

If you use the "List" option, the filter results are identical for all languages in the project. The system saves the compiled filter on the basis of the internal designation.

Wildcards refer to the designations in the current language. When you use wildcards, it is highly probable that one and the same filter in different languages returns different results.

"List" filter mode

Assigning selection criteria

To adopt selection criteria for a filter, move the values out of the left-hand "Available" box into the right-hand "Selected" box.

- Adopting a measured variable in the filter

  The button moves the entries marked in the "Available" box to the "Selected" box. Single or multiple selection is possible by mouse clicking, the Ctrl key and mouse clicking or the Shift key and mouse clicking.

- Adopting all measured variables in the filter

  The button moves all entries visible in the "Available" box to the "Selected" box.

- Removing a variable from the filter

![X button with single arrow]

The button moves the entries marked in the "Selected" box back to the "Available" box. Single or multiple selection is possible by mouse clicking, the Ctrl key and mouse clicking or the Shift key and mouse clicking.

- Removing all measured variables from the filter

![X button with multiple arrows]

The button moves all entries back to the "Available"box.

In parallel with the "Available" and "Selected" boxes, the current status of assignment is visible in the "Previous settings" area.

Assigning selection criteria in groups

You can transfer the previously defined groups of measured values from the "Available groups" box to the "Selected" box.

"Wildcards" filter mode

The wildcards mode allows you to define text sequences that filter the display as full text search criteria. The text sequences can contain wildcards:

Table 5- 5   Wildcards

"?"	Any character
"*"	One or several of any characters

Example:

The text sequence "PAC*" entered in the advance selection of the "Device" tab limits display of measured values to devices in the PAC series.

Empty filter

No filter is active when the "Pattern" box is blank or contains the test sequence "*".

The configured filters are displayed immediately in the top "Previous settings" area.

5.11   Power peak analysis

5.11.1   Overview

Note

Availability

The power peak analysis is available as from SENTRON powermanager V3.0 SP1.

SENTRON powermanager contains a report generator for determination of power peaks within a specified time period.

The following can be evaluated:

- Power demand values of the PAC device types. The power demand values' timestamp is at the start of the period.

- Parameterized power demand values of generic Modbus devices.

Report

You receive the result of analysis as a tabular report in the *.csv file format. You can open, print and edit the report file with Microsoft Excel.

Powermanager issues the report in the set language.

Number of Peaks to Display :		5	
Time Preselection	from	until	
	04/01/2011 00:00	04/21/2011 14:26:00 AM	

Measuring Point :			
PAC3200_111 (EM) cumulated active power import			
Limit			
30.000 kW			
Value	from	until	
41.951 kW	06.04.2011 15:00	06.04.2011 15:15	
40.153 kW	18.04.2011 13:30	18.04.2011 14:30	
47.135 kW	18.04.2011 14:45	20.04.2011 12:45	
39.398 kW	20.04.2011 13:00	21.04.2011 09:15	
40.704 kW	21.04.2011 09:30	21.04.2011 12:45	
	more violations available (in sum 1)		

Figure 5-39   Power peak analysis, report created

5.11.2 Opening and closing

Opening the "Power peaks" dialog box

Proceed as follows:

1. Click on the "Power peaks" icon in the SPM base panel.

The "Power peaks" dialog box shows the last saved configuration.

Figure 5-40 "Power peaks" window

Closing the "Power peaks" dialog box

Proceed as follows:

1. Save changes made to the configuration.

2. Close the window. To do this, click on the button:

Note

Save configuration changes

Configuration changes that have not been saved are lost when you close the window.

5.11.3 Creating a report

Proceed as follows to create a report:

1. Open the "Power peaks" dialog box.

2. Check the current configuration data. Modify the configuration data to suit your requirements.

3. Determine the directory where you want to save the report.

4. Trigger report creation. To do this, click on the "Create report" button.

   Wait until the progress bar shows "100%" and then jumps back to "0%".

Result: SENTRON powermanager has created the report and saved it in the specified directory.

Save the modified configuration if you wish to keep it.

5.11.4 Configuring

Scope

Configuring power peak analysis comprises:

- Selecting datapoints
- Defining the limit of the datapoint
- Narrowing down the query period
- Displaying power peaks in the report
- Report file name and path

The complete configuration is possible in the "Power peaks" dialog box.

Selecting datapoints

The "Measured values" table lists the datapoints that are included in the analysis and are printed in the report.

The "Meas. Value Selection " area under the "Measured value" table provides the functions for editing the table entries:

● Including datapoints in the "Measured value" table.

● Deleting a datapoint from the "Measured value" table.

● Changing the limit of a datapoint or limits of all datapoints.

Including a datapoint in the "Measured value" table.

Proceed as follows:

1. Click on the button:
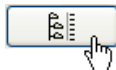
   The button opens the "Value selection" dialog box.

2. Choose the required datapoint from the selection tree of the "Value selection" box. Click on the button:
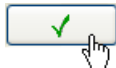
   Result: the selection tree is closed. The selected power type is transferred to the "Measured value" box.

3. Determine the limit of the datapoint in the "Limit" box.

   Violation of the value is considered to be a power peak.

4. Activate the "Single limit" option box.

5. Click on the button to the right of the Limit box.

   Result: the datapoint with its assigned limit appears in the "Measured value" table.

Deleting a datapoint from the table

Note

Deleting without confirmation

The system deletes the selected table entry without prompting.
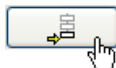
Proceed as follows:

1. Click on the entry you wish to delete in the "Measured value" table.

2. Click on the button:

Deleting all datapoints from the table

Note

Deleting without confirmation

The system deletes all table entries without prompting.

Proceed as follows:

1. Click on the button:

Editing a datapoint in the table

1. Click on the entry you wish to edit in the "Measured value" table.

   The data is placed in the "Meas. Value Selection" area.

2. If necessary, overwrite the "Limit" box.

3. Activate the "Single limit" option box.

4. Transfer the change to the table. To do this, click on the button:

Edit limit: single limit/general limit

The "Single limit" and "General limit" option boxes change the button's behavior:

Single limit

The button transfers the current "Measured value" and "Limit" to the "Measured value" table. The entries already existing in the table remain unchanged.

General limit

The button transfers the current "Measured value" and "Limit" to the "Measured value" table and overwrites all existing table entries with the new limit.

Note

No "Undo"

To cancel this step, you must re-edit all limits already parameterized.

Query period

The "Start time" and "End time" boxes in the "Query parameters" area narrow down the query period.

A number of previously defined calendar periods is available for selection:

Open intervals:

- Today

- This week

- This month

- This year

Closed intervals:

- Yesterday

- Last week

- Last month

- Last year

- Last 24 hours

- Last 3 days

Any periods:

- Any day

- Any period

A selected previously defined period can be modified to suit requirements.

Start and end times can be specified exactly to the second.

Define query period

Proceed as follows:

1. Click on the "Set query time" button.

2. Select one of the previously defined periods in the dialog box. Or define an individual period in the "Start time" and "End time" boxes.

3. Confirm the period by clicking on the button:

Displaying power peaks in the report

The "Power peaks" area contains parameters for display of power peaks in the report:

- "Show percentage deviation"

  The percentage deviation of the power peak from the parameterized limit value is calculated and printed in the report.

- "Number"- "All" or "Input"

  The "Number" box specifies how many power peaks per measuring point are displayed in the report. An annotation is inserted in the report if the number of power peaks determined exceeds the set value.

  The limit to the set value is active if the "Input" option box is selected.

The "All" option is set by default. This option ignores the value in the "Number" box. A detailed report is created.

Report file name and path

Filename

Powermanager writes the power peak analysis report into a *.csv file. The file name is fixed:

```
Peak_Data_<YYYY>_<MM>_<DD>_<HH>_<MM>_<SS>.csv
```

Calendar date of the starting time

<YYYY> year
<MM> month
<DD> day

Time of the starting time

<HH> hour
<MM> minute
<SS> second

Directory

You can choose the directory freely.

The "Target path" box contains the directory set last, e.g.

```
<..>/<project_directory>/data/
```

Overwrite the path to suit your requirements.

The path can contain the slash "/" or the backslash "\" as the directory delimiter.

The lowermost directory must be terminated with a directory delimiter, e.g.
"../data/" instead of "../data".

Note

Default directory

If the user's individual target path does not exist on the computer, powermanager writes the report file into the default directory.

Default directory

The "\data" directory underneath the project directory is the default directory.

The default directory is set by default when the application is installed.

Any directory deviating from the default directory is stored on the client computer and not throughout the system.

5.11.5   Saving the configuration

Note

Save configuration changes

Configuration changes that have not been saved are lost when you close the window.

Proceed as follows to save a configuration change:

1. In the "Power peaks" window, click on the button:

5.11.6   Calculating power peaks

Scope

Powermanager calculates power peaks on the basis of archived data.

A power peak can consist of one or several periods. It begins with the period end of the first measured value that exceeds the defined limit and ends with the period end of the last measured value that exceeds the limit.

To determine the end of the period, the period length at the time of the period start is determined and is added to it. If several measured values exceed the limit in succession, the highest violation within the time range is specified as the power peak. The value's period end is always specified in the report as the time for a measured value.

Percentage deviation

The percentage deviation from the limit is calculated on the basis of:

((Value of the highest violation) – (Limit)) / (Limit) * 100 %

The percentage deviation is rounded to integral percentages without decimal places.

Example of percentage deviation

Limit: 2 kW, query period: 01.01.2010 10:00 to 01.01.2010 11:00

Table 5- 6   Measured values

Timestamp (period start)	Time period [min]	Value [W]
01.01.2010 10:00 h	15	1957
01.01.2010 10:15 h	15	2110
01.01.2010 10:30 h	15	2215
01.01.2010 10:45 h	15	2013
01.01.2010 11:00 h	15	957

The following violations have occurred:

01.01.2010 10:30 h to 01.01.2010 11:00 h
 Value: 2215 W

(2215 W – 2000 W) / (2000 W) * 100 % = 11 %

Reporting

6

6.1 Overview

SENTRON powermanager provides you with a powerful report generator.

The report generator uses Microsoft Excel. The system accesses pre-defined Excel templates and fills them with data from the process database. The data is displayed in Excel as raw data and is edited graphically in diagrams.

Creation of the report can be initiated manually, semi-automatically or fully automatically. Fully automatic creation is time-driven and does not require user intervention.

Getting Started

Getting Started provides the report types pre-defined in the default and shows you, in step-by-step instructions, how to set up an individual report system. In summary, reporting is set up as follows:

1. **You inform yourself about which preconfigured report types SENTRON powermanager offers**

2. **You prepare the cost center report**

   – You create one or more media.

   – You create one or more tariff sets.

   – You create one or more cost centers.

3. **You create your report templates**

   In the template, you define once which data is to be logged in the report.

4. **You create your reports on the basis of your report templates**

   Creation of each individual report must be initiated manually. In the next step you automate creation.

5. **You set up semi-automatic creation of reports**

6. **You set up fully automatic creation of reports**

6.2 Requirements

Microsoft Excel macro security level

The safety concept of Microsoft Excel allows the user to decide whether macros are to execute or not. For interruption-free operation of the SPM report generator, it is necessary to set the security level to "low".

Proceed as follows:

1. Open Microsoft Excel.

2. Go to the "Security" window: "Tools > Macro > Security"

3. On the "Security Level" tab, select the option "Low".

4. Confirm the selection with "OK".

Additional Microsoft Excel system files

Additional system files are required to operate Microsoft Excel under Microsoft Windows XP. The SPM report generator requests the files if they are not already available on the computer.

You can find instructions on how to provide the files in the Chapter "Starting and terminating (Page 101)", Section "Error message when starting reporting – Post-installing system files".

Microsoft Excel availability for fully automatic report generation

A permanently running computer is required for cyclic and fully automatic report generation. Normally, this would be a server computer and not a workstation computer.

Microsoft Excel must be started on the computer.

6.3   Starting and terminating

Opening the report window

Proceed as follows to open the start window of the SPM report generator:

1. Open the SPM base panel.

2. In the Icon line, click on the "Reporting" icon:

Result: The SPM starts Microsoft Excel. Excel opens the "SENTRON powermanager Report" window.

You can find a description of the start window in the chapter "The SENTRON powermanager Report start window".

If you receive an error message when calling, please follow the instruction in the following section "Error message when starting reporting – Post-installing system files".

Return to the report window

The start window of the SPM report generator has the Excel filename "Report.xls".

If you have opened several windows in Excel and you want to return to the start window of the SPM report generator, proceed as follows:

1. Close the Excel menu "Window".

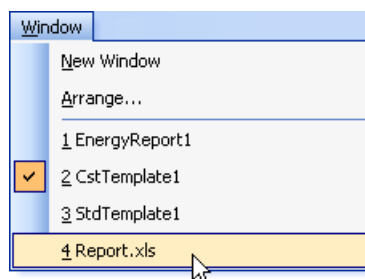2. Select the menu item "Report.xls".

Figure 6-1   Excel, menu title "Window"

Closing report window

Proceed as follows to terminate reporting and close the Excel "Report" window:

1. In the Excel "Window" menu, check how many windows you have opened.

2. Close all windows that you have opened from the Report start window. In individual cases, decide whether you want to save any as yet unsaved changes.

3. Finally, close the Report start window.

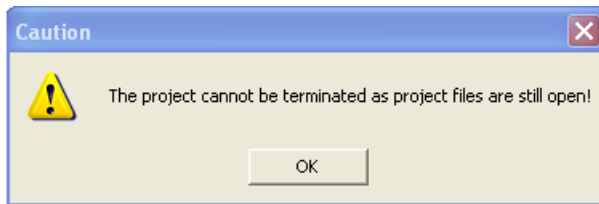   If other windows of the report generator are opened, you will receive a message.

Figure 6-2   Message "The project cannot be terminated"

Error message when starting reporting – Post-installing system files

Microsoft Excel under Windows XP requires additional system files for SPM reporting. If these supplements have not been installed on the server computer, you will receive the error message "Objects could not be loaded".

The Product CD contains a batch file for post-installing the missing system files. Proceed as follows:

1. Close Microsoft Excel.

2. Insert the SPM Product CD into the drive slot.

3. On the Product CD, open the folder on the "LW:\reportRegEdit\".

4. Click on the "reportReg.bat" file.

5. Confirm the success messages with "OK".

Result: The missing files have been post-installed. It is possible to start Excel.

6.4 The "SENTRON powermanager Report" start window
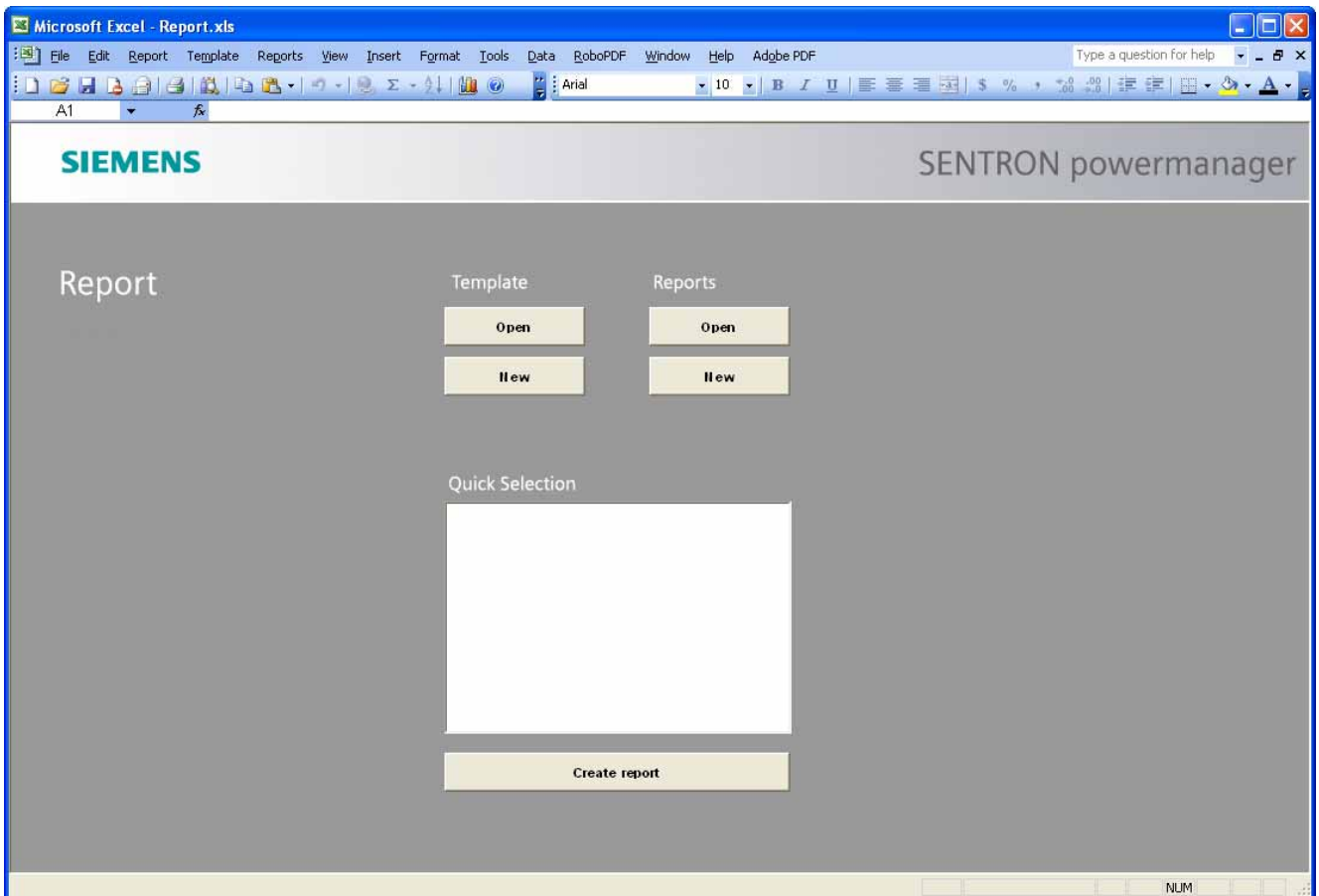
The start window is divided into 3 areas.

Figure 6-3   SPM reporting, start window

Areas

- "Template" area
  - The "New" button creates a new report template.
  - The "Open" button opens an existing report template for editing.
- "Reports" area
  - The "New" button creates a report on the basis of an existing template.
  - The "Open" button opens a created report.
- "Quick Selection" area

  The "Quick Selection" area enables semi-automatic report creation based on a template and on stored information about the report type and the report period.

Additional menu titles

The menu bar of the Excel "Report" window contains 3 additional menu titles:

- "Report"
- "Template"
- "Reports"

The menus contain the additional Excel commands that you need for working with the SPM report generator.

The menus are available in all Excel windows that you can call from the start window.

The menus are not available if you open an Excel template belonging to the SPM report generator direct in the file folder.

6.5 Report types

6.5.1 Overview

The following sections present the report types that can be generated:

- Cost center report
- Measuring point comparison
- Measured value comparison
- Duration curve
- Standard report
- EnergyReport

The report variants differ by virtue of the report format and report types assigned to them.

The report format restricts the measured variables that can be selected, e.g. to demand values or energy counters. It defines the display format, e.g. display as a characteristic curve or a duration curve or it recycles data, e.g. for cost recording.

The report type determines the interval and the period, e.g. values cumulated every hour over the day.

In the SPM default, report formats and types are already configured for use.

6.5.2   Cost center report

Overview

The cost center report represents consumption and the correlated costs per medium, grouped according to cost centers.

Report template

CstTemplate.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 1   Pre-defined report types

Name	Interval	Period	Start of the period
Daily report	Hour	Day	Previous day, 00:00:00 h
Monthly report	Day	Month	First day of the month, 00:00:00 h

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

Report, output to Microsoft Excel

The report contains three sheets:

- Std
- Cost center report diagram
- Cost center report table

"Std" sheet

This sheet contains the raw data of the cost center report with values per interval and total values of all intervals.

Figure 6-4   Cost center report, raw data, hourly intervals throughout the day

"Cost center report diagram" sheet

The diagram maps assignment of the media to cost centers and shows the consumption and costs per medium in the selected time period.

The left-hand bar chart shows consumption values, and the right-hand bar chart shows the correlated costs per medium (one beneath the other in the figure).

For each cost center, a maximum of 10 media can be displayed according to the assignment of a maximum of 10 tariff sets in the cost center definition.

The columns for consumption and costs of a medium have the same color. Different media are color-coded. The legend explains the color assignments.
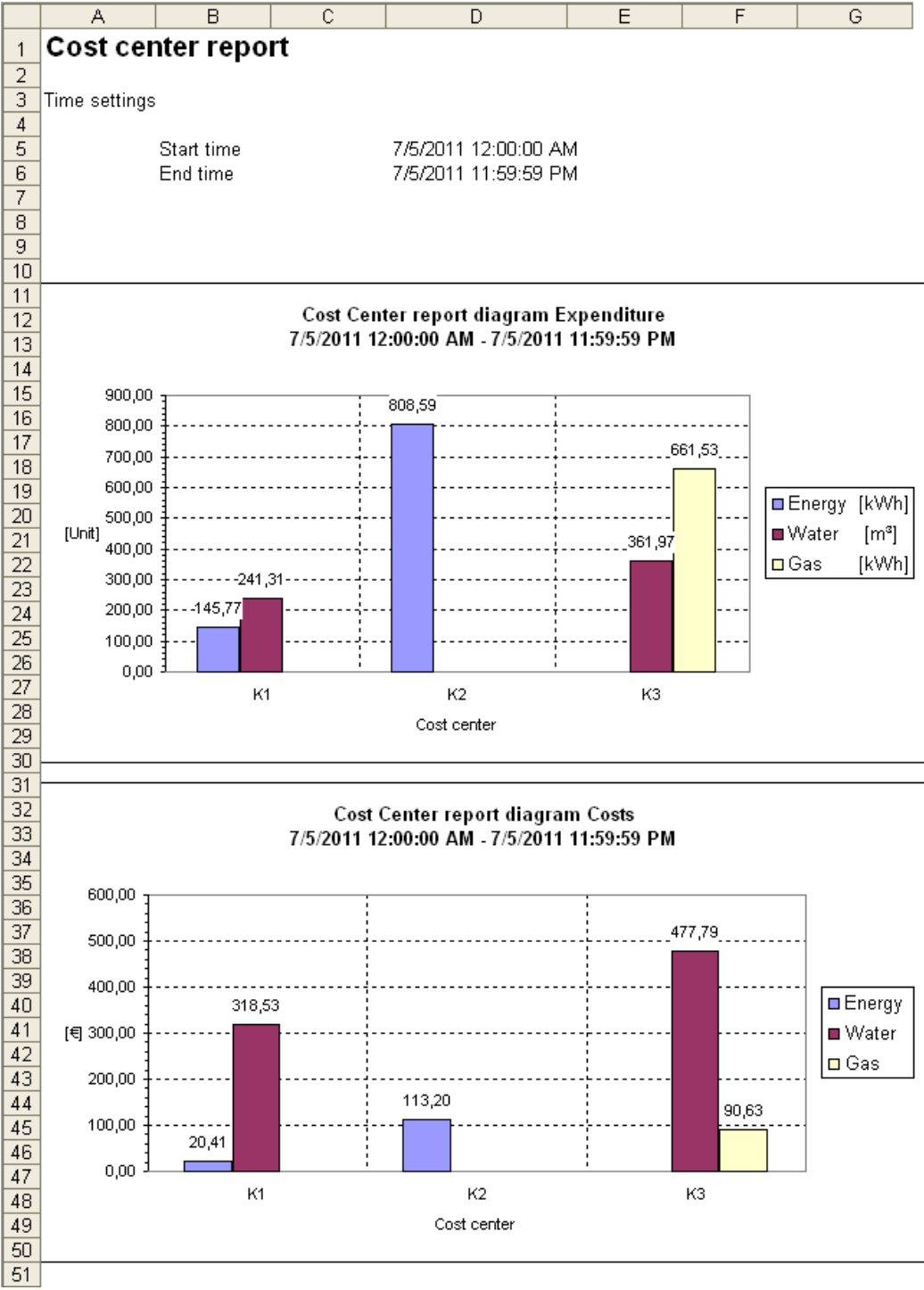
Cost center report

Figure 6-5   Cost center report, diagram

"Cost center report table" sheet

The table shows the sum values of the reporting period:

- Overall consumption per medium and per cost center

- Total costs per medium and per cost center

- Overall consumption per medium across all cost centers

- Total costs per medium across all cost centers

- Total costs per cost center

- Total costs across all cost centers

An empty cell in the matrix indicates that no corresponding medium is assigned to the cost center.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	**Cost center report**												
2													
3	Time settings												
4													
5		Start time		7/5/2011 12:00:00 AM									
6		End time		7/5/2011 11:59:59 PM									
7													
8													
9						Energy			Water			Natural Gas	
10		Cost center		Total costs [€]		Expenditure[kWh]	Costs [€]		Expenditure[m³]	Costs [€]		Expenditure[kWh]	Costs [€]
11		K1		338,94		145,77	20,41		241,31	318,53			
12		K2		113,20		808,59	113,20						
13		K3		568,42					361,97	477,79		661,53	90,63
14													
15													
16		Total		1.020,56		954,36	133,61		603,28	796,32		661,53	90,63
17													

Figure 6-6 Cost center report, totals

The total costs of a cost center result from the sum of the single costs for each medium. The values of the single costs are added up without checking the unit or the currency of the single costs.

6.5.3 Measuring point comparison

Overview

The "measuring point comparison" report shows the total consumption of different measuring points over a specific period in a bar chart.

Report template

CompareValues.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 2   Report types

Name	Interval	Period	Start of the period
Comparison_15min_Day	15 minutes	Day	Previous day, 00:00:00 h
Comparison_15min_Month	15 minutes	Month	Current day of the previous month, 00:00:00 h
Comparison_Hours_Day	Hour	Day	Previous day, 00:00:00 h
Comparison_Hours_Month	Hour	Month	Current day of the previous month, 00:00:00 h
Comparison_Days_Month	Day	Month	Current day of the previous month, 00:00:00 h
Comparison_Days_Year	Day	Year	Current day of the previous year, 00:00:00 h

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

The interval selected in the report type is irrelevant for the display in the diagram. It displays the total values over the period.

The interval determines which data is used for the calculation.

Report, output to Microsoft Excel

The report contains two sheets:

- "Std", raw data, values cumulated according to the report type
- "Sum graph"

"Sum graph" sheet

The unit entered on the vertical axis is taken from the datapoint that is entered in column "C" of the report template. The unit taken automatically can be overwritten manually when defining the report template.
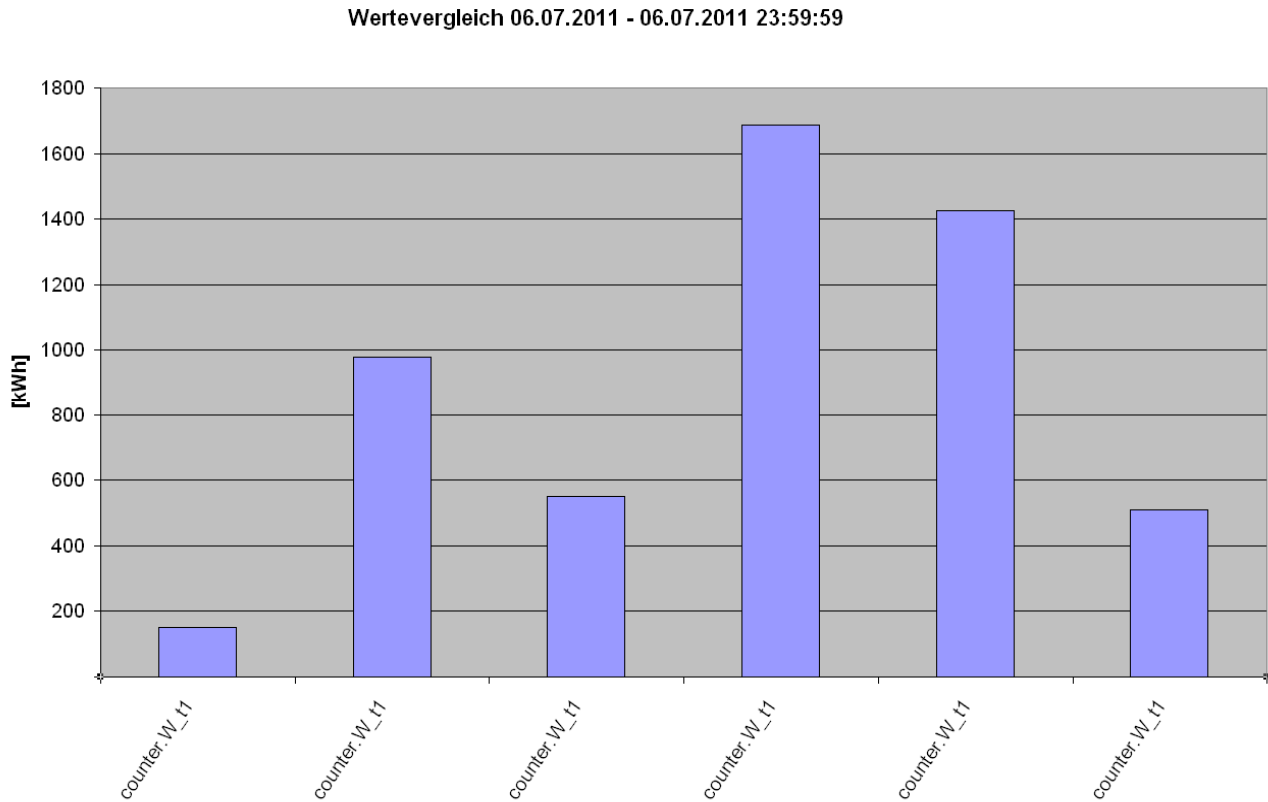

Figure 6-7   Measuring point comparison

6.5.4 Measured value comparison

Overview

The "Measured value comparison" report shows the energy consumption over the selected time period per interval.

There are two cases:

- Comparison of the consumption values of several measuring points in the same period
- Comparison of the consumption values of the same datapoint, ,e.g. comparison of one day with the previous day

Up to 10 measuring points can be displayed in the diagram.

Report template

ComparisonReport.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 3   Report types

Name	Interval	Period	Start of the period
Comparison_15min_Day	15 minutes	Day	Previous day, 00:00:00 h
Comparison_15min_Month	15 minutes	Month	Current day of the previous month, 00:00:00 h
Comparison_Hours_Day	Hour	Day	Previous day, 00:00:00 h
Comparison_Hours_Month	Hour	Month	Current day of the previous month, 00:00:00 h
Comparison_Days_Month	Day	Month	Current day of the previous month, 00:00:00 h
Comparison_Days_Year	Day	Year	Current day of the previous year, 00:00:00 h

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

Offset for period comparison

The time window of the data export can be moved according to periods. The offset can be defined in the "Offset" box of the report template. The "Insert measured value" dialog box contains a corresponding "Offset" box, in which you can insert the offset digit.

Table 6- 4   Period offset

Offset	
0	Period that is selected during report generation
1	One period later, e.g. next day
2 …	
-1	One period earlier, e.g. previous day
-2 …	…

In a very easy way, the offset makes it possible to compare consumption values of the same device over several periods, e.g. from one day to the previous day or from one month to the previous month.

You will find further information on the "Insert measured value" dialog box in "Datapoints in the EnergyReport and other report types (Page 136)".

Report, output to Microsoft Excel

The report contains two sheets:

● "Std", raw data, values cumulated according to the report type
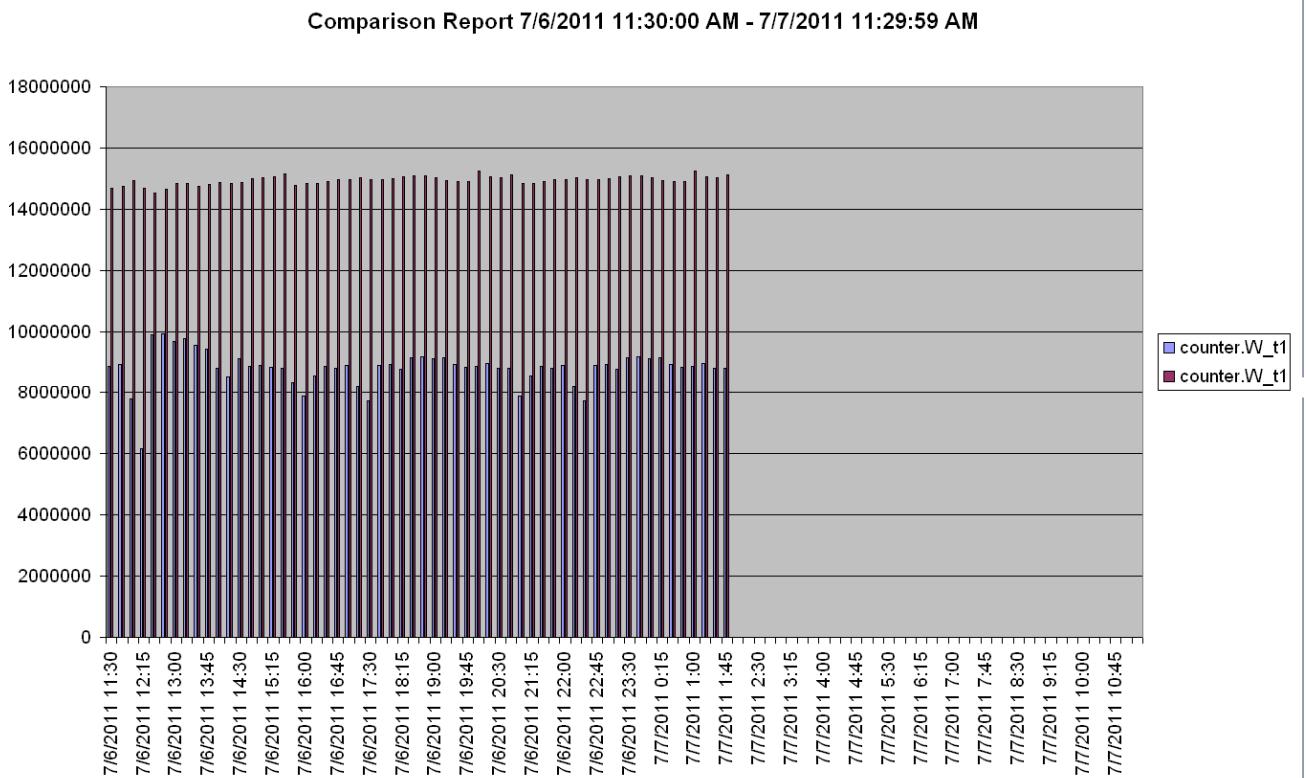
● "Graph"

"Graph" sheet

Figure 6-8   Measured value comparison, 15-minute intervals throughout the day

6.5.5 Duration curve

Overview

The duration curve indicates which power demand value is applied for how long in the selected period. Entries are sorted from the shortest to the longest.

Report template

ContinuousLine.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 5 Report types

Name	Interval	Period	Start of the period
Daily duration curve "Daily_cl"	Hour	Day	Previous day, 00:00:00 h
Monthly duration curve "Monthly_cl"	Day	Month	First day of the previous month, 00:00:00 h
Yearly duration curve "Yearly_cl"	Month	Year	First day of the current previous year's month, 00:00:00

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

Report, output to Microsoft Excel

The report contains two sheets:

- "Std", raw data, cumulated according to the report type
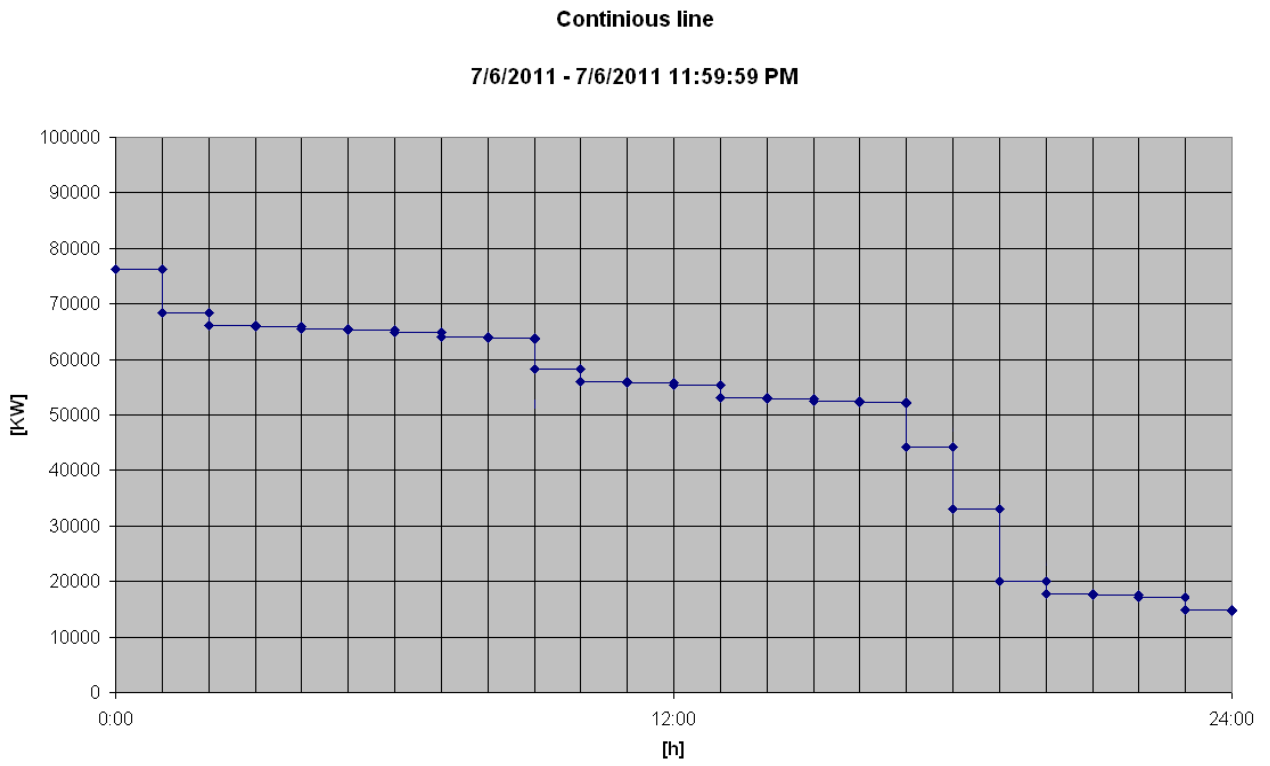- "Graphic"

"Graphic" sheet

Continious line

7/6/2011 - 7/6/2011 11:59:59 PM

Figure 6-9   Daily duration curve with hourly intervals

6.5.6 Standard report

Overview

With the standard report you can query all raw data, both counted and also general measured values.

The standard installation contains no graphic display of data. This can be added individually to Microsoft Excel.

Report template

StdTemplate.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 6   Report types

Name	Interval	Period	Start of the period
Daily report	Hour	Day	Previous day, 00:00:00 h
Monthly report	Day	Month	First day of the month, 00:00:00 h

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

6.5.7 EnergyReport

Overview

The "EnergyReport" is intended for exporting energy or power demand values. Only the raw data is provided, without graphical processing.

Report template

EnergyReport.XLT

Report types

The following report types are pre-defined and assigned in the default:

Table 6- 7   Report types

Name	Interval	Period	Start of the period
Daily report	Hour	Day	Previous day, 00:00:00 h
Monthly report	Day	Month	First day of the month, 00:00:00 h

The period and the start of the period are pre-defined default values. When creating the report, you can define the report period individually.

6.6 Preparing the cost center report

6.6.1 Media

Overview

Media are used only in the cost center report. You must create at least one medium in the system to then be able to create a tariff set, a cost center and the cost center report.

SENTRON powermanager uses the general term "medium" for a material or energy type with an assigned unit, e.g. electricity measured in kWh or water consumption measured in m^3.

As the medium can be defined freely, non-metric units, e.g. Anglo-American units of measures, are also possible.

A medium that is used in a tariff set cannot be deleted.

Note

Converting the unit

The unit of the medium can be selected independently of the unit of the recorded measured variable.

In the cost center report's template, you can convert the datapoint's unit to the unit of the medium, e.g. m³ to kWh.

You will find more information in the section entitled "Data points in the Cost Center report (Page 133)".

Creating a medium

Proceed as follows to create a medium:

1. Select the menu item "Report > Configuration > Medium".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Specify the password "erAdmin" in the "Password" dialog window. Confirm with "OK".

3. In the "Medium" dialog window, click on the icon below.

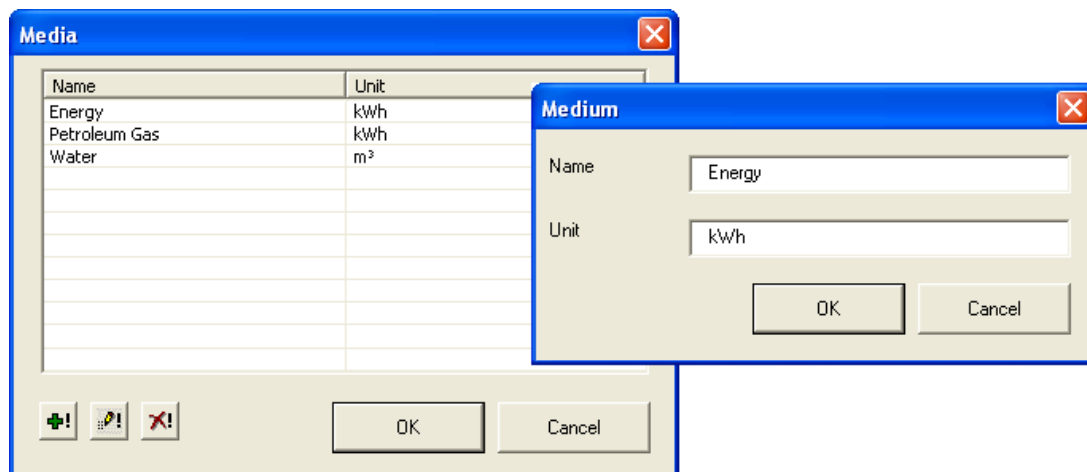4. Enter the data in the "Medium" window, e.g. "Electricity" and "kWh":

Figure 6-10   Create a new medium in the "Medium" dialog box

5. Terminate creation by clicking "OK".

6.6.2   Tariff sets

Overview

A tariff set

- assigns one or several prices to a medium
- defines which price is to apply on which days and at which times of the day
- specifies the calendar period throughout which it is valid

Tariff sets are needed to define cost centers. There must be at least one tariff set so you can create a cost center.

Requirement

At least one medium created in the system is needed to define a tariff set.

You can find information on media in "Media (Page 118)".

Structure of a tariff set

Division into sub-tariff sets

A tariff set contains up to 10 sub-tariff sets. Sub-tariff sets follow one another in chronoligical order. Precisely one sub-tariff set applies at any one time.

"Default" sub-tariff set

A tariff set contains at least one sub-tariff set. This set with the name "Default" is stipulated by the system, must be used and cannot be deleted.

The "Default" sub-tariff set applies globally to all calendar periods that are not covered by other additionally defined sub-tariff sets.

Additionally defined sub-tariff sets

In addition to the "Default" sub-tariff set, sub-tariff sets that can be named freely can be created and also deleted. These sets overwrite the "Default" sub-tariff set for a defined validity period. The validity periods of two sub-tariff sets cannot overlap.

Tariffs

One sub-tariff set contains up to 12 tariffs.

The tariffs can be assigned, exactly to the hour, to weekdays, Sundays and holidays, and the following applies:

● The week from Monday to Sunday must be occupied completely. Definition of holiday tariffs is optional.

● Several tariffs can be distributed over a day. The validity periods must not overlap and must cover the whole day.

Creating a tariff set

Proceed as follows to create a tariff set:

1. Select the menu item "Report > Configuration > Tariff Sets".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Specify the password "erAdmin" in the "Password" dialog window. Confirm with "OK".

3. In the "Tariffsets" dialog window, click on the icon below.

4. Enter the tariff data in the "Tariffset Details" window:

   – Define a name for the tariff set in the "Name" box.
     Select the medium in the "Medium" box.
     Assign a currency to the medium.

   – Fill in the existing "Default" sub-tariff set.

     Defines prices and times of the day. Assign the tariffs to weekdays, Sundays and holidays.

     If necessary, define holidays.

   – If necessary, create further sub-tariff sets. Use the "Add" or "Copy" buttons to do this.

   You can find a description of the fields and other brief instructions in the sections below.

5. Terminate creation by clicking "OK".

The "Tariffset Details" dialog window

12 tariffs can be defined per sub-tariff set. The tariffs are numbered from "Tariff 1" to "Tariff 12".

Figure 6-11   Tariff set with weekday and holiday tariff

- "Name"

    Name of the tariff set. The tariff set will be offered under this name in the selection lists of the reporting function, e.g. when defining the cost center.

    Assign a unique meaningful name.

- "Medium"

    Material or energy type with an assigned unit that is priced in the tariff.

    For additional information on the medium, please refer to "Media (Page 118)".

- "Currency"

    Currency of cost recording.

- **"Sub-tariff set" area**

    All data within the "Sub-tariff set" area refers to the currently selected sub-tariff set. The name is visible in the name box. A list offers the created sets for selection.
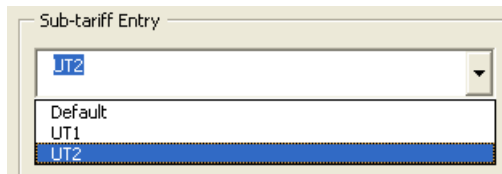
Figure 6-12   Selecting the sub-tariff set

    The "Default" sub-tariff set is preselected.

- "Copy" button

    Copies the currently selected sub-tariff set and creates a new set with the imported data.

    Overwrite the "Valid from" and "Valid to" boxes with the desired period of validity.

- "Edit" button

    Allows you to change the name of the currently selected sub-tariff set.

- "Add" button

    Creates a new sub-tariff set. The current date and time are set in the "Valid from" and "Valid to" boxes. Overwrite this initial default with the desired period of validity.

- "Delete" button

    Deletes the currently selected sub-tariff set.

Note

Deletion without prompting

The "Delete" button deletes the currently selected sub-tariff set without additionally prompting confirmation.

● "Valid from", "Valid to"

Period in which the currently selected sub-tariff set is valid.

The validity periods of several sub-tariff sets cannot overlap. The system sends an error message if this is configured wrongly.

Note

Full day

The time must be set to "00:00:00" h in the "Valid from" box and to "23:59:59" h in the "Valid to" box.

● **"Times/Costs"**

The checkbox in front of the tariff number opens the assigned fields for input. Simultaneously, the checkbox switches the tariff on or off.

☑ Tariff 1

Figure 6-13   Tariff is switched on and effective

☐ Tariff 1

Figure 6-14   Tariff is switched off

Define one or several tariffs. Specify the following per tariff:

– Daily demand period with times of day "From" "To"

– Price referred to consumption time

– Weekdays and holidays on which the tariff applies

The times of day in the "From" and "To" boxes are exact to the hour. Specification of minutes or seconds is rejected.

The default setting "From 00:00:00" "To 00:00:00" corresponds to the full 24-hour day. The system ensures that there are no time overlaps or errors. You receive an error message if the total daily period deviates from the 24-hour day or the defined weekdays do not result in a 7-day week.

● "Holidays (Ho)"

The "Ho" checkbox in the "Times/Costs" area stands for holidays. The days of the year defined as holidays can be found in the list field in the "Holidays (Ho)" area. When a new tariff set is created, the list is empty.

Note

Holidays in the sub-tariff set's period of validity

Set the checkmark for public holidays in the sub-tariff set in which the holiday tariff is located. Otherwise, the holiday is calculated at 0 €.

Defining holidays

Define the holidays for the period that is to be recorded in the cost center report.

Proceed as follows:

1. Click on "Add" in the "Holidays (Ho)" area.

2. Enter the date of the holiday in the dialog window "Insert Date".

   Insert the date straight into the date box or click on the switch to open the calendar. Click on the desired day in the calendar.

3. Confirm with "OK".

Result: the day is added to the list of holidays and is immediately effective for the tariff.

Deleting a tariff set

Deleting a tariff set affecst the cost centers it is assigned to. Deletion cancels assignment. As a result, the cost center is wrongly configured.

Note

Incorrectly configured cost center due to tariff set deletion

Only delete a tariff set if you are sure that the tariff set is not assigned to a cost center required for active operation.

Proceed as follows to delete a tariff set:

1. Select the menu item "Report > Configuration > Tariff Sets".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Specify the password "erAdmin" in the "Password" dialog window. Confirm with "OK".

3. In the "Tariffsets" dialog window, click on the tariff set you want to delete.

4. Click on the Delete icon.

   The system asks for a confirmation. Click on "OK" in the message window if you want to delete the selected tariff set.

   There is no confirmation of the delete operation in the "Tariffsets" dialog window. You can exit the window with "OK" or "Cancel".

6.6.3 Cost centers

Overview

It is necessary to define at least one cost center to create the template of the standard cost center report.

You need at least one tariff set to define a cost center. Creation of a new tariff set must thus precede creation of the new cost center.

One cost center can be assigned up to 10 tariff sets.

One cost center cannot be assigned several tariff sets that contain the same medium, e.g. no two tariff sets can be assigned for the electricity medium.

The same tariff set can be assigned to any number of cost centers.

A cost center is not bound to a specific template but is available for general use.

Creating a cost center

Create one or more cost centers in accordance with your requirements.

Proceed as follows:

1. Select the "Report > Configuration > Cost Centers" menu item.

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Specify the password "erAdmin" in the "Password" dialog window. Click on "OK to confirm.
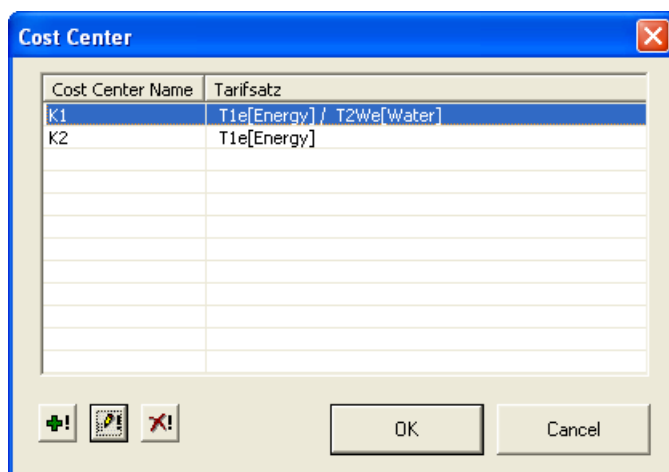   The "Cost centers" dialog box lists the cost centers that have already been created.

Figure 6-15   Creating a new cost center in the "Cost centers" dialog box

3. In the "Cost centers" dialog box, click on the icon below.

4. Enter the cost center data in the dialog box:

   You can find a description of the boxes and other brief instructions in the section entitled "The Cost centers dialog box".

5. Terminate creation by clicking "OK".

The "Cost centers" dialog box
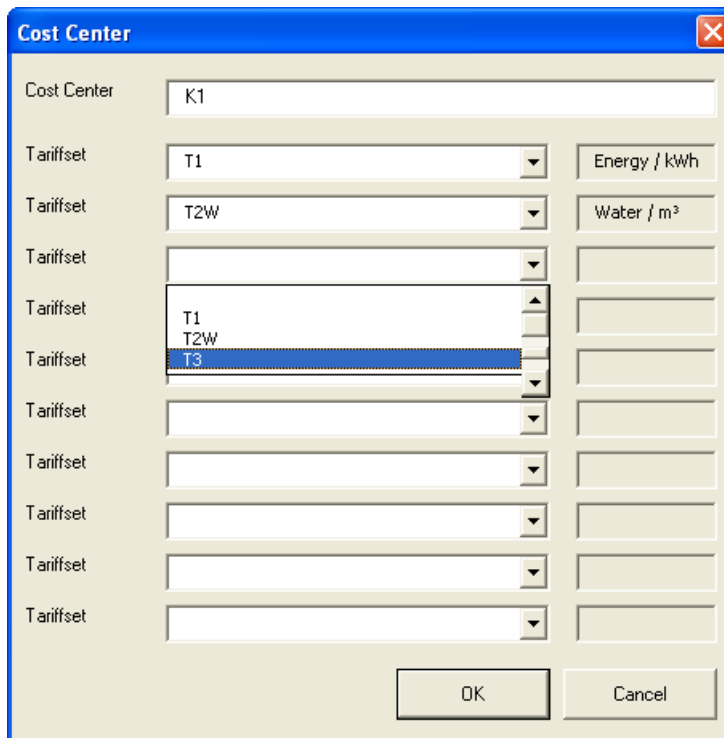
Figure 6-16   Assigning tariff sets

- "Label"

  Define a unique and meaningful name for the cost center. The cost center will be offered under this name in the selection lists of the reporting function, e.g. when defining the datapoints.

- "Tariffset"

  You can assign up to 10 tariff sets to one cost center.

  Select the tariff set from the picklist. If the list is empty, you have not defined any tariff sets. In this case, terminate creation of the new cost center. First, create the tariff sets. You can find more information in the Chapter "Tariff sets (Page 119)".

Deleting a cost center

> **Note**
>
> **Incorrectly configured cost center report due to deletion of the cost center**
>
> Only delete a cost center if you are sure that the cost center is not used in a template.
>
> The delete command deletes the cost center immediately without prompting for confirmation. Templates that access the deleted cost center will no longer function.

Proceed as follows to delete a cost center:

1. Select the "Report > Configuration > Cost Centers" menu item.

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Specify the password "erAdmin" in the "Password" dialog window. Confirm with "OK".

3. In the "Cost centers" dialog box, click on the cost center you want to delete.

4. Click on the Delete icon.

   Result: The cost center is deleted immediately. It is not necessary to confirm with OK.

   You can exit the window with "OK" or "Cancel".

6.7 Templates

Overview

The pre-defined SPM standard report templates are Excel templates, which you only have to fill with operating data to use them as templates to suit your purposes.

In the report template, you define:

● Datapoints

● Report type

● Unit in the report, which may deviate from the unit of the datapoints queried

● Unit conversion

● The cost center for the cost center report and, by way of it, the medium

The created report template in Excel is also stored as an XLT template.

Creating a new template

Proceed as follows to create a new template:

1. Click in the start window of the report generator on "Template", "New".

   Or select the "Template > New" menu item. The "Template" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. In the "Report format" dialog window, select the desired format, e.g. "Cost center report".

   Confirm the selection with "OK".

3. In the "Report types" dialog window, select one or more report types.

   With this pre-selection, you decide which report types are offered for selection when creating the report.

   You will find a description of the boxes and further brief instructions in "Report types (Page 130)".

4. Confirm the selection with "OK".

   Result: Excel opens the standard template of the selected report format.

5. Add the desired datapoints to the template. You can find the instructions for this in the section entitled "Datapoints (Page 131)".

6. Save the template.

Note

Use the "File > Save" menu command.

Please note the special features described below in the section entitled "Saving the template".

Assign a meaningful filename in the "Save template" dialog window.

Result: the template has been created in the system and is available for creating reports.

Editing an existing template

Proceed as follows to open an existing template for editing:

1. Click in the start window of the report generator on "Template", "Open".

   Or select the "Template > Open" menu item. The "Template" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

   Or click on the relevant "Open" icon.

2. In the "Select a file" dialog window, select the template you want to edit.

3. The remaining procedure is the same as for creating a new template.

Saving the template

Note

Use the "File > Save" menu command to save a template.

Do not use the "File > Save As" menu command. The "File > Save As" command writes the window contents to an Excel table "*.xls". However, templates must be available as Excel templates "*.xlt".

The "File > Save" command corresponds to the "Save" icon:

Filename

Note

The file name of a template must not end in a digit.

Remove the digits from the final positions of the file name. Or append at least one alphabetical character to the digits.

6.8   Report types

Overview

The report type defines the interval and the period of the data export, e.g. cumulation of the data in 15-minute intervals throughout the day.

Numerous report types are pre-defined and assigned in the default. For information, please refer to "Report types (Page 104)".

The "Report types" dialog window

The "Report types" dialog window appears after selection of the report format. It shows all report types that are assigned to the selected report format and allows narrowing down to certain types. This restriction is effective when the report is created manually.
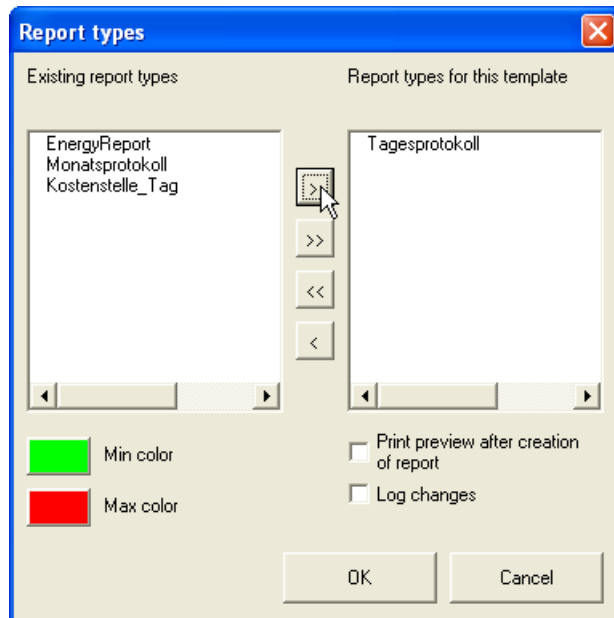

Figure 6-17   "Report types" dialog window

Boxes

- "Existing report types"

    All report types created in the report system.

- "Report types for this template"

    Report types offered when creating the report.

● "> >> << <"

Buttons for moving list entries between the boxes.

The "<" and ">" buttons move individual entries.
The "<<" and ">>" buttons move all entries.

● "Min color", "Max color"

The "Min color", and "Max color" boxes define the color coding of the extreme values in the report.

Click on the colored button to change the color.

6.9 Datapoints

6.9.1 Editing datapoints in the report template

Overview

You can find information below on how to insert and edit datapoints in an opened template.

The procedure is similar for all templates: You define the control data of a datapoint in a dialog window. The dialog window makes the possible data available for selection in list fields. The report generator applies the data from the dialog box to the Excel template.

The description of the control data can be found in the following sections "Data points in the Cost Center report (Page 133)" and "Datapoints in the EnergyReport and other report types (Page 136)".

Inserting datapoints into a template

Proceed as follows to insert datapoints into a template:

1. Create the first datapoint in column "C" of the Excel template.

   – Mark any cell or any cell area in column "C".

   – Select the menu item "Template > Insert DP".

     The "Template" menu is available in all windows that have been opened from the start window of the report generator.

2. In the "Measured value" dialog window, enter the data necessary for the specific template.

   See below for a description of the boxes and further brief instructions.

3. Terminate creation of the new datapoint by clicking "OK".

   Result: Excel applies the data from the "Insert DP" dialog window to column "C" of the template.

4. Enter descriptive information in the template underneath the "Header" row.

   The description improves readability of the report, e.g. the required name for the measuring point or cost center can be placed here.

   If you use "Change DP", the boxes are automatically filled with the measuring point designation from the datapoint name.

Figure 6-18   Comment lines in the report template

5. Insert further datapoints in columns "D", "E",….

Editing data of a datapoint

Proceed as follows to modify the data of a datapoint:

1. Mark the datapoint you want to modify. To do so, place the cursor in any cell belonging to the datapoint.

2. Select the menu item "Template > Modify DP".

3. Edit the data in the "Modify DP" dialog window.

4. Terminate editing by clicking "OK".

Result: Excel applies the data from the "Modify DP" dialog window to the template.

Deleting a datapoint from a template

Proceed as follows to delete a datapoint

1. Mark the datapoint you want to delete. To do so, place the cursor in any cell belonging to the datapoint.

2. Delete the column.

6.9.2 Data points in the Cost Center report

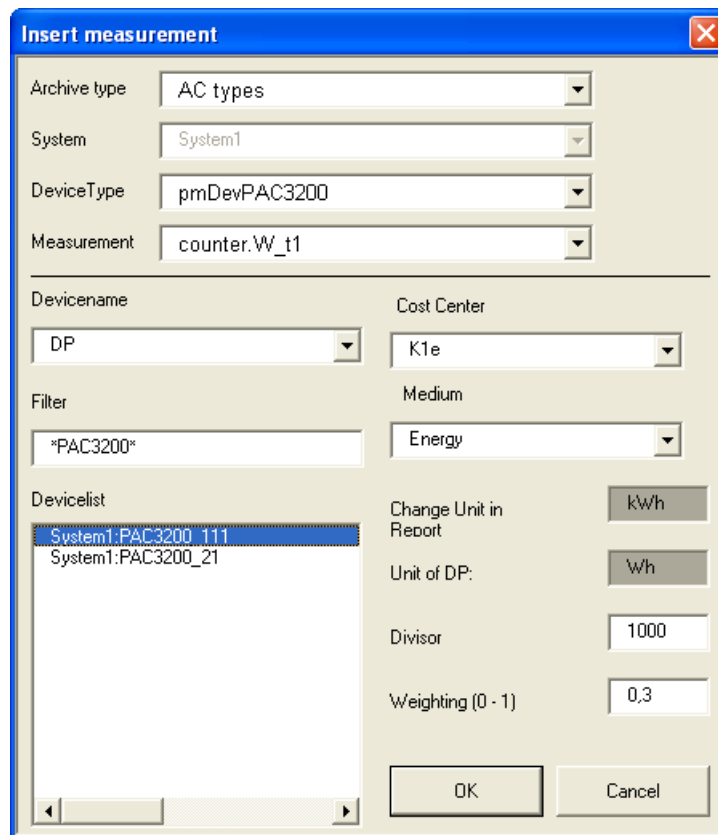### "Insert measured value" dialog window

Figure 6-19 Cost Center report, "Insert DP" dialog window

Boxes

- "Archive type"

  The "AC types" value is fixed. It limits the selection in the "Measured value" box to consumption values.

- "System"

  In the standard installation, the "System1" value is permanently specified.

  In a distributed system, a different system can be selected.

- "Device type"

  Device type of the device that supplies the data. This is also called the datapoint type "DPT".

  The following section "Device types (Page 141)" lists the types that can be selected in the SPM standard project.

  The "Device list" list box on the bottom left of the window lists the devices of the selected device type created in the system.

- "Measured value"

  Measured value that the selected device supplies. This is also called the datapoint element "DPE".

  Its availability depends on the selected device type. The table in the following section, "Energy and universal counters", lists the counters.

- "Device name representation"

  The "Device name representation" box determines the name and additional information for a device in the "Device list" box on the bottom left of the window.

  – "DP"

    A device is listed under its internal device name. The name of the root area precedes the device name, e.g. "System1:PAC4200_Anlage".

  – "Alias"

    A device is listed under its alias.

    Note

    Devices without assigned aliases do not appear in the list.

    The SPM standard does not provide for assigning aliases. When the "Alias" option is selected, the device list is therefore empty even though devices of the selected datapoint type can be available in the system.

  – "Comment"

    A device is listed under its internal device name. The name of the selected datapoint element and the suffix "value" are appended to the device name, e.g.: "PAC4200_Anlage.counter.W_t1.value".

- "Filter"

  With a filter instruction you can limit the number of devices in the "Device list" box to a subset.

  You will find more information in the section entitled "Filters (Page 141)".

- "Cost Center"

  Cost center to which the counted demand values are assigned.

  The list field shows the choice of created cost centers.

- "Medium"

  Medium that is assigned to the cost center via the tariff set.

  If several media are assigned to the selected cost center, the list box offers the media for selection.

- ● "Change unit in the report", "Unit of the DP", "Divisor".

  The "Change unit in the report" box shows the unit of the selected medium.

  The "Unit of the datapoint" box shows the unit of the datapoint.

  The "Divisor" box determines both units' conversion ratio. The value "1" is the default.

  Example:

  To convert from watt hours to kilowatt hours, enter the value "1000" in the "Divisor" box.

- ● "Weighting (0-1)"

  Proportional assignment of the counted consumption values for the selected cost center, expressed as a decimal factor; e.g. the value 0.2 corresponds to a proportional share of 20%.

- ● "Device list"

  The box on the bottom left in the window lists all devices created in the system that correspond to the selected device type and the filter criterion.

  Select the desired device. For this purpose, click on the entry.

Energy counters and universal counters

Table 6- 8   Energy counters and universal counters

Counter/device type	MB device[1]	PAC1500	PAC3100	PAC3200	PAC4200	Virtual counter
counter.W_t1 Active energy on-peak tariff		X	X	X	X	
counter.W_t2 Active energy off-peak tariff		X			X	
counter.Q_t1 Reactive energy on-peak tariff		X	X	X	X	
counter.Q_t2 Reactive energy off-peak tariff		X			X	
counter.counter Universal counter	X [2]			X	X	X
counter.counter_2 Second universal counter of the PAC4200					X	
counter.user_counter_1 counter.user_counter_2 … counter.user_counter_10 10 pulse counters of the PAC4200					X	

1) MB device: generic Modbus device 2) 5 universal counters.

6.9.3 Datapoints in the EnergyReport and other report types

"Insert measured value" dialog window

The "Insert measured value" dialog window has an almost identical structure for all report types.

Measuring point comparison and measured value comparison also offer the "Change unit in report" button. The duration curve report type is limited to selection of mean values.
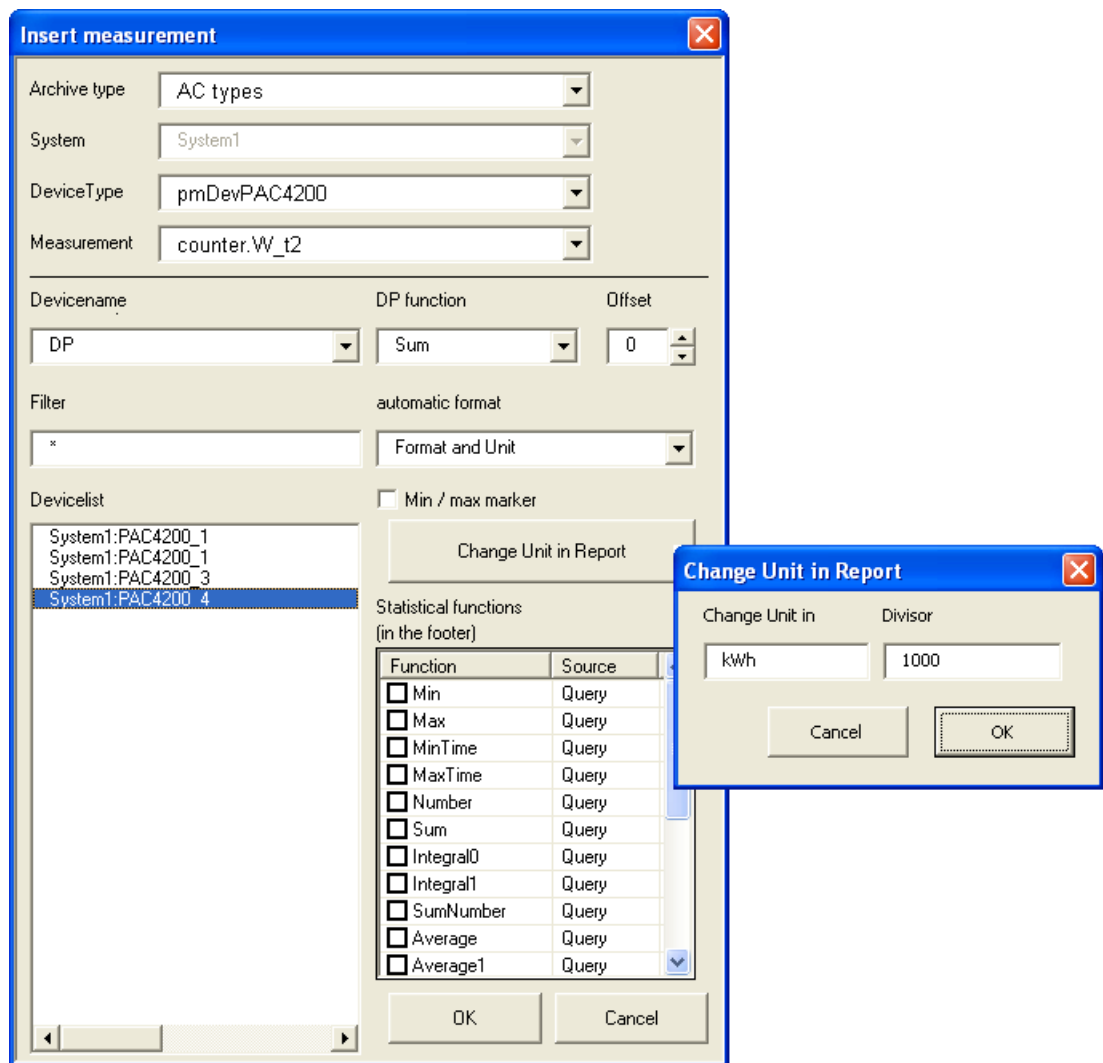

Figure 6-20   "Insert measured value" dialog window

Boxes

- "Archive type"

  – "AC types": Counted values

  – "HDB directly": General measured values

  EnergyReport: The "HDB directly" archive type should be selected to be able to select power demand values.

- "System"

  In the standard installation, the "System1" value is permanently specified.

  In a distributed system, a different system can be selected.

- "Device type"

  Device type of the device that supplies the data. This is also called the datapoint type "DPT".

  The following section "Device types (Page 141)" lists the types that can be selected in the SPM standard project.

  The devices of the selected device type created in the system are listed in the "Device list" list box on the bottom left of the window.

- "Measured value"

  Measured value that the selected device supplies. This is also called the datapoint element "DPE". Its availability depends on the selected device type.

  The datapoint elements of interest for load profile are listed under "value.04_powerPeriod.cumulated…".

  The availability and names of the dat point elements depend on the device type:

  – The additional particular limitation "act_period" in the case of the PAC4200 is necessary for differentiating between a "current period" and an "instantaneous period". With the PAC4200, the current period indicates the last completed period.

  – Suffix "_EM" for cumulated power values (power demand) in the case of the PAC3100 and PAC3200.

Note

On the PAC3100 and PAC3200, select only the entries with the appended suffix "_EM".

You can find an explanation of this specification in the Siemens Support Database, FAQ "What must be observed to ensure that the time stamp and the power demand values of the devices are correctly exported?"

Cumulated power values (power demand):

Cumulated active power export

PAC4200:

value.04_powerPeriod.cumulated_active_power_export_act_period

PAC3200, PAC3100:

value.04_powerPeriod.cumulated_active_power_export_EM

Cumulated active power import

PAC4200:

value.04_powerPeriod.cumulated_active_power_import_act_period

PAC3200, PAC3100:

value.04_powerPeriod.cumulated_active_power_import_EM

Cumulated apparent power

PAC4200:

value.04_powerPeriod.cumulated_apparent_power_act_period

Cumulated reactive power export

PAC4200:

value.04_powerPeriod.cumulated_reactive_power_export_act_period

PAC3200, PAC3100:

value.04_powerPeriod.cumulated_reactive_power_export_EM

Cumulated reactive power import

PAC4200:

value.04_powerPeriod.cumulated_reactive_power_import_act_period

PAC3200, PAC3100

value.04_powerPeriod.cumulated_reactive_power_import_EM

- "Device name representation"

  The "Device name representation" box determines the name and additional information for a device in the "Device list" box on the bottom left of the window.

  – "DP"

  A device is listed under its internal device name. The name of the root area precedes the device name, e.g.: "System1:PAC4200_Anlage".

  – "Alias"

  A device is listed under its alias.

  ### Note
  ### Devices without assigned aliases do not appear in the list.

  The SPM standard does not provide for assigning aliases. When the "Alias" option is selected, the device list is therefore empty even though devices of the selected datapoint type can be available in the system.

  – "Comment"

  A device is listed under its internal device name. The name of the selected datapoint element and the suffix "value" are appended to the device name, e.g.: "PAC4200_Anlage.counter.W_t1.value".

- "DP function"

  Accept the pre-assigned value.

- "Offset"

  You can use the "Offset" box in the "Measured value comparison" report.

  You will find more information in the section entitled "Measured value comparison (Page 111)".

  Accept the default value "0" in all other report types.

- "Filter"

  With a filter instruction you can limit the number of devices in the "Device list" box to a subset.

  You will find more information in the section entitled "Filters (Page 141)".

- "Automatic formatting"

  The raw data can be formatted in the report output.

  - "No formatting": unformatted data export

  - "Only Format": values are assigned a fixed number of decimal places

  - "Format and unit": values are assigned a fixed number of decimal places. The value is followed by the designation of the measured variable.

Figure 6-21   Raw data on the left without, on the right with formatting and minimum and maximum marking

- "Min / max marker"

  If the checkbox is activated, the minimum and maximum value in the report are set against a colored background.

- "Change unit in report"

  This button opens a dialog window for entering the unit and a divisor for unit conversion.

  The unit of the datapoint is specified by the selected datapoint. The unit printed in the report can be assigned freely. The "Divisor" box determines both units' conversion ratio. The divisor "1" is the default.

  Examples:

  To convert from watt hours to kilowatt hours, enter the unit "kWh" in the "Unit in the Report" box and the value "1000" in the "Divisor" box.

- "Statistical functions"

  - "Min", "Max", "Average", "Sum"

    Minimum, maximum, average or sum of all the values can be printed in the footers of the reports.

    The default report templates are prepared only for these four functions. Other functions offered in the selection are ignored.

6.9.4 Device types

Table 6- 9   Device types

Designation of device type	Device type
pmDevPAC1500	PAC1500
pmDevPAC3100	PAC3100
pmDevPAC3200	PAC3200
pmDevPAC4200	PAC4200
pmMB	MB device
pmVirtCounter	Virtual counter

6.9.5 Filters

With a filter instruction you can limit the number of devices in the "Device list" box in the "Insert measured value" dialog window to a subset.

Wildcards

The filter instruction can contain the "*" and "?" wildcards.

- The character "*" stands for any number of contiguous characters within the device name.

- The character "?" stands for exactly one of any character within the device designation.

Please note that the "Device name representation" box determines the component parts of the device designation.

Filter examples

Table 6- 10   Filter examples

Filter	Displayed devices
*	Standard case. No filtering. All devices of the selected device type are listed.
System1:PAC4200_A*	All devices of "System1" whose device names begin with the character string "System1:PAC4200_A". The devices are listed if the value "DP" is set in the "Selection" box. Only then is the character string "System1" a filterable name component.
*_A	All devices with the name component "_A" in the last position.
4200	All devices with the name component "4200" at any point within the device name.
PAC?200	All devices with the name components "PAC" and "200". There is precisely one of any character between the name components.
*_?	All devices with the name component "_" in the penultimate position and precisely one of any character in the last position.
(Empty)	No device. The list is empty.

6.10   Reports

This chapter describes manual initiation of report creation.

You control creation by selecting:

- Report template
- Report type
- Creation period

By default, the creation period is the period defined in the report type. You can individually overwrite both the start time and the period.

Creating a report

Proceed as follows to create a report:

1. Click in the start window of the report generator on "Reports", "New".

   Or select the menu item "Reports > New". The "Reports" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. In the dialog window, select the template on which the report is to be created.

3. In the dialog window "Time period for the report", specify the report type and the from-to period.

   – "Report type"

   Pre-selected report types are available for selection in the template:

   – "Report from" … "to"

   Any time periods can be selected.

   Depending on the chosen report type, the "Report from" … "to" boxes are pre-assigned with the date of the previous day or with the first and last of the month.

   You can find information on default assignment in "Templates (Page 127)". The period and the period start are specified in the relevant "Report type" section.

4. Confirm the specifications with "OK".

   Result: the report generator creates the report. Excel opens the report in a new window.

5. Save the report: "File > Save".

   You can find more information on saving reports in the section "Saving reports".

Saving reports

Standard storage system

The SPM standard includes a user-friendly storage system that is uniform for all users.

The default storage location for all generated reports is the folder:
"<Projektordner>\data\xls_report\Report".

When a report is saved for the first time, the system creates a sub-folder under the name of the report type:

When the report is repeatedly saved, the Excel "File > Save" command automatically opens the correct sub-folder. The sub-folder is already pre-selected in the Save dialog window.

Any storage locations

You can save reports in any folders independently of the established storage system.

Filename

The SPM report generator suggests filenames according to the following scheme:

<Name of the template>_YYYYMMDD.xls

YYYYMMDD : numerical date in ISO 8601 format
YYY : Year, MM: Month, DD : Day

"DD" is the date of the start day.

Opening the created report

Proceed as follows to open a created report:

1. Click in the start window of the report generator on "Reports", "Open".

   Or select the menu item "Reports > Open". The "Reports" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. Open the relevant sub-folder in the dialog window.
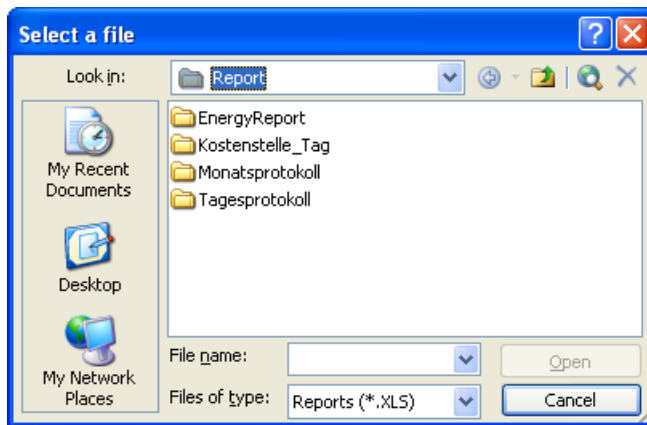
   The sub-folders are named according to the report type.

Figure 6-22   Selecting report for opening

3. Open the desired report.

   In the standard storage system, the files are named according to the following scheme:

   <Name of the template>_YYYYMMDD.xls

   "DD" is the date of the start day.

   You can find more information on the standard storage system and the filenames of the reports in the section "Saving reports".

6.11   Quick Selection – semi-automatic report creation

The SPM report generator supports semi-automatic report generation with "Quick selections".

You only initiate report generation. All the necessary control information is pre-defined: Template, report type and report period.

Creating a report with quick selection

The "Quick Selection" field in the start window of the report generator lists all prepared templates for quick selection.

Proceed as follows to create a report with quick selection:

1. Double-click in the Quick Selection field on the desired template.

   Or select the template and then click on the "Create report" button.

Result: the report generator creates the report without prompting for confirmation. The report is saved, printed or displayed in the Excel window depending on the quick selection settings.

You can find information on creating a quick selection in the section "Creating a quick selection".

Creating a quick selection

A quick selection saves the information on the template, report type and report period for re-use.

Proceed as follows to create a quick selection:

1. Select the menu item "Report > Quick selection".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. In the "Quick selection" dialog window, click on the icon below.

3. Enter the control information in the "Quick selection" dialog window.

   You can find a description of the fields and other brief instructions below in the section "The Quick selection dialog window".

4. Terminate creation of the new quick selection by clicking "OK".

Result: Quick selection is available for selection in the start window of the report generator.

The "Quick Selection" dialog window

Figure 6-23   Creation of a new "Quick selection"

Fields

- "Label"

  Selection name. The template is offered under this name in the start window of the SPM report generator, in the list field "Quick selection".

- "Template"

  Template on which reports can be created using quick selection.

  The button to the right of the field opens the file selection dialog box. The pre-selected "Template" folder contains the templates created in the system.

- "Report type"

  Report type for which reports are to be created by quick selection.

Note

The system does not check whether the report type is permissible until it is generated.

If the template does not contain the report type selected here, the report generator sends the error message "No report types defined in the template". In this case, extend the template or select another report type.

- "Print"

  If this checkbox is selected, the report is sent to the standard printer without prompting for confirmation.

  You define the standard printer in the Windows operating system.

- "Save"

  If this checkbox is selected, the report is saved without prompting for confirmation.

  You can find information on the automatically selected file folder and the automatically assigned filename in the Chapter "Reports (Page 142)", section "Saving reports".

- "Close"

  If this checkbox is selected, the created report is not opened for viewing in Excel.

- "Time period" "Last period"

  The report is created for the last month or for the previous day.

- "Time period" "Current period"

  The report is created for the current month or for the current day.

6.12   Schedule – fully automatic report creation

The SPM report generator supports fully automatic report generation with "Schedules".

An actively set schedule creates reports periodically, e.g. every morning, the daily report for the previous day.

Viewing the list of active schedules

Proceed as follows to check which schedules have been created and which schedules are currently in effect:

1. Select the menu item "Report > Schedule".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

   Result: The "Schedule" dialog window lists the created schedules.

The lamp icon that precedes the schedule name indicates the status of the schedule:

- Green lamp: Schedule is switched on, reports are created periodically.

- White lamp: Schedule is switched off.
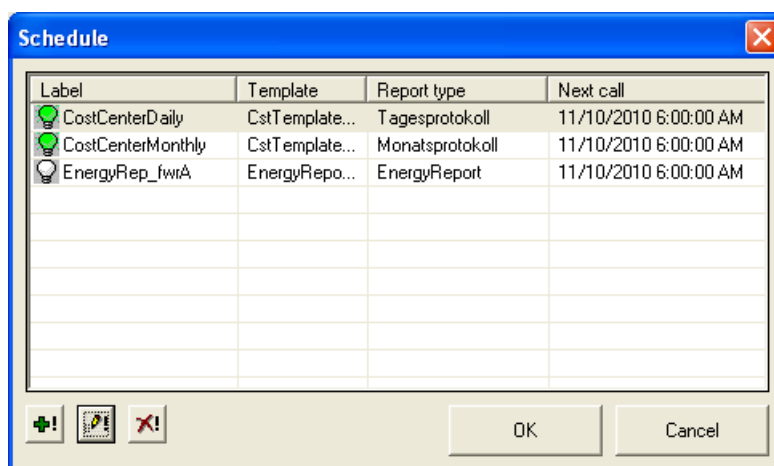
Figure 6-24   List of the created schedules in the "Schedule" dialog window

Creating a schedule

Proceed as follows to create a schedule:

1. Select the menu item "Report > Schedule".

   The "Report" menu is available in the start window of the report generator and in all windows that have been opened from the start window.

2. In the "Schedule" dialog window, click on the icon below.

3. Enter the control information in the "Schedule" dialog window.

   You can find a description of the fields and other brief instructions in the section "The Schedule dialog window".

4. Confirm creation of the new schedule with "OK".

   The created schedule is listed in the "Schedule" dialog window.

   A green lamp in the "Label" column indicates that the schedule will become effective as soon as it is created.
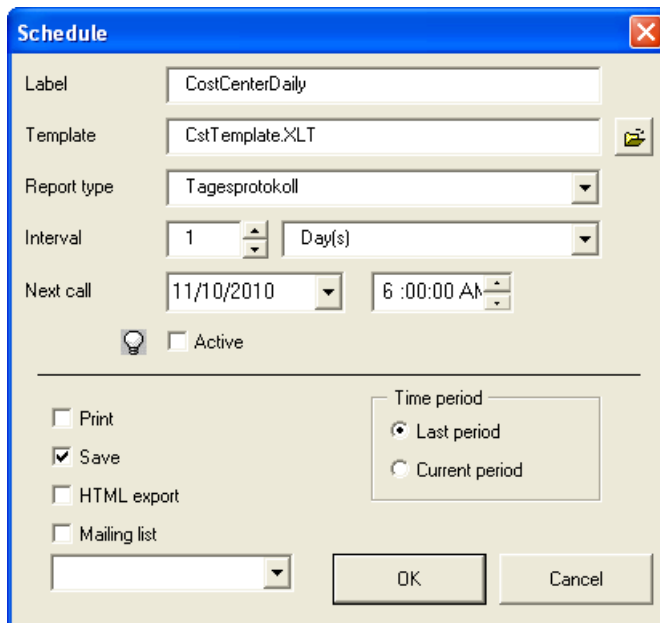
5. Terminate creation by clicking "OK".

The "Schedule" dialog window

Figure 6-25   Creation of a new schedule for fully automatic report creation

Boxes

- "Label"

  Name of the schedule.

- "Template"

  Template on which reports can be created periodically.

  The button to the right of the field opens the file selection dialog box. The pre-selected "Template" folder contains the templates created in the system.

- "Report type"

  Report type that is to be created.

  Note

  The system does not check whether the report type is permissible until it is generated.

  If the template does not contain the report type selected here, the report generator sends the error message "No report types defined in the template". In this case, extend the template or select another report type.

- "Interval"

  Rhythm of report generation, e.g.:

  "1 month(s)" for monthly generation

  "12 hour(s)" for twice-daily generation

- "Next call"

  Time of the next report generation with date and time of day to the second.

- "Active"

  If the checkbox is selected, the schedule becomes effective as soon as it is created.

  The lamp icon beside the field indicates the status:

  – Green lamp: Schedule is switched on

  – White lamp: Schedule is switched off

- "Print"

  If this checkbox is selected, the created reports are sent to the standard printer without prompting for confirmation.

  You define the standard printer in the Windows operating system.

- "Save"

  If this checkbox is selected, the created reports are saved without prompting for confirmation.

  You can find information on the automatically selected file folder and the automatically assigned filename in the Chapter "Reports (Page 142)", section "Saving reports".

- "Html export"

  If this checkbox is selected, the report generator converts the created report to Html format. Internet browsers can represent the Html format.

  The report generator stores Html files in the following standard folder:

  <Projektordner>\data\xls_report\html\<Protokolltyp>

- "Mailing list"

  When a report is generated, an e-mail is sent automatically to specific recipients. The created report is attached to the e-mail.

  The recipients are included in a mailing list. You can create the mailing list under "Report > Mailing list".

- "Time period" "Last period"

  The report is created for the last month or for the previous day.

- "Time period" "Current period"

  The report is created for the current month or for the current day.

Representing trends

<div style="text-align: right; font-size: 3em;">7</div>

7.1 Overview

Trends allow representation of the course of a value over time. A trend can contain any number of hierarchically arranged areas for representing curves, with scales and legends. Value-over-time and value-over-value representations are both possible here.

7.2 Creating and configuring a trend view

Creating a new trend view

Proceed as follows to create a new trend view:

1. Click on the "Variable trend" icon in the SPM base panel.

The empty trend window and the dialog box "Select trend view" open.
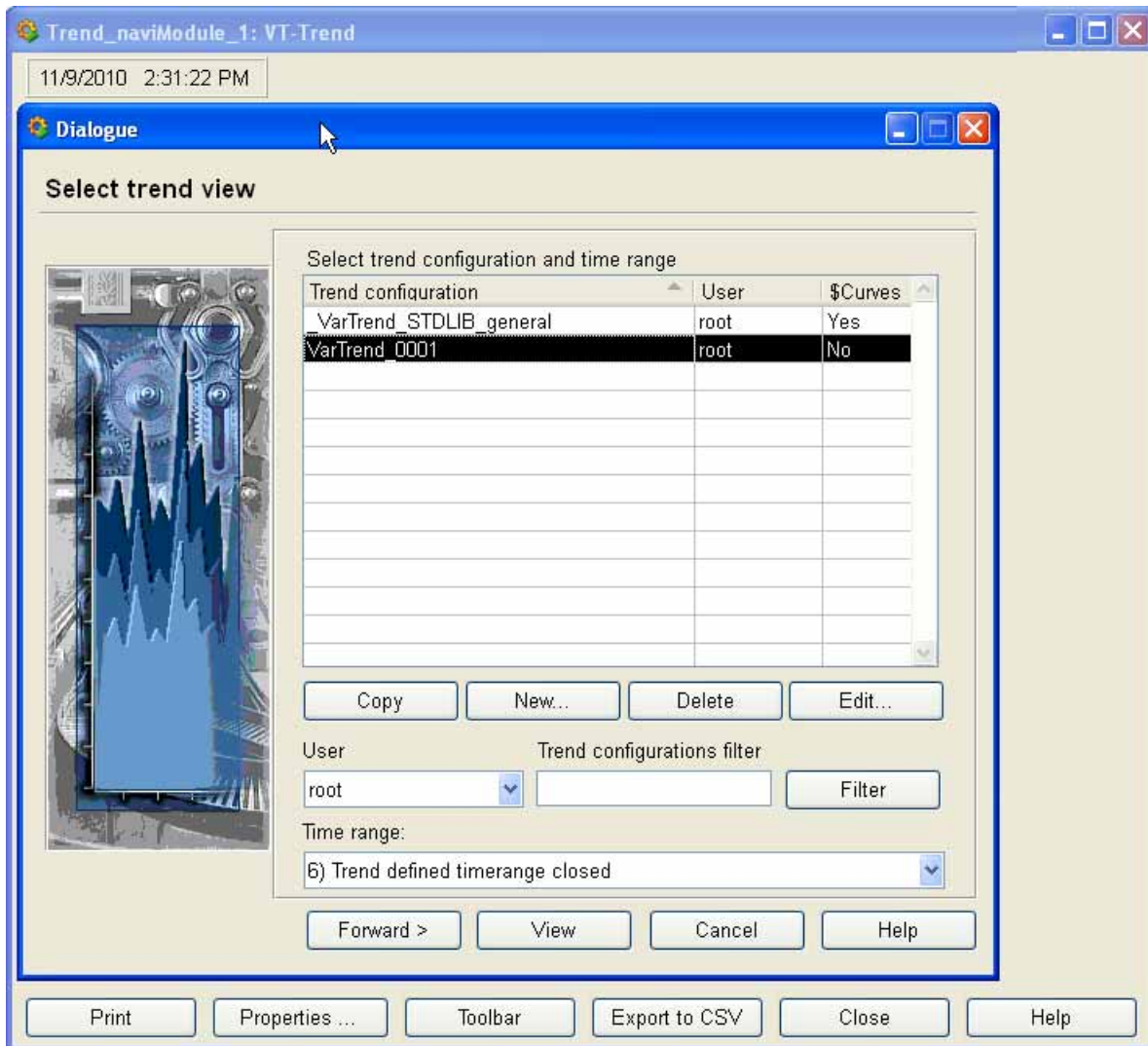
Figure 7-1   "Select trend view" dialog window

Under certain circumstances, only the trend window appears. In this case, click in the footer of the trend window on "Properties ..." to additionally open the "Select trend view" dialog window.

You can find more information about this in the Chapter "Displaying the trend view (Page 159)", section "Opening the trend view".

2. Click on the "New" button in the "Select trend view" dialog window.

3. Assign a meaningful name. Confirm with "OK".

Result: The trend view has been created. The assigned name appears in the list of the dialog box.

4. Leave the "Select trend view" window open. Continue configuring the trend view.

You can find instructions on configuring in the following sections.

Configuring the trend view

Proceed as follows to configure a trend view:

1. In the "Select trend view" dialog window, select the trend you want to configure.

2. Click on the "Edit" button.

   The "Trend configuration editor" window opens.

   In this window, select the data point and define the time range.

   You can find more information about this in the Chapter "Selecting a data point (Page 154)", section "Trend configuration editor".

3. Select the time limitation in the list field "Time range".

   The list offers pre-defined "open" and "closed" daily and weekly periods for selection.

   – Open periods: The values come from the database. New values are added to these online.

   – Closed periods: The values come exclusively from the database.

4. Click on "View" or "Forward".

   – Click on "View" if the period is clearly limited.

   – Click on "Forward" if "any" period can be selected.

     Define the "Start time" and/or "End time" of the period under representation.

     Finally, click on "View".

Result: The trend window shows the configured trend view. The trend retains all settings for calling up again.

Several curves in one trend view

The trend views allows visual comparison of individual trends.

In the dialog window "Trend configuration editor", you can add further data points to a trend view or remove data points from the trend view.

You can find more information about this in the Chapter "Selecting a data point (Page 154)", section "Trend configuration editor".

7.3 Selecting a data point

Selecting a datapoint – "Trend configuration editor" dialog window

You select the datapoints for the trend view in the "Trend configuration editor" dialog window.
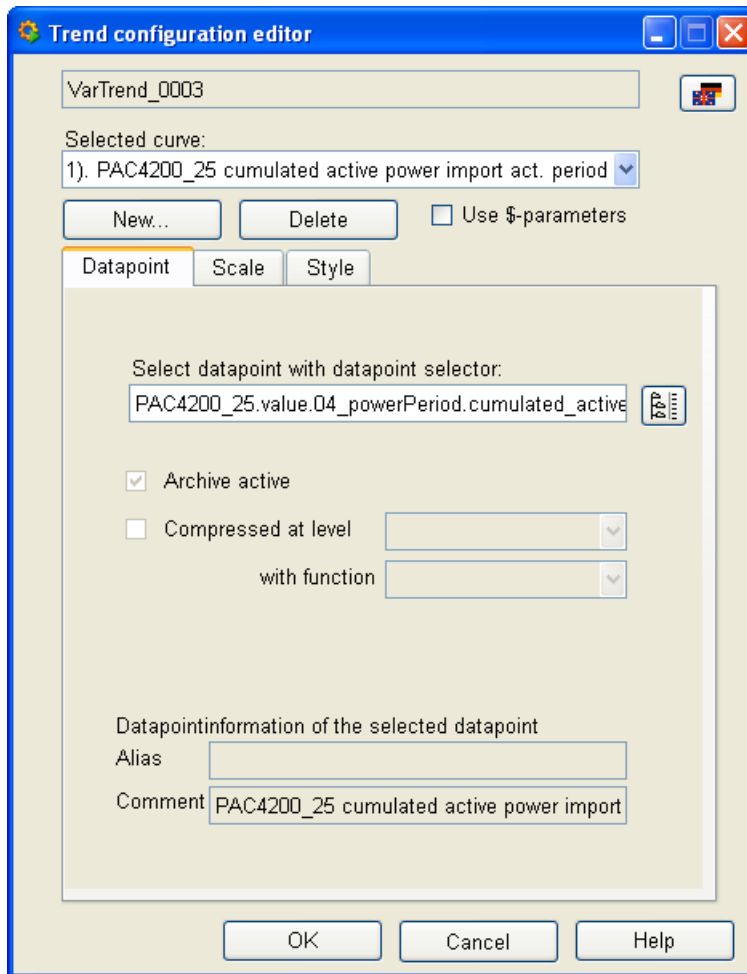
Figure 7-2   "Trend configuration editor" dialog window

You can accommodate one or more datapoints in the view. Visual comparison of individual trends is thus possible.

A maximum of 16 datapoints can be represented in one trend.

Proceed as follows:

1. Click on the "Selected curve" field.

   This field lists the datapoints that have already been added to the trend view.

2. Select the entry "Undefined curve" in the "Selected curve" field.

   Create the entry "Undefined curve" if it is not available. To do so, click on the "New" button.

3. Assign a datapoint to the curve. For this purpose, click on the button following the field "Select datapoint with datapoint selector":

   The "DpSelector" dialog window opens. Select the datapoint in the "DpSelector" dialog box. Finally, confirm with "OK".

   You can find more information on the "DpSelector" dialog window in the section "DpSelector dialog window".

   The name of the datapoint is displayed in the field "Select datapoint..." and correspondingly in the field "Selected curve", e.g.:

   - Collective reactive power (VARn)
   - PAC4200_25.value.03_power.collective_reactive_power_Qn

   You can make further trend view specifications on the "Scale" and "Style" tabs.

4. Confirm with "OK".

Result: The datapoint has been added to the trend view. The trend is displayed for the defined time period.

"dpSelector" dialog window

The "DpSelector" dialog window provides a choice of the datapoints or measured values available in the system.

The button at the top edge of the window changes between two tree views:

- The "DPE" tab shows the three-stage tree of the datapoint types, datapoints and datapoint elements.

- The "Measured value" tab displays the project tree with project-specific designations for the area, sector and device. The measured variables are designated as defined specifically for each country in device Engineering, "Extended configuration" tab.
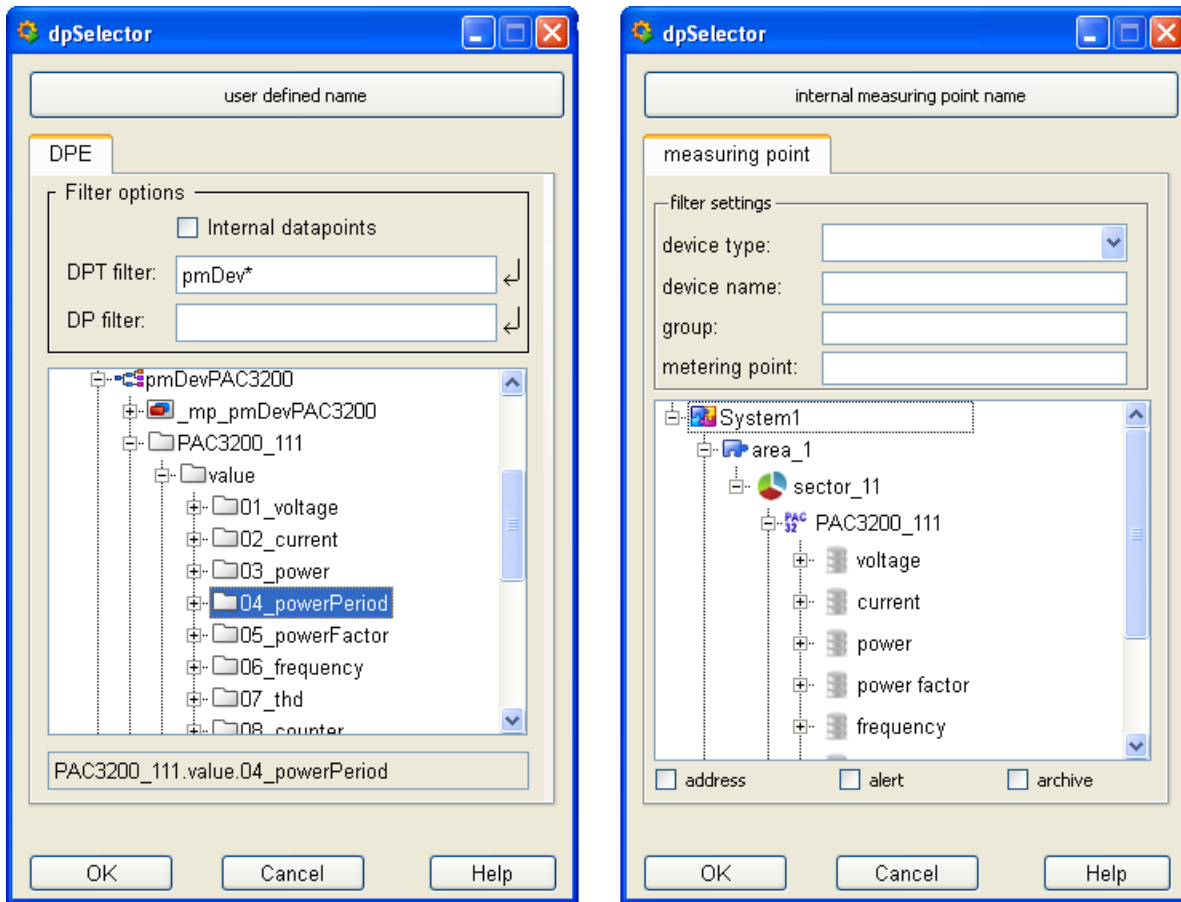
Figure 7-3   "dpSelector" dialog window

Proceed as follows to select a datapoint element or a measured value for the trend display:

Selection on the "DPE" tab

1. Click on the "Internal measured value name" button to display the "DPE" tab.

2. Apply the pre-defined filter criteria in the "Filter options" area.

3. Double-click on the entries in the tree view to open the relevant sub-level.

4. At the lowest level, select the datapoint element for the trend view.

Selection on the "Measured value" tab

1. Click on the "Measured value name" button to display the "Measured value" tab.

2. If necessary, in the "Filter settings" area, narrow down the display of measured variables in the project tree. The fields are ANDed. The wildcards "?" and "*" can be used in all fields.

3. Double-click on the entries in the tree view to open the relevant sub-level.

4. At the lowest level, select the measured value for the trend view.

Boxes of the "DPE" tab

- "Filter options"

  The fields "DPT filter" and "DP filter" are ANDed.

  The place holder "*" stands for any character string.

  A distinction is made between upper and lower case.

  – "DPT filter"

    Datapoint type filter. The field is pre-assigned with the value "pmDev*".

  – "DP filter"

    Datapoint filter.

- Datapoints

  The cumulated power demand values are listed under "04_powerPeriod".

  The availability and names of the datapoints depend on the device type:

  – The additional particular limitation "act_period" in the case of the PAC4200 is necessary for differentiating between a "current period" and an "instantaneous period". With the PAC4200, the current period indicates the last completed period.

  – Suffix "_EM" for cumulated power values (power demand) in the case of the PAC3100 and PAC3200.

Note

On the PAC3100 and PAC3200, select only the entries with the appended suffix "_EM"

You can find an explanation of this specification in the Siemens Support Database, FAQ "What must be observed to ensure that the time stamp and the power demand values of the devices are correctly exported?"

Cumulated power values (power demand):

Cumulated active power export

    PAC4200:

        value.04_powerPeriod.cumulated_active_power_export_act_period

    PAC3200, PAC3100:

        value.04_powerPeriod.cumulated_active_power_export_EM

Cumulated active power import

PAC4200:

value.04_powerPeriod.cumulated_active_power_import_act_period

PAC3200, PAC3100:

value.04_powerPeriod.cumulated_active_power_import_EM

Cumulated apparent power

PAC4200:

value.04_powerPeriod.cumulated_apparent_power_act_period

Cumulated reactive power export

PAC4200:

value.04_powerPeriod.cumulated_reactive_power_export_act_period

PAC3200, PAC3100:

value.04_powerPeriod.cumulated_reactive_power_export_EM

Cumulated reactive power import

PAC4200:

value.04_powerPeriod.cumulated_reactive_power_import_act_period

PAC3200, PAC3100

value.04_powerPeriod.cumulated_reactive_power_import_EM

Boxes of the "Measured value name" view

- "Filter settings

  The fields are ANDed. The wildcards "?" and "*" can be used in all fields. A distinction is made between upper and lower case.

- "Address"

  Polling of the measured value is activated if the box is ticked. Display according to the definition in device engineering, "Configuration" tab, "Address" column.

- "Alert"

  Alert monitoring of the measured value is activated if the box is ticked. Display according to the definition in device engineering, "Configuration" tab, "Alert" column.

- "Archive"

  Archiving of the measured value is activated if the box is ticked. Display according to the definition in device engineering, "Configuration" tab, "Archive" column.

7.4 Displaying the trend view

Opening a trend view

The "Variable trend" button in the SPM base panel has been optimized for direct calling of the predominantly used trend view:

- The "Variable trend" button opens the last-closed trend view if the Windows system buttons or the corresponding Windows standard command ALT + F4 were used for closing.

- The "Variable trend" button opens an empty trend window and the "Select trend view" dialog box if the trend window was previously closed with the "Close" button.

In the "Select trend view" dialog box, the "View" switch opens the trend view.

"Trend" window
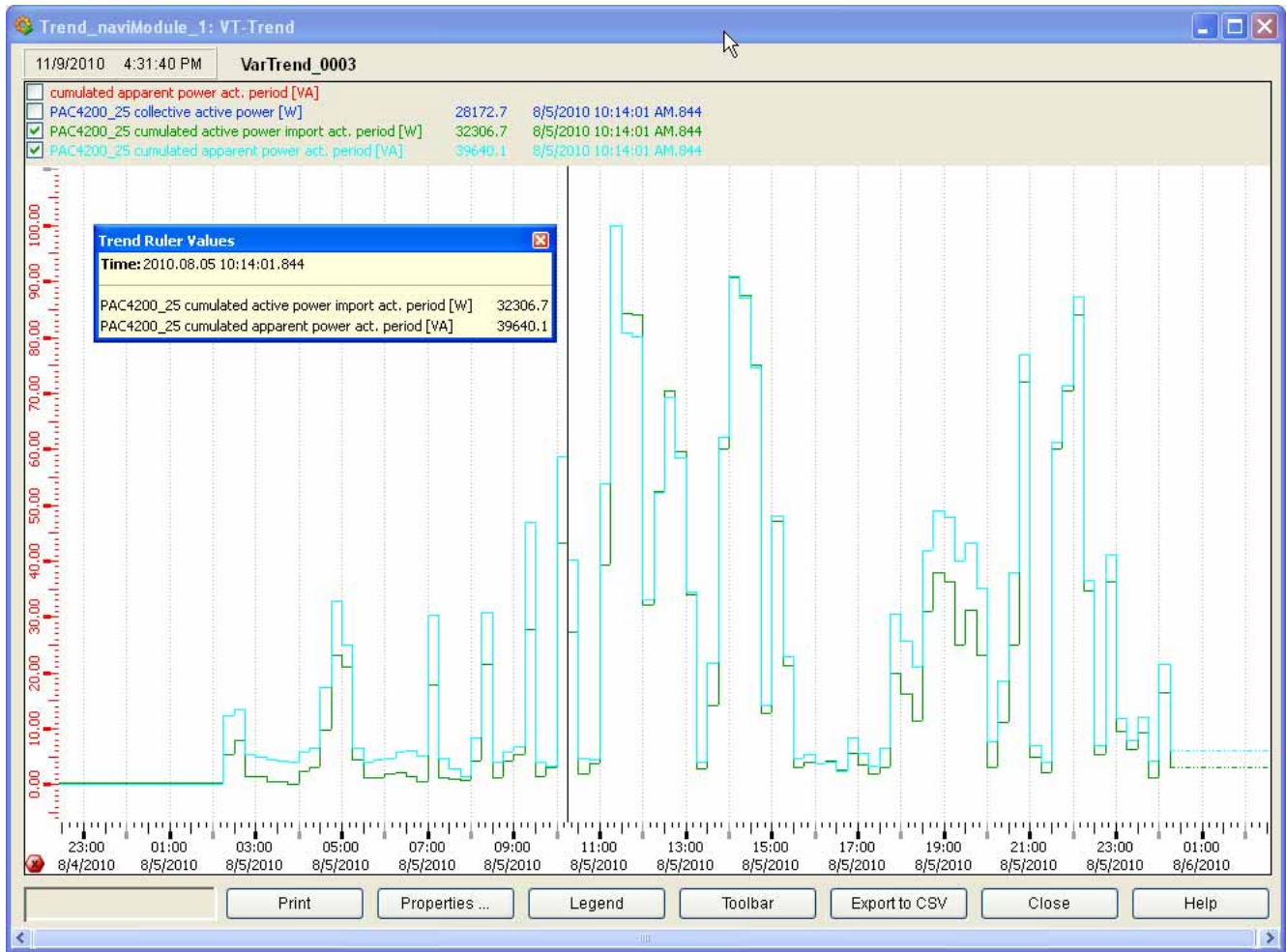
Figure 7-4   "Trend" window

Left-click in the graphic to open the "Trend Ruler Values".

The mouse wheel scales the view.

The "Legend" button opens a header area that lists the data points and that enables displaying and hiding of the curves.

System administration and optimization

<div style="text-align: right; font-size: 3em;">8</div>

8.1 Creating a new project

The SPM standard contains the project template "powermanager_template". A project that you create with the help of this template corresponds to the as-delivered status of the standard project.

Requirements

An SPM project is stored in precisely one project folder. The name of the project folder is also the name of the project.

Ensure that the name of the project to be created is different to the names of the existing projects.

SPM checks that each name is unique. If two names are identical, you receive the message: "Warning! This project already exists".

Creating a new project

Proceed as follows to create a new project:

1. Call the SPM Project Administration: "Windows program list > SENTRON > SENTRON powermanager V3.0 > Project Administration".
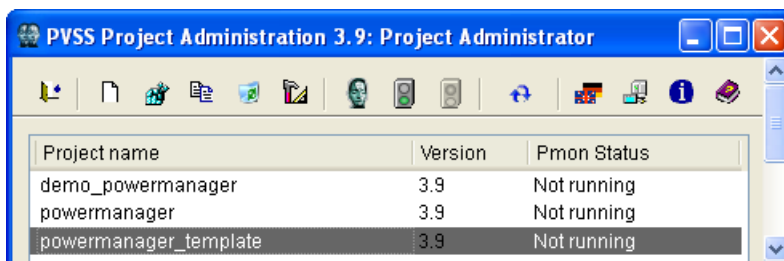
Figure 8-1   Project Administration

2. Right-click on the project "powermanager_template". Select "Copy project" from the shortcut menu.

   The "Copy project" dialog window opens.

3. Give the project a meaningful name.

   Ensure the name is different to the names of existing projects.

4. Determine the folder in which the project is to be created. For this purpose click on the "Select target project path" icon.

Select the folder in the selection dialog box. Ensure there are no spaces in the entire folder path. Otherwise, the SPM cannot access the project.

The SPM standard path for projects: "C:/SENTRON".

5. Activate the "Register target project" checkbox. This makes the project available in the SPM. Otherwise, the project folder is only copied.

6. Terminate creation of the new project. Click on the icon below.

The SPM sends the message "Project has been copied". Confirm the message with "OK".

Result: The project has been created and registered in the SPM. It is available for selection in the SPM console.

8.2 Adapting the archive size

Optimum archive size

The optimum archive size depends on the number of devices in the project. Data loss can occur if archives are too small. Space on the hard disk is wasted if archives are too large.

In the standard SENTRON powermanager V3.0 installation, the archive is designed for 100 devices. When operating more than 500 devices you must individually adapt the archive settings to your project. To do this, observe the notes in the online help and the FAQ: 3SZ271: "Which database settings are required so that archive data is kept for a long period of time?"

The "archive_XXX.dpl" files supplied in the standard installation, e.g. "archive_500.dpl" or "archive_1000.dpl", are examples of a possible configuration and must be adapted to your project.

Pre-defined parameterization data

Adaptation is easy to perform with the help of the supplied pre-defined parameterization data.

The following pre-configured parameterization data is available:

- Up to 20 devices
- Up to 50 devices
- Up to 100 devices
- Up to 200 devices
- Up to 500 devices
- Up to 1000 devices

Changing the archive configuration

Proceed as follows to change the archive configuration with the aid of the parameterization data included:

1. Start System Management in the Console.

Click on the "ASCII Manager" button on the "Database" tab.

2. Activate the "Import" option in the "ASCII Manager" window.

3. Select the project path "...\SENTRON\PowermanagerV3.0\powermanagerLib\dplist\".

4. Open one of the following dpl files, suitable for the desired project size:

   archive_normal.dpl for up to 20 devices (default setting)
   archive_50.dpl for up to 50 devices
   archive_100.dpl for up to 100 devices
   archive_200.dpl for up to 200 devices
   archive_500.dpl for up to 500 devices
   archive_1000.dpl for up to 1,000 devices

5. Click on the "Start" button in the "ASCII Manager" window. Acknowledge the password prompt. Close the window.

Result: the new configuration will be used after the next automatic archive change.

Changing the archive immediately

If the archive is to be changed immediately, you must also carry out the following steps:

1. Start System Management in the Console.

2. Click on the "Actions" button for each archive. Click on the "Start file change" button in the dialog window.

3. Stop the project. Start it again.

8.3 Creating users

You must create a user account in the SPM for each user of your projects.

> **Note**
>
> **The standard user "root" must not be deleted.**

Creating users

Proceed as follows to create a user account in the SPM:

1. Click on the "System management" icon in the SPM base panel.

2. Open the "Permission" tab in the "System Management" window.

   Click there on the "User administration" icon.

   The "User administration" window opens.

3. Click on the "Add user" button.

   Enter the required data in the "User characteristics" dialog window. Assign a password to the user.

   You can find a description of the fields and other brief instructions in the sections below.

4. Confirm creation of the new schedule with "OK".

    Result: The user account has been created in the SPM. The account is listed in the "User administration" window. The user can log in with the assigned user name and password.

5. Click on the "Close" button to exit the "User administration" window.

"User administration" window
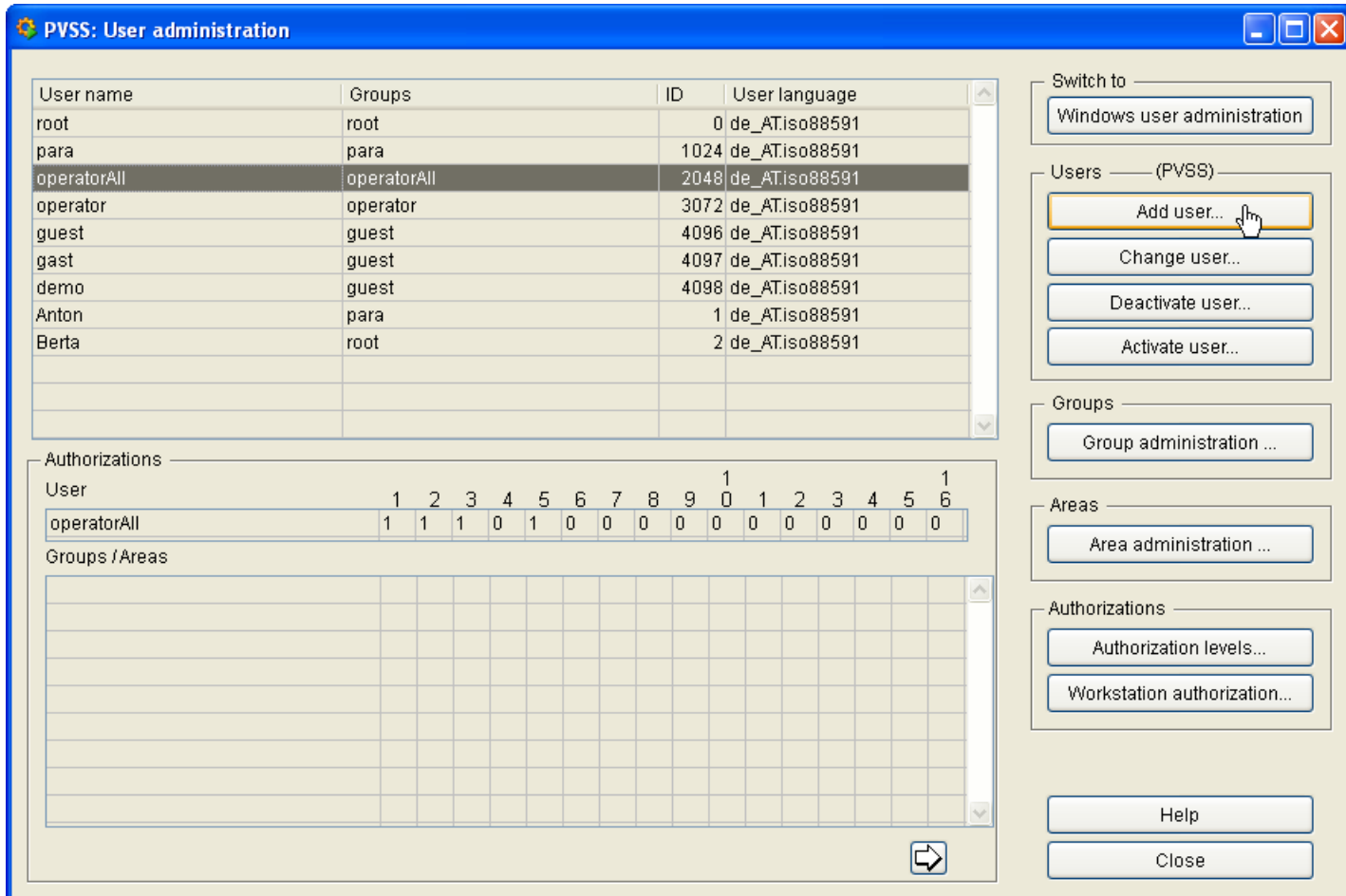
Figure 8-2   "User administration" window with pre-defined users

User

The table at top left in the window lists the created users:

*   "User name"

    Name required by the user to log into the SPM.

*   "Groups"

    User groups to which the user is assigned.

    The user receives specific user rights through the group.

    A user must be assigned to at least one group and can be assigned to several groups.

- "ID"

  Internal identification number of the user account.

- "User language"

  Language of the SPM user interface. The language is suggested to the user at login.

"User characteristics" dialog window

Click in the "User administration" window on the "Add user" button to open the "User characteristics" dialog box.
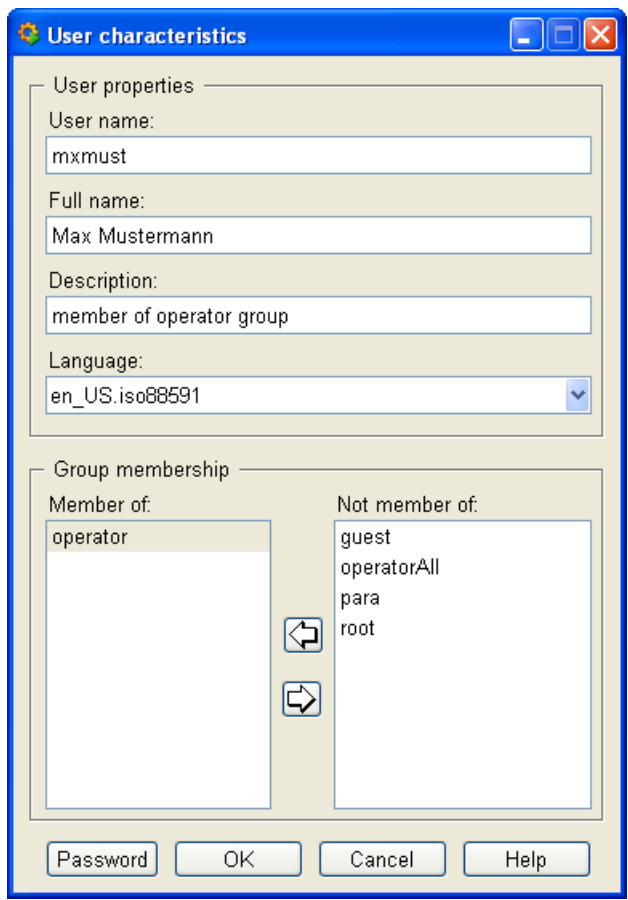
Figure 8-3   "User characteristics" dialog window

Fields

- "User name"

  Name of the user account. The user logs in under this name.

- "Full name"

  Name of the user.

- "Comment"

  Explanatory description of the user account.

- "Language"

  Language of the SPM user interface. The language is suggested to the user at login.

- "Group membership"

  The user must be assigned to at least one user group. Assignment to several groups is possible.

  Use the arrow keys to move the entries.

  The group assignment confers the group rights on the user. You can find further information on the assignment of rights in the section "Authorization levels and user groups".

- "Password"

  The "Password" button opens the fields for password assignment.

Note

Assign a password to each user.
In particular, assign a password to each user with administration rights.

Otherwise, access to the SPM is unprotected.

NOTICE
When the SPM is delivered, the standard user "root" has no password. Assign a password to the standard user "root".   Otherwise, access to the SPM is unprotected.

Authorization levels and user groups

The following are pre-defined in the SPM standard: 5 user groups, 5 authorization levels, the assignment of user groups and authorization levels.

Table 8- 1   Authorization levels

Level	Name in the dialog box	Scope of rights
1	Visualize	Allows only visualization
2	Normal operator authorization	Allows the opening of panels
3	Extended operator authorization	Allows the execution of commands, the setting of substitute values, the setting of correction values, as well as the modification of value range types
4	Administration	Allows the use of GEDI and PARA
5	Acknowledgement	Allows the acknowledging of alerts

Table 8- 2   Rights of the user groups in the SPM standard

Group/level	Visualization	Operator authorization		Administration	Acknowledgement
		Normal	Advanced		
Root	X	X	X	X	X
Para	X	X	X	X	X
Operatorall	X	X	X		X
Operator	X	X			X
Guest	X				

The group assignment confers the group rights on the user.

8.4   Performance optimization

Overview

SENTRON powermanager offers the following options to improve the system's performance.

- Smoothing supplied data
- Extending polling times
- Reducing active addresses

Smoothing supplied data

SENTRON powermanager can smooth the data supplied by the devices in the driver before it is processed further in the control system. Smoothing is used to reduce the amount of communication and the volume of data stored in the system.

Value-dependent smoothing with relative threshold value

SENTRON powermanager performs value-dependent smoothing with a relative threshold (specified in [%]).

A value is smoothed if the value arriving in the driver only differs from the last value transferred to the Event Manager to the extent specified as a percentage in the threshold.

No smoothing takes place if the difference of the consecutive values exceeds the threshold value.

Value range

Meaningful threshold values lie in the range from 0% to 5%. They can be entered exact to one decimal place.

Viewing the driver settings

You reach the driver settings display via the project tree root's shortcut menu. There, select "System Settings > Driver settings".

Figure 8-4   Driver settings

Performing smoothing

Proceed as follows:

1. Launch the driver settings view.

   Shortcut menu of the project tree root, "System settings > Driver settings".

   You reach the currently set smoothing threshold in the "Smoothing" area, "Current settings".

2. Enter the threshold in the %" box next to the "Change smoothing" button: 0 to 5.

3. Start smoothing. To do this, click on the "Activate smoothing" or "Change smoothing" button.

   Wait until the operation is completed. A progress bar indicates progress.

Extending polling times

Depending on the measured value type, measured values are read (polled) by the devices at different times. The communication load is reduced when the polling times are increased. As a result, the number of devices can be increased.

Follow the steps below to change polling times:

1. Launch the driver settings view.

   Shortcut menu of the project tree root, "System settings > Driver settings".

2. Select the polling times in the "Polling times" area. The value in the respective list box "[s]" must be explicitly accepted with the button on the right.

Reducing addresses

A further effective measure for optimizing performance is to reduce active addresses. Addresses can be reduced in a semi-automated process for PAC3200 and PAC4200 devices. For PAC1500 and PAC3100, the scope of addresses is already reduced by default.

Reducing addresses

Proceed as follows:

1. Right-click on an area in the project tree. Select "PAC3200 device engineering" or "PAC4200 device engineering" in the shortcut menu.

2. Go to the "Configuration" tab.

3. On the "Configuration" tab, deactivate the "Inherit default settings" option.

4. Click on the "Read address reduction" button.

5. Save the setting.

Result: the reduced scope of addresses affects:

- Newly created devices

- Devices with the "Inherit area settings" option activated

Restoring the original address configuration

To restore the original (full) address configuration, activate the "Inherit default settings" option. Save the change.

8.5 Distributed systems

Overview

Distributed systems enable connection of two or more autonomous SENTRON powermanager systems via a network. Each subsystem of a distributed system can be configured either as a single-station system or a multi-station system. Each system can process and display values and alerts of other systems.

Licensing

There must be a "SENTRON Powermanager Distributed Systems" license on every SENTRON powermanager system that is to be operated in a distributed system.

Interface to the systems

Communication of the parameterized subsystems takes place exclusively via the Distribution Manager. It must be entered in the SPM Console and started.

Permanent network connection

A permanent network connection is required for mutual data access by the participating systems.

Creating new projects

For information on how to create a new project, see "Creating a new project (Page 161)".

Note

No wizard

Creation of a new project using a wizard is not recommended in the case of SENTRON powermanager.

Parameterization of distributed systems

Config file

A few entries in the project's config file "<Project_path>/config/config" are needed for integration in a distributed system:

Table 8- 3   Entries in the "config" file

Entry	Possible values	Description
[general] **distributed**	1 or 0	Required entry. Defines a distributed system. A distributed system requires the "distributed = 1" entry in the "[general]" section. This value can also be overwritten for individual Managers. [ctrl_1] distributed = 0 In this case, the Control Manager with the number 1 cannot access the DPs of other systems (DP identification is not communicated to this Manager).
[dist] **distPort**	Port number. The default value is 4777	Defines the port numbers used by the Dist Manager to accept connections from other systems. The default value is 4777. Note that you do not need to define port numbers if your projects run on different computers. You must define the port numbers, however, if your projects run on the same computer.
[dist] **distPeer**	–	distPeer = "host1[:port1][$host2[:port2]]" system number Defines the hosts and the system number to which the Dist Manager establishes the connection as the "client" (the other system is the "server"). If the other system is redundant, both host names are separated by a dollar sign "$".

The following entries already exist in the SENTRON powermanager's configuration file. The entries are examples and must be adjusted accordingly.

```
[general]
distributed = 1
[dist]
#Establishing connection to Host1 with system number 1
#distPeer = "Host1" 1
#Establishing connection to Host2 with system number 2
#distPeer = "Host2" 2
#Establishing connection to Host3 with system number 3
#distPeer = "Host3" 3
#Establishing connection to Host4 with system number 4
#distPeer = "Host4" 4
```

System names and system numbers

Corresponding to the "distpeer" entries in the configuration file, applicable system names and numbers must be assigned to the project databases. A system name and a system number can only be used once within a system network.

The system name and number ate assigned when creating a project in the project administration.

The powermanager and powermanager_template projects supplied are pre-parameterized with the system name "System1" and the system number "1". If several projects created on this basis are to be connected with each other, these settings must first be changed. Use the following command:

```
PVSSToolSyncTypes –system <system_number> <system_name> -proj
<project_name>
```

- **Example:**

  ```
  PVSSToolSyncTypes –system 2 System2 -proj powermanager
  ```

  This command assigns the system name "System2" and the system number "2" to the powermanager project on the current server.

With the project stopped, enter the command in the command line.

If a distributed system is to run as a single system (single-user system) again, you must set the system number back to "1".

Synchronous times

In a distributed system, synchronize the times of the individual networked computers.

Archive structure

To enable report data to be read by all systems, the archive structure must be read in again for each project.

Proceed as follows:

1. Go to the base panel of the SENTRON powermanager. Launch reporting.

   You will find more information in the section entitled "Starting and terminating (Page 101)".

2. In the report window, select the menu command:

   "Report > Configuration > Archive structure"

3. Enter your password. The default password is "erAdmin".

   Confirm with "OK". Acknowledge all the subsequent dialog boxes with "Yes".

Result: your archive structure is updated.

8.6 Mass parameterization

Overview

You can automate creation of new devices in the project tree. To do this, create a csv file as described in the following example in your project's data directory.

The csv file must begin with the "PM_" prefix, e.g. "PM_MassDataTmplte.csv".

Example

The following devices are to be created in an automated fashion:

- Two PAC4200 devices with the names MyPAC4200_1 and MyPAC4200_2

- One PAC3100 device with the name MyPAC3100_1 via Slot1 of the gateway MyPAC4200_2

- One PAC3100 device with the name MyPAC3100_2 via the standard gateway

To do this, enter the following in the csv file:

```
DP name;DP type;area;IP address;gateway;unit_address;frame;port
MyPAC4200_1;pmDevPAC4200;area_4;192.168.219.214;FALSE;0;tcp;502
MyPAC4200_2;pmDevPAC4200;area_4;192.168.219.215;FALSE;0;tcp;502
MyPAC3100_1;pmDevPAC3100;area_4;192.168.219.216;TRUE;1;rtu;17002
MyPAC3100_2;pmDevPAC3100;area_4;192.168.219.217;TRUE;1;tcp;502
```

Note

"tcp" as frame

Select "tcp" as a frame for a device you want to operate over the standard gateway. (See MyPAC3100_2 in the example above).

You will find a pre-defined sample file "PM_MassDataTmplte.csv" in the data directory of the demo project.

Meanings of field names

```
DP name;DP type;area;IP address;gateway;unit_address;frame;port
```

- "DP name"

  Internal device name.

- "DP type"

  Device type.

  Available types:

  - pmDev3VL (3VL via COM11)

  - pmDev3VLCOM11 (3VL via COM21)

  - pmDev3WL (3WL)

  - pmDev1500, pmDev3100, pmDev3200, pmDev4200 (Pac devices)

  - pmDevMB (generic Modbus device)

- "Area"

  Area name in the project tree.

- "IP address"

- "Gateway"

  Value range: FALSE, TRUE

  Modbus-TCP: FALSE
  Modbus-RTU: TRUE

- "Unit_address"

  Address of the unit in the sub-networked Modbus network.

  Modbus-TCP: 0 (no relevance)
  Modbus-RTU: 1 - 125

- "Frame"

  [tcp; rtu]

- "Port"

  - Modbus-TCP: 502

  - Modbus-RTU – Slot1 : 17002 (SENTRON PAC4200, RS 485 bus is connected to slot "MOD1")

  - Modbus-RTU – Slot2 : 17003 (SENTRON PAC4200, RS 485 bus is connected to slot "MOD2")

  - Modbus-RTU – standard gateway: 502

User interface

You reach the mass parameterization display via the project tree root's shortcut menu. There, select "System Settings > Mass parameterization".

Datei	DP Name	DP Typ	Bereich	IP-Adresse	Gateway	Unit Address	Frame
PM_MassDataTmplte.csv	MyPAC4200_1	pmDevPAC4200	area_4	192.168.219.214	☐	1	TCP
PM_MassData_1.csv	MyPAC4200_2	pmDevPAC4200	area_4	192.168.219.215	☐	1	TCP
PM_MassData_2.csv	MyPAC3100_1	pmDevPAC3100	area_4	192.168.219.216	☑	1	RTU
	MyPAC3100_2	pmDevPAC3100	area_4	192.168.219.217	☑	1	TCP

[read file]   ☐ overwrite existing devices   ▮ device of same type exists

[import data]   ☑ create not existing areas   ▮ device of anothe type exists

[refresh]

Figure 8-5   Mass parameterization

- "File"

  The "File" table lists the "*.csv" files that have been created in the current project's "..\data" directory.

- "Read file"

  This button reads the data of the currently selected csv file into the panel.

- "Import data"

  This button imports the the devices shown into the system.

- Yellow-highlighted line

  A device with an identical name and device type already exists in the project tree.

- Red-highlighted line

  A device with an identical name and a different device type already exists in the project tree.

Optionally, you can also overwrite existing devices or create areas that do not exist.

List of abbreviations A

A.1 Abbreviations

Table A- 1   Meaning of abbreviations

Abbreviation	Meaning
ALM	Siemens Automation License Manager
CTRL	Control Manger
GEDI	Graphical editor
SPM	Siemens SENTRON powermanager V2.0
UI	User interface

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