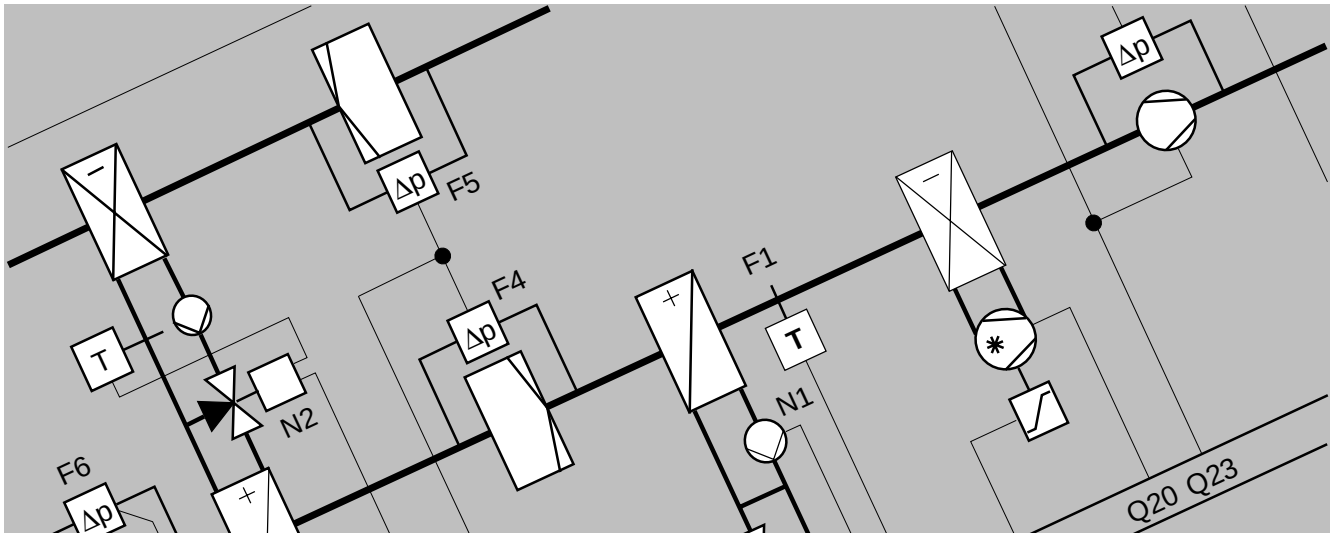
SIEMENS



European Tool Set
Plant Description Tool
User's Guide

Landis & Staefa Division

Table of contents

Read this first

What does this chapter contain?

The sections below provide important basic information prerequisite to understanding this User's Guide.

What are the conventions?

This document describes PDT Version 1.40.

What abbreviations have been used?

The table below contains all abbreviations as used throughout this document.

ETS	European Tool Set: Set of software tools providing optimal support for the project engineering process.
PDT	Plant Description Tool
SDT	System Design Tool (generic term)
SDT Shell	System Design Tool Shell for the Automation Level Network
SDT ALN	System Design Tool for the Automation Level network (generic term)
PRVCONF	System Design Tool for the Automation level network of UNIGYR- and VISONIK systems
RS-CONF	System Design Tool for the Automation Level Network of INTEGRAL systems
SDT-FLN	System Design Tool for the Floor Level Network
EDB	Exchange Database: Common, open database in ETS
BTA	Building services system
ISP	Location

What shortcuts have been used?

The following shortcuts are used in this document:

Shortcut	Meaning
ALT, TAB, ENTER, …	Press the respective key.
[OK] / ↵	Confirm entries, messages or actions by clicking [OK] or by pressing the ENTER / ↵ key.
Drag & Drop	1. Click the object with the left mouse button, and keep the button pressed. 2. Drag the object to the desired location while holding down the left mouse button. 3. Release the mouse button.
`(Example)`	All examples within workflows are printed in this form and font.
[OK] / […]	All buttons in windows or dialog boxes are printed in this form.
”File / Save”	Menu selections are printed in this form. Example: Select the "Save" option in the "File" menu.

1 Introduction

This chapter contains general information on the contents of this document and PDT.

1.1 About this document

This User's Guide is intended for all users who plan, sell and/or process projects for L&S systems. It primarily describes the functions of PDT and how to use them. For requirements or hints refer to the additional documentation indicated for the respective topic.

Where do I find what?

This user's guide contains the following chapters and topics:

Chapter	Contents
	Read this first (previous page) *Conventions and shortcuts used in this document*
1	Introduction (this chapter) – *General information you need to know* – *What concepts represent the basis for PDT*
2	Starting with PDT: – *How to start PDT, create a project, and how to access help* – *Data and operations contained in PDT* – *How to save and archive your project data*
3	Working with PDT: – *Available functions and commands* – *Generally applicable guidelines when working with PDT* – *Best practices for planning, sales and project engineering*
4	Detailed information: – *Information on special operations* – *Information on special tools* – *Information on individual PDT elements* – *Answers to frequently asked questions* – *Explanations of error messages and troubleshooting*

Additional documents

The following L&S documents contain further basics, information and support with regard to project execution:

- ETS Basics (Order No: CM2U8374E)
- SDT Shell User's Guide (Order No: CM2U8379E)
- RSCONF User's Guide (Order No: CM2U8378E)
- PRVCONF/PRVCODE User's Guide (Order No: CM2U8375E)
- SDT-FLN User's Guide (Order No: CM2U8376E)

Where do I find further information?

The following file, which is included on the installation diskette, provides additional information:

- The “Release.doc” file with further information on this version of PDT.

Note

We urge you to read the "Release.doc" file prior to using PDT!

Version information

This user's guide refers to PDT version 1.40.

1.2 Philosophy

The following sections primarily describe the basic concepts for project engineering and using PDT.

1.2.1 Field of application of PDT

The field of application PDT is explained in terms of the major functions listed below.
PDT is used to perform tasks in the following three major areas:

- Description of the physical plant (building services installations)
- Description of the plant functions
- Generation of data for further processing

PDT provides:

- Plant schematic
- CEN Info lists and field device lists
- Description of functions
- I/O points for UNIGYR, VISONIK, or INTEGRAL systems

Description of the physical plant

PDT is used to put together graphical descriptions of the physical plant. This is done by copying ready-made plants or plant elements from the available libraries and modifying them where necessary. You can then print the plant schematics.

Generating I/O points

Having completed the plant description, you can use PDT to generate the I/O points for UNIGYR, VISONIK or INTEGRAL systems.

Description of functions

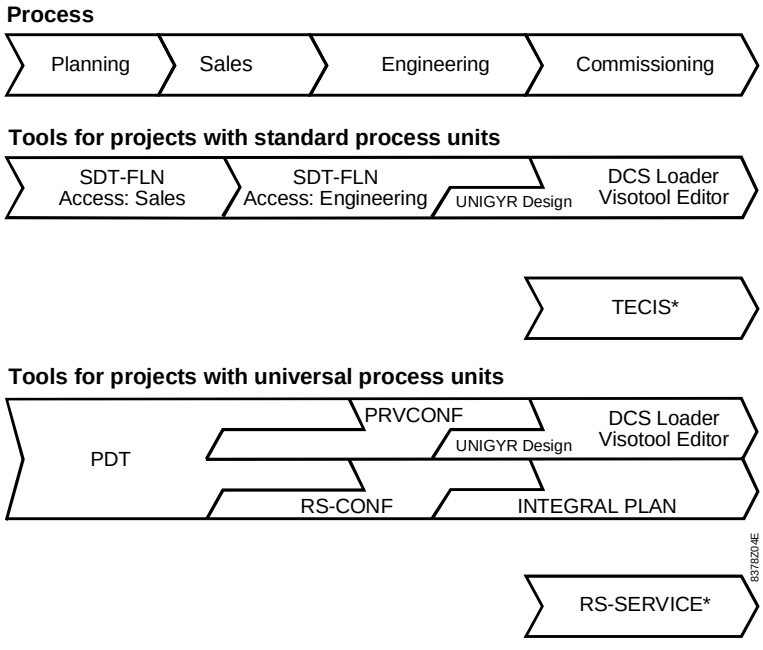
PDT also allows you to create a description of the functions implemented in the plant.

CEN Info lists and field device lists

Based on the selected plant hardware PDT generates CEN Info lists and field device lists that can be printed using MS Excel.

When do I use which tool?

The illustration below provides guidelines for the correct choice of tool for each task.



Note

You can find additional, detailed information on ETS and the individual tools in the ETS Basics document (Order No: CM2U8374E)

1.2.2 Workflows

Principle

PDT provides for a top-down work approach. This means that you first define the highest-level units and then their details.

For the sake of manageability, all information and functions are tailored to the respective project phase. This means that only those functions, menus and data items that are necessary during the respective phase will be visible and active..

Recommendation

We recommend the following workflow:

- Select the access level corresponding to the respective project phase
- See section 3.6 ”Standard workflow”
- You should generally use the buttons in windows and dialog boxes from left to right.
- Make sure you fully complete each step before proceeding to the next.

Basic principle: Each step comprises a logical task that produces an intermediate result. The result may initially be incomplete, but it represents a defined intermediate stage that can be documented.

1.2.3 ETS standards

Why use standards?

You should use standards wherever possible in order to increase quality and to achieve a cost-effective project workflow. Standards are stored in libraries.
The higher the level of standardization, the less flexibility the solution contains. At the cost of the advantages of standardisation, however, flexibility can be increased at any time in ETS.

The ETS libraries contain the following:

- Plant parts
- Default plants
- Standard plants

Plant parts

Plant parts correspond to the modules of a plant. They consist of selectable components with the following information and definitions:

- Schematic view
- Data points
- Defaults for field devices
- Defaults for data point texts

Default plants

Default plants are commonly used plants that you can often use in projects with only minor changes.
They contain the following information and definitions:

- Plant schematic
- Data points
- Defaults for field devices
- Defaults for data point texts

Standard plants

Standard plants are tested and ready-to-use plants that can simply be copied to new projects and used as is.
Standard plants contain the same information and definitions as default plants:

- Plant schematic
- Function descriptions
- Data points
- Defaults for field devices
- Defaults for data point texts

In addition, most of these features are preset for the user.
The following modification options are available without actually changing a standard plant (which is also possible at any time):

- Deactivation of certain plant parts with field devices
- Exchange of field devices

2 Starting with PDT

2.1 Starting PDT

How do I proceed?

Proceed as follows to start PDT:

Step	Procedure
1	Double-click the PDT icon

Note

You cannot start PDT while SDT Shell is running!

2.2 Creating a project

All data belonging to a project are stored in one directory. When you create a project, a new project directory is created.
We recommend that you create all project directories in the higher-level directory ETS_DATA. Procedures for project variant and version management are described in the ETS Basics document, section 3.3 "Project Variants and Versions".

How do I proceed?

Proceed as follows to create a project:

Step	Procedure
1	Select "Project / New"
2	Enter a project name *Note:* Use a maximum of 8 characters; do not use special characters
3	Enter any additional project definitions in the dialog box

Notes

When defining the project attributes, remember to enter meaningful information in all entry fields and especially to enter the originator's name. This information automatically appears in the headers / footers of the reports generated in SDT Shell. This simplifies subsequent checking, increases documentation quality and saves considerable time and effort. The dialog box for defining project attributes appears automatically when you create a new project. You can open it again to make changes by selecting "Project / Attributes".

You can use the "New" icon in the tool bar to create new plants but not new projects.

How do I access help in PDT?

You can get help on PDT at any time via the "Help" menu. In the "Help" menu, you can access an "Index" of help topics or you can open a "Using Help" window that provides various options.

2.3 Access to libraries

Libraries are provided to help you use ETS standards. For that reason, you should always start with a library.

How do I proceed?

Proceed as follows to copy a plant from a library:

Step	Procedure
1	Select "Library / Open Standard Solution”
2	Select a plant group in the tree view
3	Select a plant and import it into the active project

Note

You can find further information on working with libraries in section 3.5 ”ETS Explorer”.

2.4 PDT data and operations

Before you start working in PDT, familiarize yourself with the terms explained below, taking a plant as an example.

2.4.1 Terms

Plant

A **plant** is made up of a number of plant parts that together describe an HVAC process. A plant is controlled by a **single process unit** and should not be split between different process units.

Plant part

Plant parts are made up of components.
The plant parts correspond to the modules of the respective plant; these can be heating coils, fans, dampers etc., for example. Plant parts can be copied, moved and deleted. Depending on the properties (attributes) selected for a plant part, individual components and sub-components (valves, pumps, sensors etc.) are displayed or hidden in the graphical and text view.

Example

Use the mouse to highlight a plant part on the far right and move it.

Component

Components are the elements of plant parts. They generally represent one or more I/O points. They consist of a text (data point text), a system identifier (address in VISONIK; allocated by SDT) and one or more field devices. Components can also contain sub-components.

Example

Use the mouse to highlight a sensor, for example, in the active plant part — you have selected a component.

Attribute

Attributes describe the properties of plant parts and components. Their selection options can be limited via **restrictions** (see section 4.1.4).

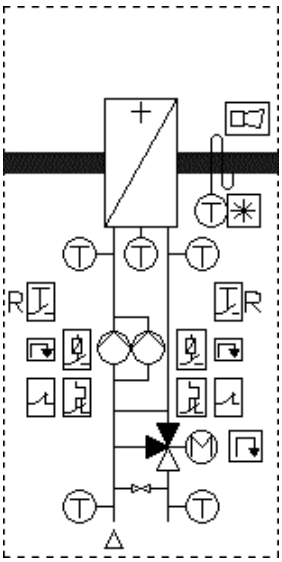
Example

Double-click the active plant part — the attribute dialog box is opened.

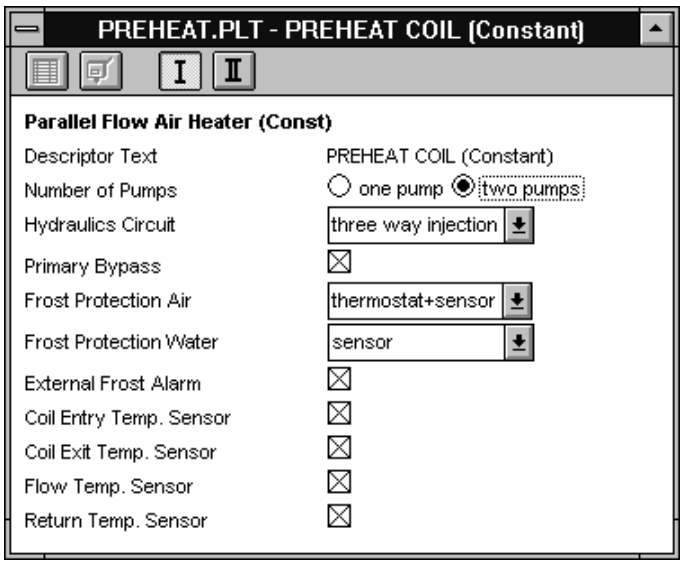
Two different attribute views are used in PDT (see 3.1 ”Graphical plant editor” and 3.2 ” Attribute table editor”)

Example
Hot water preheater

The illustration below shows the graphical display of a hot water preheater in PDT. All possible components are displayed. Depending on the properties you select for the preheater, both the display in PDT as well as the plant's functionality change.



8377O01

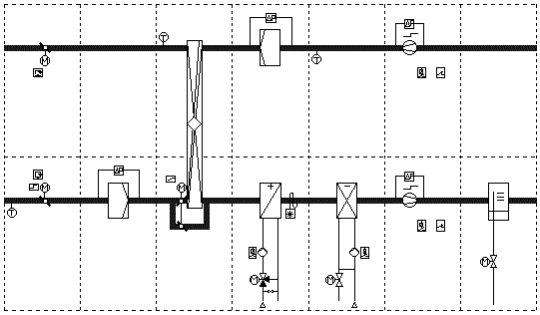


8377O02E

2.4.2 Data views in PDT

The plants associated with a project are described with the aid of graphics (plant parts) and text (functions).
PDT provides four plant data views which are described in the following sections:

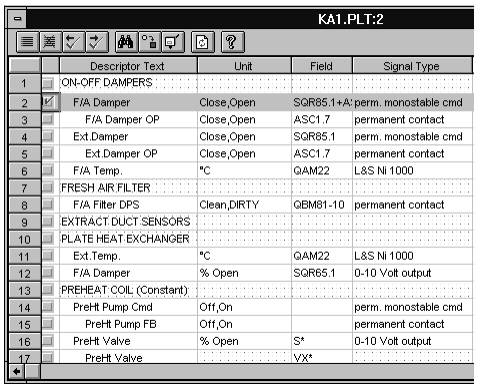
Plant graphic



Graphical display of plant parts and components

8377O03

Attribute table

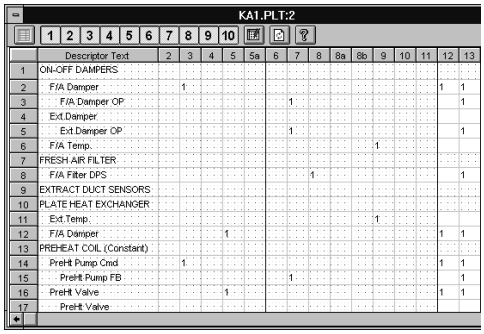


	Descriptor Text	Unit	Field	Signal Type
1	ON-OFF DAMPERS			
2	F/A Damper	Close,Open	SQR65.1+A'	perm. monostable cmd
3	F/A Damper OP	Close,Open	ASC1.7	permanent contact
4	Ext.Damper	Close,Open	SQR65.1	perm. monostable cmd
5	Ext.Damper OP	Close,Open	ASC1.7	permanent contact
6	F/A Temp.	°C	QAM22	L&S Ni 1000
7	FRESH AIR FILTER			
8	F/A Filter DPS	Clean,DIRTY	QBM81-10	permanent contact
9	EXTRACT DUCT SENSORS			
10	PLATE HEAT EXCHANGER			
11	Ext.Temp.	°C	QAM22	L&S Ni 1000
12	F/A Damper	% Open	SQR65.1	0-10 Volt output
13	PREHEAT COIL (Constant)			
14	PreHt Pump Cmd	Off,On		perm. monostable cmd
15	PreHt Pump FB	Off,On		permanent contact
16	PreHt Valve	% Open	S*	0-10 Volt output
17	PreHt Valve		VX*	

Display of plant parts and components with their common attributes

8377O04E

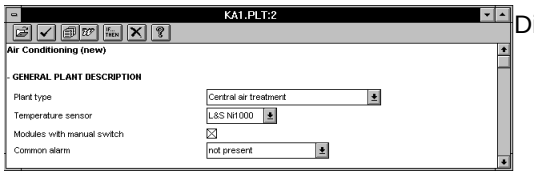
CEN Info list



8377O05E

Display of component data points as per CEN standard

Function definition



8377O06E

Display of plant functions

2.4.3 Operations in PDT

Overview

PDT enables you to perform operations on the following objects:

- Projects
- Plants
- Plant parts
- Components
- Functions

Project operations

The following project operations are possible in PDT:

- Create a new project
- Open an existing project
- Close an open project
- Archiving a project

Plant operations

The following plant operations are possible:

- Create a new plant
- Copy plants
- Save plants
- Deleting plants
- Create plant documentation (CEN Info list, field device list, plant schematic and function description)
- Generate plant points for various systems
- Import plants and points generated in SDT

Plant part operations

You can do the following with plant parts:

- Move
- Copy
- Delete

You will normally copy entire plants or plant parts, individually or in groups, from the libraries into the plant you are editing.
The easiest method is to drag a highlighted group of plant parts from one plant into another — this automatically creates a copy.
Do **NOT** copy plant parts inside the same plant, as this produces points with duplicate point texts and field devices with duplicate identifiers.
You can copy or move plant parts to free spaces only. The plant grid automatically expands to the right and downwards.

Component operations

You cannot move, copy or delete components and sub-components; you can only activate or deactivate them.
You can do this in the attribute window which opens when you double-click the plant part. By clicking the associated graphical symbols you can change from one component to the next or to activated sub-components.

Function operations

Using the function editor, you can select a function library or deactivate it again. You can select the desired functions from the list by activating or deactivating them. Many functions also provide a selection of variants.

Undo / Redo

All operations in PDT are buffered.
Using "Edit / Undo", you can undo each operation step by step. However, this undoes **all** of the changes you have made between the last operation and selection of the "Undo" function.

Using the ”Edit / Redo" function you can redo undone operations.

2.5 Access Level

What are access levels for?

PDT functions have been tailored to the needs of various tool users and various project phases by means of five access levels. These access levels hide those functions and attributes that the respective users do not need for their daily work.

Access level settings

The access levels are implemented using different dongles (Sentinel keys) and different tool settings.

Sentinel

In this document, "Sentinel" stands for the "Sentinel Scribe™" dongle which is used as a software program copy protection key for the respective program.

There are five access levels:

Sentinel	Users	Access level settings
No Sentinel	Planners (in PDT)	• Planner
”UNIGYR Design”	UNIGYR system houses	• Planner • System house
”VISONIK” or ”ETS”	L&S employees	• Planner • System house • L&S Sales • L&S Engineering
”Tool Manager”	Tool managers in Group Companies and branch offices	• Planner • System house • L&S Sales • L&S Engineering • Tool Manager

2.6 Terminating PDT

You can terminate PDT at any time. If your project contains unsaved changes, a message will be displayed.

Select "Plant / Exit" to terminate PDT.

2.7 Saving data

Utilities are provided to back up all data of current or completed projects in compressed form and to restore that data if necessary.

Archiving a project

Proceed as follows to archive your project:

Select **"Project / Close and archive"**

A message in the DOS window with the title ”SAVEPROJ.BAT” indicates when the process is completed.

Close the DOS window.

Note

A subfolder \SAVE.nnn containing the current project data is created in the project's directory. The number ”nnn” is automatically incremented (up to 999) when the function is activated.

3 Working with PDT

3.1 Graphical plant editor

Purpose

The graphical plant editor serves to create plants from plant parts and activate the appropriate components.

Toolbars

For increased efficiency, PDT provides toolbars that contain the most frequently used functions.
You can activate functions directly by clicking the toolbar symbols instead of taking the long way round via the menus.

Plant editor

Toolbar

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

No.	Function
1	Create a new plant
2	Open an existing plant
3	Save the plant in the active window
4	Print the active plant
5	Layout view (for printing)
6	Cut a plant part
7	Copy a plant part
8	Paste a plant part
9	Open / close the attribute window
10	Open / close the restriction window
11	Display / hide the tree view
12	Open the attribute table
13	Open the CEN Info list
14	Open the function window
15	Zoom selection to window size
16	Zoom out by a factor of 2
17	Restore original size
18	Zoom in by a factor of 2
19	Activate rubber band selection
20	Open the plant part library
21	Open the default plant library
22	Help

Tree view

You can display the plant parts and components in a tree view in the graphical plant editor. The following additional functions are provided:

Toolbar:


8371O04

1 2 3 4

Note

These functions affect the entire tree, not just the currently highlighted section.

No.	Function
1	Display the top level of the plant parts or blocks only
2	Display the top level of the plant parts only
3	Display all components
4	Display all sub-components

Attribute window

You can edit he attributes of the plant parts and components in the attribute window of the graphical plant. This window contains the following functions:

Toolbar


8377O08

1 2 3 4

No.	Function
1	Open the dialog box for editing the CEN Info list of a component (works only if a component is highlighted)
2	Open the dialog box for selecting field devices (works only if a component is highlighted)
3	Switch to the "I/O Points" attribute view
4	Switch to the "Names and Addresses" attribute view

3.2 Attribute table editor

Purpose

The attribute table editor serves to check and modify the major attributes of all active components, especially field devices and signal types (fine tuning). A new main menu opens when the attribute table editor is started.

Toolbar


8377O09

1 2 3 4 5 6 7 8 9

No.	Function
1	Activate all rows
2	Remove all activations
3	Jump to the previously activated row
4	Jump to the next activated row
5	Open the dialog box for entry selection
6	Open the dialog box for entry replacement
7	Open the dialog box for field device selection
8	Update table display
9	Help

Further functions

- Double-clicking the table header opens a dialog box for selecting the columns you want to display
- Column width changes are saved

Notes

- In text cells, the "Cut" and "Paste" functions apply to the entire entry, not to portions of text. In Windows 95©, use the right mouse button to open an editor dialog box for portions of text.
- You can only delete cell entries using the backspace key < ← >.
- Changes to cell entries do not become effective until you quit the cell.
- Pressing the <F1> key when a signal type cell is active opens a help window with the possible module signal types

3.3 CEN Info list editor

Purpose

The CEN Info list editor allows you to check and modify the CEN Info list, especially the manual switches of the I/O modules. The table displayed here cannot be printed; printing is only possible using Excel. See 3.6.9 ”Creating plant documentation”.

Toolbar

8377O10

1 2 3 4 5 6 7 8 9 10 11 12 13 14

No.	Function
1	Display the CEN Info list for a component (works only if a component is highlighted)
2	Display or hide group 1 (physical outputs)
3	Display or hide group 2 (physical inputs)
4	Display or hide group 3 (service operation)
5	Display or hide group 4 (virtual basic functions)
6	Display or hide group 5 (management level communications)
7	Display or hide group 6 (supervision)
8	Display or hide group 7 (interlocks)
9	Display or hide group 8 (closed loop control)
10	Display or hide group 9 (calculation / optimisation)
11	Display or hide group 10 (statistics / user interface)
12	Set the selected CEN column
13	Update table display
14	Help

Notes

Pressing the <F1> key opens a help window containing the CEN column description. To simplify the editing process, select "? / Always on Top" in the opened help window. This keeps the column description in the foreground of the display.

Changes to cell entries do not become effective until you quit the cell.

3.4 Function editor

Purpose

The function editor allows you to select functions and generate the function description.

Toolbar

8374O06

1 2 3 4 5 6 7

No.	Function
1	Change the function library
2	Test the functions (according to the library's test rules)
3	Create the function description
4	Edit the function description with Microsoft Word© (see section 3.6.9 ”Creating plant documentation”)
5	Generate "Code Links" (based on the program code in the library)
6	Delete the function selection
7	Get help information on the selected function

3.5 ETS Explorer

Purpose

The ETS Explorer allows you to select default plants and plant parts from the libraries.

Toolbar

8377O12

1 2 3 4 5 6 7 8 9 10 11 12 13

No.	Function
1	Transfer the default plant or the plant part to the open project in PDT
2	Switch to PDT without transferring data
3	Shrink the tree view
4	Expand the tree view
5	Display the previous default plant or plant part
6	Display the next default plant or plant part
7	Display / hide the tree view
8	Expand the plant schematic (active only when the tree view is hidden)
9	Shrink the plant schematic (active only when the tree view is hidden)
10	Plant schematic 1:1 (active only when the tree view is hidden)
11	Switch to the plant parts tree view
12	Switch to the default plants tree view
13	Help

Note

You can start the ETS Explorer only if the required libraries are present. Otherwise, a file selection dialog box is displayed.

3.6 Standard workflow

Meaningful workflow

In order to work as efficiently and with as few errors as possible when creating new plants, we recommend that you observe the following standard workflow.

Recommended standard workflow

Step	Procedure
1	Select the appropriate access level, see section 2.5 ”Access Level”
2	Create or open a project
3	Select a plant Select a default plant: copy a plant from a library or archive
4	Exchange plant parts if necessary Modify plant parts and components
5	Modify field devices and signal types
6	Create a user name (implementation only!)
7	Generating data points
8	Combining functions
9	Adapting the CEN Info list
10	Save the plant
11	Print the plant documentation (CEN Info list, field devices list, plant schematic and function description)

3.6.1 Creating / opening a project

Before you can create a new plant or modify an existing one, you must first open or create the ETS project to which it belongs.

Project directory structure

In order to keep the different variants and project steps manageable, we recommend that you use a standard project directory structure for all customer projects. This standard structure is described in the ETS Basics document.

Creating a new project

Before creating a new project, you must first set up the customer project directory where PDT should create your ETS project directory.

Step	Procedure
In the File Manager:	
1	Create the customer project directory
In PDT:	
2	Close any open projects
3	Select the "Project / New" function
4	Select the customer project directory in the dialog box
5	Enter the name for the ETS project directory
6	Enter all required information in the "Project Attributes" window

Opening an existing project

Step	Procedure
1	Close any open projects ("Project / Close")
2	Open the desired project ("Project / Open")

3.6.2 Selecting a plant

In order to add a new plant to the project, you best use an existing plant. The plant library or local project archive normally contains a suitable plant that you can take as a basis and modify as required. This procedure has the advantage that the existing plant is already tested and error-free.
Create new plants from scratch only in exceptional cases.

Copying a plant from the archive

Step	Procedure
In the File Manager:	
1	Decompress the project in the archive if necessary
In PDT:	
2	Open the plant you want to copy (in archive directory)
3	Save the plant in the active ETS project using "Plant / Save as"
4	Make any necessary modifications

Copying a plant from the library

Step	Procedure
1	Open the plant library ("Library / Open Standard Solution...")
2	Find the required plant (use ETS Explorer)
3	Transfer the plant to PDT
4	Save the plant in the ETS project using "Plant / Save as"

ETS Explorer

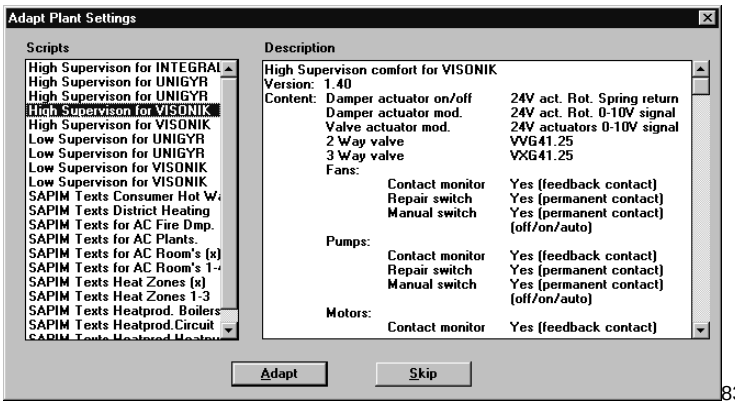
If the required libraries are present, the ETS explorer starts automatically when you open the plant library. The Explorer displays all of the plants contained in the libraries in a **tree view**.
Using the tree view and the graphical display, select the most suitable default plant and transfer it to PDT.

Recommendation

Because the ETS Explorer must first build the tree view on start-up which takes some time, do not close it until you have selected and transferred all the plants you need.

Adapting to preferences

During transfer of a plant (or plant part) from the library, they can automatically be adapted to the customer's preferences. When you transfer a plant from the library to PDT, a dialog box opens which allows you to adapt the plant to preferences; select [Adapt] to execute this function.
The following dialog box opens:



8377O13E

Recommendation

This function is used to make a rough definition of the plant using common values. For the final definition, however, you must still check the values of each component.

Notes

- The plant type determines the selection list (e.g. ventilation, heating, air conditioning) The most recently selected setting for this plant type is highlighted.
- You can also start this function manually by selecting "Edit / Adapt to Preferences".
- The preferences are stored in the form of scripts which can be modified by the tool manager.
- If you cannot adapt components via this function (warning appears), an invalid signal type may be present or a restriction is active. The function is executed for all other components, however.

3.6.3 Modifying plants

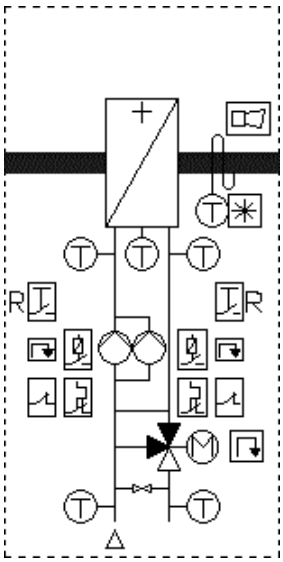
This section describes three possible work steps. You may only require one of these work steps.

Modifying a plant part

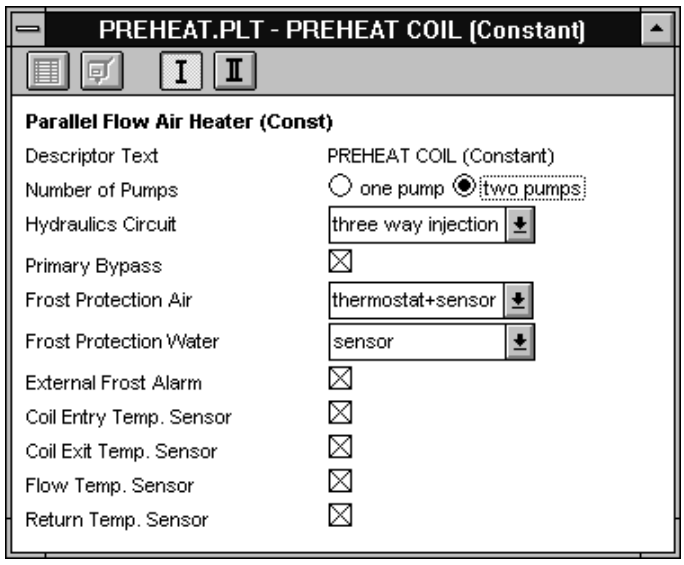
The following example is intended as a guide to help you modify a plant part in your plant.

Example

Exchange heating coil (low-pressure hot water with constant volume flow): Change hydraulic circuit.



8377O01



8377O02E

How do I proceed?

Proceed as follows to modify the plant part:

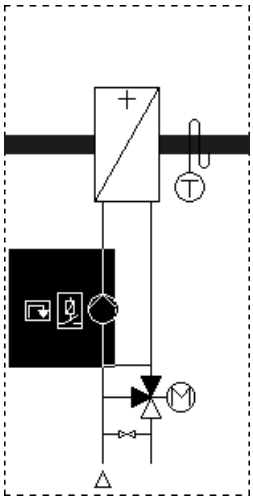
Step	Procedure
1	Highlight the plant part you want to modify
2	Open the plant attribute dialog box (”View / Attributes”)
3	Select attribute category **I** ”I/O Points”
4	Select a different type of hydraulic circuit under the "Hydraulic Circuit" heading
5	Close the dialog box

Modifying a component

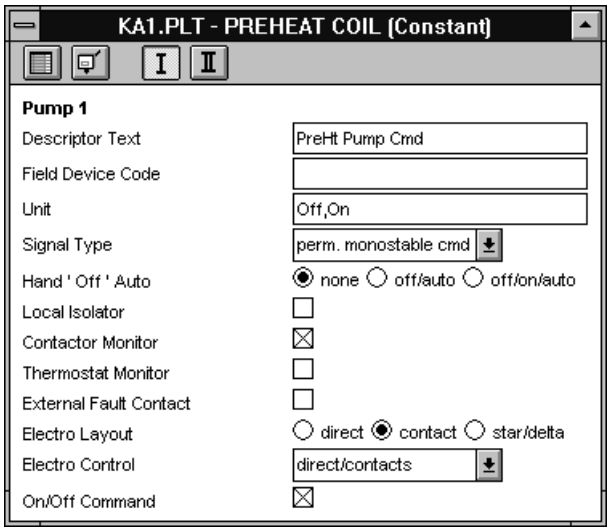
The following example is intended as a guide to help you modify a plant part in your plant.

Example

Pump: activate isolator switch and external fault contact



8377O15



8377O16E

How do I proceed?

Proceed as follows to modify a component:

Step	Procedure
1	Highlight the component you want to modify (`Pump 1`)
2	Open the plant attribute dialog box (”View / Attributes”)
3	Select attribute category **`I`** ”I/O Points”
4	Select / activate the required attributes (e.g. `Local Isolator` and `External Fault Contact`)
5	Close the dialog box

Exchanging a plant part

The following example is intended as a guide to help you exchange a plant part in your plant.

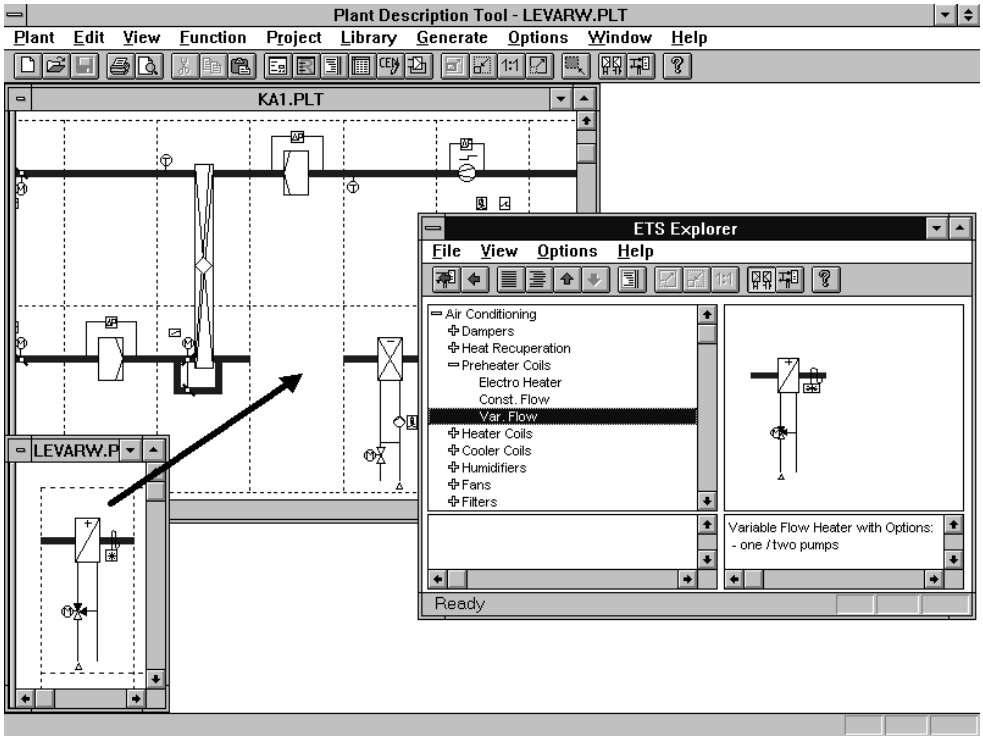
Example

Exchange heating coil (low-pressure hot water with constant volume flow) for a heating coil (low-pressure hot water with var. volume flow, without pump)

How do I proceed?

Proceed as follows to exchange the plant part:

Step	Procedure
1	Delete the plant part you want to exchange (leaves a gap)
2	Open the plant part library ("Library / Plant parts")
3	Find the new plant part
4	Transfer the plant part to PDT
5	Copy the plant part into the gap (via drag & drop)
6	Close the plant part window



8377O17E

Recommendation

Close the library view of the plant part (smallest window in the above example) as soon as you have finished, because it uses up memory and thereby increases the risk of involuntary program termination.

Plant parts contain the data (information such as texts, device identifiers, function IDs) that make up the efficiency of ETS. This efficiency is lost if a plant part is inserted at the wrong location, for example if a reheater is copied instead of a heating coil. In this case, replacing "PH" with "AH" is not sufficient.

This means that plant parts must **never** be copied **within** the **same** plant, as this produces plant parts with duplicate background information which can cause conflicts.

Standard plants

Experts prepare standard plants which include function descriptions and have restricted attribute selection. Additionally, you cannot add new plant parts or delete existing plant parts from standard plants.
Standard plants are defined as such in the plant attribute window.
If you want to modify a standard plant, you must first remove the standard tag.

The only option to re-attach this tag is to use the "Undo" function ("Edit / Undo") before you save the plant. However, this means that **all** changes you have made since you removed the standard tag will be lost.

3.6.4 Modifying field devices and signal types

Field devices and signal types are mostly set correctly via the process of adapting to preferences.
You can use the attribute table and CEN Info list for quick checking (and for making any necessary changes).

Checking

Proceed as follows to check the preferences for field devices and signal types:

Step	Procedure
1	Open the attribute table (”View / Attribute table”)
2	Check the field device and signal type entry for each component
3	If necessary, change the field device / signal type

Note

Signal types determine the I/O module type. For detailed information, refer to "Help".
You can edit the optional manual switches on the I/O modules in the CEN Info list (see 4.2.9 ”Editing the CEN Info list”)

Selecting field devices

The field devices can either be entered directly or via a selection dialog box. There are three different application cases for this:

- You want to replace an existing field device with a similar device (e.g. a sensor).
- You want to find a missing or undefined field device (e.g. a valve actuator).
- You want to add installation accessories for an existing field device.

Replacing a field device

Proceed as follows to replace an existing field device:

Step	Procedure
1	Highlight the component in the plant schematic or the attribute table
2	Open the field device dialog box (Edit / Field Device Codes”)
3	Find the desired field device in the "Field Device Catalogue" list box (use the scroll bar)
4	Highlight the desired field device and click [Replace]
5	Close the dialog box by clicking [OK]

Finding a field device

Proceed as follows to find a missing or undefined field device:

Step	Procedure
1	Highlight the component in the plant schematic or the attribute table
2	Open the field device dialog box (Edit / Field Device Codes”)
3	Type the first few letters of the field device in the ”Field Device Attribute Preview" field (e.g. SK*****) *Note* Click the **left mouse button** to update the catalogue section
4	Find the desired field device in the "Field Device Catalogue" list box (use the scroll bar)
5	Highlight the desired field device and click [Replace]
6	Close the dialog box by clicking [OK]

Adding installation accessories

Proceed as follows to add installation accessories to a field device:

Step	Procedure
1	If necessary, replace or find and insert the field device
2	Type ” **+** A***** ” after the field device name in the "Field Device Attribute Preview" field *Note* ” **+** ” indicates an installation accessory
3	Find the desired field device in the "Field Device Catalogue" list box (use the scroll bar)
4	Highlight the desired field device and click [Replace]
5	Close the dialog box by clicking [OK]

Notes

In the case of damper and valve actuators, there is a separate component for the feedback signal and for the valve. The respective field devices must be entered **there** and not as accessories.

Some components represent a number of similar devices. In this case, they contain several field devices separated by “ **;** “ (see section 4.3.1, "Plant parts and components”).

3.6.5 Creating a user name

User names need only to be created during the engineering phase!

The term user name is used differently depending on the system concerned:
- VISONIK: User name
- INTEGRAL: SAPIM text
- UNIGYR: Not used

In ETS, the user name is divided into a plant-specific prefix and a point-specific suffix. There are two text fields for the suffix — one for measurement and control-oriented names (User ID) and one for device-oriented names (Device ID).
They can be displayed and edited in the attribute window (view **`II`**) or in the attribute table in PDT. Use the following:
- User ID if the device name is **NOT** the same as the user name.
- Device ID if the device name is **identical** to the user name.

Use

In PRVCONF or RSCONF you must explicitly specify which of the text fields should be used.

Graphics

You can specify which of the texts should be used in customer graphics under ”Options / Graphic Mode".

Editing

The contents of the text fields can be created in different ways:
- From libraries, in which case the User ID field is empty and the Device ID field contains an entry.
- Preset texts can be inserted from a file (script) using the ”Adapt to Preferences” function.
- By typing an entry in the respective field.

3.6.6 Generating data points

Generate points

In order to generate the points of a specific system for a plant (i.e. write them to the exchange database), you must always save the respective plant after completing your changes. This also applies to function changes.

Procedure: Select **"Generate / VISONIK Points**, **UNIGYR Points** or **INTEGRAL Points"**

A window indicates the successful completion of this task and displays any errors that occurred. If errors occurred, eliminate the cause of the error message, resave the plant and generate the points again.

Possible error message

```
Error: The current point list row cannot be fully converted
 Error converting IO row
 Error converting: Flow Temp.: ;;;;;;;;;;1;;;;1;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
```

If this type of error message occurs, no data point or I/O module was found for the respective row in the CEN Info list during point generation.

Example

There are no measured value modules with indication. For that reason, column 13 in the CEN Info list must never contain the value "1" for an AI point.

3.6.7 Selecting functions

You can assign open and closed loop control functions to plants. These then allow you to create the function description.
Additionally, you can generate the program code, provided the library contains the associated data. Plant conditions are not automatically considered. For example, the "Summer compensation" function does not automatically generate an outside air temperature sensor.

Function libraries

Function libraries are prepared by experts and contain the function description, possibly test rules and possibly the program code. The function libraries must be created in the Group Companies.

Selecting the functions

The following workflow assumes that you have not yet selected a function library.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Select the function library
3	Select the functions
4	Save the plant

Changing the function library

You can select only one function library per plant. If you choose to select a different function library, you will loose all previously selected functions.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Select the new function library
3	Select the functions
4	Save the plant

Deleting the function selection

Proceed as follows if you decide not to use the selected function library:

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Delete the function selection (”Function / Delete All Requirements”)

Checking functions

If the appropriate tests are contained in the library, you can check whether the functions work correctly with the plant.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Check the functions (”Function / Check Requirements”)

Creating the function description

Before you can create the function description, you must first have selected a function library and from it the required functions as described in the above workflow.

Step	Procedure
1	Save the plant
2	Open the function window (”Function / Open Function Window”)
3	Generate the function description (”Function / Generate Functional Description”)

Note

You will loose any changes you have made to the function description using Microsoft Word© the next time you select "Generate Functional Description".

Editing a function description

After generating the function description you can edit it, if necessary, and then save and print it.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Open the function description for editing (selecting ”Function / Edit Functional Description" launches Microsoft Word©)
3	Update the function description by selecting "**Edit / Select All**" and pressing the function key <**F9**>
4	Edit, save and print the description (in “Microsoft Word©”)

Note

You can open the function description outside of PDT in Microsoft Word©. The file is located in the active ETS project directory and has the file extension *.RTF.

Printing a function description

You can print the function description after you have generated and saved it.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Open the function description for editing
3	Update the function description by selecting "**Edit / Select All**" and pressing the function key <**F9**>
4	Print the description in Microsoft Word©

Generating the code links

Code links are required to generate the controller code using either ”PRVCODE” (for VISONIK process stations) or the HVAC Code Generator (for UNIGYR process units).

In order to generate the code links, you must first have assigned a library to the plant as per the workflow described above, and the library must contain the control code.

Step	Procedure
1	Open the function window (”Function / Open Function Window”)
2	Generate the code links (”Function / Generate Code Links”)

3.6.8 Adapting the CEN Info list

As a rule, you only need to adapt manual switches and displays on I/O modules in the CEN Info list. Proceed as follows to do this:

Step	Procedure
1	Open the CEN Info list editor (”View / Point Data Table”)
2	Select the desired row
3	Activate the cell in column 12 or 13 of the desired row
4	Enter one of the following values: ” ” = no manual switch required ”0” = no manual switch permitted ”1” = manual switch required

Recommendation

The table columns are combined into meaningful groups. These groups are assigned to numbered buttons.
For improved clarity, we recommend that you click the appropriate buttons to hide all of the groups that are of no interest to you.

Use the help function to get more information and assistance on columns and buttons.

Note

- Groups 1 and 2 (physical entries) are completed automatically and cannot be edited, because they affect point generation.
- Groups 4 ... 10 appear in the printed CEN Info list but have no other affect. They are not completed automatically.

3.6.9 Creating plant documentation

Printing a plant schematic in PDT

You can choose different presentation types for printing:

- Operating graphics refers to a presentation as seen on screen.
- Customer graphics refers to a device presentation with optionally displayed names (system name, user name, device ID, field device).

Note

To create customer graphics, new graphics files are loaded, which requires time and memory and may considerably slow down PDT, depending on the PC. Additionally, the risk of improper program termination increases. Thus, save **all** plants prior to creating customer graphics.

In both presentation types, you can display the additional I/O summary bar.

Step	Procedure
1	Save all plants
2	Make the settings for graphic printing (”Options / Graphic Mode”)
3	Print the plant schematic ("Plant / Print")

Creating a Designer drawing file

The plant schematics created in PDT are Designed drawings.
In order to create a *.DRW file (Micrografx Designer 3.1©) for the open plant, select the following:

Step	Procedure
1	Save all plants
2	Make the settings for graphic printing (”Options / Graphic Mode”)
3	Save the plant schematic (”Plant / Save Designer File”)

You can later edit the file created in **Micrografx Designer ©.**

Printing a legend for the plant symbols

To complete your project documentation, you can print all symbols used in the plant schematic:

Procedure: Select **"Plant / Print Symbol Legend"**.

Generating and printing a CEN Info list

Do not generate the CEN Info list until after you have saved the plant. This is the only way to ensure that the list matches the information in the exchange database.

Procedure: Select **"Generate / Point List"**

You can use Microsoft Excel© to print the file that is created.

Generating and printing a field device list

Do not generate the field device list until after you have saved the plant. This is the only way to ensure that the list matches the information in the exchange database.

Procedure: Select **"Generate / Field Device List"**

You can use Microsoft Excel© to print the file that is created.

Note

The field device list generated in PDT is a product-neutral description of field devices. If you need a list with catalogue names, you can produce one using the "Lists" menu in SDT Shell.

Printing a function description

To print a function description, refer to the appropriate topic on page 28.

3.6.10 Importing points into PDT

Importing points

When you open a plant, only the data saved locally in PDT is accessed. In order to retrieve point data (e.g. field devices, address or I/O channels) changed in SDT Shell (PRVCONF, RS-CONF) from the exchange database, select the following:

"Generate / Point Import"

Notes

New points generated in PRVCONF are displayed in a free plant part with the name "External Points" after the point import operation.

If a new plant has been created in PRVCONF, a message is displayed when you open the project in PDT, stating that there is no PDT file (file type *.PLT) for the plant. The missing file is generated when you acknowledge the message. You can then import the points contained in the plant using the procedure described above.

3.6.11 Deleting a plant

You can only completely delete a plant in PDT.

If you delete a plant in SDT-ALN (PRVCONF), the plant file generated by PDT (file extension *.PLT) remains intact. You have the following two possibilities for deleting this file:

- Delete the PLT file in the file manager (possibly including further files generated by PDT, such as the function description, CEN Info list or field device list).
- Delete the PDT file in PDT as described below.

Deleting a PDT plant file

Proceed as follows to delete a plant file in PDT:

Step	Procedure
1	Open the project, if necessary ("Project / Open")
2	Close the plant, if necessary ("Plant / Close")
3	Delete the plant ("Plant / Delete")

4 Detailed Information

This chapter is intended for experienced PDT users. It contains additional information and special PDT operations.

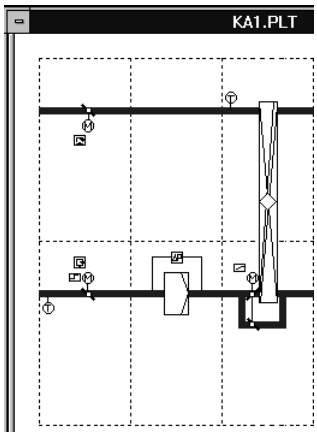
4.1 Special views

4.1.1 Plant parts and components tree view

In addition to the graphical display, you can also display plant parts as a list. This display shows the blocks, plant parts, components and any sub-components in a tree view reflecting the hierarchy of the various plant objects as already described.

List view

The list view is always present in the split plant window. It is located in the left pane of the window, which is minimised by default. The list becomes visible if you enlarge this pane. To enlarge the pane, drag the divider bar, which is at the left edge of the window, to the right (hold down the left mouse button):



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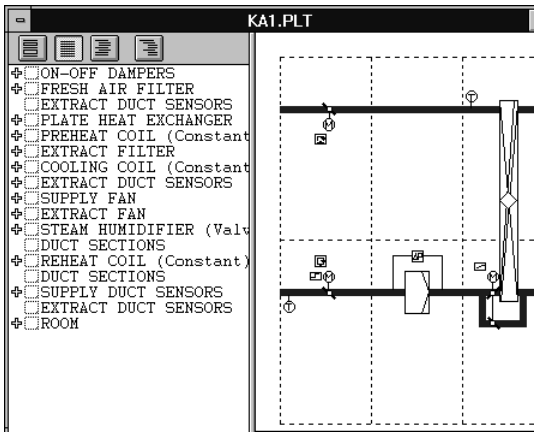

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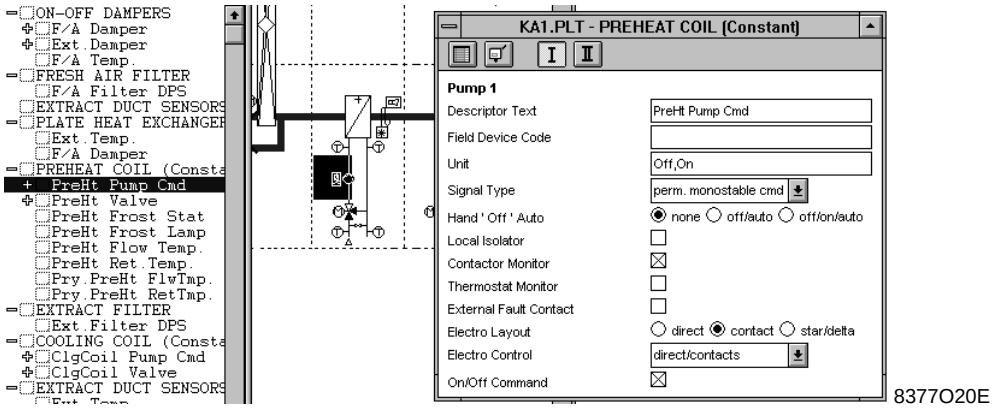
Level of detail in the list view

You can change the level of detail in the list view in two different ways:

- You can use the icons in the list view to change level of detail for all plant parts or components simultaneously.
- You can increase or decrease the level of detail of an individual line by clicking the respective ”+” or ”-” sign.

Link between the two views.

The graphic and list view are interlinked, i.e. selections made in either display are matched in the other.
Component selection in both displays:



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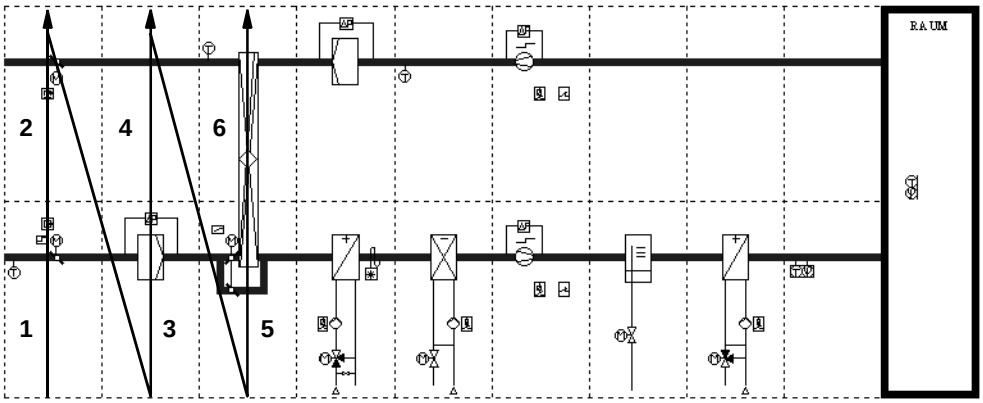
4.1.2 Sequence in list views

The sequence of plant parts and components or data points is the same in all list views. It follows the scheme shown below:



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4.1.3 Various attribute views

There are two possibilities for viewing the contents of the attribute window and restriction dialog:

- "I/O Points" view
- "Names and Addresses" view

"I/O Points" view

The "I/O Points" view displays all hardware-related information in the attribute window.

Plant parts:

- Components

Components:

- Text
- Field device
- Units / Status
- Signal type
- Sub-components

"Names and Addresses" view

The "Names and Addresses" view displays all system-related information in the attribute window.

Plant parts:

- Text
- Function ID

Components:

- Text
- System Name
- User ID
- Device ID
- Function ID
- CAD link

Setting the view

There are two possibilities for setting the desired view.

First possibility:

Step	Procedure
1	”Options / Attribute Category”
2	Select the desired view

Second possibility:
Use the respective icons in the attribute dialog box to switch between the views.

4.1.4 Restrictions

Restrictions allow you to adapt the selection range for attribute values to local usage and function libraries. This ensures that you do not use incompatible attribute values by mistake.

In the restrictions dialog, restricted attributes are prefixed by an "R".

Removing restrictions

If necessary, any PDT user can remove these restriction in the restrictions dialog. However, this generally only applies to very special plants that require accordingly expensive implementations.

Step	Procedure
1	Highlight the part (block, plant part, component, …)
2	Open the restrictions window
3	Highlight the attribute
4	Remove the restriction

Note

You can use the "undo" function to restore mistakenly removed restrictions at any time. However, this will undo **all** changes you have made since you removed the restriction.

Removing block restrictions

Restrictions on elements contained in blocks are always fully effective. Lower-level restrictions are identified by an ”×” in front of the attribute.

To remove restrictions of this kind, you must first break up the block:

Step	Procedure
1	Highlight the block
2	Break up the block (”Edit / Beak Apart”)
3	Remove the restrictions

Procedure for entering restrictions

As a rule, only Tool Managers or application experts should set restrictions.

Open the attribute window and the restrictions window to enter restrictions:

Step	Procedure
1	Highlight the desired part (standard block, plant part, component, etc.)
2	Open the attribute dialog box
3	Enter valid attribute values (texts, ASN code, etc.) in the attribute dialog box
4	Open the restrictions dialog box
5	In the restrictions window, lock out all values that are not permitted by the function library

Note

In the case of standard blocks, all attributes apart from the text are generally locked out.

4.2 Special operations

4.2.1 Editing free plant parts

Free plant parts simply are point lists. They can be used to cover special local needs.

The data points in free plant parts have the same properties as components:
- They can be activated or deactivated.
- They appear in the list view.
- They have all standard attributes of components (e.g. text, system name…).
- They have two additional attributes, "Signal family" and "Signal type", for defining I/O modules.

You can insert and modify free plant parts during the sales phase in exactly the same way as plant parts from libraries.
During the engineering phase, you must either ensure that the device ID and the function ID are present and correct or post-edit these data points in PRVCONF or INTEGRAL PLAN.

Inserting a free plant part

Proceed as follows to insert a free plant part:

Step	Procedure
1	Open the plant part library with local plant parts
2	Copy the desired plant parts to the plant you want to edit

Creating a free plant part

Creation of free plant parts is reserved for Tool Managers only; you may only depart from this rule in exceptional situations, for example if it is the only implementation possibility open to you.

Data points

Proceed as follows to create data points for a free plant part:

Step	Procedure
1	Open the plant part library with free plant parts
2	Copy the empty part to the plant you want to edit
3	Insert the text and description of the plant part
4	Select "Edit / Add Point Component"
5	Enter the point text Enter the field devices Enter the units or status texts (ON, OFF,…) Select the signal family and type
6	In case of multistage switching commands: Open the [CEN Info list], enter the data in the CEN column, then close the dialog box (click [OK])
7	To add the next point, repeat the procedure from step 4

Note

An entry must be made in the CEN Info list for data points in free plant parts. The selected column must correspond to the values entered for "signal family" and "signal type". The entries must correspond to the possible point and module types. For analogue inputs (AI), for example, there must be no setting in column 13 ("displays"), since there are no AI modules with indication.

The newly created, free plant part can be linked to a graphic.
However, this is not a necessary requirement for using a free plant part.

Graphics

You must use Micrografx Designer 3.1© to generate a graphic. The overall procedure involves considerable effort and makes it worthwhile only in large projects; contact your Tool Manager for details.

4.2.2 Highlighting several plant parts

Distributed plant parts

Proceed as follows to highlight a number of distributed plant parts:
– Hold down the <Ctrl> key.
– Click the desired plant parts.

Adjacent plant parts

To highlight a number of parts that form a **closed rectangle**:
– Activate rubber band selection (icon or "View / Rubber Band Selection").
– Hold down the mouse button and highlight the desired section by drawing a rectangle that touches all the plant parts you want to highlight.

Note

Terminate the rubber band selection by making a "normal" highlight (clicking with the mouse).

To highlight a number of parts that form a **closed rectangle adjacent to the graphic**:
– Hold down the mouse button outside of the graphic.
– Draw a rectangle that touches all plant parts to be highlighted.

4.2.3 Avoiding problems

PDT uses outsourced functions to display the plant schematic. These functions use a lot of memory and tend to behave incorrectly if too many plant schematics are open and after long working periods.
Therefore, we recommend the following approach:

- Leave only as few plants as possible open simultaneously.
- Save each plant immediately, as soon as you have finished editing it.
- If possible, edit only plants of the same type at once (air-conditioning, heating, heating groups, ...). Terminate and restart PDT when you change to a different plant type.
- Save all plants before printing (or displaying the print preview).
- Terminate and restart PDT after printing 5 ... 6 customer graphics.
- Terminate and restart PDT after a maximum of 4 hours work.

4.2.4 Adapting the plant schematic printout

You have three possible options for printing plant schematics:
- Graphic mode
- Graphic printout
- Component text

Setup

Start the dialog for setting up the plant schematic printout (or for saving the Designer file) as follows:

Step	Procedure
1	”Options / Graphic Mode”
2	Select the desired view

Graphic mode

There are two different graphic modes to choose from:
- **Operation graphics:**
  The printed plant graphic (or the saved Designer file) corresponds to the display on screen:
  – All I/O channels, including feedback signals, steps, etc. are printed.
  – The printout contains no text.
- **Customer graphics:**
  The printed plant graphic (or the saved Designer file) does not correspond to the display on screen but to the Group Company's normal presentation:
  – I/O channels with feedback signals, steps, etc. are not printed
  – Depending on the current settings, component texts may or may not be printed.

Graphic printout

There are two different printed graphic options to choose from:
- **Print frame**
  In both views, you can choose the frame that is printed around the plant graphic.
- **I/O summary bar**
  Show or hide the I/O summary bar

Component text

You can choose the components texts for customer graphics.
Possible settings: None, System name, User ID, Device ID or Field device code.

Suppress individual text printout

You can activate or suppress printing of the text for individual components using the "Graphic Text Visible" attribute in the attribute dialog (view **II** ”Names and Addresses”).

Notes

- Problems in customer graphics may occur with texts that are more than 5 characters long.
- When printing customer graphics, the graphic build-up takes a certain amount of time and memory problems may occur, as additional graphics have to be loaded. Consequently, we recommend that you do not print the customer graphics until the plants are completed, and that you save all plants beforehand..

4.2.5 Printing plant schematics

Graphic printing uses outsourced functions. These functions tend to behave incorrectly after you have printed several graphics.
We thus strongly recommend that you save all plants prior to printing.

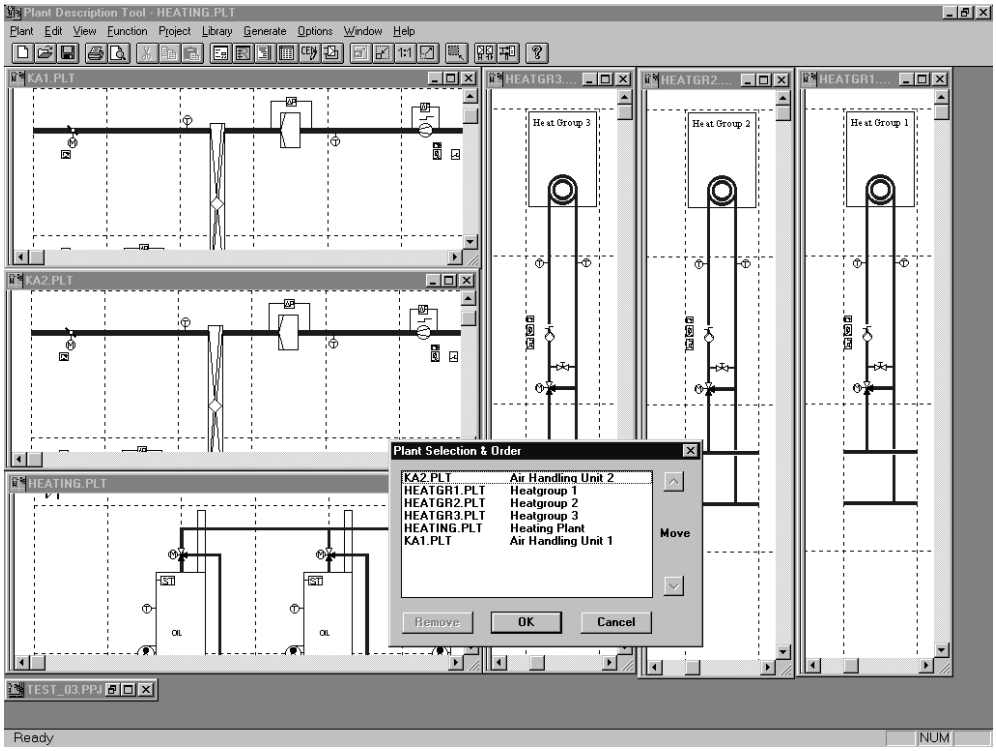
Under **Windows 95,** you must use PCL for printing, because the postscript driver has an error.
The ”HPPCL5MS.DRV” and ”HPW.DRV” drivers produce correct printouts if the installed printer is ”HP LJ 4L” or ”HP LJ 5L”. Correct printouts are also produced with the ”HP LJ IIID" printer if you select the ”HP LJ 4L” printer type instead of ”HP LJ IIID” when you install the driver.

Under **Windows 3.1** you can use either PCL or Postscript. Postscript is preferable, however, because PCL does not always print the valve texts.
The ”HPPCL5A.DRV” and ”HPPCL5E.DRV” drivers do not print the valves and texts properly with the ”HP LJ IIID” and ”HP LJ 4L” printers. The ”HPW.DRV” driver for the ”HP LJ 5L” printer produces correct printouts of plant schematics.

Do not switch off your **local printer**; otherwise the Sentinel key will not be recognised!

4.2.6 Printing plant groups

This function is mainly intended for printing heating plants. You can combine a number of sub-plants to an overall plant for creating a graphic. In the process, the edges of the individual graphics are cropped so that each is attached seamlessly to the next. You can only display or print this graphic — you cannot edit or save it. You can, however, export it to Micrografx Designer by selecting "Plant / Save Designer File". The following illustration provides an overview of how this function is executed:



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How do I proceed?

Proceed as follows to print a heating plant group:

Step	Procedure
1	Open all plants for the heating group (sequence is insignificant)
2	Open the dialog with a list of all opened plants ("Plant / Plant Group")
3	Sort the plants in the desired sequence (using the [∧] and [∨] keys), and remove individual plants if required *Note* The plant sequence displayed corresponds to the sequence (from left to right) in the printout The grouping of the plant graphics takes a certain amount of time (and memory)
4	Print the overall graphic (”Plant / Print”) *Note* You can use the print preview to it check the overall graphic before printing The graphics header contains information on the active project and the plant values of the first plant displayed

Important

Any subsequent changes you make to the open plants will not be included in the plant group; to include these changes you must reassemble the plant group.

4.2.7 Plant-wide replacement of field devices

You can use this function to replace obsolete field devices with new ones.
The underlying principle corresponds to “Search and Replace” in Microsoft Word©. This function replaces all field devices in all components of the open plant in accordance with entries in the field device replace file FDEVREPL.TXT.
PDT first looks for this file in the project directory, then in the ETS_PROG directory. PDT automatically creates the file if it is not found.

Preparing a field device replace file

Proceed as follows to prepare a field device replace file:

Step	Procedure
1	Select "Edit / Field Device Replace File" The editor will be launched automatically with the FDEVREPL.TXT file

2	Enter which field device(s) you want to replace with which, separated by semicolons ” **;** ”
	
	Examples: (Exchanging room sensors and frost sensors)
	`QAA23;QAA24↵`
	`QAM61.2;QAF63.2↵`

3	Save and close the file.

Replacing field devices

Proceed as follows to replace field devices across the plant:

Select **"Edit / Replace Field Device Codes"**.

When you acknowledge the function in the dialog box, the new field devices will be entered for all components in the plant.

Important

The function replaces the field device **only**, but it does **NOT** adjust the **signal type**!

4.2.8 Plant-wide replacement in the attribute table

You can use this function to make global changes to field devices or signal types within a plant, e.g. switch from 230 V actuators to 24 V actuators.
In this two-step procedure you first "select", then "replace" the selection with the content of your choice. The following example is intended to help you perform this procedure in your own project.

Example

All cells in the "field devices" column that contain ”GCA321.1E” should be replaced with the now known entry ”GCA121.1E”. At the same time, you want to set the signal type ”floating” to ”non-floating”.

How do I proceed?
Select

Proceed as follows to highlight the ”GCA321.1E” entries you want to replace:

Step	Procedure
1	Select and highlight the Field devices column
2	Click the selection icon 
3	Enter GCA321.1E in the dialog box
4	Click [Find]

Note

You can manually highlight individual rows by activating the check box at the beginning of each row (e.g. to add three rows to an already highlighted selection).

How do I proceed?
Replacing

Proceed as follows to replace the highlighted entries with ”GCA3121.1E”:

Step	Procedure
1	Highlight the Field devices column
2	Click the "Replace" symbol 
3	Enter GCA121.1E in the dialog box
4	Click [OK]
5	Highlight the Signal type column
6	Click the "Replace" symbol 
7	Select the non-floating signal type
8	Click [OK]

Result:
Wherever an entry is possible in the highlighted cells of the column, ”GCA121.1E” is entered and the signal type set to ”non-floating”.

Notes

Locked cells are not replaced, and no message is issued.

In signal type cells where an entry is not permitted, the entries are not replaced; however, a message is displayed.

You can use the "Undo" function to return the cells you changed last to their pervious entries.

4.2.9 Editing the CEN Info list

PDT uses a point list as per CEN standard 1995. This standard describes I/O points (based on basic physical functions), virtual points, communication with the management level and processing (supervision, open and closed loop control, switching, optimisation, recording of statistical data, graphical presentation).

Purpose

You can use the CEN Info list editor (see section 3.3, ”CEN Info list editor”) to check and modify the CEN Info list, especially the manual switches on I/O modules. You cannot print the table displayed in the editor — you can only print the CEN Info list via Microsoft Excel©.

Notes

Pressing the <F1> key opens a help window containing the CEN column description. To simplify the editing process, select "? / Always on Top" in the opened help window. This keeps the column description in the foreground of the display.

Changes in cell entries do not become active until you quit the cell.

Meanings of the columns

Columns 2 to 11 (basic physical functions) contain information on the I/O points. In the case of predefined plant parts, they are determined automatically by the selected component attributes and are thus not editable.
In the case of free plant parts, you can edit this information in the CEN Info list dialog box (accessible via the attribute dialog).

Columns 12 and 13 (service operation level) contain information on the I/O modules. You can edit them directly. Permissible values are "undefined" (no entry), "0" and "1". If you enter ”undefined” the preset values of the point generator will be applied.

You can edit all other columns (14 to 75) for each component. The permissible values in each case are ”undefined”, 0, 1, etc.

4.2.10 Printing the CEN Info list

You can generate the CEN Info list as an Excel spreadsheet by selecting ”Generate / Point List".
We recommend that you do not modify this spreadsheet, since it is newly generated at each update.

Excerpt from a PDT CEN Info list:

Building Management Information List *(EN-1995) Part 1*

1) One DO for each active Stage (e.g. O, I, II = 2 DO)
2) One common Feedback for all active Stages
3) Including Fault and Alarm Signals
4) Position Indication Included
5) Additional virtual information to be defined

		1					2								3		4					5					6									Rev: 14.12.1994	
	Location:	**Physical Basic Funktions**													**Serv.**	**Virtual Basic-**						**Mgmt. Level**					**Processing Functions**										
	A	**Output**					**Input**								**Oper.**		**funktions 5)**					**Communication**					**Monitoring**										
	Plant:	On/Off		Cntrl.			Digital					Analog		Count																							
	Air Handling Unit 1	DO, Momentary Switching, 1)	DO, Maintained Switching, 1)	DO, 3-Point	AO, Analogue Output	AO, Pneumatik Analog	DI, Local / Remote	DI, Oper. State Feedback, 2)	DI, Other Signals, 3)	DI, Impuls Signals	DI, Power Fail Signals	AI, Passive Resistance 4)	AI, Active Sensor 4)	DI, Up to 25 Hz	Switching / Positioning	Indicating	Switching Command	Analogue Command	State Report	Analogue Value Report	Count Value Report	Switching Command	Analouge Command	State Report	Analogue Value Report	Count Value Report	Fixed Limit	Sliding Limit	Runtime Totalisation	Event Counting	Command Confirmation	Logic Interlock of Eventang	Message Delay	Message Suppression	Maintenance Message		
No	**Column No:**	2	3	4	5	5a	6	7	8	8a	8b	9	10	11	12	13	14	15	16	17	18	19	#	21	#	#	#	#	#	#	#	#	31	#	#	Remarks	No
1	ON-OFF DAMPERS																																				1
2	F/A Damper		1												1	1																				Y001	2
3	F/A Damper OP							1								1																				Q001	3
4	Ext.Damper																																				Y021	4
5	Ext.Damper OP							1								1																					Q021	5
6	F/A Temp.											1																									B000	6
7	FRESH AIR FILTER																																					7
8	F/A Filter DPS								1							1																					F100	8
9	PLATE HEAT EXCHANGER																																					9
10	Ext.Temp.											1																									B230	10
11	F/A Damper				1										1	1																					Y100	11
12	PREHEAT COIL (Constant)																																					12
13	PreHt Pump Cmd		1					1							1	1																					M301	13
14	PreHt Pump FB																																				F301	14
15	PreHt Valve				1										1	1																					Y300	15
16	PreHt Valve																																				A300	16
17	PreHt Frost Stat								1							1																					F300	17
18	EXTRACT FILTER																																					18

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4.3 Details on plant parts and components

4.3.1 Plant parts and components

Components in the plant editor

Plant parts are made up of components. Components generally create one or more data points.

Each component is represented by a symbol in the graphical plant editor. The same symbol is used for each component in all plant parts.

When you click the symbol, the component's attributes are displayed in the attribute dialog box. If a component contains sub-components, the next lower hierarchical level appears when you click the attributes.

In some components, the symbols of a number of sub-components are displayed on top of each other to save space. In this case, the next symbol at the same hierarchical level is displayed with each mouse click.

By clicking [CEN Info list] you can view and modify the CEN Info list columns which determine the point's characteristics.
In the case of predefined plant parts, the entries in columns 1 to 11 (basic physical functions) are defined by PDT and cannot be edited.

Components without data points

Components that have no data points are still displayed in the attribute table, CEN Info list and other point lists, because they can have field devices (e.g. damper actuator without its own switching command).
However, the "System Name" attribute of these components is always empty.

Components with more than one data point

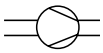
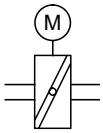
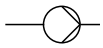
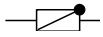
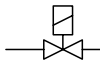
In the case of components with more than one data point, the text attributes (text, field devices, units, system name, user ID, device ID, ...) of all data points are displayed in succession, separated by semicolons " ; ".

Field device accessories

Field device accessories are separated from the actual field device entry by a ”**+**” sign in the display.

4.3.2 Graphical symbols

Below is a summary of symbols used in PDT for components.

	Symbol	Component	Symbol	Component
HVAC symbols for air		Fan		Air damper with motor actuator
		Fire protection damper with motor actuator		Air damper with pneumatic actuator
HVAC symbols for water		Pump		Three-way valve with motor actuator
		Non-return valve		Three-way valve with pneumatic actuator
		Two way valve with solenoid actuator		Three-way valve with solenoid actuator
Sensors		Temperature sensor		Radiant heat sensor
		Humidity sensor		Wind sensor
		Combined temperature and humidity sensor		Wind direction sensor
Detector switches		Temperature switch		Level switch
		Occupancy switch		Contamination switch
		Smoke switch		
Special symbols		Sequential frost protection		Safety thermostat
Input signals		Feedback signal		External operating contact (normally open)
		Contactor / contact supervision		External alarm contact (normally closed)
		Thermal contact		External fire alarm
		Rotation / belt supervision		Feedback signal damper open
		Open Meter		Feedback signal damper closed

Graphical symbols, continued

Output signals


ON/OFF command


Linear step switch


Binary step switch


Analogue output


Acoustic warning signal


Indicator lamp

Temperature indicator and humidity indicator

Operating elements


Manual switch

Isolator switch

Emergency-Off switch


Extension switch


Extension switch with indicator

Temperature and humidity setpoint adjustments

Temperature sensor with setpoint adjustment


Selector switch
Fire department switch


Mode selector switch with indication


Acknowledge key (Reset key)


Acknowledge key with fault indicator

4.3.3 Special PDT components

The following pages provide detailed descriptions of some pre-defined plant parts and components.

Pumps, valves, motors

Manual switch:
The "manual switch component generates an input signal for each of the positions ”Auto”, ”1” and ”2”. No signal is generated for the "Off" position.
In the case of switching commands with integrated feedback signal (VISONIK) an additional Rem/Loc signal is transmitted to the switching command module.

Isolator switch:
An isolator switch usually acts directly on the relay or motor. Depending on signal type, the "isolator switch" component generates an additional input signal for the controller.
In the case of switching commands with integrated feedback signal (VISONIK) an additional Rem/Loc signal is transmitted to the switching command module.

Supervision:
Depending on the signal type, the **contactor monitor** generates a status signal (normally open) or a feedback signal (FB) on a switching command.
The **thermostat monitor** generates an alarm (normally closed).
The **external fault contact** generates an alarm (normally closed).

Electrical layout:
The **electrical layout** is intended primarily as CAD information.
Electrical control should normally be set to "Direct/Contactor". The UNIGYR controller can provide star-delta control, if permitted. In this case, two digital outputs (DO) are generated if the star-delta circuit is selected as the electrical layout.

Feedback signal (FB signal)**:**
A separate data point is not generated for the signal type "feedback signal". Instead, a feedback signal is generated for the corresponding switching command (VISONIK and UNIGYR only).

Remote/local input (Rem/Loc input)**:**
A Rem/Loc input is set if a manual switch or isolator switch **and** a feedback signal are present. This prevents feedback signals that deviate from the switching command from triggering an alarm.

Combination sensor

Combination sensors consist of two sub-components that can either be a sensor or a switch. If the physical measured variables and signal types of the two sub-components are not locked, you must select the proper combination.
The field device type must always be located on the "combination sensor" component — the two sub-components have no field device types of their own.

If the device IDs or field device types should be shown on the customer graphics, the "graphic visible" attributes must be **activated** in the combination sensor and **deactivated** in the sub-components.
If the system names or user names of the data points should be shown, the "graphic visible" attribute must be **deactivated** in the combination sensor and **activated** in the sub-components.

Safety thermostat

This device has two contacts:
Normally closed for direct electrical safety shutdown.
Normally open for the signal to the controller.

Linear step switch

Linear step switches have several outputs for the steps 1, 2, 3, etc. of which only one can be active at a given time.
They generate one or several **multi-step** switching commands
(e.g. BO3 (UNIGYR) or SBR3 (VISONIK)).
The number of steps is entered in the CEN Info list.

Feedback signal:
Only one signal is generated for all steps.

Binary step switch

Binary step switches have several outputs of which any combination (1, 2, 1+2, etc.) can be active. The following relation applies to the number of outputs and binary steps: 2 outputs result in 3 binary steps, 3 outputs result in 7 binary steps, etc.
They generate several **single-step** switching commands
(e.g. BO (UNIGYR) or SB (VISONIK)).
One row is generated in the CEN Info list (in Excel) for each output. When you are editing the CEN Info list in PDT, however, only one entry, which has the step value 1, is visible.

Feedback signal:
One signal is generated for each output (only meaningful in VISONIK).

Plant selector switch
Fire department switch

Plant selector switches and fire department switches generate a number of inputs for each of the positions ”Auto”, ”1”, ”2” and ”3”. No input is provided for position ”0”.

ON/OFF damper actuator

ON/OFF dampers can be equipped with two limit switches. A feedback signal can be selected for the "on" limit switch and for the "off" limit switch. Normally, however, a feedback signal is only assigned to one of the limit switches.

Modulating damper actuator

A feedback signal can be assigned to modulating dampers. In this case, one analogue output (AO) and one analogue input (AI) are generated.

VAV box

No controller signals are generated for VAV boxes without auxiliary energy.

Air heater, reheater, cooler

Frost protection air:
You can select from the following options:
- Switch (e.g. RAK22): generates a digital input signal (DI) to shut off the fan.
- Sensor (e.g. QAM21): generates an analogue input signal (AI) to open the heating valve.
- Combined switch and sensor: generates a DI and an AI signal.
- Sequential frost protection (e.g. QAF21): generates a DI signal (see ”sequential frost protection" in the following).

Frost protection water:
You can select from the following options:
- Switch (e.g. RAK12): generates a DI signal to shut off the fan.
- Sensor (e.g. QAD21): generates an AI signal to open the heating valve.
- Sequential frost protection (e.g. QAF62 or QAD21): generates a DI signal (see ”sequential frost protection" in the following).

Sequential frost protection:
This device calculates the valve opening or fan shutoff from an integrated temperature sensor. An additional contact is provided for the signal to the controller.

Fire protection groups

Fire protection groups combine the signals of a group of associated fire protection dampers. A group can consist of a number of dampers connected in series and/or individual dampers.
The number of dampers (1 ... 10) determines the number of signals for individual dampers (if selected) and the number of actuators (except in case of fused dampers).

We recommend that you use the "fire protection group" plant part. This allows you to define signals both for individual dampers and for the whole group with independent signal types for inputs (damper position) and outputs (actuators).
In the old "fire protection damper" plant part, the signal types for outputs (switching command) and inputs (damper position) were linked and had to correspond to the damper type (motor with switching command, motor without switching command, fuse). If that was not the case, the correct points were displayed in the CEN Info list, but the point generator displayed an error message..

4.4 Frequently asked questions

This section contains answers to frequently asked question that go beyond the scope of the standard workflow and are primarily addressed to experienced users.

I selected the "refresh" command, but the attribute table was not updated. What should I do?

If the number of components in the opened attribute table has changed, the "refresh" command may not be executed correctly. To get the correct display, close the saved attribute table, then reopen it.

After system compilation and I/O assignment in PRVCONF / RSCONF, the attribute table contains lines without system names. What should I do?

These rows are probably components without signals of their own, e.g. dampers, that are controlled by a fan switching command. The rows are visible in the attribute table, because they can contain field devices.
There is no call for action.

How is the I/O module or terminal module type determined?

In PDT, I/O module and terminal module types are determined by the signal type and by columns 12 and 13 of the CEN Info list. Press the <F1> key to view help information on the correspondence of signal types and modules.

How do I use free plant parts?

During the sales phase, you can use and adapt free plant parts in exactly the same way as plant parts from libraries.
During the engineering phase, you must either ensure that the device ID and the function ID are present and correct or post-edit these data points in PRVCONF or INTEGRAL PLAN.

How can I import old data?

ETS and PDT automatically import old data, although a safety warning is issued.
We recommend that you keep a backup copy of the old data.

4.5 Error messages

This section provides information to help you deal with error messages.

	Situation / message	Cause	Solution
Save	When saving a file: ”Unexpected File Format”	Plants that are too large are saved in the project; the file is corrupt.	Divide up the plants and save the file under a new name.
Open	When opening a file: ”Unexpected File Format”	File is corrupt.	none
Print	Memory problems are reported during printing of customer graphics.	PC problem with Micrografx Designer.	Save all plants before selecting the "Print" or "Save Designer File" command.
	When printing in Windows 95: ”Offending Command sm”	Postscript driver error in Windows 95	Use the HPPCL driver in Windows 95
	When printing in Windows 95 or Windows 3.1: Valve device IDs appear twice.	Printer or printer driver problems	In **Windows 95**: Use the HPPCL5MS.DRV or HPW.DRV driver with HP LJ 4L or HP LJ 5L printers; use the HP LJ 4L driver for the HP LJ IIID printer. In **Windows 3.1**: It is best to use postscript. Valves and texts may not be printed correctly using the HPPCL5A.DRV and HPPCL5E.DRV drivers with HP LJ IIID and HP LJ 4L; preferably use the HPW.DRV driver for HP LJ 5L printers.
	Incorrect program termination when a plant with free plant parts is opened	Designer graphics problem with Windows 95	Ask the Tool Manager, who uses special rules for creating graphics.
Sentinel key	PDT does not recognise the Sentinel key and starts in "Planner" mode.	Local printer is switched off.	Turn on the local printer.
Preferences	The correct selection is not displayed under ”Adapt to Preferences”.	Plant has the wrong plant type.	Select the correct plant type under "Plant / Attributes".
Description of functions	When opening the function window: ”Function library ... not found.	The function library was not found.	Select one of the available function libraries.
	Functions cannot be modified.	The function library was not found or is obsolete.	Select one of the available function libraries and reselect the functions.

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