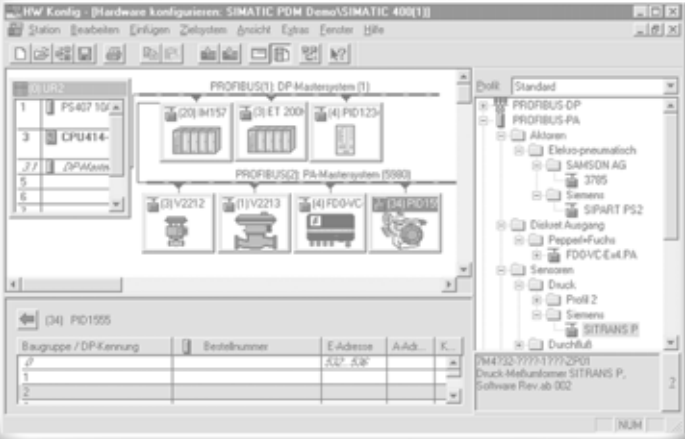


SIMATIC PDM software

7

SIMATIC PDM

- Application7/2
- Graphical user interface.....7/2
- Communication7/3
- Diagnostics.....7/4
- Technical data.....7/5
- Ordering data.....7/5



Application

SIMATIC PDM (Process Device Manager) is a uniform, cross-vendor tool for configuring, parameterizing, commissioning and diagnostics of intelligent field devices and components. SIMATIC PDM allows a wide variety of process devices to be configured using *one* software system and *one* uniform graphical user interface. This results in reliability, and significantly saves costs for investment and staff training, as well as follow-up costs.

SIMATIC PDM can be used in two manners:

- Independent of system suppliers on a personal computer or programming device with the Windows 98, NT or 2000 operating system
- With an option as an integral tool in STEP 7, the SIMATIC S7 configuring and programming tool. In this manner, SIMATIC PDM is also integrated into the SIMATIC PCS 7 process control system.
- With the routing function, SIMATIC PDM permits access from a *central* engineering station to all field devices with communications capability in the plant. This is possible for field devices with PROFIBUS-PA or HART communication as well as for PROFIBUS-DP devices such as SIPART controllers or SIMOCODE motor protection and control devices.

The display of device parameters and functions is uniform for all supported process devices and independent of their communication link, e.g. via PROFIBUS-DP, PROFIBUS-PA or the HART protocol.

The main functions of SIMATIC PDM are

- adjustment and modification of device parameters,
- comparison of reference and actual parameters,
- plausibility testing of inputs,
- simulation,
- automatic diagnostics,
- management, and
- commissioning functions such as measuring circuit tests of process devices.

SIMATIC PDM additionally permits process monitoring with display of selected values, alarms and status signals of the device on the screen.

7

Graphical user interface

The SIMATIC PDM graphical user interface is designed according to the standard guidelines of Microsoft Windows and complies with the requirements of the VDI/VDE GMA 2187 guidelines. Menu structures and toolbars are used as is an Explorer view which simplifies navigation between parameter groups (Fig. 7/3). Even complex devices with several hundred parameters can thus be processed clearly and rapidly.

The user interface supports several views:

- STEP 7 view (Fig. 7/1)
Process devices are configured using HW-Config within STEP 7 and displayed graphically or as a table.
- Process device network view (Fig. 7/2, top)
The hierarchical structure of networks, communication components, down to the process devices is configured here. Configuring data can be imported from there when integrating in STEP 7; multiple inputs are thus avoided.
- Process device plant view (Fig. 7/2, bottom)
The devices configured in HW-Config or in the process device network view are automatically imported into the process device plant view. Free grouping of these devices will be available soon, and the process devices can then be arranged hierarchically in a tree structure. Dynamic diagnostics information is also displayed in this plant view. Associated icons are displayed for the device depending on the diagnostics information. A list of diagnostics messages can also be called there.

- Parameter view (Fig. 7/3)

The parameters of a selected process device can be displayed, modified and saved here. Communication to the device is also established here. This parameter display is started by double clicking a process device in one of the other views.

The design of the graphical user interface is based on DIN V19259 or IEC.

The devices with different communication interfaces are displayed homogeneously and user-friendly within the graphical user interface. The main attention is paid to efficiency.

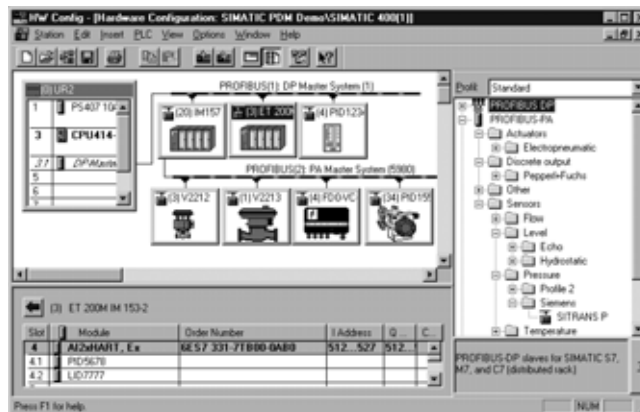


Fig. 7/1 STEP 7 view using HW-Config

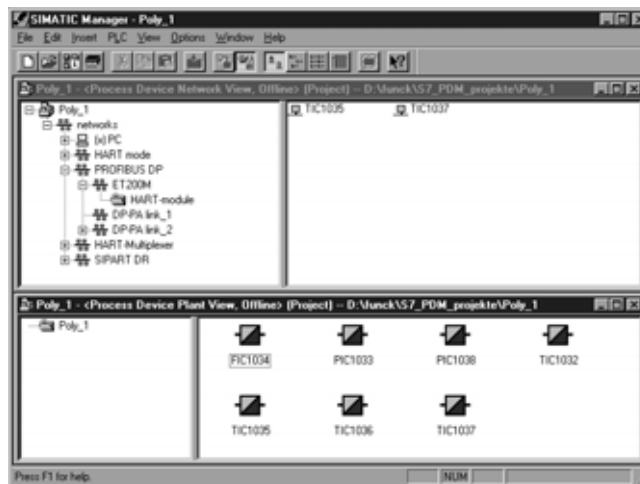


Fig. 7/2 Process device network view and plant view

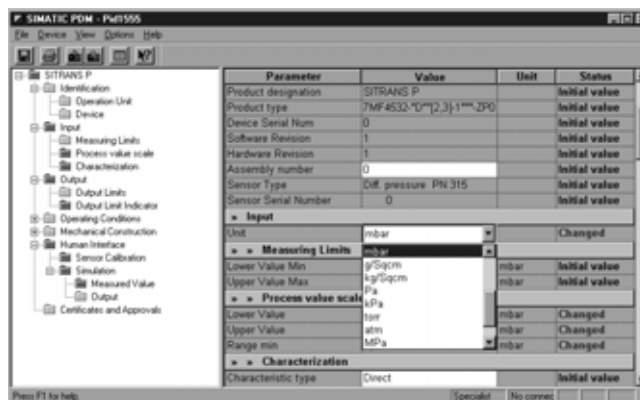


Fig. 7/3 Parameter view

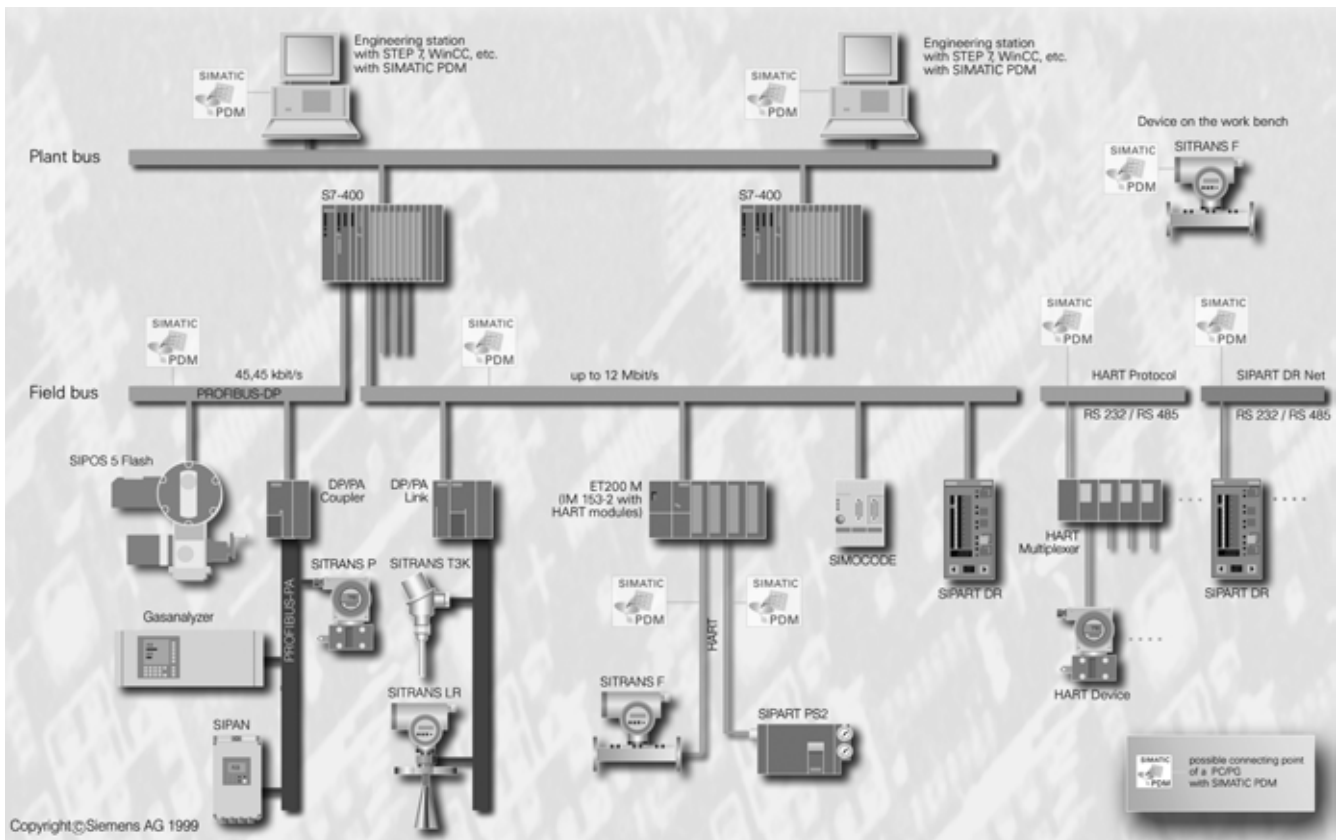


Fig. 7/4 Communication in an automation solution with SIMATIC PDM

Central device operation

Fig. 7/4 shows a summary of the possible connection points of SIMATIC PDM (version V5) in a plant. The SIMATIC PDM icon shows wherever SIMATIC PDM can be connected.

With SIMATIC PDM V5 you can use the so-called **Routing** for the first time. Routing permits uniform communication from a central engineering station up to the process devices. Reconnection of the PC's DP interface to the respective DP segment is superfluous, and thus a possible source of error is eliminated.

Data collection times are eliminated, the device data are available directly online. In particular, the diagnostics data of the devices are available immediately. This decisively increases the plant safety, and the costs for data collection are significantly reduced.

The PCs/programming devices on which SIMATIC PDM is to be installed are connected to the plant bus. This is either an ES engineering station or an engineering console with SIMATIC PDM. Common operations on a project database using different PCs/programming devices are possible via a LAN.

Devices can be connected in different manners at the field level: PROFIBUS-PA devices to DP/PA coupler and DP/PA link or HART devices to the HART analog input/output modules of the ET 200M. HART devices can also be connected to conventional analog input/output modules.

A HART multiplexer is shown on the right in Fig. 7/4 via which all connected HART devices can be reached.

The SIPART DR controllers and the SIMOCODE are shown as representatives for PROFIBUS-DP devices.

The PROFIBUS-DP is connected here to a SIMATIC S7-400 automation system. Several DP segments can be connected to the S7-400. Further SIMATIC S7-400 systems can be connected to the plant bus.

Communication

SIMATIC PDM supports several communication protocols and components for communication with the following devices:

- Devices with PROFIBUS-DP interface
 - These are connected directly to PROFIBUS-DP. An example is the SIPART DR20 compact controller.
- Devices with PROFIBUS-PA interface, e.g. the SITRANS P transmitter
- Remote I/O stations such as e.g. the ET 200M
 - The PROFIBUS-PA devices supported by SIMATIC PDM are connected via a DP/PA link or DP/PA coupler to the PROFIBUS-DP segment.
 - The integrated PROFIBUS-PA devices can be parameterized, as well as **almost all PROFIBUS-PA devices** via the following PA profiles of versions 2.0 and 3.0:
 - Pressure and temperature
 - Level and flow
 - Actuators
 - Discrete I/Os
 - Analyzers (only PA profile version 3.0)
- Devices with HART interface
 - These devices can be connected in different manners:
 - Via the SIMATIC ET 200M distributed I/O system with the HART modules
 - Via a HART modem with which a point-to-point connection is established between the PC or engineering station and the HART device
 - Via multiplexers which pass on the telegrams transparent to the HART devices.

Diagnostics

In addition to the fully integrated HART-capable devices, **almost all HART devices** are also parameterizable.

- Controllers with serial SIPART DR communication via RS 232 / RS 485.

The SIPART DR19, DR20, DR21 and DR22 controllers can also be parameterized via the so-called SIPART DR network.

A summary of the possible connection points of SIMATIC PDM in a plant is shown in Fig. 7/4.

Diagnostics

Diagnostics rules can be stored for all configured devices:

- **Standard diagnostics:** diagnostics rules predefined by SIMATIC PDM for checking general diagnostics parameters. The following checks are included:
 - Identification of device (incl. device type, tag)
 - With PROFIBUS-PA devices (profile V2/V3), evaluation of *all* block objects:
 - Diagnostics (physical block)
 - Block mode
 - Simulation (i.e. a device running in this mode is detected and displayed accordingly)
 - Limits (common alarms), without automatic acknowledgment
 - With HART devices:
 - Evaluation of device status
 - Simulation
- **Device type diagnostics:** evaluates vendor-specific diagnostics information which is not defined in profiles or in other general specifications. These are predefined diagnostics rules which the vendor can formulate as methods in the device description. The vendor can save several device-specific diagnostics rules for selection.
- **User-defined diagnostics:** in this case, users create the diagnostics rules themselves using the diagnostics editor. All variables of a device can be linked in SIMATIC PDM.

The accessibility of all components is checked by the diagnostics agent irrespective of the type of diagnostics rule involved. Correct configuring of the network topology as well as the communication are checked.

Device Description Language

The *Device Description Language* exists for parameterization of devices. This language is standardized, multi-vendor, and very widely used.

This language describes the parameters, the communication, and the representation of the devices. Using this description, SIMATIC PDM automatically generates its graphical user interface.

The *Device Descriptions* describe the dependencies between the parameters. In this manner, SIMATIC PDM can recognize faulty inputs early enough and signal them to the user.

The use of *Device Descriptions* means that all common field devices can be incorporated into SIMATIC PDM independent of their communication interface.

Device Descriptions for devices and components (e.g. remote stations) from many different vendors are being permanently developed for SIMATIC PDM. The device vendors are responsible for the *Device Descriptions*.

A current list of supported devices can be found on the Internet (www.fielddevices.com).

Access privileges

SIMATIC PDM differentiates between two different user groups: Specialist and Maintenance engineer. The *maintenance engineer* can only modify the operating data, the *specialist* can access all parameters and functions.

A freely-selectable password can be used as the access privilege for the *specialist*.

Technical data

SIMATIC PDM			
Task	Parameterization, commissioning and diagnostics of process devices and components with PROFIBUS-DP, PROFIBUS-PA, HART and SIPART DR communication		
Required hardware	Personal computer / programming device with Pentium processor and 32 Mbyte RAM (recommended: 64 Mbyte or more)		
Operating system	Windows 98, Windows NT 4.0, Windows 2000 with integration in STEP 7: STEP 7 version 5		
SIMATIC PDM memory requirements	Approx. 110 Mbyte, plus 70 Mbyte for SIMATIC PDM without option "Integration in STEP 7"		
Industrial Ethernet connection or TCP/IP connection (interface card for PC)	Communications processor	CP 1411 CP 1613 ¹⁾	On request 6GK1 161-3AA00
PROFIBUS-DP connection			
• For PG 720/740/760 programming device	Built-in MPI interface or Ethernet interface		
• For personal computer	Communications processor	CP 5511 ²⁾ CP 5611 ²⁾	On request 6GK1 561-1AA00
Gateway from PROFIBUS-DP to PROFIBUS-PA	DP/PA coupler	Ex version Non-Ex version	6ES7 157-0AD81-0XA0 6ES7 157-0AC80-0XA0
	IM 157 (interface module for DP/PA link)		6ES7 157-0AA81-0XA0
Gateway from PROFIBUS-DP to HART	IM 153-2 interface module		6ES7 153-2AA02-0XB0
	HART analog input module		6ES7 331-7TB00-0AB0
	HART analog output module		6ES7 332-5TB00-0AB0
HART point-to-point connection	Via HART modem		7MF4 997-1DA

1) The required drivers are included in the delivery of the communications processor

2) The required drivers are included in the delivery of SIMATIC PDM and in STEP 7

Ordering data

	Order No.		Order No.
SIMATIC PDM V5.1¹⁾ Basic software for operation and parameterization of process devices and components including communication via HART modem, with RS 232, for 16 tags ²⁾	6ES7 658-3AX01-0YC0	Tag option(s) for SIMATIC PDM V5.1	
Option(s) for SIMATIC PDM Expansion of SIMATIC PDM V5.1 basic software:		• Up to 128 tags ²⁾	6ES7 658-3XA00-2XD0
• Integration in STEP 7 / SIMATIC PCS 7 (required if STEP 7 is installed on the programming device/PC)	6ES7 658-3BX00-2XD0	• Up to 512 tags	6ES7 658-3XB00-2XD0
• Routing via S7-400 ³⁾	6ES7 658-3CX00-2XD0	• Up to 1,024 tags	6ES7 658-3XC00-2XD0
• Communication using PROFIBUS-DP and -PA	6ES7 658-3DX00-2XD0	• Up to 2,048 tags	6ES7 658-3XD00-2XD0
• Communication using standard HART multiplexer	6ES7 658-3EX00-2XD0	• Up to 4,096 tags	6ES7 658-3XE00-2XD0
• Diagnostics	6ES7 658-3FX00-2XD0	• Up to 8,192 tags	6ES7 658-3XF00-2XD0
		• Up to 16,384 tags	6ES7 658-3XG00-2XD0
		SIMATIC PDM maintenance contract	6ES7 658-3XX00-0XX0
		SIMATIC PDM demo version	6ES7 658-3GX01-0YC8

1) Only the basic software need be ordered when upgrading from a previous version to the current version V5.1 (with same functionality)

2) Tags are basically understood to be terminal equipment such as transmitters, e.g. SITRANS P

3) Only together with the option "With integration in STEP 7"

Note: for the function "Data set routing", the automation system must be equipped with the CP 443-5 Extended communications processor and CP 443-1