<table>
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<th>Page</th>
<th>Topic</th>
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<td>9/7</td>
<td>SIMATIC PDM</td>
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</tbody>
</table>
HART protocol

Overview
HART is a widely used communication standard for field devices. Specification of HART devices takes place through the HCF (HART Communication Foundation).

The HART standard expands the analog 4 to 20 mA signal for modulated, industry-proven, digital signal transmission.

Benefits
• Service-proven analog measured value transmission
• Simultaneous digital communication with bidirectional data transmission
• Possibility of transmitting several measured variables from one field device (e.g. diagnosis, maintenance and process data)
• Connection to higher-level systems such as PROFIBUS DP
• Easy installation and startup

Use in conjunction with SIMATIC PDM
• Cross-vendor operation of all HART devices by means of standardized parameter records
• HART field devices that are described by HART DDL are integrated in SIMATIC PDM through the HCF catalog. HART DD (Device Description) is standardized in SIMATIC PDM, multi-vendor and very widely used. Other HART field devices are integrated in SIMATIC PDM through EDD (Electronic Device Description).
• Easy operation and startup of field devices, also in hard-to-reach locations
• Expanded diagnosis, evaluation and logging functions

Application
These devices can be connected in different ways:
• Using the distributed I/O system
  - SIMATIC ET 200M
  - SIMATIC ET 200iSP
  - SIMATIC ET 200iS with the HART modules or with analog modules 4 to 20 mA and a HART handheld communicator
• Using a HART modem, with which a point-to-point connection is established between the PC or engineering station and the HART device
• Using HART multiplexers, which are contained in the HART server of the HCF

Integration
Siemens field devices for process automation which are listed in this catalog and can be controlled using HART:

<table>
<thead>
<tr>
<th>Measuring instruments for pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITRANS P DS III</td>
</tr>
<tr>
<td>SITRANS P P300</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measuring instruments for temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITRANS TF</td>
</tr>
<tr>
<td>SITRANS TK-H</td>
</tr>
<tr>
<td>SITRANS TW</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flowmeters</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITRANS F M MAGFLO 5000 HART</td>
</tr>
<tr>
<td>SITRANS F M MAGFLO 6000 19” / IP67 / I / I Ex d</td>
</tr>
<tr>
<td>SITRANS F M Transmag 2</td>
</tr>
<tr>
<td>SITRANS F C MASSFLO 6000 19” / IP67 / Ex d</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measuring instruments for level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pointek CLS 500</td>
</tr>
<tr>
<td>SITRANS Probe LR</td>
</tr>
<tr>
<td>SITRANS Probe LU</td>
</tr>
<tr>
<td>SITRANS LR 200</td>
</tr>
<tr>
<td>SITRANS LR 300</td>
</tr>
<tr>
<td>SITRANS LR 400</td>
</tr>
<tr>
<td>SITRANS LC 500</td>
</tr>
<tr>
<td>SITRANS PD 500</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Electropneumatic positioners</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIPART PS2</td>
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<table>
<thead>
<tr>
<th>Power supply units and isolation amplifiers</th>
</tr>
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<tbody>
<tr>
<td>SITRANS I</td>
</tr>
</tbody>
</table>
Overview
Today, distributed automation solutions based on open field buses are state-of-the-art in large areas of the manufacturing industry and process engineering. It is only with field buses that the functional benefits of digital communication can be put to full use, e.g. better resolution of measured values, diagnosis options and remote parameterization.

PROFIBUS is today’s most successful open field bus with a large installed base for a wide range of application. Standardization to IEC 61158 / EN 50170 provides you with future protection for your investment.

Benefits
- A uniform modular system from the sensor into the control level enables new plant concepts
- Problem-free exchangeability of field devices, including from different manufacturers, that comply with the standard profile
- Networking of transmitters, valves, actuators, etc.
- Implementation of intrinsically safe applications through use of the field bus in hazardous areas
- Easy installation of 2-wire lines for joint energy supply and data transmission
- Reduced cabling costs through savings of material and installation time
- Reduced configuration costs through central, simple engineering of the field devices (PROFIBUS PA and HART with SIMATIC PDM, also cross-vendor)
- Fast and error-free installation
- Lower service costs thanks to simpler wiring and plant structure plus extensive diagnosis options
- Greatly reduced commissioning costs through simplified loop check
- Scaling/digitizing of the measured values in the field device already, hence no rescaling necessary in SIMATIC PCS 7

Function
PROFIBUS PA expands PROFIBUS DP with near-process components for the direct connection of actuators and sensors.
For PROFIBUS PA the RS 485 transmission technique was replaced by a different technique optimized for intrinsically safe application. Both techniques are internationally standardized in IEC 61158.
PROFIBUS PA uses the same communication protocol as PROFIBUS DP; the communication services and telegrams are identical.
For PROFIBUS PA the data and energy supply for the field devices can be directed through a 2-wire line.

Integration
Siemens field devices for process automation which are listed in this catalog and can be controlled using PROFIBUS:

PROFIBUS PA
- Measuring instruments for pressure
  - SITRANS P DS III PA
  - SITRANS P300
- Measuring instruments for temperature
  - SITRANS T3K PA
- Flowmeters
  - SITRANS F M MAGFLO 6000 19" / IP67 / I / I Ex d
  - SITRANS F M Transmag 2
  - SITRANS F C MASSFLO 6000 19" / IP67 /Ex d
- Measuring instruments for level
  - Pointek CLS 200
  - Pointek CLS 300
  - SITRANS Probe LU
  - SITRANS LR 200
  - SITRANS LR 300
  - SITRANS LR 400
- Electropneumatic positioners
  - SIPART PS2

PROFIBUS DP
- Flowmeters
  - SITRANS F M MAGFLO 6000 19" / IP67 / I
  - SITRANS F C MASSFLO 6000 19" / IP67
- Measuring instruments for level
  - SITRANS LUC500
  - HydroRanger 200
  - MultiRanger 100/200
  - SITRANS Probe LU 01, LU 02, LU 10
SIMATIC PDM (Process Device Manager) is a universal, vendor-independent tool for the configuration, parameterization, commissioning, diagnosis and servicing of intelligent field devices (sensors and actuators) and field components (remote I/Os, multiplexers, control-room devices, compact controllers), which in the following sections will be referred to simply as devices.

Using one software, SIMATIC PDM enables the processing of more than 1,000 devices from Siemens and over 100 vendors worldwide on one homogeneous user interface.

With respect to device integration, SIMATIC PDM is the most powerful device manager available on the world market. Devices which previously were not supported can be easily integrated in SIMATIC PDM at any time by importing their device descriptions (EDD). This provides security for your investment and saves you investment costs, training expenses and consequential costs.

Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface.

SIMATIC PDM is integrated in the asset management of SIMATIC PCS 7. The Process Device Manager provides wider information for all devices described by the Electronic Device Description (EDD), e.g. detailed diagnostics information (vendor information, information on fault diagnostics and troubleshooting, further documentation), modification logbook (audit trial), parameter information. You can change directly to SIMATIC PDM from the diagnostics faceplates in the maintenance station.

Configuration options with SIMATIC PDM

Parameters and functions for all supported devices are displayed in a consistent and uniform fashion independent of their communications interface.

SIMATIC PDM is integrated in the asset management of SIMATIC PCS 7. The Process Device Manager provides wider information for all devices described by the Electronic Device Description (EDD), e.g. detailed diagnostics information (vendor information, information on fault diagnostics and troubleshooting, further documentation), modification logbook (audit trial), parameter information. You can change directly to SIMATIC PDM from the diagnostics faceplates in the maintenance station.
Design

Product versions

A customer-oriented product structure enables you to adapt the scope of functions and the performance of SIMATIC PDM to your individual requirements. You can select the minimum configuration, one of the predefined product configurations, or produce your desired configuration from the individual components offered (see table).

Depending on the application environment, SIMATIC PDM can be categorized as follows:

- **SIMATIC PDM system-integrated:** Complete packages for operation in a SIMATIC PCS 7/S7 configuration environment
  - SIMATIC PDM PCS 7 (for integration in an engineering system for SIMATIC PCS 7)
  - SIMATIC PDM S7 (for integration in a SIMATIC S7 configuration environment)

- **SIMATIC PDM stand-alone:** Service tools for operation on a mobile computer on the PROFIBUS or with direct connection to the device
  - SIMATIC PDM Single Point (for processing of a single field device via a point-to-point coupling)
  - SIMATIC PDM Service (for enhanced servicing, incl. modification logbook and lifelist detailed diagnostics)

### TAG options/Power Packs

The predefined product configurations can be expanded by further functions and Power Packs. Product configurations with 512, 1,024, 2,048 or unlimited TAGs can be implemented in this manner. In contrast to the Power Packs, TAG options can only be combined with SIMATIC PDM Basic. They can only be used for product configurations based on individual components.

A TAG corresponds to a SIMATIC PDM object, which represents individual field devices or components within a project, e.g. transmitters, positioners, switching devices or remote I/Os. TAGs are also relevant for diagnosis with the lifelist of SIMATIC PDM. In this case, TAGs are considered to be all recognized devices with diagnostics capability, whose detailed diagnosis is effected through the device description (EDD).
**Function**

**Core functions**
- Adjustment and modification of device parameters
- Comparing (e.g. project and device data)
- Plausibility testing of data input
- Device identification and testing
- Device status indication with operating modes, alarms and states
- Device identification and testing
- Simulation
- Diagnostics
- Management (e.g. networks and PCs)
- Commissioning functions, e.g. measuring circuit tests of device data
- Export/import (parameter data, reports)
- Device replacement (lifecycle management)
- Global and device-specific modification logbook for user operations (audit trail)
- Device-specific calibration reports
- Graphic presentations of echo envelope curves, trend display, valve diagnosis results etc.

**Support of system management**
SIMATIC PDM supports the operative system management in particular through:
- Uniform presentation and operation of devices
- Indicators for preventive maintenance and servicing
- Detection of changes in the project and device
- Increasing the operational reliability
- Reducing the investment, operating and maintenance costs

**Graphical user interface**
The user interface of SIMATIC PDM satisfies the requirements of the directives VDI/VDE GMA 2187 and IEC 65/349/CD. Even complex devices with several hundred parameters can thus be represented clearly and processed quickly. Using SIMATIC PDM it is very easy to navigate in highly complex stations such as remote I/Os and even connected field devices. Several views are available to users to help them with their tasks:
- Hardware project view
- Process device network view (preferably for stand-alone application)
- Process device plant view as TAG-related view, also with display of diagnosis information
- Parameter view for parameterizing the field devices
- Lifelist view for commissioning and service

**Communication**
SIMATIC PDM supports several communication protocols and components for communicating with devices that have the following interfaces:
- PROFIBUS DP/PA interface
- HART interface
- Modbus interface
- Special interface from Siemens

**Routing**
From the central engineering system of the SIMATIC PCS 7 process control system it is possible with SIMATIC PDM to reach every EDD-parameterizable device in the field plant-wide through the various bus systems and remote I/Os. SIMATIC PDM can thus perform the following from a central position:
- Read diagnosis information from the devices
- Modify device settings
- Adjust and calibrate devices
- Monitor process values
- Create simulation values
- Reparameterize devices.

**Integration**

**Device Integration**
SIMATIC PDM supports all devices described by EDD (Electronic Device Description). EDD is standardized to EN 50391 and IEC 61804. Internationally it is the most widely used standardized technology for device integration. At the same time it is the directive of the established organizations for PROFIBUS (PNO: PROFIBUS International) and HART (HCF: HART Communication Foundation).

The devices are directly integrated in SIMATIC PDM through their EDD or the current HCF catalog. In the EDD the device is described in terms of its functions and construction using the Electronic Device Description Language (EDDL) specified by PNO. Using this description, SIMATIC PDM automatically creates its user interface with the specific device data.

The current device catalog of SIMATIC PDM covers more than 1,000 devices from over 100 manufacturers world-wide. In addition, devices from all manufacturers can be integrated in SIMATIC PDM by simply importing their EDDs. It is thus possible to keep the device range up to date at all times and to add to the number of manufacturers and devices supported by SIMATIC PDM. To permit improved transparency, SIMATIC PDM also allows you to create project-specific device catalogs. If you would like to use any devices which cannot be found in the SIMATIC PDM device catalog, we will be glad to help you integrate them.

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Overview

SIMATIC PDM can be used either integrated in a SIMATIC PCS 7/S7 configuration environment, as a mobile servicing tool on a computer with connection to PROFIBUS, or directly on the device.

Design

The customer-oriented product structure of SIMATIC PDM offers you many variations. You can select the minimum configuration (SIMATIC PDM Single Point), one of the predefined and application-specific product configurations, or produce your individual configuration from the components offered.

Each individual component is available as a floating license for one user, and as a rental license for 50 operating hours. The rental license is particularly suitable for low-price processing of short-term projects.

Minimum configuration SIMATIC PDM Single Point

The functionality of this minimum configuration is matched to the processing of exactly one field device via a point-to-point coupling. All functions of this device are supported as defined in the device description. These functions include:

- Unlimited selection of device / management of device catalog
- Communication through PROFIBUS DP/PA or HART modem
- Parameterization and diagnostics corresponding to device description
- Export and import of parameter data
- Device identification
- Lifelist

The following system functions of SIMATIC PDM Basic are not available with SIMATIC PDM Single Point:

- EDD-based diagnostics in the lifelist
- Project processing
- Save function (only export and import of parameter data)
- Record functions
- Routing
- Communication with HART field devices through remote I/Os

SIMATIC PDM Single Point cannot be expanded with respect to its functions (e.g. to SIMATIC PDM Basic or with routing option via S7-400) or by means of the TAG option or PowerPack.

SIMATIC PDM Basic

SIMATIC PDM Basic is the basic version with all functions required for operation and parameterization of the devices, and with enabled communications paths for

- PROFIBUS DP/PA,
- HART communication (modem, RS 232 and PROFIBUS),
- Modbus,
- SIREC bus and
- SIPART DR.

The SIMATIC PDM Basic software supports projects with as many as 4 TAGs and, provided the system requirements are met, can be used for stand-alone operation on any computers (PCs/notebooks) with local connection to bus segments or direct connection to the device.

SIMATIC PDM Basic can be expanded by functional options and TAG options/Power Packs. Use of the following functions depends on at least 128 TAGs:

- Modification logbook
- Calibration report
- Detailed diagnostics in the lifelist

Functional options

SIMATIC PDM option "Integration in STEP 7/PCS 7"

This option is required for using SIMATIC PDM in a SIMATIC S7 or SIMATIC PCS 7 configuration environment. SIMATIC PDM can thus be started directly from the hardware project (HW Config).

SIMATIC PDM Option "Routing through S7-400"

This option is required as an add-on to the option "Integration in STEP7/PCS 7" when SIMATIC PDM is to be used in a central engineering system for SIMATIC PCS 7/S7 with Ethernet bus link to the automation systems for the plant-wide configuration, parameterization, commissioning and diagnosis of the devices in the field.

SIMATIC PDM Option "Communication through standard HART multiplexer"

This option enables SIMATIC PDM to use the HART OPC server for communicating with HART field devices through HART multiplexers.

TAG options/Power Packs

With the SIMATIC PDM TAG options it is possible to increase the SIMATIC PDM Basic software from 4 TAGs to 128, 512, 1,024 or 2,048 TAGs, or when using an additive PowerPack even to unlimited TAGs.

One TAG corresponds to one SIMATIC PDM object, which represents individual field devices or components within a project, e.g. measuring devices, positioners, switching devices or remote I/Os. TAGs are also relevant for diagnosis with the lifelist of SIMATIC PDM. In this case, TAGs are considered to be all recognized devices with diagnostics capability, whose detailed diagnosis is effected through the device description (EDD).

The SIMATIC PDM Power Packs can be used to subsequently increase the number of available TAGs for all SIMATIC PDM product configurations. Power Packs can be obtained for expansion to 512, 1,024, 2,048 and unlimited TAGs.
Predefined product configurations

SIMATIC PDM Service

This is a product configuration specially predefined for servicing use. SIMATIC PDM Service offers all functions of SIMATIC PDM Basic, including modification logbook, calibration report and detailed diagnostics in the lifelist. In addition, SIMATIC PDM Service can be expanded by the offered options (functional and TAG options). The following program components are part of SIMATIC PDM Service:
- SIMATIC PDM Basic
- Option: 128 TAGs

SIMATIC PDM S7

SIMATIC PDM S7 is a predefined product configuration matched for use of SIMATIC PDM in a SIMATIC S7 configuration environment. It offers all functions of SIMATIC PDM Basic (including modification logbook, calibration report and detailed diagnostics in the lifelist) as well as the functionality for PDM integration in HW Config. SIMATIC PDM S7 can be expanded by the offered functional options and SIMATIC PDM PowerPacks. The following program components are part of SIMATIC PDM S7:
- SIMATIC PDM Basic
- Option: 128 TAGs
- Option: Integration in STEP 7/SIMATIC PCS 7

SIMATIC PDM PCS 7

SIMATIC PDM PCS 7 is a predefined SIMATIC PDM product configuration for integration into the engineering toolset of the SIMATIC PCS 7 engineering system. It offers all functions of SIMATIC PDM Basic (including modification logbook, calibration report and detailed diagnostics in the lifelist), the functionality for PDM integration in HW Config, as well as routing from the central engineering system to the field devices. SIMATIC PDM PCS 7 can be expanded by the offered functional options and SIMATIC PDM PowerPacks. The following program components are part of SIMATIC PDM PCS 7:
- SIMATIC PDM Basic
- Option: 128 TAGs
- Option: Integration in STEP 7/SIMATIC PCS 7
- Option: Routing through S7-400

Technical specifications

Requirements for stand-alone operation

| Hardware | PG/PC/notebook with processor in accordance with the operating system requirements |
|          | 256 MB main memory or more |
|          | 210 MB free memory on hard disk or more |
| Operating system (alternative) | Microsoft Windows 2000 Professional with SP1 or higher |
| Further software components | SIMATIC PDM integrated in STEP 7 |

Selection and Ordering Data

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6ES7 658-3AX06-0YA5</td>
<td>Functional options for SIMATIC PDM V6.0</td>
</tr>
<tr>
<td>6ES7 658-3AX06-0YA6</td>
<td>Integration in STEP 7 / SIMATIC PCS 7</td>
</tr>
<tr>
<td>6ES7 658-3BX06-2YB5</td>
<td>Routing through S7-400</td>
</tr>
<tr>
<td>6ES7 658-3BX06-2YB6</td>
<td>Communication through standard HART multiplexer</td>
</tr>
<tr>
<td>6ES7 658-3CX06-2YB5</td>
<td>STEP 7 V5.1 or higher with Service Pack 6 or higher, to be ordered separately</td>
</tr>
</tbody>
</table>
### Selection and Ordering Data

**TAG options/Power Packs**

**SIMATIC PDM TAG option**
For TAG expansion, additive to SIMATIC PDM Basic V6.0
- 5 languages (German, English, French, Spanish, Italian), executes with Windows 2000 Professional or Windows XP Professional
- Floating license for 1 user
  - Up to 128 TAGs
  - Up to 512 TAGs
  - Up to 1,024 TAGs
  - Up to 2,048 TAGs
- Rental license for 50 hours
  - Up to 512 TAGs

**SIMATIC PDM PowerPack**
For subsequent TAG expansion of all SIMATIC PDM product configurations V6.0
- 5 languages (German, English, French, Italian and Spanish), executes with Windows 2000 Professional or Windows XP Professional
- Floating license for 1 user
  - From 128 TAGs to 512 TAGs
  - From 512 TAGs to 1,024 TAGs
  - From 1,024 TAGs to 2,048 TAGs
  - From 2,048 TAGs to TAGs unlimited

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6ES7 658-3XA06-2YB5</td>
<td>SIMATIC PDM TAG option</td>
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<tr>
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<td>6ES7 658-3XD06-2YB5</td>
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<td>SIMATIC PDM PowerPack</td>
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<td>SIMATIC PDM PowerPack</td>
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<tr>
<td>6ES7 658-3XC06-2YD5</td>
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</tr>
<tr>
<td>6ES7 658-3XD06-2YD5</td>
<td>SIMATIC PDM PowerPack</td>
</tr>
</tbody>
</table>

**Predefined SIMATIC PDM V6.0 product configurations for special applications**

**SIMATIC PDM Service V6.0**
Complete package for stand-alone users in servicing, with
- SIMATIC PDM Basic V6.0
- Option "128 TAGs"
- 5 languages (German, English, French, Italian and Spanish), executes with Windows 2000 Professional or Windows XP Professional
- Floating license for 1 user

**SIMATIC PDM S7 V6.0**
Complete package for use in a SIMATIC S7 configuration environment, with
- SIMATIC PDM Basic V6.0
- Option "Integration in STEP 7/PCS 7"
- Option "128 TAGs"
- 5 languages (German, English, French, Italian and Spanish), executes with Windows 2000 Professional or Windows XP Professional
- Floating license for 1 user

**SIMATIC PDM PCS 7 V6.0**
Complete package for integration in the engineering toolset of the SIMATIC PCS 7 engineering system
- Floating license for 1 user, with
  - SIMATIC PDM Basic
  - Option "Integration in STEP 7/PCS 7"
  - Option "Routing through S7-400"
- 5 languages (German, English, French, Spanish, Italian), executes with Windows 2000 Professional or Windows XP Professional

**Demo software**
**SIMATIC PDM Demo V6.0**
Without online communication and save functionality
- 5 languages (German, English, French, Spanish, Italian), executes with Windows 2000 Professional or Windows XP Professional

**SIMATIC PDM upgrade/update service**
**SIMATIC PDM Upgrade from V5.x to V6.0**
For all product versions and combinations
- 5 languages (German, English, French, Italian and Spanish), executes with Windows 2000 Professional or Windows XP Professional
- Floating license for 1 user

**SIMATIC PDM Software Update Service**
Subscription for 1 year with automatic extension
- Requirement: current software version