SIEMENS

SIMATIC

Industrial software
SIMATIC Maintenance Station 2007

Operating Manual

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A5E00901992-03

Safety Guidelines

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

⚠DANGER

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

⚠WARNING

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

⚠CAUTION

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

CAUTION

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

NOTICE

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

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

⚠WARNING

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

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Disclaimer of Liability

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

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Asset Management using the SIMATIC Maintenance Station

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1.1 Basics of plant asset management

Introduction

Various tasks have to be accomplished within the operating phase of a plant. The actual plant operation is the task of production personnel. Aspects to be taken into consideration when controlling and monitoring the plant's output of products:

- Appropriate quality
- Defined batch quantity
- Specified time or date of delivery
- Minimum utilization of resources such as personnel, raw materials, power and costs.

Maintenance personnel are responsible for ensuring high availability of the plant within a defined period and reliable long-term operation by taking appropriate optimization measures. Maintenance measures must also be carried under the aspect of minimizing the utilization of resources, for example, personnel, material, energy and costs. As a result of their different tasks, these two groups of persons have different information requirements.

By contrast to maintenance personnel who require information about the state of production equipment, the operating personnel are primarily interested in information concerning the process.

The HMI and SCADA systems of the plant form the information interface for both groups. The corresponding users should deploy these systems in order to obtain all important information relevant to their task. The user should not be confronted with unnecessary information flooding.

Introduction to plant Asset Management

The section below describes the basic terminology used in this introduction to Asset Management.

Term: Asset

Assets are the various plant components. The term "plant assets" denotes components or devices of the plant / machinery which are serviced by maintenance personnel.

Term: Asset Management

The term Asset Management generally encompasses activities and measures taken to maintain or increase the value of a plant. In addition to plant management, plant automation and their optimization, these measures include in particular the maintenance and increase of asset values.

Term: Plant Asset Management

Plant asset management denotes maintenance tasks which are suitable to preserve or add values. An important aspect in this context is an optimal cost ratio of value-adding maintenance and plant availability.

In addition to the collection of data for the analysis of the plant's technical state, plant asset management also makes decisions concerning maintenance measures to be taken.

Term: Plant Asset Management System

A plant asset management system is an IT system that provides the following functionality:

- Collection of online information for the assessment of the plant and components state.
- Support of decisions concerning maintenance measures to be taken.
- Preparation and execution of maintenance measures.
- Interface to other systems for asset management such as EAM/CMMS or business management.

Abbreviation: CMMS

Computerized Maintenance Management System. CMMS is a computerized system which is used to plan, manage and analyze maintenance. This includes request management and execution, personnel planning and management, spare parts and materials.

Abbreviation: EAM

Enterprise Asset Management System. EAM functionality is closely related to CMMS.

1.2 Asset management using the SIMATIC Maintenance Station

Plant Asset Management using SIMATIC Maintenance Station

SIMATIC Maintenance Station is a system for Plant Asset Management which provides the following basic functions:

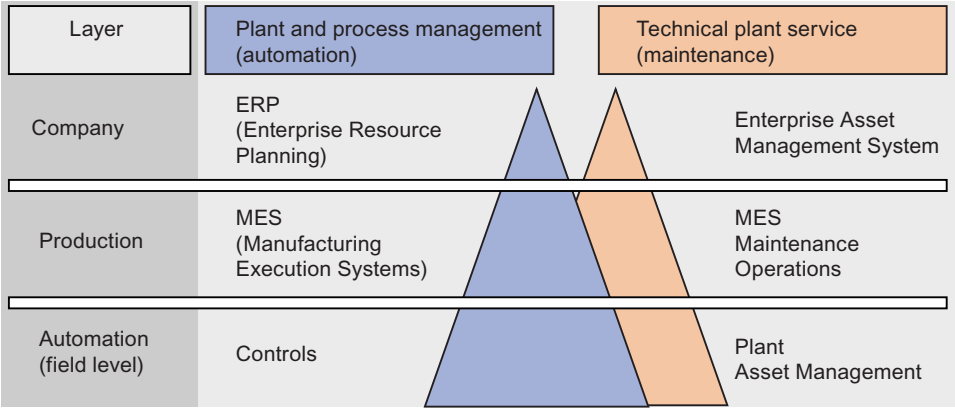
- Collection of online information for the assessment of the plant and components state and for reporting system errors.
- Decisions concerning maintenance measures such as plant service, inspection, repairs and the elimination of weak point.
- Maintenance request and status management.

Additional features of SIMATIC Maintenance Station

- Scaleable diagnostics functionality for individual components and the plant.
- Integration of all operating and monitoring systems and plant components.
- Separation of maintenance-relevant information and process data
- Clear presentation of the plant status
- Harmonized visualization of all components
- Automatic generation of diagnostics screens and of their corresponding hierarchy based on project data
- Integration of process automation components. These are PC stations, network components, automation systems and their sublevel components such as fieldbus systems, drives, sensors and switchgear.
- The system supports the integration of components not belonging to the SIMATIC environment and of user-specific diagnostics functions.

Benefits of SIMATIC Maintenance Station

SIMATIC Maintenance Station provides diagnostics functions to maintenance departments which allow precise analysis of the plant components, namely the assets. An additional advantage of Maintenance Station is the concentration of plant automation and maintenance in a single system. This single-system structure for plant engineering, operating and monitoring clearly facilitates handling.



Implementation of the SIMATIC Maintenance Station enhances effectiveness in terms of the planning and execution of maintenance tasks. Benefits derived:

- Reduction of direct maintenance costs in terms of personnel and material by enhancing scheduling and reducing maintenance time. Improved utilization of component down times also contributes towards this effect.
- Reduction of costs incurred as a result of non-scheduled down times, because tasks can be completed within defined down times. Reduction of reject products and reworking due to the early detection of error rates at specific components.

Functions

SIMATIC Maintenance Station integrates various functions:

- The HMI system for the visualization of diagnostics information.
- Controls for the initiation of maintenance processes and status management.
- Functions for asset management.

1.3 Implementation and application of SIMATIC Maintenance Station

Introduction to functions and applications

SIMATIC Maintenance Station facilitates plant asset management in the field of process automation. It provides functions for plant and component diagnostics, for requesting maintenance measures, and for managing the status of maintenance tasks.

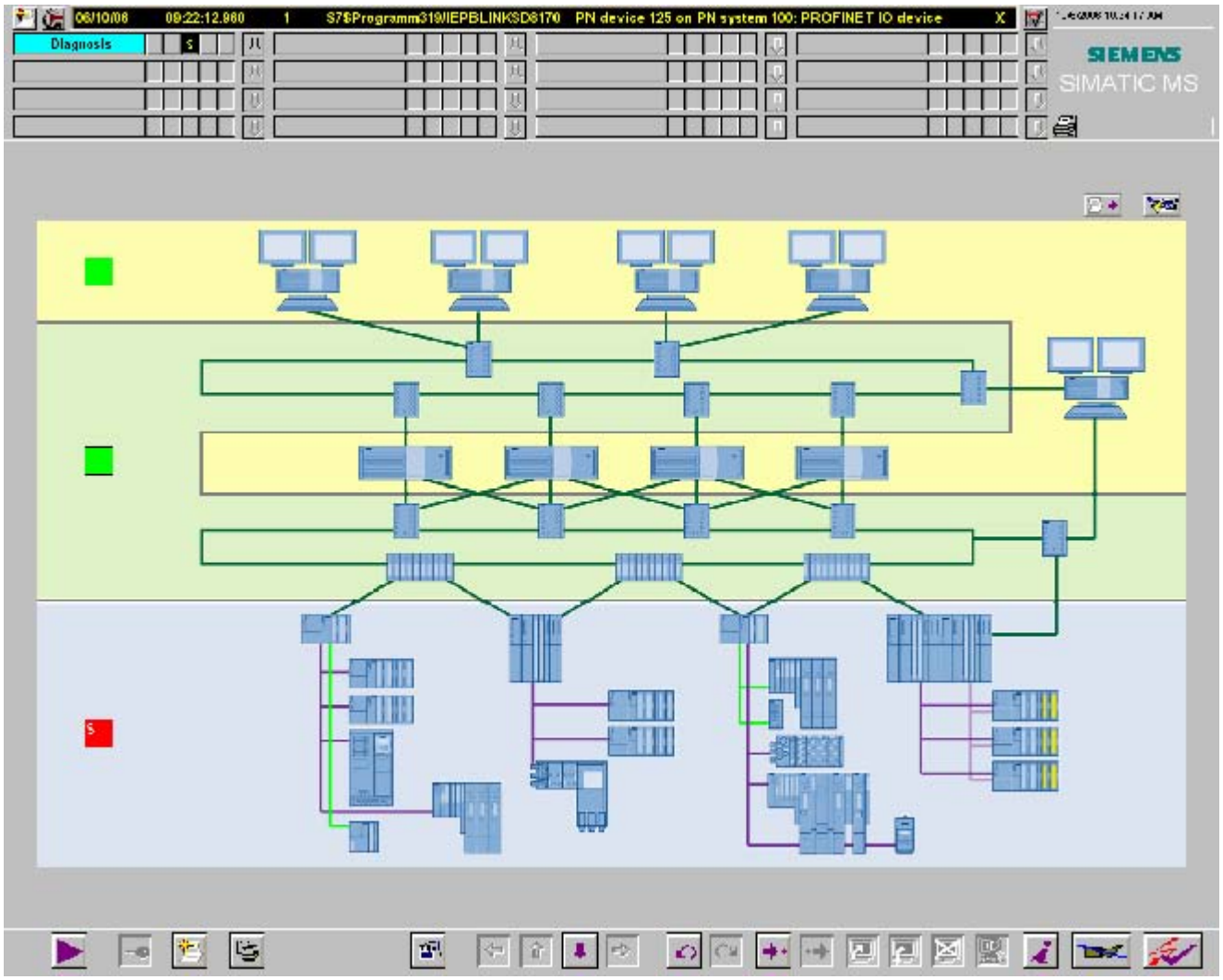
This topic provides a brief overview of Maintenance Station functionality. You can find a detailed description in "Overview of diagnostics and maintenance using the maintenance station (Page 185)".

Note

Maintenance Station functionality is dedicated to Plant Asset Management.
It does not provide technical functions which could be used, for example, to configure drives or calibrate sensors / transducers. The hardware is configured in SIMATIC Manager of SIMATIC STEP 7.

The overview screen and area overviews

The diagnostics screens of Maintenance Station have a hierarchic structure. The Maintenance Station opens with the overview screen. This is the root screen within the diagnostics screen hierarchy and provides an overview of the actual plant status to maintenance.



The so-called overview area on the top edge of the screen outputs the most recent diagnostics message.

The group displays  show a summary of the states of all components and of the nested hierarchies.

The group display or the "Loop-in-Alarm"  function can be used to open the diagnostics screen of the component addressed by the current diagnostics message. The program opens the diagnostics screen at the higher hierarchy level in order to visualize all diagnostics messages which are currently active.

The overview screen visualizes the PC stations, network components and AS objects fields, and highlights these on different colored backgrounds. The current status of each area is displayed by means of icons (e.g.

or ).

The user can open the corresponding area overview by clicking one of the icons in order to obtain information about the maintenance-relevant status of this area.

Note

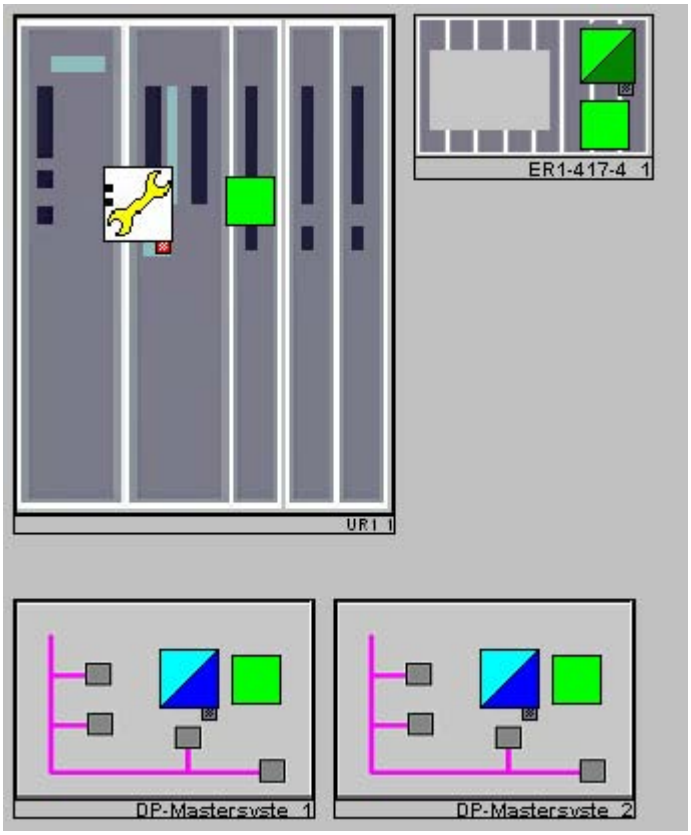
The "Loop-in-Alarm" function triggers a change to the diagnostics screen which outputs the selected message and the environment causing this message.

Diagnostics screens

The diagnostics screens are arranged within their hierarchy below the AS field overview. The hierarchy of diagnostics screens corresponds with the component hierarchy of the automated plant. The diagnostics screens output the symbols of the automation systems and of their sublevel components. These symbols also visualize the status of these components. The user can navigate in the hierarchy of diagnostics screens.

The "Network components" and "PC stations" areas only provide an overview screen for the relevant area.

The diagram below shows an example of a diagnostics screen which visualizes an automation system with integrated hardware, for example, the CPU, the universal rack "UR1, the expansion rack "ER1", and the corresponding "DP master system 1" and "DP master system 2" bus systems. The status displays of this screen output a summary of the status of sublevel components in the bus systems.



Abbreviation: AS

AS = Automation System

Component diagnostics

The overviews or other diagnostics screens visualize the various components using symbolic images. The symbolic images visualize the corresponding status and sublevel hierarchy of the component.
The symbolic image of an AS is shown below.

The symbolic images contain:

1. The symbolic visualization of the component.
2. The status display of the actual component. In this example, the status shown is:
    = "Maintenance alarm".
3. Status display for diagnostics messages of the component. The status display is inserted on the bottom right side of the below the component status display mentioned earlier. In the example, this is a small red square.
4. The display for diagnostics messages in the nested hierarchy. The example shows a "Maintenance alarm" diagnostics message concerning a component in the sublevel hierarchy of this automation system.

   As a result, the display shows the status  = "Maintenance alarm".
5. Designation of components or of the subsystem.

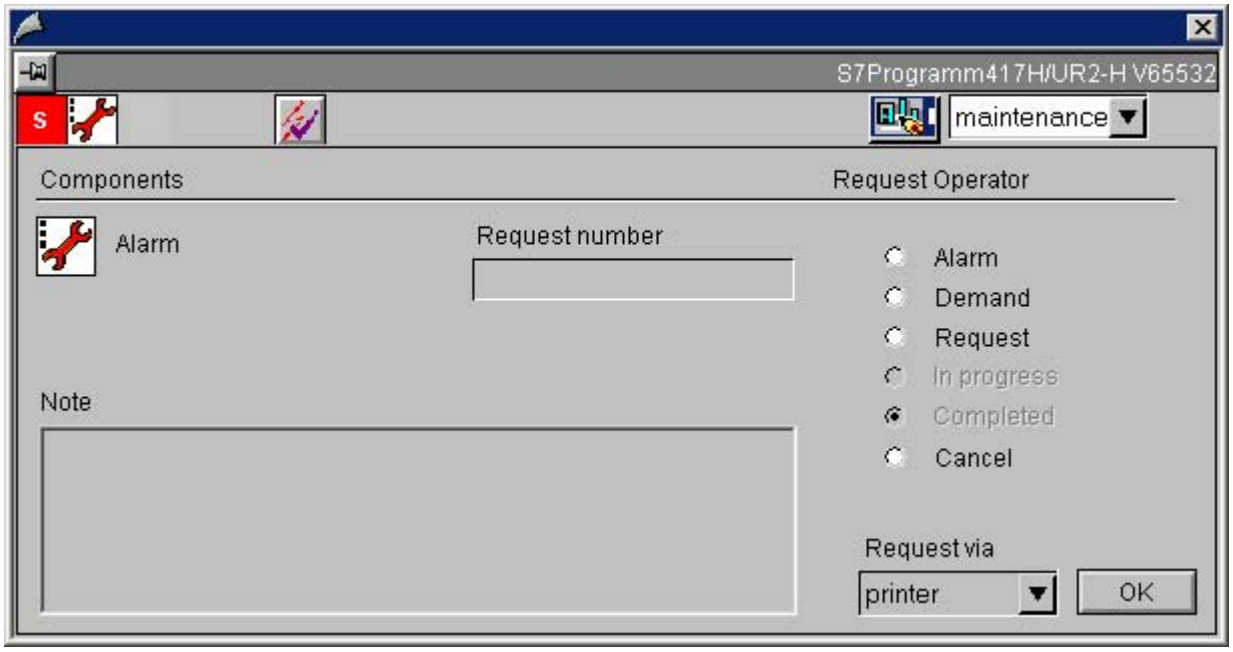
By clicking a status display in the component image, you open either the diagnostics screen of the hierarchy sublevel or the diagnostics faceplate of the component.

The component's diagnostics faceplate

The diagnostics faceplate contains diverse displays relating to the component status and maintenance requests. The faceplate also contains control elements for maintenance request and status management. The faceplate shown in the image below, for example, shows the following status:

The icons mean:

-  = A "Maintenance alarm" diagnostics message for the component is active.
-  = "Maintenance alarm". This represents the highest priority of maintenance requests.



The faceplate supports three default views for the visualization of component-specific information.

- The "Identification" view outputs online data of the component or of the hardware configuration and of the maintenance status, including the status of any existing redundant component.
- The "Message" view outputs diagnostics messages, operator actions and maintenance demands. The messages can be acknowledged and managed.
- The "Maintenance" view lets the user react to maintenance requests by initiating and managing corresponding maintenance tasks.
  In this view the data of the component can be exported for other applications for further processing such as the WinCC add-ons "PM-MAINT" or "Alarm Control Center". For additional information please refer to the chapter "Exporting component data for other applications".

For additional information, please refer to "Components for the visualization of diagnostics data (Page 107)".

Initiating and managing maintenance tasks

The Maintenance Station supports users in terms of the preparation and execution of maintenance tasks such as maintenance, inspection, repairs and the elimination of weak points.

In addition to the output of component-specific data and messages, the diagnostics faceplate provides the following functionality. Users can open the "Maintenance" view in order to react to component maintenance requests. This may involve the initiation or termination of a maintenance task, or the change of the corresponding priority.

After initiation of a maintenance task, the faceplate returns the progress status of maintenance. The status is indicated by the faceplate symbols and is also logged.

The symbols  and  of the faceplate indicate the following status.

-  = "Maintenance requirement" requested.
-  = Maintenance "in progress".

A work instruction number and a comment can be entered for each maintenance task. The work instruction number is used as information for the transfer to EAM/CMMS systems and is entered in the log.

On successful completion of maintenance, the user sets the "Completed" status on the diagnostics faceplate. The status displays are refreshed automatically.

1.4 Components supported

Integration requirements

The next section outlines the components supported for integration.

- The properties of SIMATIC components are determined by data already integrated in the hardware configuration of the S7 project.
- The properties of other integral components of the S7 project that are capable of communication, such as PROFIBUS DP or PROFINET IO components, are defined by means of a GSD file. SIEMENS drive components also belong to these standard slaves.
- Integration by means of Asset Proxy is designed for third-party components and devices which do not support standard diagnostics functionality for reporting errors to higher-level components.
  The diagnostics functions are handled based on configuration data of the S7 blocks in the user program.
  The Asset Proxy also supports integration of the interfaces of logical devices.

Note

An archive server may not be used as Maintenance Station Server.
For further information on supported device types, refer to the STEP 7 documentation "Configuring messages > Configuring the reporting of system errors > Components supported and functional scope".

Overview of supported components

The list shows the components in the areas in which they are assigned the diagnostics functions and screens.

Area	Component
PC stations	WinCC stations / Operator Stations (OS)
	Industrial PCs
	Standard PCs
	WinAC Slot
	Archive Server
Network components	Ethernet components
AS objects	CPUs of the SIMATIC S7-300 and S7-400 automation systems, including H and F systems
	Central and expansion racks of the automation systems, I/O modules
	External I/O such as ET 200M or ET 200S
	PROFIBUS components such as DP interfaces (S7 slaves, DP slaves)
	PROFINET IO components
	Diagnostic Repeater
	PA devices are supported if these are connected directly to PROFIBUS via DP/PA coupler. The support corresponds with that of a standard salve. PA devices connected via DP/PA Link are not supported.
	Drives, sensors, switchgear
	Non-Siemens components can be integrated by means of asset proxy.

Term: Maintenance Station Server

A WinCC server which features enhanced diagnostics functionality.

Term: Asset Proxy

The Asset Proxy acts as component representative in the diagnostics system. It is implemented for components which are not standard slaves and do not belong to the SIMATIC family. The function blocks and instance DBs for the asset proxy are programmed in the user program of the AS. A defined interface is used to manage "MaintenanceState" diagnostics data and transfer messages. The "Extended" or "Standard" type is used, depending on the component.

Term: MaintenanceState

Representation of the diagnostics status in MaintenanceState "MST"

The diagnostics maintenance states of a component are managed in status word MaintenanceState "MST".

1.5 Quantity structures and restraints

Data volumes

Data volume of the software listed below:

- SIMATIC STEP 7 V5.4 SP3
- SIMATIC WinCC V6.2 SP2 or V7.0
- SIMATIC NET V6.4

Limitations

Restraints of the current version of Maintenance Station:

Components

- Smart devices (intelligent field devices) are not supported.
  The term smart devices denotes appliances such as sensors and actuators which support loadable, programmable functionality such as a PLC core, for example.
- PA devices connected via DP/PA Link are not supported.
- The restrictions defined in "Reporting system errors" also apply.
  For more detailed information, refer to the STEP 7 documentation "Configuring messages > Configuring the reporting of system errors > Components supported and functional scope".

Configuration

- A Central Archive Server CAS may not be operated as Maintenance Station Server.
- Maintenance Station Server or the Maintenance Station of a single-user WinCC project may not be used as "Master OS" for WinCC applications of the type "OS Reference".
- The use of the "Project Duplicator" of WinCC is not allowed. You may not use "Project Duplicator" to copy the "OS" configured for the Maintenance Station and other OS of the S7 project.
- The PC names may not end with the character string "_IM".
- The name of all automation systems to be visualized in Maintenance Station diagnostics must be unambiguous within the S7 project.
- Connections to the components play an important role when using the Maintenance Station. This is an important aspect when using direct connections to the automation systems.
  - The system supports up to 64 connections to the PC which is used to visualize diagnostics data.
  - The MPI network supports up to 29 active connections per interface. However, the number of active connections on the MPI is also limited to 64.
  - Make allowances in terms of the number of connections when using SIMATIC NET, for example, on PROFINET.

Diagnostics

- Diagnostics of several CPUs in the same rack is not supported.
  Redundant CPUs support diagnostics functions.
- The use of WinCC clients without integrated project data may have a negative impact on performance of Maintenance Station Server at the start of runtime. It is advisable for this reason to implement WinCC clients with integrated project data. Please note the conditions defined in the WinCC documentation when using WinCC clients without integrated project.

1.6 The sample project

The included sample project

The SIMATIC Maintenance Station SW package is supplied with a sample project for STEP 7. Data configured in this sample program:

- Hardware configuration.
- PC Station for SIMATIC Maintenance Station Combined, integrated on a WinCC station.

The Maintenance Station configuration is based on the hardware configuration.

The sample project automatically included when you install the Maintenance Station can be edited for testing.

For detailed information on installation and usage, refer to the "SIMATIC Maintenance Station - Getting Started" description. The description is available in PDF format in the Windows Start menu at "SIMATIC > Documentation > English".

Configurations of the SIMATIC Maintenance Station 2

2.1 Introducing SIMATIC Maintenance Station configuration

Overview

In addition to configuration data, the Maintenance Station requires diverse process data. You can implement different Maintenance Station configurations, depending on the plant's topology and on the existing WinCC stations.

- SIMATIC Maintenance Station Combined:
  Maintenance Station is installed on an existing WinCC station and is integrated into the WinCC project. Users can change between the diagnostics and process screens.
- SIMATIC Maintenance Station stand-alone:
  Maintenance Station is installed on a separate PC which is dedicated to diagnostics functions.

Information about SIMATIC Maintenance Station in client-server architectures

Maintenance Station functionality can be distributed to different computers within distributed systems. Maintenance Station Server handles processing of the diagnostics messages. Maintenance Station Client is used to visualize diagnostics data and to handle maintenance tasks.
This kind of configuration is also required if the data volume of a WinCC station or Maintenance Station exceeds the capacity of the Maintenance Station.

Integration of SIMATIC NET SNMP OPC Server

Maintenance Station also supports SIMATIC NET SNMP OPC server where it is required for diagnostics of SNMP-compatible network components or industrial PCs. SNMP must be activated and configured on all network components to be monitored. All SNMP components integrated in the diagnostics system require a network connection. For further information, refer to "Integrating additional components > Integrating SNMP components".

Configuration criteria

Essential configuration criteria:

- Operating mode of Maintenance Station, i.e. "stand-alone" or "combined".
- Type of the plant architecture.

Hardware and software requirements also represent decisive configuration criteria. For further information, refer to the topic "Installing SIMATIC Maintenance Station > Hardware and software requirements".

Maintenance Station engineering on the S7 Engineering Station

It is usual in most systems to implement a PC which is dedicated to S7 project engineering. It is advisable for this reason to run Maintenance Station engineering on this PC as well. All data of the plant's hardware configuration are available for Maintenance Station engineering and for generating the diagnostics screens/data/blocks.

In order to visualize diagnostics data of the Maintenance Station on a second PC and use the "Loop-in-HW-Config" function for diagnostics, SIMATIC STEP 7 must be installed and the S7 project must be copied to this second PC.

Maintenance Station diagnostics on the S7 engineering station

The handling of Maintenance Station diagnostics on the engineering station "ES" of the S7 project is an alternative combination. In distributed systems, this corresponds with the operation of Maintenance Station Client on the S7 ES.

The hardware configuration data of the S7 project must be made available to the "Loop-in-HW-Config" diagnostics function on the diagnostics faceplate. This function also requires SIMATIC STEP 7.

Properties of this combination:

- All essential diagnostics data of the S7 project are already available and represent the actual configuration status. It is not required of the user to transfer the S7 project to a separate PC which runs the Maintenance Station application. User-specific adaptation of each S7 project update is not necessary.
- Deactivate the Maintenance Station before you edit configuration data. The PC is used either as Maintenance Station or as S7 Engineering Station. Concurrent operating modes are not supported.

Term: Maintenance Station Client

A WinCC Client for the visualization of process and diagnostics screens with diagnostics control functionality.

Abbreviation: ES

ES = Engineering Station

Abbreviation: SNMP

Simple Network Management Protocol. The protocol supports central management of multiple network components.

2.2 Determining the plant types

2.2.1 Overview of the plant types

Overview

The overall system structure determines the vital criteria of the Maintenance Station configuration and properties. The overall system is subdivided into different plant types:

- Single-user system:
  The plant represents a "single-user system" type in an S7 project which only contains WinCC stations with single-user projects. The S7 project contains neither any WinCC multi-user projects, nor any WinCC servers, nor any assignments of WinCC clients.
- Multiuser system:
  A plant represents a "multiuser system" type if the S7 project only contains WinCC multiuser stations and perhaps WinCC clients with integrated project. In this case, the Maintenance Station must also be a multiuser project. It may not contain and WinCC stations with single-user projects.
  Multiuser projects may have a different configuration.
  - As stand-alone WinCC stations without clients.
  - A client-server architecture with WinCC server and allocated WinCC clients.
- Mixed system:
  The plant represents a "mixed system" if the S7 project contains WinCC stations with single-user and multiuser projects.
  Multiuser projects may have a different architecture similar to the "multiuser system" type.

Term: WinCC single-user station

WinCC station running a project of the type "WinCC multiuser project".

Term: WinCC multiuser station

WinCC station running a project of the type "WinCC multiuser project".

2.2.2 Principle of determining the plant types

Introduction

A suitable Maintenance Station configuration is selected based on several criteria.

- Operating location of the Maintenance Station
  "Stand-alone": on a separate PC. "Combined": integrated into a WinCC station.
- Type of the plant architecure.
  The type of project, i.e. either "single-user" or "multiuser", forms a criterion for configuring S7 projects running on the WinCC stations.
- Communication paths for data traffic to the Maintenance Station.
  The Maintenance Station and other WinCC stations within a multiuser project architecture exchange information by means of so-called server packages. WinCC stations running single-user projects can not intercommunicate and are interconnected with the automation systems via direct process channel. The Maintenance Station also requires a direct process channel for diagnostics of these automation systems.

Basic procedure

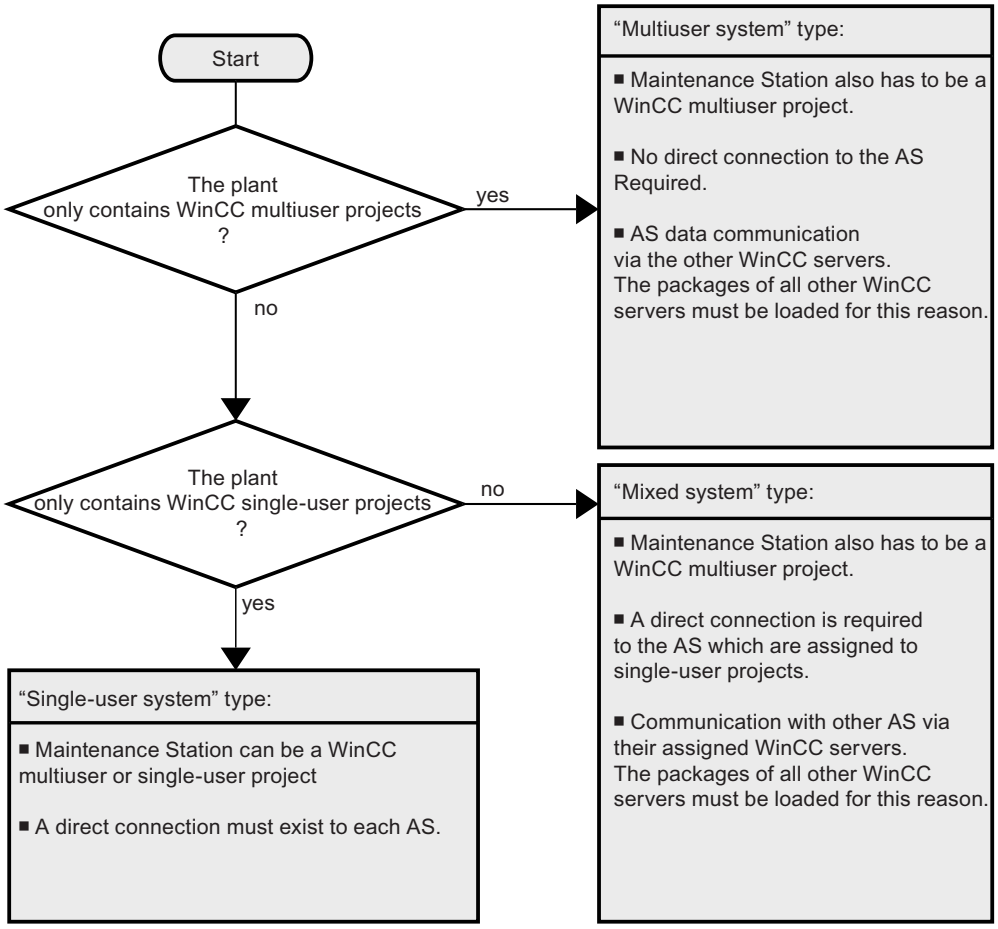
Essential configuration criteria to consider in the next steps:

1. Maintenance Station operation on a separate PC,or integration in a WinCC station.
2. Determination of the possible configuration of the overall automation system based on the definition of the plant type.
   The plant type defines important properties and requirements in terms of the configuration of the Maintenance Station to be implemented.

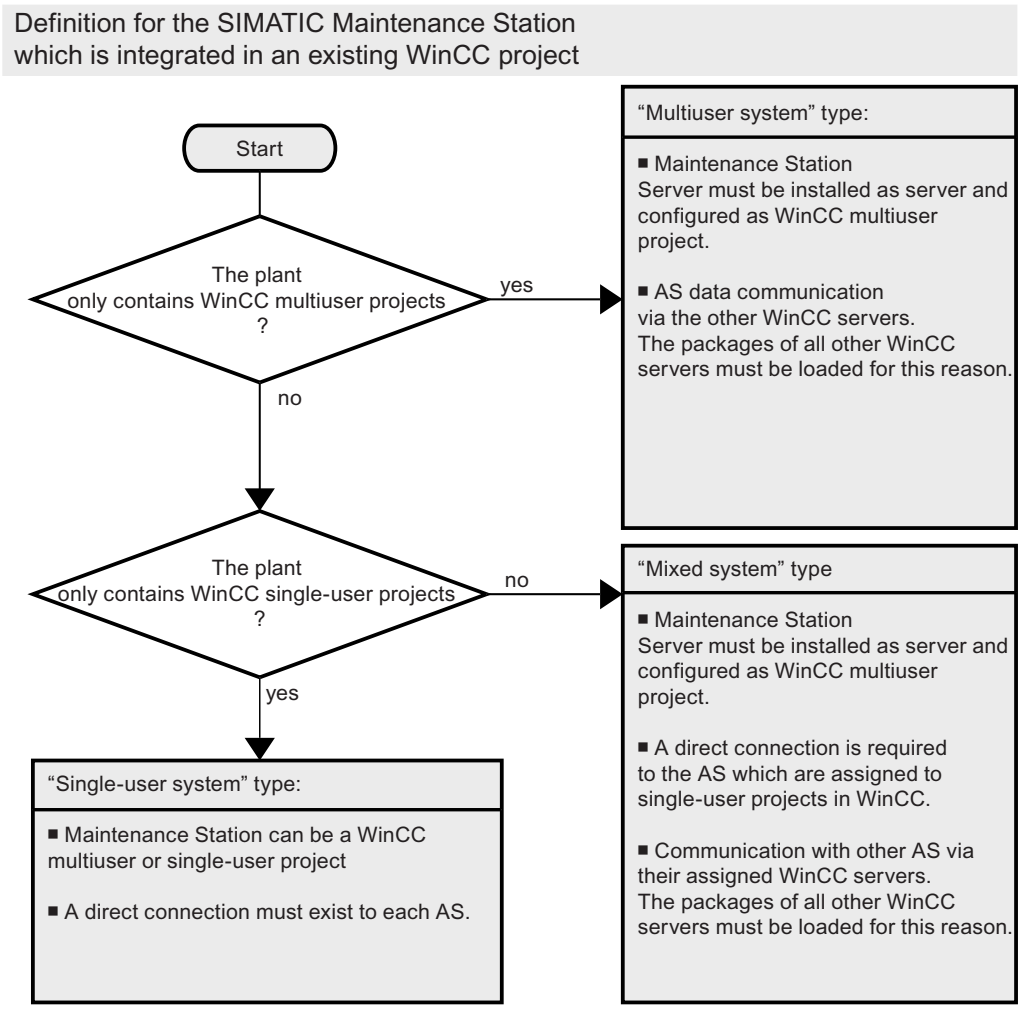
The diagrams below illustrate the determination of the plant type, depending on the operating location selected. Based on this criterion, the diagrams provide a brief overview of the essential properties of the Maintenance Station to be implemented.
You can find a detailed description in the section titled "Effect of the plant types on the configuration (Page 30)".

Definition for the SIMATIC Maintenance Station Stand-alone

Definition for the SIMATIC Maintenance Station Stand-alone



Definition for SIMATIC Maintenance Station Combined



The configuration cannot be determined

The system architecture may not meet requirements, or a suitable configuration could not be found for the Maintenance Station, for example. In this case, the solution may be to modify the system architecture.

Modification of a system architecture which consists of stand-alone WinCC stations may provide a solution if, for example, the Maintenance Station to be implemented as stand-alone station is unable to communicate with the automation systems.

- The WinCC single-user stations connected to the required AS are converted into WinCC multiuser projects. This solution requires installation of the WinCC "Server" software component and of the corresponding license key. This setup enables communication by means of server packages with the Maintenance Station which is, in this scenario, also configured as WinCC multiuser project.
  If the project type is changed after the diagnostics screens have been generated for the first time, please note the information in "Changing the project type in WinCC (Page 149)".
- Implementation of a shared system bus for AS communication. This scenario would allow direct connections via the system bus to a Maintenance Station operated as WinCC single-user project.
  This solution, however, increases the number of connections required for communication between the WinCC station or Maintenance Station and the AS. Allowances must be made for the SIMATIC WinCC and SIMATIC NET data volumes in terms of the number of connections.

Term: WinCC single-user project

WinCC single-user projects are interconnected directly with the corresponding automation systems. Generation of packages is not supported. Communication with other WinCC stations and server-server communication are ruled out for this reason.

Term: WinCC multiuser project

A WinCC multiuser project can generate its own packages and upload the packages from other WinCC multiuser projects. The packages can be uploaded from WinCC clients and WinCC multiuser projects. Communication with other WinCC multiuser stations is handled by server-server communication functions. The PC running the multiuser project features a process bus interface for communication with the corresponding automation systems. The multiuser project supports several WinCC clients.

2.3 Effect of the plant types on the configuration

2.3.1 Configuration of the "single-user system" type

Configuration of the "single-user system" type

A "single-user system" within an S7 project only contains WinCC stations with single-user projects.

Communication

The WinCC single-user stations feature a direct process bus interface for communication with the corresponding automation systems. The WinCC stations do not communicate directly.
The Maintenance Station to be integrated must be provided a direct process connection to each AS which participates in diagnostics processes and was previously assigned only to one WinCC single-user station.

Make allowances for data volumes when you define the number of connections. For additional information, please refer to "Quantity structures and restraints (Page 20)". The system supports up to 64 direct connections between the Maintenance Station and the automation systems.

Software requirements

- The same WinCC version must be installed on all WinCC stations of the project, as specified in "Hardware and software requirements".
- The "Maintenance Station Engineering" component must be installed on the PC which is used for Maintenance Station engineering.
- When integrating the Maintenance Station in an existing WinCC project, install the "Maintenance Station Server" component on the WinCC station which is intended to be used as Maintenance Station "OS" to visualize diagnostics data.
  This WinCC project can remain for operation as WinCC single-user project or can be converted into a WinCC multi-user project.
  The WinCC "Server" options must be installed on the PC to convert the WinCC station into a multiuser project. However, it is not required to install a "WinCC Server" license key as long as the project is not accessed by any WinCC clients.

Licensing

- A separate PC added to the plant in order to run the Maintenance Station requires a "WinCC RT (x)" license key. For additional information on the required license keys, please refer to "Licensing (Page 47)".
- Corresponding Maintenance Station license keys required:
  - The "SIMATIC Maintenance Station 2007 Engineering" license key on the PC which runs Engineering.
  - The "SIMATIC Maintenance Station 2007 Engineering" license key on the PC which is used to visualize diagnostics data.

Abbreviation: OS

OS = Operator Station

2.3.2 Configuration of the "multiuser system" type

Configuration of the "multiuser system" type

With a "multiuser system" type, the S7 project only contains WinCC multiuser stations and, in some cases, WinCC Clients with an integrated project. In this case, the Maintenance Station must also be a multi-user project.

Communication

Communication between the WinCC multiuser stations is handled by means of server packages.

The Maintenance Station to be implemented is also defined as multiuser project and receives its data in the server packages. For this reason, the Maintenance Station does not require a direct process connection to the automation systems.

However, the data can also be allocated directly to the Maintenance Station if a direct process connection is available.

Software requirements

- The following requirements apply to all WinCC stations which download their server packages to the Maintenance Station:
  - The version of WinCC specified in the hardware and software requirements must be installed.
  - The extension software ("Process Server Extension") for Maintenance Station must be installed. This extension software can be installed via Setup in the Maintenance Station.
  - One session with "WinCC OS Project Editor" must be completed in the WinCC project.
- The system only supports up to 12 multiuser stations due to the data volume of WinCC.
- The "Maintenance Station Engineering" component must be installed on the PC which is used for Maintenance Station engineering.
- When the Maintenance Station is integrated into an existing WinCC multiuser project, the corresponding component - "Maintenance Station Server" or "Maintenance Station Client" - is installed on the WinCC Server or WinCC Client.
- When the system is expanded to include new PCs for diagnostics functions, the corresponding component of the Maintenance Station is installed on the Maintenance Station Server or Client that will be implemented.
  The software specified in "Hardware and software requirements" must be installed beforehand.
- The relevant version of STEP 7 must be installed on the client in order to provide access to the "Loop-in-HW-Config" function on the Maintenance Station Client to be implemented. The user has to install this software.

Term: WinCC client

General term used of a PC which is used to visualize and operate the process screens or diagnostics screens.

Term: WinCC Server

A WinCC Server receives and processes the process data for operating and monitoring the system. The process data can be transferred via direct process connection or by other WinCC Servers. Operation and monitoring takes place on one or more WinCC clients.

If several WinCC Servers are used, the data can be distributed across them. This means that, in a large system, different components can be processed on separate servers, for example. Systems that are distributed in this way offer the following advantages:

- Good scalability
- Separate system components
- Greater availability as a result of good scalability and separate system components.
- A WinCC Server can access several other WinCC Servers at the same time (server-server communication).

If configured as a SIMATIC Maintenance Station Server, a WinCC Server can also execute diagnostics and maintenance functions.

Licensing

The "SIMATIC Maintenance Station 2007 Engineering" license key must be installed on the PC which is used for Maintenance Station engineering.

License keys which must be installed on the Maintenance Station Server:

- The "SIMATIC Maintenance Station 2007 Runtime" license key to provide a suitable number of variables.
- The "WinCC Server" license key must be installed on this PC if one or more WinCC clients or Maintenance Station clients access a WinCC multiuser project.
- The "WinCC RC (x)" or "WinCC RT (x)" license key is required to expand the system with PC for Maintenance Station Server.
  For additional information on the license keys required, please refer to "Licensing (Page 47)".

License keys which must be installed on the Maintenance Station Client:

- A STEP 7 license key must be installed on the client in order to provide access to the "Loop-in-HW-Config" function on the Maintenance Station Client to be implemented.
- It is not necessary to install the Maintenance Station license key on the client.

2.3.3 Configuration of the "mixed system" type

Configuration of the "mixed system" type

The plant represents a "mixed system" if the S7 project contains WinCC stations with single-user and multiuser projects.

Communication

Communication between the WinCC multiuser stations is handled by means of server packages. The Maintenance Station does not require a direct connection to automation systems which are already interconnected with a WinCC Server.

The WinCC single-user stations feature a direct process bus interface for communication with the corresponding automation systems. There is no communication between WinCC single-user stations. The maintenance station must be provided for this reason a direct process interface to each AS which participates in diagnostics processes and which was previously assigned only to one WinCC single-user station.

Software requirements and license agreements

Conditions are similar to those of the "multiuser system" type.

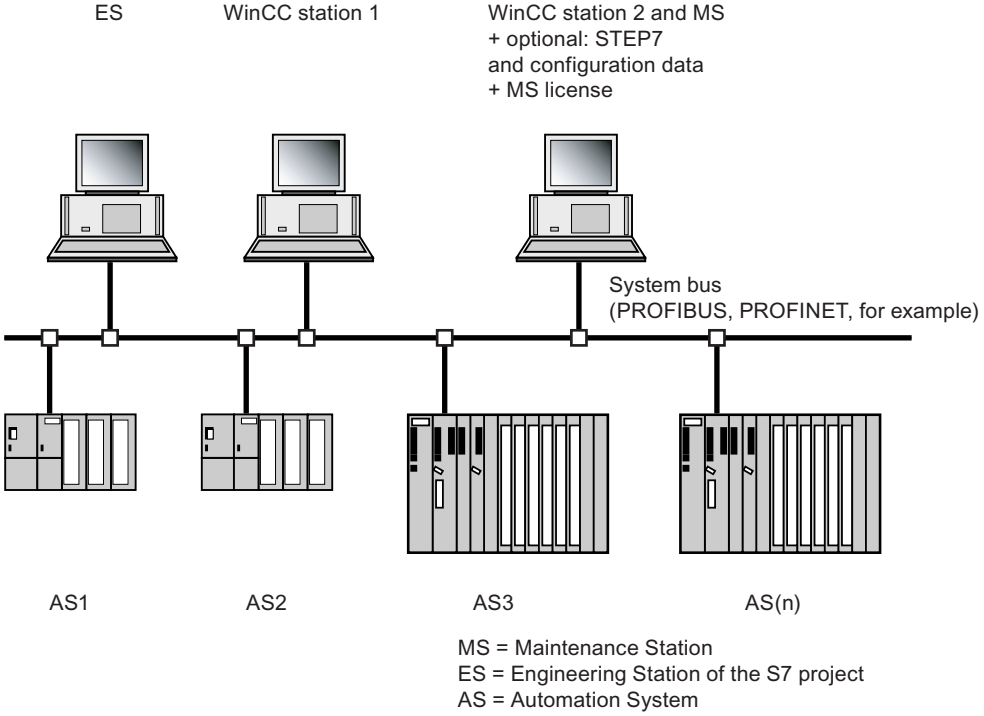
2.4 SIMATIC Maintenance Station Combined

Definition

SIMATIC Maintenance Station Combined: The SIMATIC Maintenance Station is integrated into an existing WinCC station.

Integration of Maintenance Station into an existing WinCC station

With this type of configuration, the Maintenance Station is also installed on an existing WinCC station and integrated into the WinCC project.



The diagram shows an application with this type of configuration. Components previously implemented in the plant, for example:

- Automation systems
- S7 Engineering Station for configuration
- Several WinCC stations 1 and 2 for "operating and monitoring".

The Maintenance Station is now expanded for asset management. The existing hardware remains in use.

Communication

An interconnection with the system bus is required.

Software and license requirements

Software which must be installed on the Maintenance Station:

- SIMATIC Maintenance Station.
  Installation of one of one of the "Engineering", "Server" or "Client" options on the PC, depending on your configuration. For more detailed information, refer to "Installing SIMATIC Maintenance Station (Page 53)".
- Maintenance Station license keys.
  The "Runtime" license key is required to visualize diagnostics data on the PC. The "Engineering" license key is required if the PC is used for Maintenance Station engineering.
- SIMATIC WinCC version as specified in the "Hardware and software requirements" section.
- License key for SNMP OPC Server if SNMP-compatible network components or industrial PCs are to be integrated in the diagnostics system.

If both conditions defined below apply to the PC which is used to visualize diagnostics data, the following conditions will apply to the software.

- The Maintenance Station is engineered on the S7 Engineering-Station and diagnostics data are visualized on a separate PC.
- The "Loop-in-HW-Config" function is used for diagnostics.

If this applies, the software and data shown below must be installed on the PC:

- SIMATIC STEP 7.
- A copy of the S7 project.

2.5 SIMATIC Maintenance Station Stand-alone

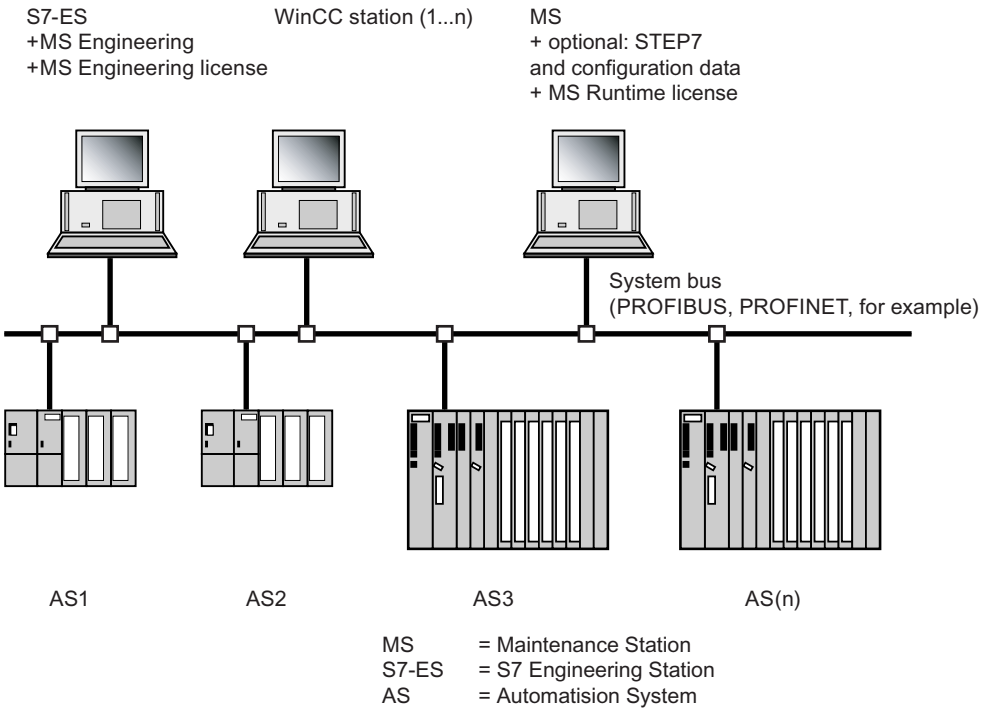
Definition

SIMATIC Maintenance Station Stand-alone: SIMATIC Maintenance Station is implemented on a new or separate PC which is dedicated to operation of the SIMATIC Maintenance Station.

"Stand-alone" configuration

With this type of configuration, a PC is dedicated to handling Maintenance Station diagnostics. The same PC can be used for Maintenance Station engineering. It is usually more practical to use the S7 ES for Maintenance Station engineering.

An example of this type of configuration is the expansion of a plant which was previously operated only with automation systems and without WinCC stations for operating and monitoring, for example. The Maintenance Station is now expanded for asset management.



The diagram shows the configuration for using the S7 ES for Maintenance Station Engineering. Diagnostics data are visualized on a separate PC.

Communication

Integration into the system bus.

Software and data requirements

Maintenance Station engineering and diagnostics on the same PC

The following software and data must be installed or available when the same PC is being used for Maintenance Station engineering and diagnostics:

- SIMATIC Maintenance Station "Engineering"
- License keys for Maintenance Station "Engineering" and "Runtime".
- SIMATIC WinCC version as specified in the "Hardware and software requirements" section.
- SIMATIC WinCC license keys.
- License key for SNMP OPC Server if SNMP-compatible network components or industrial PCs are to be integrated in the diagnostics system.
- SIMATIC STEP 7, including the license key
- A copy of the S7 project from the S7 Engineering Station if the S7 ES is not used for Maintenance Station engineering or if the "Loop-in-HW-Config" is to be used for diagnostics.

Maintenance Station engineering and diagnostics on different PCs

Software and data which must be installed or available when using the S7 ES for Maintenance Station engineering and a separate PC to visualize diagnostics data:

On the S7 Engineering Station and on the new Maintenance Engineering Station:

- SIMATIC Maintenance Station "Engineering"
- The Maintenance Station "Engineering" license key.
- SIMATIC WinCC version as specified in the "Hardware and software requirements" section.
- SIMATIC WinCC license keys.

On the PC used to visualize diagnostics data:

- SIMATIC Maintenance Station "Server"
- SIMATIC WinCC version as specified in the "Hardware and software requirements" section.
- SIMATIC WinCC license keys.
- The Maintenance Station "Runtime" license key.
- License key for SNMP OPC Server if SNMP-compatible network components or industrial PCs are to be integrated in the diagnostics system.

Additional software packages and data required on the PC used to visualize diagnostics data when using the "Loop-in-HW-Config" function for diagnostics:

- SIMATIC STEP 7, including the license key
- Copy of the S7 project.

2.6 Information on client-server architectures

Introduction

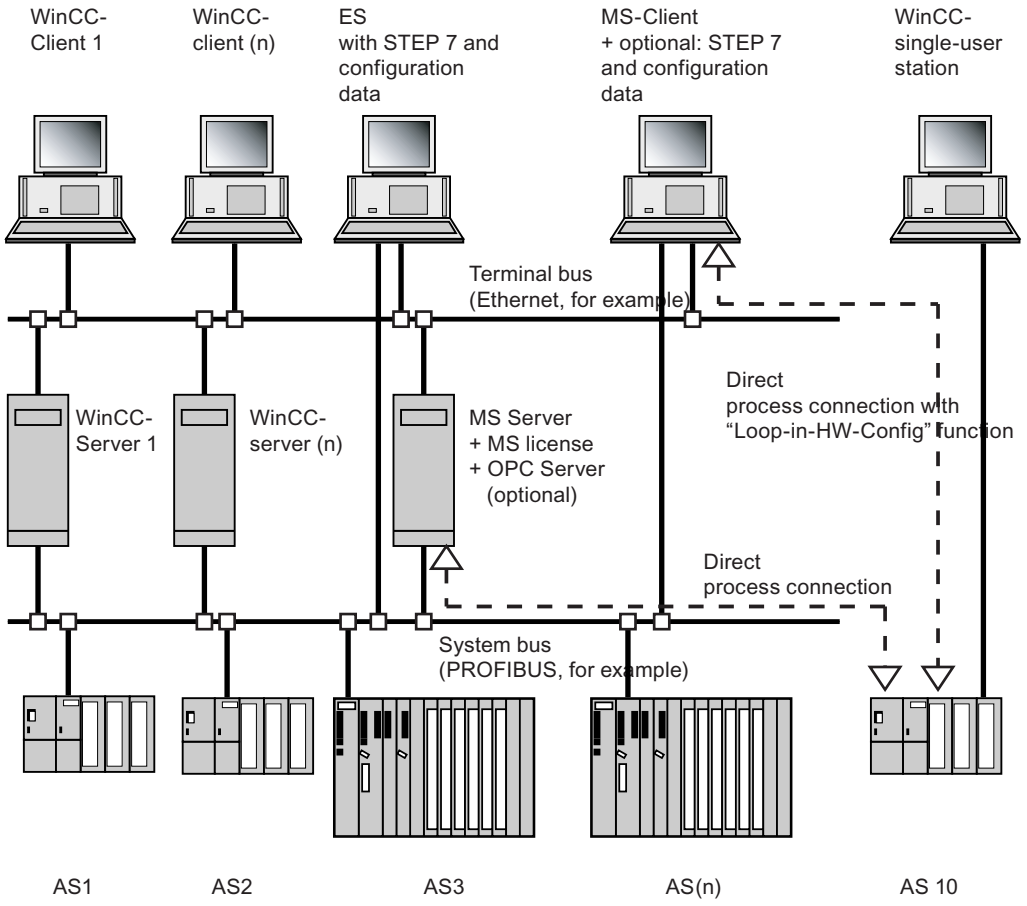
SIMATIC Maintenance Station can be installed as client or server station, independent of their operation as stand-alone or combined station.

Maintenance Station in a client-server architecture

The functionality of a Maintenance Station operated in a client-server architecture is distributed to several PCs. Maintenance Station Server processes the signals and diagnostics messages relevant to maintenance. Maintenance Station Client is used to visualize diagnostics data and to manage the status of maintenance tasks.

A Maintenance Station operated in a client-server architecture represents a WinCC multiuser project for applications with the system's plant types described below.

- Multiuser system: Other WinCC stations in the client-server architecture are always implemented as multiuser projects.
- Mixed system: The system contains multiuser and single-user WinCC stations.



ES = Engineering Station SIMATIC
MS Server = Maintenance Station Server
MS Client = Maintenance Station Client

Communication

- The Maintenance Station Server must be interconnected with the terminal bus.
  An interconnection with the system bus is optional. A direct process interface, for example. via system bus, is only required for communication with automation systems which are only assigned to WinCC single-user stations.
- The Maintenance Station Client must be interconnected with the terminal bus. An MS client which is also used as S7 Engineering Station must be interconnected with the system bus.
  Integration of the "Loop-in-HW-Config" function for diagnostics requires a direct process interface to the automation systems which are only assigned to WinCC single-user stations.

Software and data requirements of Maintenance Station Client

Software or data which must be installed or be available:

- SIMATIC Maintenance Station "Client"
- SIMATIC WinCC, including the "WinCC RT" license key
- Server packages of all configured WinCC servers and of Maintenance Station Server.

Additional software required if Maintenance Station Client is not used concurrently as S7 Engineering Station and when using the "Loop-in-HW-Config" function for diagnostics:

- SIMATIC STEP 7, including the license key
- Configuration data of the S7 project.

Software and data requirements of Maintenance Station Server

Software requirements when installing Maintenance Station Server on a WinCC server:

- SIMATIC Maintenance Station "Server"
- The Maintenance Station "Runtime" license key.
- License key for SNMP OPC Server if SNMP-compatible network components or industrial PCs are to be integrated in the diagnostics system.

The following software is also required for adding a new Maintenance Station Server PC:

- SIMATIC WinCC, including the "Server" option.
- The "WinCC RC" and "WinCC Server" license keys.

Properties of Maintenance Station Server

Maintenance Station Server, "MS-Server" in the following, can be implemented with or without interconnection with the system bus. The user can decide whether to configure MS Server for operation on a WinCC station with system bus connection or on a separate PC. This is an optional configuration which does not depend on factors such as system utilization.

A direct process interface is required for the diagnostics of automation systems which are only assigned to WinCC single-user stations.
The direct process interface can be formed by a network or physical direct connections connections. The diagram above shows this scenarios for the "AS10". The project type of this WinCC single-user station may also be converted into a multiuser project in order to allow communication using server packages. However, this configuration changes software requirements, for example, in terms of availability of the "WinCC Server" component and corresponding license.

Note

If the project type is changed after the diagnostics screens have been created for the first time, please note the information in "Changing the project type in WinCC (Page 149)".

The MS Server can be operated in stand-alone or redundant mode.

Data relevant to diagnostics which are archived on MS Server:

- The diagnostics screens including the hierarchic structure.
- Variables of SNMP OPC server
- Internal variables for the diagnostics status.
- Variable for the diagnostics status of S7 automation systems with direct connection to MS Server.
- Status variables for PC stations and network components.

If the SNMP OPC Server is being used on the MS Server, a system bus connection is required for diagnostics purposes: for example, Optical Switch Module "OSM" and Electrical Switch Module "ESM".

Properties of Maintenance Station Client

The Maintenance Station Client, "MS Client" in the following, is a WinCC client with integrated project. In order to access data of the MS Server and of other WinCC servers the MS Client requires the corresponding server data, namely the packages. The data of other WinCC servers must be available because the diagnostics faceplates are interconnected with the variables of the various WinCC servers.

Each client supports visualization of the data of up to twelve servers or redundant server pairs.

The MS Client can also be implemented directly on the S7 ES. In this case, actual S7 project data are already available to the MS Client. MS Client must be deactivated when you edit the project data.

The S7 project data must be available on the MS Client when "Loop-in-HW-Config" is used for diagnostics. A direct process connection is also required for communication with automation systems which are only assigned to WinCC single-user stations.

Note

The server names must be unambiguous within the distributed system and the plant in order to be able to visualize the data of different servers.
All external server configuration data must be available on the clients for their proper visualization in the client project. The term external data refers to functions such as ActiveX Controls which do not originate from WinCC and to external graphic objects, for example, which are not integrated as OLE objects.

For more detailed information on the configuration of client-server systems, refer to the WinCC documentation, "Configurations > Distributed systems".

Installation of SIMATIC Maintenance Station 3

3.1 Hardware and software requirements

Notes on installation

Please observe the installation information provided in the "readme" file on your SIMATIC Maintenance Station product DVD.

Hardware requirements

System	Clock rate	Main memory	Free hard disk space
Engineering station	2.8 GHz	1 GB	15 GB
Maintenance Station Stand-alone / WinCC-Station "Single-user Workstation"	2.8 GHz	1 GB	15 GB
Maintenance Station Server / WinCC Server	2.8 GHz	1 GB	15 GB
Maintenance Station Client / WinCC Client	2.8 GHz	512 MB	3 GB

Software requirements

Supported operating systems

System	Operating system
Engineering station "ES"	Windows XP Professional SP2 Windows Server 2003 SP2
Maintenance Station Stand-alone / WinCC-Station "Single-user Workstation"	Windows XP Professional SP2 Windows Server 2003 SP2
ES with Maintenance Station Stand-alone	Windows XP Professional SP2 Windows Server 2003 SP2
Maintenance Station Server / WinCC Server	Windows Server 2003 SP2
Maintenance Station Client / WinCC Client	Windows XP Professional SP2 Windows Server 2003 SP2

Note

The Windows Firewall must be deactivated when running the Windows XP SP2 operating system. The active Windows Firewall may prevent communication and data exchange between the PCs.

SIMATIC software

The software below is not supplied and installed with the SIMATIC Maintenance Station. Depending on the intended use of a PC, the software must be installed prior to the Maintenance Station.

- SIMATIC STEP 7 V5.4 SP3
- SIMATIC WinCC V6.2 SP2 or V7.0
- SIMATIC NET V6.4

See also

Configurations of the SIMATIC Maintenance Station (Page 23)

3.2 Licensing

Introduction

The SIMATIC Maintenance Station software is protected by copyright, as is the case with other SIMATIC software such as WinCC and STEP 7; it requires a valid license agreement for unrestricted use. The SW is licensed with a Certificate of License "CoL" and the license keys supplied alongside with the SIMATIC software package on a separate license key volume. License keys are the technical representatives of the license.

The installation procedure transfers the license key to a local drive and clears it on the license key volume. Users may acquire more than one license key per licensed component on SIMATIC Maintenance Station. This feature is not supported for any other SIMATIC software.

License keys can be installed using Automation License Manager. Automation License Manager for managing the license keys is included in the Maintenance Station software package.

SIMATIC software such as WinCC only runs in demo mode if the corresponding license key is not installed. The software also changes to demo mode if the maximum number of licensed process variables or archive variables is exceeded in a project.

The SW runs in demo mode for a limited period. Any further use upon expiration of the trial period constitutes a breach of SIMATIC software license agreements. For additional information, refer to the corresponding SIMATIC software "Licensing" documentation.

Basic license key types

- Single license:
  The software can be used on any PC for an unlimited amount of time. The type of use is determined from the Certificate of License (CoL).
- Floating License
  This license grants you the use the software for an unlimited period of time. Users can obtain this type of license from a connected PC to allow the use of protected SW products for which a local license key is not available.

For further information on license types, refer to the Automation License Manager documentation.

Licensing of SIMATIC Maintenance Station

License key	Description	Family
SIMATIC Maintenance Station 2007 Engineering	SIMATIC Maintenance Station only for Engineering	SIMATIC MS
SIMATIC Maintenance Station 2007 Runtime	SIMATIC Maintenance Station Different license keys for Runtime: 100 tags / assets 500 tags / assets 1000 tags / assets The number of assets is indicated at the "Validity" parameter.	SIMATIC MS

Installed Runtime license keys may be accumulated.
The user may install two Runtime license keys for 100 and 500 assets to cover the use of 520 diagnostics components, for example. Such a setup covers the licensing of 600 assets.

Note

SIMATIC Manager returns the total number of configured assets which require licensing for diagnostics. Select "Diagnostics screens > Configured objects" from the shortcut menu of your project.

Overview of license keys required

- License keys to install on the PC for Maintenance Station Engineering.

License key	Description	Family
SIMATIC Maintenance Station 2007 Engineering	SIMATIC Maintenance Station Engineering	SIMATIC MS
STEP 7	SIMATIC STEP 7 V5.4	SIMATIC STEP 7
WinCC RC (x)	WinCC for WinCC Engineering and Runtime (corresponding to the version of WinCC in use)	SIMATIC HMI
Industrial Ethernet SOFTNET S7 Lean	SIMATIC NET PC-Software V6.4	SIMATIC NET

- License keys to install on the PC for visualization of diagnostics data

License key	Description	Family
SIMATIC Maintenance Station 2007 Runtime	SIMATIC Maintenance Station Runtime Different license keys, depending on the number of assets.	SIMATIC MS
STEP 7	If SIMATIC STEP 7 V5.4 is installed, optional for the "Loop-in-HW-Config" diagnostics function	SIMATIC STEP 7
WinCC RC (x) or WinCC RT (x)	WinCC for WinCC Engineering and Runtime/Diagnostics or for WinCC Runtime/Diagnostics (corresponding to the version of WinCC in use)	SIMATIC HMI
Industrial Ethernet SOFTNET S7 Lean	SIMATIC NET PC-Software V6.4	SIMATIC NET

Maintenance Station in a client-server architecture

- License keys on Maintenance Station Server.

License key	Description	Family
SIMATIC Maintenance Station 2007 Runtime	SIMATIC Maintenance Station Runtime Different license keys, depending on the number of assets.	SIMATIC MS
WinCC RC (x)	WinCC for WinCC Engineering and Runtime (corresponding to the version of WinCC in use)	SIMATIC HMI
WinCC Server	Optional: WinCC with "Server" option for Maintenance Station Server (corresponding to the version of WinCC in use)	SIMATIC HMI
Industrial Ethernet SOFTNET S7 Lean	SIMATIC NET PC-Software V6.4	SIMATIC NET

- License keys for Maintenance Station Client.
  This PC is only used to visualize diagnostics data.
  Terms defined at "License Keys on the PC used for Maintenance Station Engineering" shall apply if Maintenance Station Client is also used for engineering.

License key	Description	Family
STEP 7	If SIMATIC STEP 7 V5.4 is installed, optional for the "Loop-in-HW-Config" diagnostics function	SIMATIC STEP 7
WinCC RT (x)	For WinCC Runtime (corresponding to the version of WinCC in use)	SIMATIC HMI

Licensing of SNMP OPC Server

SIMATIC NET SNMP OPC Server is a component of SIMATIC NET and requires a separately purchased license agreement with license key.

3.3 Installing license keys

Introduction

You license SIMATIC Maintenance Station by installing the license keys supplied on the license key volume.

This section described license key installation using Automation License Manager which is included in the Maintenance Station software package.

Requirements

Installation requirements

- The license key volume is not write protected.
- License keys cannot be installed on a compressed volume.

Procedure

The description in the next section shows how to transfer SIMATIC software license keys for installation on a relevant PC.

1. Run Automation License Manager. You select Automation License Manager from the Windows Start menu, "SIMATIC > License Management".
2. Connect plug-in license key volumes to the PC. Place the removable license key volume, for example, a floppy disk, into the relevant drive.
3. Select the drive which contains the license key volume from the navigation window of Automation License Manager.
   The view shows all license keys available on this volume.
4. Select the required license key from the table. You may also select several license keys for the transfer. Select "Transfer..." from the shortcut menu of the license key selected. This opens the "Transfer License Key" dialog box.
5. Select the target volume and confirm your entry with "OK". The license key is now transferred to the target volume.
6. Verify the transfer by selecting the target volume from the navigation window of Automation License Manager. The view shows the license key you transferred and all other existing license keys.

Result

The selected license keys were successfully transferred to the relevant PC.

Note

Initialize your license key installation by restarting the corresponding SIMATIC software, for example, WinCC and STEP 7.

You uninstall the license keys in reverse order. Open the navigation window of Automation License Manager, and then select one or several license keys from the local volume of a PC. In the next step, transfer the license keys to a selected license key volume.

For more detailed information on license key handling, refer to the Automation License Manager documentation.

3.4 Installing SIMATIC Maintenance Station

Introduction

This section describes the installation of SIMATIC Maintenance Station software.

Software installation packages available:

- "Maintenance Station Stand-alone"
  For installation of the Maintenance Station in the configuration with the same name, if the Maintenance Station is installed on a separate PC that is only used for diagnostics purposes.
- "Maintenance Station Engineering"
  For installation of the entire engineering and diagnostics software on a PC.
  This option also supports installation on a Maintenance Station Client and on a Maintenance Station Stand-alone.
- "Maintenance Station Server"
  For installation of the component with the same name in a client-server architecture.
  This option also supports installation on a Maintenance Station Stand-alone without Engineering.
- "Maintenance Station Client"
  For installation of the component with the same name in a client-server architecture.
- "Process Server Extension"
  For installation of the extension software on a WinCC Server with the "multiuser system" plant type.

Licensing is prerequisite for using the software. For additional information, please refer to the sections "Licensing (Page 47)" and "Installing license keys (Page 51)".

Integration of the Maintenance Station in an existing WinCC project may have an impact on WinCC licensing, because additional tags may be required for diagnostics functions in this project.

Note

Maintenance Station requires installation of the WinCC version specified in the hardware and software requirements.
Installation of the Maintenance Station on an existing WinCC station may require an update or upgrade of the WinCC software. In particular when upgrading the software, you should first read the chapter "Installation Notes > Upgrading WinCC" in the WinCC documentation.

Upgrading the Maintenance Station

To upgrade the Maintenance Station to a more recent version, proceed as described below.

During the updating process restarting of the PC may be necessary in order to continue the installation successfully.

When carrying out an upgrade, observe the corresponding configuration steps under the topic "Configuration steps in case of changes".

Requirements

- Local administrator rights for installation.
- The hardware and software requirements must be met for installation of the Maintenance Station.
- Always close SIMATIC WinCC before you install the Maintenance Station software on the PC.

Procedure

1. Place the product DVD of SIMATIC Maintenance Station into the DVD drive of the PC. Setup usually runs automatically. The autorun function of the DVD drive is disabled if Setup does not start. In this case, open the DVD directory in Windows Explorer and then run Setup by double-clicking "Setup.exe".
2. Select your Setup language and then click "Next".
3. Please note the information in the dialog box; for example, relating to open programs. Click "Next".
4. In the "Product information" dialog box, if required you can press the relevant button to open the information for reading or printing. Click "Next".
5. The license agreement dialog box opens. Set the "I accept the terms of this license agreement…" check box to continue installation. Click "Next".
6. Enter the corresponding user information in the dialog box and then click "Next".
7. The "Program packages" dialog box opens. Select a program package that corresponds to the required configuration. The different packages are described in the introduction. The help window indicates the installation scope of the option selected. Click "Next".
8. The "Programs" dialog box shows the programs installed and corresponding update requirements. Click "Help" to obtain information on the various status icons. Depending on the program package selected, you can also enable or disable options.
9. Click "Next". SW installation starts. Software Setup is menu-controlled. You can set up and configure diverse items in the next setup dialog boxes. Confirm your changes until setup is completed.

Result

The Maintenance Station software is installed according to the software package you selected.

Integrating additional components

4

4.1 Integrating standard slaves and Siemens drives

4.1.1 Overview of the integration of standard slaves and Siemens drives

Overview

Siemens drives and non-SIMATIC components can be integrated in the diagnostics system as so-called standard slaves, for example DP slaves. The component properties of standard slaves are defined by a GSD file.

The device manufacturer supplies the GSD file. Device data are integrated by importing the corresponding GSD file. The standard slave is available in the module catalog after import. PROFINET components can also be integrated using a GSD file. The GSD file may be multilingual to support different languages.

The GSD file must be available in the regional languages required. The last letter of the "GSD" file name extension is replaced with a language identification letter.

File name extension	Language
GSD	Standard file
GSG	German
GSE	English
GSF	French
GSI	Italian
GSS	Spanish

4.1.2 GSD file import

Introduction

Siemens drives and non-SIMATIC components can be integrated in the diagnostics system as sc-called standard slaves; for example DP slaves. The component properties of standard slaves are defined by a GSD file.

The device manufacturer supplies the GSD file. Device data are integrated by importing the corresponding GSD file in the "HW Config" editor.

Note

The GSD file must be available in the regional languages required.

Procedure

1. Select the component, for example an AS, from the navigation window of SIMATIC Manager.
2. Select "Open Object" from the shortcut menu. The "HW Config" editor opens the hardware configuration of this component.
3. Select "Options > Install GSD file…". The "Install GSD file" dialog box opens.
4. From the "Install GSD files:" field, select the source of the GSD files to be installed. Select "from the folder" if you have saved the GSD files received from the manufacturer to the PC, for example. Select "from STEP 7 project" if you want to copy an already configured standard slave from a different project.
5. Open the selection dialog box by clicking "Find". Select the folder which contains the GSD file to be imported or the relevant user project from this dialog box. Close this dialog box by clicking "OK".
6. The table now lists the GSD files of the folder or project you selected. The list also shows the languages supported by the GSD file. The revision level and version is only indicated for I/O devices.
7. Select one or several files. You select or deselect all GSD files by clicking "Select all" or "Deselect all".
   You can view the log of the previous installation session by clicking "View log file". This log file returns information on existing GSD files or on installation errors.
8. Click "Install" to run the installation session. A message is output to inform you that you cannot undo the selected GSD file installation. Confirm this dialog by clicking the "Yes".
9. The system outputs a message when setup is completed. Confirm this message. Exit the "Install GSD files" dialog box by clicking "Close", or select further files for installation and repeat the procedure starting at step 4.

Result

Import of the GSD file for the standard slave is completed. The component can now be integrated into the diagnostics system.

4.2 Integrating other components using the asset proxy

4.2.1 Using the asset proxy

Overview

An Asset Proxy is used to integrate the plant components outlined below into the diagnostics system of SIMATIC Maintenance Station.

- Interfaces of logical devices, i.e. hardware interfaces or other function blocks.
  - A welding robot connected via I/O interface. The status is reported via the interface. The user can program error evaluation and output the diagnostics status and messages at the Asset Proxy.
  - A SW controller block can be integrated in the diagnostics system Asset Proxy in order to visualize control loop errors.
- Components which do not support standard diagnostics because these are not standard slaves, for example.
- Components of "DRIVE ES".
- Components not configured in the S7 project.

An asset proxy is visualized similar to other components in icon format on the diagnostics screens.

The diagnostics status and messages of an asset proxy are integrated automatically into the diagnostics status of a corresponding AS.

Asset Proxy types

The two types available are distinguished by the value of the "S7_asset" attribute in the corresponding function block:

- Standard:
  The "S7_asset" attribute is assigned the "standard" value.
  This type applies to components which are not available in the module catalog of the "HW Config" editor, because these are non-SIMATIC components, for example, or cannot be integrated as standard slaves.
- Extended:
  The "S7_asset" attribute is assigned the "Extended" value.
  This type applies to components of "DRIVE ES". DRIVE ES is an Engineering System for all Siemens drives.
  "DRIVE ES" provides the corresponding components or drives in the module catalog of the "HW Config" editor. Configured function blocks which can be used to program asset proxies for these components are also made available in a block library.

Configuring an asset proxy

The user configures various functions for the asset proxy.

- The interface for the "MaintenanceState" diagnostics status and its data.
  A function block and an instance DB assigned the "S7_asset" attribute are defined for the configuration of an asset proxy. The value of the attribute in the FB is determined by the type of asset proxy. A function block can be used to generate several instance DBs for an asset proxy or to assign these to the proxy.
  These blocks are used to manage the "MaintenanceState" diagnostics status of the component represented by the asset proxy. Instead of being generated automatically by the Maintenance Station, the diagnostics data are programmed in the function block by the user.
- Diagnostics messages of the component:
  Instead of being generated automatically by the Maintenance Station, the diagnostics messages are programmed by the user.

The configured FBs from a block library can be adapted to suit the components of "DRIVE ES".

Visualization in the diagnostics screens

The diagnostics screens only visualize an asset proxy in the AS overview screen because it is not possible to assign these to a hierarchic structure.
Asset proxies for PROFIBUS slaves are assigned to a specific bus segment and are not represented by an icon on the overview screen.

The symbols for Asset Proxies are available in the block symbol file "@@MaintenanceTypicals.pdl", same as all other symbols for the diagnostics screens.

4.2.2 Diagnostics status word as interface to the asset proxy

Diagnostics status word as interface to the asset proxy

The "MaintenanceState" diagnostics status word interfaces the status of the asset proxy with the Maintenance Station and the diagnostics functions of this station. This status word manages maintenance-relevant states of the components and asset proxies.

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved				OS operation				U	S	Reserved			O	M	R	Component status 2								Component status 1							

You can find a detailed description on the structure of the diagnostics status word in "Syntax of the diagnostics status word MaintenanceState "MST" (Page 102)".

Parameterization of the interface

A function block and an instance DB are programmed for each asset proxy. The status word interface and the variable relevant to maintenance are defined in this function block.

The data of the diagnostics status word for the asset proxy are not generated based on Maintenance Station functionality. Instead, these are programmed by the user in the corresponding function block.

Visualization in the diagnostics screens

The component symbols output to the diagnostics screens return the states of the diagnostics status word as usual for other components. The status is also integrated into the group displays of the hierarchy.

Diagnostics messages to the asset proxy must be programmed by the user. For additional information on this topic, please refer to "Triggering diagnostics messages for the asset proxy (Page 67)".

4.2.3 PROFIBUS DP slave as asset proxy

Asset Proxy for a PROFIBUS DP slave

Asset proxies can be implemented, for example, for drives which have been configured in "HW Config" as PROFIBUS slave but do not return standard slave characteristics.
The same applies to drives with "PROFIdrive" device profile on the basis of PROFIBUS.

This type of configuration is based on the fact that these PROFIBUS slaves do not use standard diagnostics functions to report errors to a corresponding higher-level component such as an AS.

Based on its slave configuration, the drive is detected and handled by the Maintenance Station as "normal" PROFIBUS slave. A corresponding "MaintenanceState" status variable is generated and managed to his effect. As this status variable is not saved to the diagnostics DB as for standard PROFIBUS components, it is saved to the DB which is configured to output values to the asset proxy.

Asset proxies for PROFIBUS slaves are always assigned to a specific bus segment and therefore affect the group displays and diagnostics status displays of their bus segment.

4.2.4 Creating an "Extended" type asset proxy

Introduction

The asset proxy configuration depends on its type. This section describes the configuration of an "Extended" type.

This type applies to components of "DRIVE ES". DRIVE ES is an Engineering System for all Siemens drives.

"DRIVE ES" provides the corresponding components or drives in the module catalog of the "HW Config" editor. Configured function blocks which can be used to program asset proxies for these components are also made available in a block library. The elements of these FBs, such as variables and attributes, are pre-programmed to suit component requirements.

For more detailed information on supported components or drives, as well as on selecting FBs, refer to the "DRIVE ES" documentation.

Procedure

1. From the Navigator of SIMATIC Manager, select the icon of the AS you want to assign the asset proxy. Open the "HW Config" editor by double-clicking the "Hardware" icon in the right-hand window.
2. Navigate to the corresponding module catalog folder and select the component required. Drag-and-drop the component you selected to an AS bus system such as "PROFIBUS(x): DP master system(x)". Close the "Properties" dialog box of the interface.
3. Open the "Properties" dialog box by double-clicking the component you inserted. Open the "General" tab and note down the value returned in the "Diagnostics address" field. Close the dialog box.
4. Select "Station > Save" in the "HW Config" editor. Click "Station > Close" to close the editor.
5. Insert the asset proxy FB which matches your component from the block library of "DRIVE ES". Note the description in the introduction section.
6. Select the "Blocks" subfolder from the navigation window of SIMATIC Manager. Select "Insert new object > Data block" from the shortcut menu. The "Properties - Data block" dialog box opens.
7. Change to the "General - Part 1" tab. Name the block in the "Name and type" row. You should use a similar numbering scheme to make it easier to recognize the function block context. Select "Instance DB" from the box on the right side, and then select the FB from the box next to it.
8. Type a name into the "Symbolic name" input box. Close the dialog box by clicking "OK". The program automatically sets the "S7_asset" attribute and the "Extended" value on the "Attribute" tab.
9. Open the "DB-Param" dialog box by double-clicking the new DB on the block window. Select the value "LADDR" from the "Name" column of the table. Type the value taken in step 3 from the "Diagnostics address" field into the same row of the "Actual value" column. Save your entries with "Data block > Save" and then close the dialog box.

10. Select the new data block from the block window. Select "Special object properties > Operating and monitoring..." from the shortcut menu. Activate the "Operating and monitoring" check box. Close the dialog by clicking "Save".
11. From the navigation window, select the icon of the AS in which you created the new asset proxy. Select "PLC > Compile and download" to download the blocks you generated to the corresponding AS.

Result

The blocks for an asset proxy of the "Extended" type have been inserted into the S7 project.

Note

Verify that the asset proxy FB is called in the S7 program of the AS. Further information relating to the call and programming is available in the "DRIVE ES" documentation.

4.2.5 Creating an asset proxy of the "Standard" type

Introduction

The asset proxy configuration depends on its type. This section describes the configuration of an "Standard" type.

The S7 program requires an FB and a DB for managing the diagnostics status of an asset proxy. The section below shows the parameter or variable declarations in the FB.

Name	Data type	Value of the "S7_m_c" attribute	Representation in the diagnostics faceplate
MS	DWord	"TRUE"	As status symbols for "MaintenanceState"
MESSAGE	String[50]	"TRUE"	"Message" field
HWTYPE	String[50]	"TRUE"	"Device type" field
MANUFACTURED_ID	String[50]	"TRUE"	"Manufacturer" field
ORDER_ID	String[50]	"TRUE"	"Order number" field
SERIAL_NUMBER	String[50]	"TRUE"	"Serial number"
INST_DATE	String[50]	"TRUE"	"Installation date" field
HARDWARE_REVISION	String[50]	"TRUE"	"HW revision" field
SOFTWARE_REVISION	String[50]	"TRUE"	"SW revision" field
COMMENT	String[50]	"TRUE"	"Comment" field
ASSET_ID	String[32]	"TRUE"	No display

Additional information about the representation of the data in the diagnostics faceplate is available under the topic "Source and representation of component data".

Procedure

1. From the Navigator of SIMATIC Manager, select the icon of the AS you want to assign the asset proxy.
2. Navigate to the "Blocks" subfolder in the navigator of SIMATIC Manager. Select "Insert new object > Function block" from the shortcut menu. The "Properties - Function block" dialog box opens.
3. Assign a block name on the "General - Part 1" tab. Change to the "Attributes" tab. Select the "S7_asset" value from the first free row from the top of the "Attribute" column. Enter the text "Standard" in the corresponding "Value" column. Note that these entries are case sensitive. Close the dialog box by clicking "OK".
4. Open the "LAD/STL/FBD" editor by double-clicking the new FB on the block window. Select the "IN" icon from the "Interface" area of the programming window. Create a new variable according to the list shown earlier. Observe the notation.
5. Set the values of the "S7_m_c" attribute at the variables according to the table shown earlier. Select the relevant variable from the list and then select the "Object properties" command from the shortcut menu. Select the "Attributes" tab on the "Properties - Variable" dialog box. Select the "S7_m_c" value from the first free row from the top of the "Attribute" column. Enter "TRUE" in the corresponding "Value" column. Close the dialog box by clicking "OK". Repeat this step for all necessary variables.
6. Save your entries by clicking "File > Save".
7. Select the "Blocks" subfolder from the navigation window of SIMATIC Manager. Select "Insert new object > Data block" from the shortcut menu. The "Properties - Data block" dialog box opens.
8. Change to the "General - Part 1" tab. Name the block in the "Name and type" row. You should use a similar numbering scheme to make it easier to recognize the function block context. Select "Instance DB" from the box on the right side, and then select the FB from the box next to it.
9. Type a name into the "Symbolic name" input box. This symbolic name is used for the icons of the diagnostics screens. Close the dialog box by clicking "OK". The program automatically sets the "S7_asset" attribute and the "Standard" value on the "Attributes" tab.
10. Select the new data block from the block window. Select "Special object properties > Operating and monitoring..." from the shortcut menu. Activate the "Operating and monitoring" check box. Close the dialog box by clicking "Save".
11. From the navigation window, select the icon of the AS in which you created the new asset proxy blocks. Select "PLC > Compile and download" to download the blocks you generated to the corresponding AS.

Result

The blocks for an asset proxy of the "Standard" type have been inserted into the S7 project.

Note

Verify that the asset proxy FB is called in the S7 program of the AS.
The diagnostics status data are programmed in the FB. The Maintenance Station does not automatically program these FBs.

See also

Source and visualization of component data (Page 90)

4.2.6 Configuring an asset ID for individual export with a standard asset proxy

Introduction

To use the "Individual export" function with a standard type of asset proxy block, what is known as an asset ID must be configured in the instance data block for the asset proxy.

The asset ID is used to identify the asset proxy and must be unique across the entire project. The asset ID is a character string of 32 characters that is transferred to the export file when an individual export is carried out.

Requirements

The instance data block for this asset proxy has been created.

Procedure

1. In the block window of the SIMATIC Manager, select the instance data block for the asset proxy.
2. Double-click the data block to open it.
3. For the "ASSET_ID" element in the "Actual value" column, enter a character string as the asset ID for this asset proxy.
   A maximum of 32 characters may be used.
   Special characters such as "/,\,:,.,?,*,<,>,|" are not permitted.
   Please note the syntax of the data type.
4. Save the changes and exit the editor.
5. Update the diagnostics screens by selecting "Options > Diagnostics screens > Create...".
6. In the SIMATIC Manager navigation window, select the icon corresponding to the automation system in which the data block has been changed to the asset proxy. Select "PLC > Compile and download" from the shortcut menu to download the block you have changed to the corresponding AS.

Result

The asset ID of a standard asset proxy is configured for individual export of the component data.

See also

Creating an asset proxy of the "Standard" type (Page 63)

Introduction to exporting the data of an individual component (Page 153)

4.2.7 Triggering diagnostics messages for the asset proxy

Overview

To trigger diagnostics messages for an asset proxy, the user must configure "ALARM_S" and "ALARM_D" messages.
This function is programmed in the S7 program using the following default message blocks:

- SFC17 "ALARM_SQ"
- SFC18 "ALARM_S"
- SFC107 "ALARM_DQ"
- SFC108 "ALARM_D"

For more detailed information on "ALARM_xx" messages, please refer to the "Configuring messages" section in the SIMATIC STEP 7 documentation.

4.2.8 Assigning diagnostics messages to an asset proxy

Introduction

In the case of diagnostics messages for an asset proxy, what are known as "ALARM_S" or "ALARM_D" messages are triggered in the AS, as described in the section titled "Triggering diagnostics messages for the asset proxy".

These diagnostics messages are transferred to the Maintenance Station. To use the Maintenance Station functionality, the user must configure another assignment of the incoming messages to the corresponding asset proxy.

For this purpose, you will have to enter the name of the diagnostics area in message text 2 of the instance data block. In addition, the "S7_m_c" attribute must be set to "TRUE" at this data block.

Procedure

1. In the block window of the SIMATIC Manager, select the instance data block for an asset proxy.
2. Select "Special object properties --> Message..." from the shortcut menu. The "Message configuration" dialog box will open.
3. Click the "Advanced" button. Change to the "Additional text" tab.
4. Enter the name of the diagnostics area in additional text 2.
   You can find this name in the "Name of the diagnostics area" field in the "Settings for Generating Diagnostic Screens" dialog box. Once you have selected the project in the SIMATIC Manager, you can open the dialog box by selecting "Options > Diagnostic screens > Settings..."
5. Close the dialog box by clicking "OK".
6. In addition, the "S7_m_c" attribute must be set to "TRUE" at this block.
   To do this, select the data block in the block window, followed by "Object properties..." in the shortcut menu. Change to the "Attributes" tab on the "Properties - Instance data block" dialog box.
7. In the table, check that the value of the "S7_m_c" attribute is set to "TRUE"; correct it if necessary.
   If the "S7_m_c" attribute is not present, select the value "S7_m_c" in the uppermost empty line of the "Attribute" column. Enter "TRUE" in the same line of the "Value" column.
8. Close the dialog box by clicking "OK".
9. Select the Maintenance Station OS in the navigation window of the SIMATIC Manager. Select "Compile" from the shortcut menu.
10. In the navigation window, select the icon for the AS in which the asset proxy blocks have just been changed. In the shortcut menu, select "PLC > Download" to download the blocks you have changed to the corresponding AS.

Result

The assignment of the diagnostics messages from the AS to the corresponding asset proxy is configured and, therefore, the correct functionality for the diagnostics messages guaranteed in the Maintenance Station.

Note

Please note that the settings are language-dependent. You can find the language set in the upper part of the "Message configuration" dialog box.

4.3 Integration of SNMP components

4.3.1 Optional diagnostics of SNMP components

Optional diagnostics of SNMP components

SIMATIC NET SNMP OPC Server is deployed as an optional feature for network component diagnostics using the Maintenance Station. SNMP OPC Server also supports the diagnostics of SNMP components such as the Optical Switch Module "OSM" and the Electrical Switch Module "ESM".

The term OPC (= OLE for Process Control) denotes an interface for data exchange used in automation engineering. The Simple Network Management Protocol "SNMP" is used for network management. SNMP supports read and write access to the variables of network components. The Maintenance Station only performs read operations.

Components which support diagnostics functions using SNMP.

- Ethernet components such as SCALANCE X / W, OSM and ESM.
- WinAC/LC with SIMATIC NET CP
- SIMATIC S7 300/400 CPs, for example, CP343-1 IT
- PROFINET devices such as ET200S
- Industrial PCs such as SIMATIC PC
- SNMP-compatible non-Siemens devices

Profile

Standard SNMP variables are defined in "Management Information Base MIB-2". This database defines the variables which should be supported by all network components. These default variables are imported to all default profiles.

Profile "MIB-2" should be used for devices lacking a user-specific or manufacturer profile.

In addition to these standard variables of "MIB-2", each manufacturer of network devices can implement additional, device-specific SNMP variables which do not conform to the standard. Siemens also defines additional SNMP variables for SIMATIC components. In order to support these specific variables, the components are supplied with the additional, Siemens-specific profiles such as "Profil_IPC_VXX.txt" for IPC, or "CP443-1_Advanced.txt" for the central communication processor CP443-1 Advanced.

The standard profile MIB-2 "MIB_II_V10.txt", a user-specific profile, or a profile supplied by the manufacturer can be implemented for non-SIMATIC network devices. The SNMP profiles are saved to the "..\SIEMENS\STEP7\S7DATA\snmp\profile" folder.

The configuration dialog of OPC Server is used to create profiles.

Licensing

- SIMATIC NET SNMP OPC Server requires a separate license. The Maintenance Station license cannot be used to run OPC Server.
- The server license does not include SNMP components. Allowances must be made at each SNMP component for the number of assets to be licensed with the Maintenance Station "Runtime" license key.

Note

SNMP OPC Server must be installed and configured for SNMP component diagnostics before you modify existing or create new diagnostics screens. The SNMP components must also be assigned to the SNMP OPC Server to ensure proper creation of the diagnostics screens.

Requirements

- The SNMP service must be installed, configured and activated on the components to be monitored.
- SNMP must be active at all SNMP components which participate in the diagnostics system.
- All SNMP components integrated in the diagnostics system require a network connection.
- In order to provide support of special views in the diagnostics faceplate, install "SIMATIC PC DiagMonitor" V2.0 or higher on the SIMATIC Industrial PC.

Configuration overview

1. SNMP OPC Server license key is installed on the PC running the Maintenance Station application. In distributed systems, it is installed on the Maintenance Station Server, and with other configurations on the PC running the visualization of diagnostics data. SNMP OPC Server is integrated into the SIMATIC NET software and is automatically included when the user installs the Maintenance Station.
2. SNMP OPC Server is implemented in the project as "OPC Server" in SIMATIC Manager.
3. All SNMP components to be provided diagnostics functions based on SNMP are assigned to OPC Server.

Note

A redundant computer running Maintenance Station must be configured appropriately when operated on a redundant system.

Visualization in the diagnostics screens

SNMP components are visualized as SNMP objects in the "Network components" overview. These objects are not indicated by a PC icon in order to distinguish these from other PC stations.

The "PC stations" overview also visualizes industrial PCs which are integrated as SNMP components.

4.3.2 Integrating SIMATIC NET SNMP OPC Server into the project

Introduction

The Maintenance Station also supports the diagnostics of SNMP components such as the Optical Switch Module "OSM" and the Electrical Switch Module "ESM". These functions are handled by SIMATIC NET SNMP OPC Server.

You implement SNMP OPC Server in SIMATIC Manager as application for the PC station running the Maintenance Station.

Requirements

SNMP OPC Server license key is installed on the PC running the Maintenance Station application. In distributed systems, it is installed on the Maintenance Station Server, and with other configurations on the PC running the visualization of diagnostics data. SNMP OPC Server is integrated into the SIMATIC NET software and is automatically included when the user installs the Maintenance Station.

Procedure

1. Open SIMATIC Manager and activate the component view.
2. From the directory tree of the navigation window, select the "PC Station" object of the Maintenance Station or of Maintenance Station Server.
3. Double-click the "Configuration" object on the detail view. The "HW Config" editor opens.
4. Select the hardware catalog from the "Profile" field, for example, "Standard".
5. Select the relevant OPC Server from the "SIMATIC PC Station > User Application > OPC Server" folder, and then drag-and-drop it to the hardware configuration of the PC station.
6. Save the configuration by clicking "Save and compile" and then close the "HW Config" editor.

Result

SIMATIC NET SNMP OPC Server is integrated into the configuration in SIMATIC Manager.

4.3.3 Assigning SNMP components to OPC Server

Introduction

The OPC Server which is to handle the diagnostics of an SNMP component must be assigned this component.

Naming SNMP components

Aspects to be taken into account when naming SNMP components:

- Do not use space or special characters.
- The names must be unambiguous and should not coincide with any names assigned to the PC stations in SIMATIC Manager.
- The names and IP addresses of SNMP components must be unambiguous in all Ethernet networks of a plant configuration.

For information on the assignment of an industrial PC, refer to "Assigning industrial PCs to OPC Server".

Requirements

- The hardware configuration has been completed.
- OPC Server is integrated for the S7 project in SIMATIC Manager.
- The PC station with OPC Server for Maintenance Station or Maintenance Station Server is compiled.
- The SNMP component is installed in the S7 project.

Procedure

1. Select the PC station running OPC Server from the Navigator of SIMATIC Manager. Select "Open Object" from the shortcut menu. The "HW Config" editor opens.
2. Select the OPC Server in the "HW Config" editor, and then select the "Edit > Object properties ..." command. The "Properties - OPC Server" dialog box opens.
3. Open the "SNMP" tab. Accept the default shown in the "Cycle time" box.
4. Click "Edit plant configuration...". The "Edit plant configuration..." dialog box opens. You have two options of integrating new nodes.
   - Click "Add" to create new nodes separately. The program does not support the automatic import of different SNMP components, for example OSM and Industrial PCs. Add these separately as as described starting at step 6.
   - You automatically import new nodes by clicking "Import new nodes". Continue at step 5.

5. You can automatically import new nodes by clicking "Import new nodes". The program imports all components which have been created in the hardware configuration of the current project and assigned a unique IP address.
   Configuration data such as the name and IP address are applied where possible. New entries are highlighted in color.
   Continue at step 9 if you do not want to separately import additional components.
6. Click "Add..." to add new nodes separately or if the program is unable to automatically add the SNMP component. The "Add node" dialog box opens.
7. Type in the name and IP address. Observe the naming conventions defined in the preface.
   Set up a suitable profile for the component. The default MIB-2 profile is available in the "MIB-II_V10.txt" file.
   Click "Create profile…" in the "Edit plant configuration..." dialog box to create a new profile based on a MIB file or to edit a profile. It is advisable to use the "MIB-II_V10.txt" file when creating a new profile. You also receive the MIB file from the manufacturer of the SNMP network component.
   For further information on SNMP profiles, refer to the section "Optional diagnostics of SNMP components".
8. Accept the data and close the dialog box by clicking "OK".
   Repeat steps 6 to 8 to add further nodes.
9. Click "OK" to close the "Edit plant configuration..." dialog box.
10. Click "Export tags for WinCC" on the "SNMP" tab. Click "OK" to close the "Properties – OPC Server" dialog box.
11. Save the configuration and close HW Config.

Note

Measures to be taken in order to integrate the SNMP in diagnostics:
1. If the diagnostics screens were created:
a) Update the diagnostics screens.
b) Compile and download the PC station with OPC Server.
2. When initially creating the diagnostics screens:
a) Create the diagnostics screens.
b) Execute "Export tags for WinCC" as described in Step 10.
c) Compile and download the PC station with OPC Server.

Result

The SNMP components are assigned to the OPC Server. You can now run diagnostics functions using SNMP.

Note

A redundant computer running Maintenance Station must be configured appropriately when operated on a redundant system. Copy the configured OPC Server to the redundant PC station using the "HW Config" editor. Finally, save and compile the redundant PC station.

4.3.4 Assigning industrial PCs components to OPC Server

Introduction

In order to include an industrial PC such as SIMATIC PC in the diagnostics system you assign it as SNMP component to OPC Server.

Naming SNMP components

Aspects to be taken into account when naming SNMP components:

- Do not use space or special characters.
- The component name in OPC Server must correspond with the name of the industrial PC in SIMATIC Manager.
- The names must be unambiguous and should not coincide with any names assigned to the PC stations in SIMATIC Manager.
- The names and IP addresses of SNMP components must be unambiguous in all Ethernet networks of a plant configuration.

Requirements

- The hardware configuration has been completed.
- OPC Server is integrated for the S7 project in SIMATIC Manager.
- The PC station with OPC Server for Maintenance Station or Maintenance Station Server is compiled.
- The industrial PC is installed in the S7 project.
- In order to provide support of special views in the diagnostics faceplate, install "SIMATIC PC DiagMonitor" V2.0 or higher on the SIMATIC Industrial PC. This software is used for PC diagnostics / message transfer via Ethernet, email and SMS, and for the direct transfer of messages to the SIMATIC software using OPC.

Procedure

1. Select the PC station running OPC Server from the Navigator of SIMATIC Manager. Select "Open Object" from the shortcut menu. The "HW Config" editor opens.
2. Select the OPC Server in the "HW Config" editor, and then select the "Edit > Object properties ..." command. The "Properties - OPC Server" dialog box opens.
3. Open the "SNMP" tab. Accept the default shown in the "Cycle time" box.
4. Click "Edit plant configuration...". The "Edit plant configuration..." dialog box opens.
5. Click "Add" to add one new node. The "Add node" dialog box opens. The program does not support automatic installation of certain SNMP components such as industrial PCs.
6. Type in the name and IP address. Observe the naming conventions defined in the preface.
   Select the file "Profil_IPC_V13.txt" from the "Device profile" box and assign it to the industrial PC. For additional information on the SNMP profiles, please refer to "Optional diagnostics of SNMP components (Page 69)".
7. Select the value "public" from the "Community" field.
   Accept the data and close the dialog box by clicking "OK".
   Repeat steps 5 to 7 to add further industrial PCs as nodes.
8. Click "OK" to close the "Edit plant configuration..." dialog box.
9. Click "Export tags for WinCC" on the "SNMP" tab. Click "OK" to close the "Properties – OPC Server" dialog box.
10. Save the configuration and close HW Config.

Note

Measures to be taken in order to integrate the SNMP in diagnostics:
1. If the diagnostics screens were created:
a) Update the diagnostics screens.
b) Compile and download the PC station with OPC Server.
2. When initially creating the diagnostics screens:
a) Create the diagnostics screens.
b) Execute "Export tags for WinCC" as described in Step 9.
c) Compile and download the PC station with OPC Server.

Result

The industrial PC is assigned as SNMP component to OPC Server. You can now run diagnostics functions using SNMP.

Note

A redundant computer running Maintenance Station must be configured appropriately when operated on a redundant system. Copy the configured OPC Server to the redundant PC station using the "HW Config" editor. Finally, save and compile the redundant PC station.

Configuration for SIMATIC Maintenance Station 5

5.1 Overview of Maintenance Station engineering

Requirements

- The Maintenance Station hardware and software requirements are met. Additional information is available in the sections "Hardware and software requirements" and "Quantity structures and restraints".
- Optional for diagnostics of SNMP-compatible network components and industrial PCs: The SNMP OPC Server license key is installed. For additional information, please refer to "Optional diagnostics of SNMP components (Page 69)".
- All licenses for the software used on the Maintenance Station are installed.

Overview of Maintenance Station engineering

Step	Configuration step	Application implemented
H1	Editing the data of existing SIMATIC components. This may be based on the existing hardware configuration.	HW Config
H1a	If the data of existing SIMATIC components are applied: Enable diagnostics interrupts. • Check and enable for existing modules, if necessary, such as I/O modules in the component properties dialog box of HW Config. • Activate for new modules.	HW Config
H1b	When migrating S7 projects that were created before STEP 7 V5.4 SP3: • For the individual export function, one asset ID for all configured components must be manually created on a one-off basis, using the "Allocate asset ID..." function.	HW Config
H2a	Inserting new SIMATIC components in HW Config.	HW Config
H2b	Integrate Siemens drives and non-SIMATIC components as standard slaves.	SIMATIC Manager/HW Config
H2c	Integrating the components and interfaces of logical devices using an Asset Proxy.	SIMATIC Manager/HW Config
H3	If the PC of the Maintenance Station to implement is not yet registered in the S7 project or when you implement a new PC, for example, as Maintenance Station Server: • Create the PC station for the Maintenance Station PC in the S7 project. • Execute the command "Compile OS" for each new Maintenance Station "OS" you created.	SIMATIC Manager/HW Config

Step	Configuration step	Application implemented
H4	Optional when using SNMP OPC Server: • Integrate OPC Server of the Maintenance Station into the project in SIMATIC Manager. • Edit the SNMP components in the plant configuration of SNMP OPC Server.	SIMATIC Manager/HW Config
W1	For initial creation of the diagnostics screens: Requirements: The Maintenance Station "OS" was compiled at least once using the "Compile OS" function. This function is executed in step "H3" when integrating a new PC. • Start the "OS Project Editor" in the WinCC project of the Maintenance Station. • Start the "OS Project Editor" in the WinCC project of all WinCC servers in the S7 project which provide diagnostics variables and messages for diagnostics in their packages. • Define the "single-user" or "multiuser" project in the WinCC project properties, depending on the plant type.	WinCC / OS Project Editor
SM1	Defaults for the creation of diagnostics screens: • "Create settings for diagnostics screens" dialog box.	SIMATIC Manager
SM3	For initial creation of the diagnostics screens: • Execute the "Create diagnostics screens" function. • When using the SNMP OPC Server: Execute the "Export tags for WinCC" function in the "Properties – OPC Server" dialog box.	SIMATIC Manager
SM3a	Delete CPU data from diagnostics data: • Change the AS / CPU assignment in the "Create diagnostics screens" dialog box.	SIMATIC Manager/HW Config
SM3b	Refresh the diagnostics screens, for example, after you changed the hardware configuration: • Execute the "Create diagnostics screens" function.	SIMATIC Manager
SM4	Compile the diagnostics screens and block and then transfer these to the AS and to the "OS" of the Maintenance Station: • "Compile and download objects" dialog box for all components. The use of this function depends on the plant status. • or compile and download individual components in step SM 4a+4b.	SIMATIC Manager
SM4a	Transfer the diagnostics blocks to the AS using the "Compile and download objects" function: • Execute this function for all AS after you initially created the diagnostics screens. • Execute this function for each AS if configuration data were changed.	SIMATIC Manager

Step	Configuration step	Application implemented
SM4b	To execute for the compilation and transfer of diagnostics screens for the Maintenance Station "OS": • "Compile OS" function. If Maintenance Station diagnostics are not performed on the S7 Engineering Station: • "Download to PLC" function.	SIMATIC Manager
SM5	Compile and download additional WinCC stations which access a modified AS.	SIMATIC Manager
SM6	If the Maintenance Station "OS" operated as multiuser system is capable of accessing different WinCC servers: • Compile and download all WinCC servers which are accessed by the Maintenance Station "OS".	SIMATIC Manager
W2	Basic settings in the WinCC Project: • Check the settings of computer and project properties.	WinCC Explorer
W3	User administration within the WinCC project: • Check the users and access rights. When you create a new Maintenance Station: • Create the users and assign access rights.	WinCC Explorer / WinCC User Admin
W4	To integrate the Maintenance Station into an existing WinCC project: • Configure the links to the diagnostics screens in the process screens. • Configure the links to process screens in the diagnostics screens.	WinCC Explorer / Graphics Designer
W5	When creating a new maintenance Station in a client-server architecture: • Add the Maintenance Station Clients to the computer catalog in the WinCC project of the server. • Configure the client properties such as the start screen or key locks within the project. • Configure package management at the server, for example, automatic import. • Create the server packages and export these to all WinCC servers to which the Maintenance Station Client is allowed access. • Configure the package import function at the Maintenance Station Client.	WinCC Explorer
BS	Optional if the "Loop-in-HW-Config" function is used for diagnostics: • If the S7 ES does not handle Maintenance Station diagnostics, copy the S7 project to the PC which runs diagnostics and the "Loop-in-HW-Config" function.	Operating system / Windows

5.2 Steps to take when changing the configuration

Overview of the steps to take for changing the system configuration:

The following configuration steps are to be observed in particular in case of changes:

- Configuration changes
- Upgrading the Maintenance Station to a new version

Step	Configuration step	Application implemented
H1a	Editing existing component data in HW Config.	HW Config
H1b	When migrating S7 projects that were created before STEP 7 V5.4 SP3: • For the individual export function, one asset ID for all configured components must be manually created on a one-off basis, using the "Allocate asset ID..." function.	HW Config
H2a	Inserting new SIMATIC components in HW Config.	HW Config
H2b	Integrating SIMATIC drives and non-SIMATIC components as standard slaves.	HW Config
H2c	Integrating other components and interfaces of logical devices using an Asset Proxy.	SIMATIC Manager/HW Config
H3	If the PC of the Maintenance Station to implement was not yet registered in the S7 project, or if a new PC is implemented, for example as Maintenance Station Server: • Creation of a PC station for the Maintenance Station PC in the S7 project. • Execution of "Compile OS" for each new Maintenance Station "OS" created.	SIMATIC Manager/HW Config
H4	Optional when using SNMP OPC Server: • Integration of OPC Server of the Maintenance Station in the project in SIMATIC Manager. • Assignment of all SNMP components for diagnostics functions based on SNMP to OPC Server.	SIMATIC Manager/HW Config
W1a	At upgrading of the Maintenance Station execution of the OS Project Editor: Requirements: The Maintenance Station "OS" was compiled at least once using the "Compile OS" function. This function is executed in step "H3" when integrating a new PC. • Start of the "OS Project Editor" in the WinCC project of the Maintenance Station. • Start of the "OS Project Editor" in the WinCC projects of all the WinCC servers in the S7 project that make tags and messages available for diagnostics by means of packages.	WinCC / OS Project Editor
SM3a	Deletion of CPU data from diagnostics data: • Change of the AS / CPU assignment in the "Create diagnostics screens" dialog box.	SIMATIC Manager/HW Config

Step	Configuration step	Application implemented
SM3b	Updating diagnostic screens. • Execute the "Create Diagnostics Screens" function. Updating is required after changes have been made in the hardware configuration in HW Config: • DP interrupt mode of DP slaves changed from "DPV0" to "DPV1" and vice versa. • Modification of addresses, device names, diagnostics addresses, comments No updating is required when the channel diagnostics function is switched on or off, or when the module specifications - such as the comment, higher-level designation, or location designation - are changed.	SIMATIC Manager
SM4	Compile the diagnostics screens and blocks, and then transfer these to the AS and to the Maintenance Station "OS": - "Compile and download objects" dialog box for all components. The use of this function depends on the plant status. - or compiling and downloading individual components in step SM 4a+4b.	SIMATIC Manager
SM4a	Transfer the diagnostics blocks to the AS by executing "Compile and download objects": - Execution of the "Compile and download objects" function for each AS with changed configuration.	SIMATIC Manager
SM4b	Functions to execute for the compilation and transfer of diagnostics screens for the Maintenance Station "OS": • "Compile OS". • If you do not run Maintenance Station diagnostics on the S7 Engineering Station: "Download to PLC" function.	SIMATIC Manager
SM5	Compile and download additional WinCC stations which access a modified AS.	SIMATIC Manager
SM6	If the Maintenance Station "OS" operated as multiuser system is capable of accessing different WinCC servers: • Compile and download all WinCC servers which are accessed by the Maintenance Station "OS".	SIMATIC Manager
W2	Basic settings in the WinCC Project: • Check the settings of computer and project properties.	WinCC Explorer
W3	User administration in the WinCC project: • Check of the user configuration and of user rights.	WinCC Explorer / WinCC User Admin
BS0	Optional if the "Loop-in-HW-Config" function is used for diagnostics: • If the S7 ES does not handle Maintenance Station diagnostics, copy the S7 project to the PC which runs diagnostics and the "Loop-in-HW-Config" function.	Operating system / Windows

5.3 Providing the component data for diagnostics

5.3.1 Overview of the supply of component data for diagnostics

Overview

Components supported for diagnostics:

- The properties of SIMATIC components are determined by the hardware configuration data of the S7 project. The module catalog of the S7 project provides most of the SIMATIC component data in five regional languages. These data are automatically included when you insert a component into the plant configuration. Additional data are defined during configuration.
- Siemens drives and non-SIMATIC components can be integrated in the diagnostics system as so-called standard slaves, for example DP slaves. The component properties of standard slaves are defined by a GSD file.
  - Device data are integrated by importing the corresponding GSD file. The GSD file must be available in the regional languages required.
  - PROFINET components can also be integrated using a GSD file. The GSD file may be multilingual to support different languages.
- An Asset Proxy is used to integrate the interfaces of logical devices or components which do not represent standard slaves. The user configures the component data, the interface for the diagnostics status, including the diagnostics messages, at the asset proxy.

5.3.2 Editing the component data of SIMATIC products

Introduction

The component data are output to the Maintenance Station user interface. Any available online data are also output to this interface. The program visualizes the offline data if otherwise.

The sources of these offline data are available for all SIMATIC components in the hardware configuration of the S7 project. This chapter shows how to edit these data.

For additional information, please refer to "Source and visualization of component data (Page 90)".

Procedure

1. Select the component whose data you want to edit from the navigation window of SIMATIC Manager, for example, an AS. To change the data in the sublevel hierarchy of a component such as a DP slave, you also need to select the corresponding higher-level unit.
2. Select "Open Object" from the shortcut menu. The "HW Config" editor opens the hardware configuration of this component. The view includes sublevel components such as DP slaves.
3. Open the "Properties" dialog box by double-clicking the component required.
4. Edit the required parameter, for example, the entry in the "name" input box of the "General" tab. This value is output in the "Device type" field of the "Ident" view in the diagnostics faceplate of the component.
5. Close the properties dialog box by clicking "OK".
6. Select "Station > Save and compile" in the "HW Config" editor.
   You can also use this command to undo compilation in order to edit further configuration data.
7. Close the "HW Config" editor.

Result

The change of the diagnostics data of a SIMATIC component is completed.

Note

In order to be able to visualize these data on the user interface of Maintenance Station, compile the changed hardware configuration data and and then download these to the corresponding component, for example, to an AS. Also update your existing diagnostics screens and download these to the Maintenance Station.

5.3.3 Creating a separate PC station for SIMATIC Maintenance in the S7 project

Introduction

You expand the plant configuration with a PC for Maintenance Station diagnostics by integrating this PC as "SIMATIC PC station" in the S7 project.

This procedure applies to various scenarios:

- You add a PC for diagnostics with a Maintenance Station Stand-alone.
- You add one or several PCs as Maintenance Station Server / Client.

Procedure

1. Select the project folder from the navigation window in SIMATIC Manager. Select "Insert new object > SIMATIC PC Station" from the shortcut menu. A new "SIMATIC PC Station" object is inserted and remains selected in the navigation window.
2. Select "Open Object" from the shortcut menu. The Editor "HW Config" opens the view of the new PC station as empty rack.
3. Select "WinCC Application" from the "SIMATIC PC Station > HMI" module catalog if you are going to implement the PC as Maintenance Station Server or use it to visualize diagnostics data in a stand-alone configuration.
   When using the PC as Maintenance Station Client, select the "WinCC Application Client" entry from the module catalog.
   Drag-and-drop the selected module to a free slot of the rack.
4. Insert a communication module either for PROFIBUS or for Industrial Ethernet or MPI, depending on the network used. Select a module from the module catalog. When using Industrial Ethernet, for example, select "SW V6.2 SP1…" from the "SIMATIC PC Station > CP-Industrial Ethernet > IE General" folder. Drag-and-drop the selected module to a free slot of the rack. The properties dialog box of the communication module opens automatically.
5. Select one of the subnets shown and check all other settings on this dialog box. Close the properties dialog box by clicking "OK".
6. To change the default name of the PC station, select the "PC" rack, and then select "Object properties" from the shortcut menu. The "Properties – SIMATIC PC station" dialog box opens. Rename the PC and check all other settings. Close the dialog box by clicking "OK".
7. Select the "Station > Save and compile" command. Close the HW Config editor by selecting "Station > Close".
8. Select to the "OS" symbol in the folder of the new PC station in the navigation window. Select "Object properties" from the shortcut menu. The "Properties - OS:" dialog box opens. Change to the "Target OS and standby OS" or to the "Target OS" when using Maintenance Station Client. Enter the path in the "Path to Target OS Computer" input box. You can also open a selection dialog by clicking the "..." button and select the target OS path. Close the dialog box by clicking "OK".
9. The "OS" symbol remains selected in the navigation window.
   Select "Assign to OS Server" from the shortcut menu when the PC station is integrated as Maintenance Station Client and configured as "WinCC Application Client" in step 3. The "Assign OPC Server" dialog box opens. Select Maintenance Station Server as server. Click "OK" to confirm your entry. Close the dialog box by clicking "OK".

You have successfully completed the configuration of PC station as Maintenance Station Client.

10. Select "Compile" from the shortcut menu when the PC station is integrated as Maintenance Station Server or Maintenance Station Stand-alone and if it was configured as "WinCC Application Client" in step 3. The "Compile OS" wizard is started.
11. Assign the S7 programs as required in the wizard. Check all other settings and close the wizard by clicking "Compile". Close the dialog box by clicking "OK".

Result

You expanded the HW configuration of the S7 project with a PC for Maintenance Station diagnostics.

Note

SIMATIC NET SNMP OPC Server is deployed as an optional feature for network component diagnostics using the Maintenance Station. When integrating a new PC to visualize the diagnostics data returned by SNMP-compatible network components or industrial PCs, you also need to integrate SNMP OPC Server on this new PC. For additional information, please refer to "Integrating SIMATIC NET SNMP OPC Server into the project (Page 71)".

5.3.4 Creating and managing diagnostics blocks using the "Report system errors (RSE)" function

Introduction

The integrated "Report system errors" function of STEP 7 can be used to manage diagnostics data returned by the plant components and to output these to the message and status displays of SIMATIC Maintenance Station.

Creating and managing diagnostics blocks using the "Report system errors" function

STEP 7 automatically generates the necessary diagnostics blocks and message texts required for diagnostics data management. The diagnostics blocks are generated automatically when you create and update diagnostics screens.

Download these blocks to the AS, and transfer the message texts to all WinCC stations connected or to other HMI devices as well.

Default diagnostics settings

After installation of the maintenance software, the "Report system errors" function on the Maintenance Station is assigned diverse global settings. This saves you from having to configure the functions separately at each AS.

You can disable these defaults at specific automation systems. Open the corresponding automation system in the "HW Config" editor. In the next step, configure the RSE function for this AS in the "Report system errors" dialog box. Example: definition of diagnostics blocks and call of the functions in organization blocks ("OBs").

You can also reactivate the defaults. Select the project overview in the S7 project and open the "Generate diagnostics screen settings" dialog box using the shortcut menu. Click "RSE settings" to open the dialog box of the same name, and then set the "Apply RSE settings to all AS" option on the "Diagnostics support" tab.

The up-to-date status of the AS diagnostics blocks is visualized in the status bar of the RSE settings dialog box. For additional information, please refer to "Verifying the update status of diagnostics screens and data (Page 127)".

Note

The "Report system errors" always transfers messages in the context of the Maintenance Station with compulsory acknowledgment.

For further information on the "Report system errors" function, refer to the "Configuring messages > Configuring the reporting of system errors" section in the SIMATIC STEP 7 documentation.

5.3.5 Transferring diagnostics blocks to the automation systems

Introduction

The creation or update the diagnostics screens always includes the generation or the update and compilation of the diagnostics blocks. On completion of these operations, the blocks must be transferred to the corresponding automation systems.

The transfer scope is determined by the object selected from the navigation window of SIMATIC Managers:

- You can select compilation and download of one or several components by executing the "PLC > Compile and download objects…" command after having selected the project folder.
- You can select the "Compile and download objects…" or "Download" functions if you selected a single AS.

This download operation for a single AS is described in this chapter is recommended if the following conditions apply:

- A download to all AS while the plant is in operation is ruled out for reasons of safety.
- A download to all AS is ruled out for reasons of time shortage.

Requirements

The diagnostics screens were generated at least once or were updated in the course of configuration changes.

Procedure

1. Select the AS folder which contains the diagnostics blocks you changed from the navigation window in SIMATIC Manager.
2. Select the "PLC > Download" command from the shortcut menu.
3. The program outputs a message reporting the deletion of system files on the automation system. Once you have checked this message, you can cancel the procedure by clicking "Cancel". Click "Yes" or "No" to decide whether to start or cancel the operation and whether to overwrite the AS system files.
4. The program outputs a selection dialog if the automation system contains several CPUs. Select the CPU required to start the download.
5. The download progress is indicated on the screen.
6. You can view and check the log file when the operation is completed. Finally, close the message window.

Result

The diagnostics blocks were transferred to the AS.

Note

Restart the CPU of the AS having received the diagnostics blocks order to initialize the RSE blocks.

5.4 Visualization of diagnostics data

5.4.1 Introduction Visualization of diagnostics data

Overview of the visualization of diagnostics data

This section describes the visualization of diagnostics data of SIMATIC Maintenance Station.

- Overview screens:
  The Maintenance Station overview screen and the overviews of the PC stations, network components and AS objects provide a quick overview of the diagnostics states.
- Hierarchy of the diagnostics screens:
  The diagnostics screens are generated in the course of configuration and assigned a hierarchy level.
- Representation of the diagnostics status in status word MaintenanceState "MST":
  This status word is used to manage the diagnostics and maintenance states of a component.
- Visualization of components:
  The diagnostics status is visualized by HMI elements such as the faceplates, group displays, status bars of the individual component.
- Creation and management of diagnostics screens:
  The user creates new diagnostics screens and assigns the corresponding hierarchy for the S7 project in the course of configuration or when changes of the plant structure require their update.

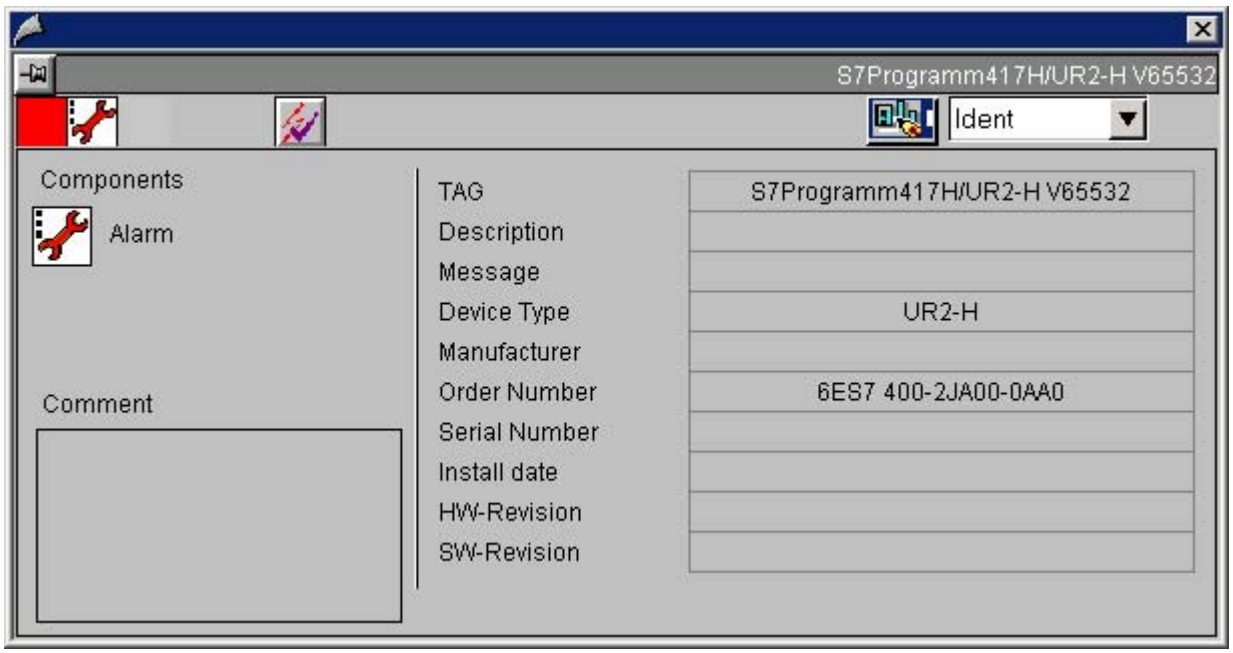
5.4.2 Source and visualization of component data

Source and visualization of maintenance data

The component data are output to the Maintenance Station user interface. The data are stored in various sources:

- The sources of these data are available for all SIMATIC components in the hardware configuration of the S7 project. The module catalog of the "HW Config" editor returns most of the SIMATIC component data in five regional languages for integration in the configuration data. Additional data are defined during configuration.
- The data of other components such as standard slaves an non-SIMATIC components are derived from a GSD file supplied by the manufacturer and cannot be edited. Components with properties defined by GSD file are considered standard slaves.
- Online component data are received from the actual device and cannot be edited. Online data can be identified on the screen based on the indication of the time of their most recent update.
- The data source depends on the type of any asset proxy used.

Data in the "Ident" view of the diagnostics faceplate



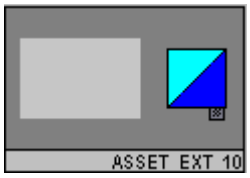
The "- - -" characters in a field indicate that the data cannot be read or that these are not defined. A blank field is output if no content is available.

Applicable to the "Source" column if not defined otherwise in the table field: Any online data returned by the device take priority in this field. The field outputs data from the S7 project of from a GSD file if online data are not available.

Date	Notation in the faceplate	Source	Editable
"TAG" field	Name / designation	a) S7 project b) at Switches the IP address	No
"Description" field	Description	Online data / S7 project / GSD file	No
"Message" field	Message	Online data / S7 project / GSD file	No
"Device type" field	Device type	HW Config > Properties dialog box of the component > General tab > "Description" field	Yes
"Manufacturer" field	Manufacturer	Online data / S7 project / GSD file	No
"Order number" field	Order number	Online data / GSD file / S7 project: HW Config > Properties dialog box of the component > General tab > "Order no." / Firmware field	No
"Serial number" field	Serial number	Only online data from the device	No
"Installation date" field	Installation date	HW Config > Properties dialog box of the component > Identification tab > "Installation data" field	Yes
"HW version" field	HW version	Online data / S7 project / GSD file	No
"SW version" field	Software version / Firmware version	Online data / GSD file / S7 project: HW Config > Properties dialog box of the component > General tab > "Order no." / Firmware field	No
"Comment" field Note: The "Comment" field text is also output to the title bar of the faceplate.	Comment	HW Config > Properties dialog box of the component > General tab > "Comment" field	Yes

Component data of asset proxies in diagnostics screens

Visualization of the asset proxy component data on the diagnostics screen depends on the proxy type. The diagram below shows an example of the output of an asset proxy of the "Extended" type to the diagnostics screen.



The table shows the component data archive.

Date	Source	Editable
Name on the icon of an asset proxy of the "Standard" type	SIMATIC Manager > Properties dialog box of the data block > "General - part 1" tab > "Symbolic name" field	Yes
Name on the icon of an asset proxy of the "Extended" type	HW Config > Properties dialog box of the component > "General" tab > "Description" field	Yes

5.4.3 Hierarchy of the diagnostics screens

5.4.3.1 Introduction: Hierarchy of the diagnostics screens

Hierarchy of the diagnostics screens

All maintenance and service data of components registered in the S7 project are visualized on the overview and diagnostics screens of the Maintenance Station.

These overview and diagnostics screens are generated automatically for the Maintenance Station and assigned to a hierarchy according to the structure of the S7 project and of the hardware configuration. If no sublevel components such as DP slaves of an AS are registered in the project, the program does not generate a hierarchy with sublevel diagnostics screens for this AS.

Level 1 (root level)	**Overview screen of the Maintenance Station**			
Level 2	Overview PC stations	Overview of network components	Overview of AS objects	
Level 3	-	-	AS (stand-alone)	
Level 4	-	-	Central racks and expansions	DP slaves
Level (n)	-	-		• ET200M • ET200S /iS • additional DP slaves • PROFINET IO

The most complex hierarchy which contains the most levels is derived from the plant structure in the area of AS objects.
The hierarchy created for the areas of PC stations and network components extends only to the overviews at level 2.

5.4.3.2 Overview screen of the maintenance station

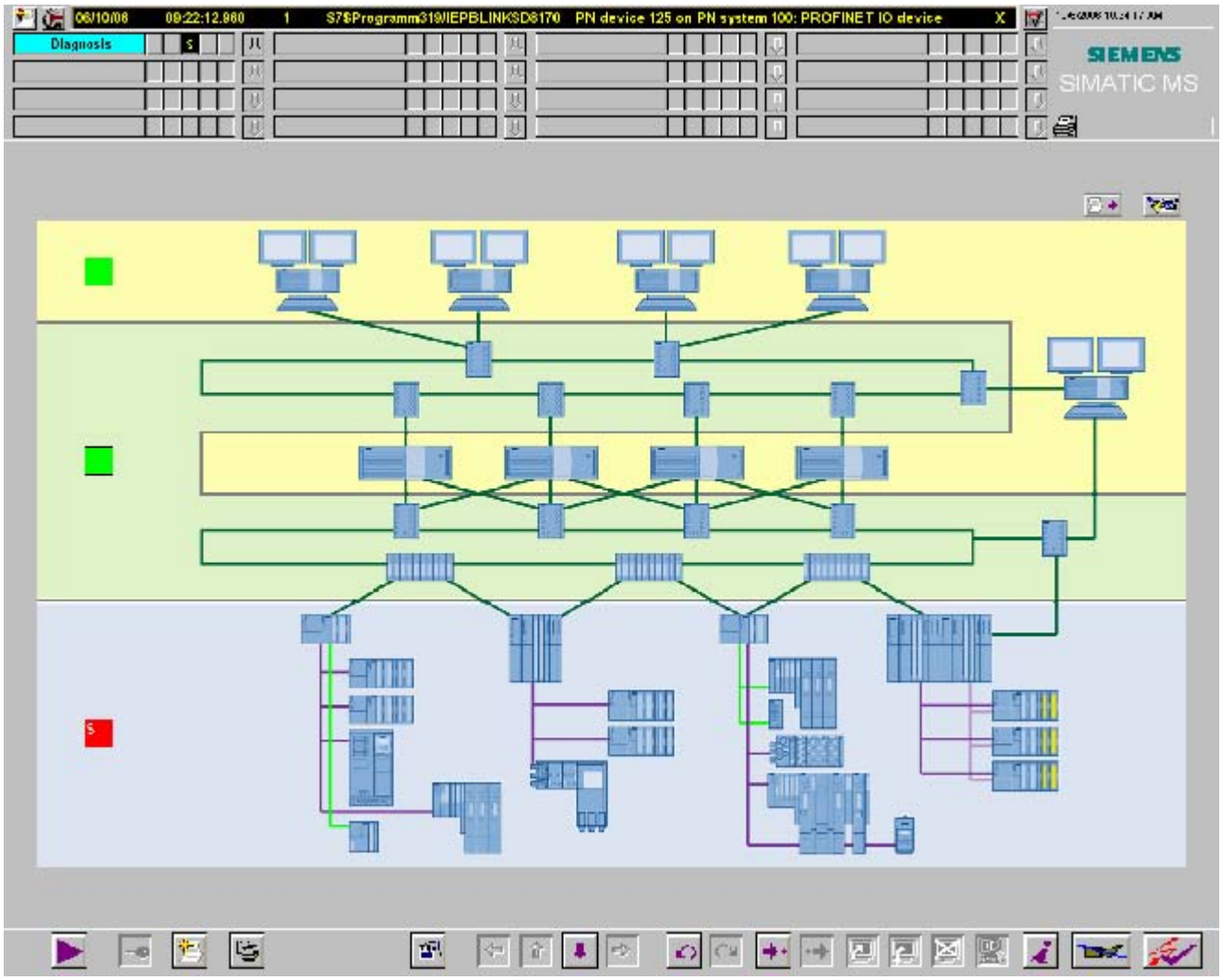
Overview screen of the Maintenance Station

The overview screen of the maintenance station represent the root screen of the diagnostics screens hierarchy. The screen is output when you select the "Diagnostics" system area from the overview area of the user interface.

All other diagnostics screens are allocated to the nested hierarchy of the overview screen. Picture Tree Navigator illustrates the hierarchic structure of the diagnostics screens and facilitates navigation in the hierarchy.

The following plant areas are visualized on a colored background in the overview screen.

1. The "PC stations" area in "light-yellow" color.
2. The "Network components" area in "light-green" color.
3. The "AS objects" area in "light-blue" color.



Each area comprises a corresponding group status display "MaintenanceGroupDisplay".

The MaintenanceGroupDisplay returns different symbols which indicate the status of components of the sublevel hierarchy.

In the screen shown above, these are  and 

. You can navigate to a nested diagnostics screen using the MaintenanceGroupDisplay.

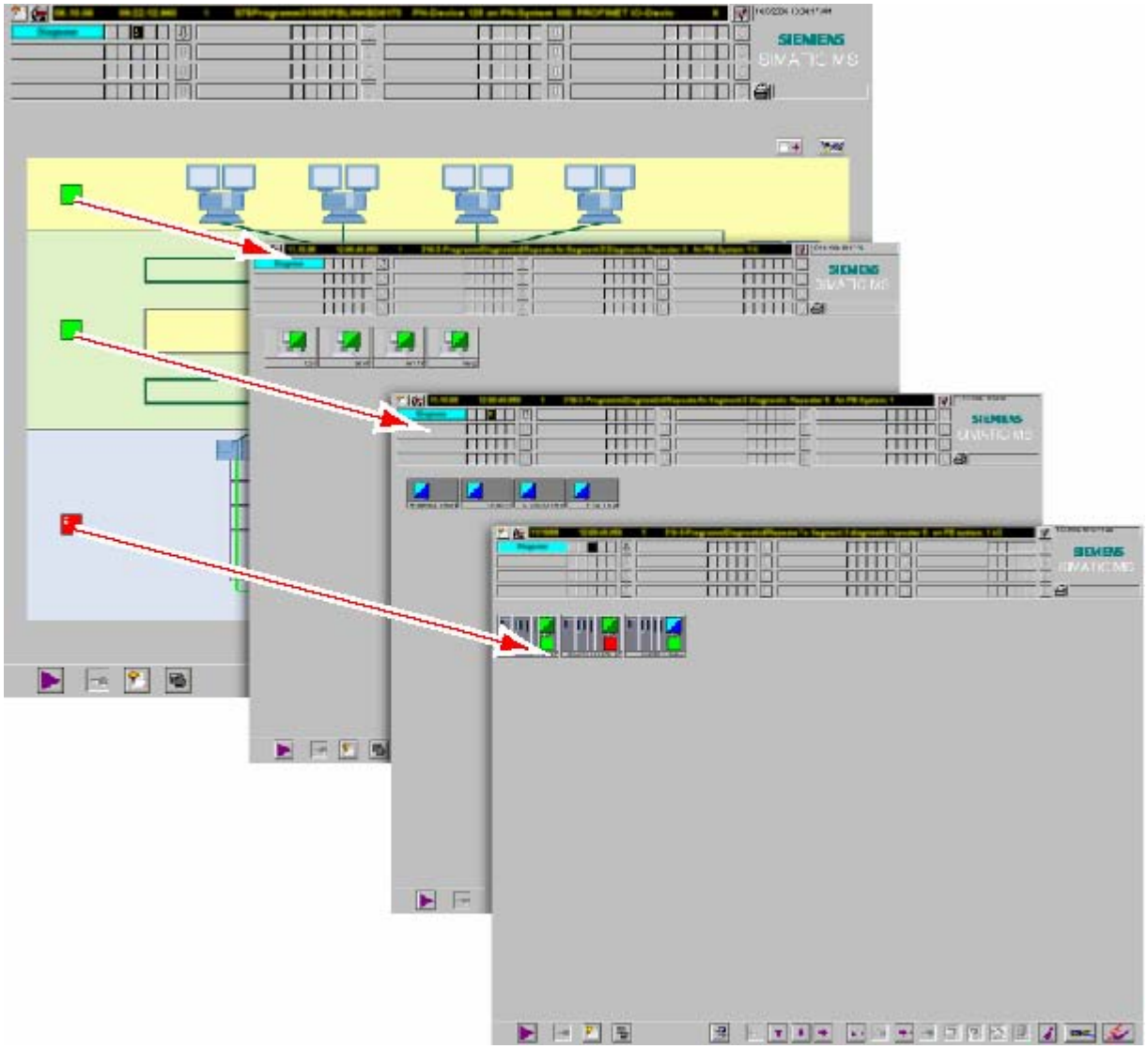
5.4.3.3 The PC Stations, network components and AS objects overviews

The PC Stations, network components and AS objects overviews

The overviews form the next level below the Maintenance Station overview screen within the hierarchy of diagnostics screens.

- Overview PC stations
- Overview of network components
- Overview of AS objects

The overviews return the status of all components within their group and sublevel hierarchy and provide a quick overview and directed access to areas and components which require precise diagnostics.



The three overviews are generated in the S7 project based on component configuration data.

Viewing the overviews

The user has several options of calling an overview.

- By navigation using the Picture Tree Navigator
- By navigation using the icons of the toolbar sets.
- An overview is also output to the screen if several messages are active in different diagnostics screens of the sublevel hierarchy. The overview accumulates all messages and represents the next higher level.
  In this case, a jump to the sublevel overview is initiated by, for example, the group display in the overview area or the MaintenanceGroupDisplay status display in the overview screen.

Navigating to sublevel diagnostics screens and to further views

The overview outputs a symbol with status display for each component and sublevel hierarchy of an area. These status displays can be used to navigate to sublevel diagnostics screens or to call functions.

An AS is represented in the "AS objects overview", for example, by the symbol shown below.

- A status display for the actual component is returned by the MaintenanceStateDisplay "MSD", which shows the status on the screen.
   . This status display can be used to open the diagnostics faceplate of the component.
- The status display MaintenanceGroupDisplay "MGD", shown with the  status on the screen, allows a jump to corresponding component or sublevel hierarchy.

Note

The hierarchy created for the areas of PC stations and network components extends only to the overviews at level 2. Navigation on sublevels is usually only supported in the area of AS objects and depends on the plant configuration.

Abbreviation: MSD

MSD = MaintenanceStateDisplay. Status bar for the output of the maintenance status of the stand-alone component.

Abbreviation: MGD

MGD = MaintenanceGroupDisplay. Status display for the output of the maintenance status of sublevel components.

5.4.3.4 Level of unit components and their sublevel hierarchy

Introduction

The diagnostics screens and the sublevel hierarchy of unit components are assigned to the next level below the overview screen and the AS objects, network components and PC stations overviews.

Note

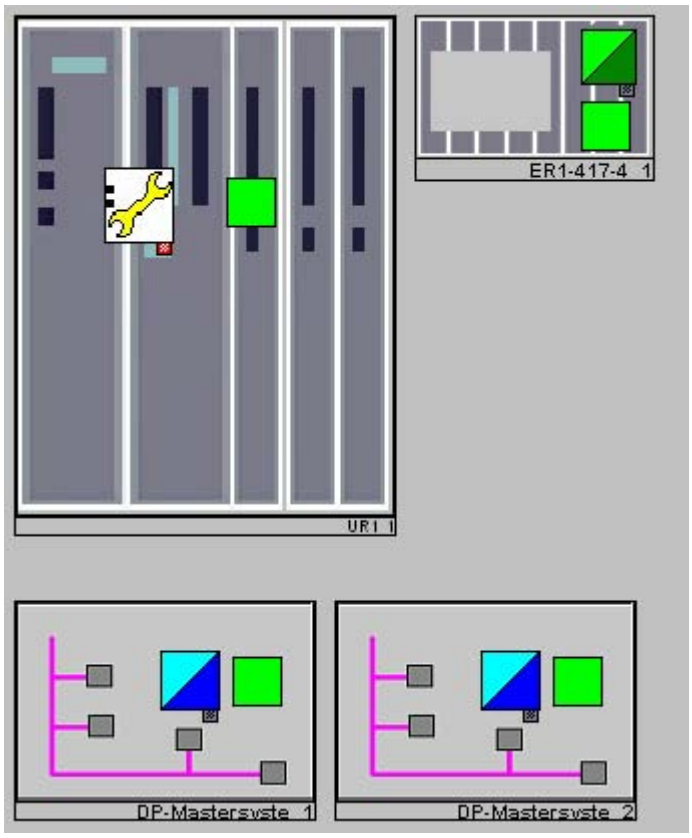
The most complex hierarchy which contains the most levels is derived from the plant structure in the area of AS objects.
The hierarchy created for the areas of PC stations and network components extends only to the overviews at level 2.
A description of the hierarchy is only possible for this reason in the area of AS objects.

Visualization of unit components and sublevel components

The diagnostics screen of a stand-alone AS visualizes the various components by means of symbols.

- The CPU of the AS in the central rack.
- Existing expansion racks
- Sublevel components such as PROFIBUS DP systems and their connected slaves.

The diagram below shows an example of the diagnostics screen of a stand-alone AS.



Components shown on this screen:

1. An AS 400 with corresponding universal rack "UR1 1"
2. An "ER1-417-4 1" expansion rack
3. Two sublevel PROFIBUS DP systems "DP master system x".

The corresponding status displays are integrated in the symbolic view of components.

- The status of an actual component is returned in the MaintenanceStateDisplay "MSD".

  The CPU view in this screen outputs the CPU status  = "maintenance request".

  The expansion rack has the status  = "Good".

  This status display can be used to open the diagnostics faceplate of the component.

- The "EventState" status display is attached to the bottom right of the MaintenanceStateDisplay. This function only returns the status of diagnostics messages of the actual component. The small red square indicates an active CPU message. There are no active messages for the other component.
- For all components, the MaintenanceGroupDisplay "MGD" returns the status

   = "Good".

  The MaintenanceGroupDisplay can be used to jump to the diagnostics screen of the corresponding component or sublevel hierarchy. This screen shows an example of slaves connected to the PROFIBUS DP subsystems.

Term: Event State

Status display for diagnostics messages of the component.

5.4.4 Representation of the diagnostics status in MaintenanceState "MST"

5.4.4.1 Introduction

Overview

The diagnostics status of a component is saved to a variable "MS" of the type "DWORD" and managed on the SIMATIC Maintenance Station. The Maintenance Station Server updates this variable.

- The status is visualized on different displays.
  - The MaintenanceGroupDisplay "MGD" (for example, ) outputs the status to higher-level diagnostics screens.
  - The MaintenanceStateDisplay "MSD" (for example, ) outputs the status to the diagnostics screens and faceplates.
- The status of component maintenance request is also managed in the variable.

  The MaintenanceStateDisplay "MSD" and symbols in the diagnostics faceplate visualize maintenance requests, for example,  and the maintenance status, for example,  .
- The status bits are used to indicate the master ID in the diagnostics faceplate for redundant components.

The main elements of this variable are component status bytes 1 and 2, the "OS operation" bits, various status bits and the reserved bits.

5.4.4.2 Syntax of the diagnostics status word MaintenanceState "MST"

Syntax of the diagnostics status word MaintenanceState "MST"

The diagnostics status word is a "DWORD" variable with a main elements structure outlined below.

- Component status byte 1
  The component diagnostics status is managed in component status byte 1, bits 0 to 7. Bits 0 to 3 are relevant in the dword. Bits 4 to 7 are reserved.
- Component status byte 2
  The diagnostics status of the redundant component is managed in component status byte 2, bits 8 to 15. Bits 8 to 11 are relevant in the dword. Bits 12 to 15 are reserved.
- "OS operation" bits
  Bits 24 to 27 represent the "OS operation" status for managing maintenance measures and the activity status.
- Status bits
  The status bits 16 to 18, 22 and 23 return different states such as the existence of a redundant component, or the master identifier for redundancy.
- Reserved bits

Status word structure

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved				OS operation				U	S	Reserved			O	M	R	Component status 2								Component status 1							

For additional information on possible states, as well as on the display of icons in the diagnostic screens, please refer to the section titled "Set of symbols for the visualization of the MaintenanceState "MST" (Page 103)".

5.4.4.3 Set of symbols for the visualization of the MaintenanceState "MST"

Symbol set of the diagnostics status word MaintenanceState "MST"

The diagnostics status word MaintenanceState "MST" is used to manage the component status.

Elements of the status word.

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Reserved				OS operation				U	S	Reserved			O	M	R	Component status 2								Component status 1							

- Component status bytes 1 and 2
- "OS operation" bits 24 to 27
- Status bits 16 to 18, 22 and 23
- Reserved bits 19 to 21 and 28 to 31

This section describes the possible states and their assignment to corresponding symbols.

Component status bytes 1 and 2

The table below shows the image of the component status in MaintenanceStateDisplay "MSD". The "Symbol in MGD" column returns the corresponding image in the MaintenanceGroupDisplay "MGD" which maps the status to higher levels of the diagnostics screens.

The states of redundant components are summarized in a group. The diagnostics faceplate of the component returns the status of each redundant component. For further information, refer to the section "Working with SIMATIC Maintenance Station > Diagnostics status of redundant components".

Remarks:

- Component status byte 2 identifies a redundant component
- Bits 0 to 3 and 8 to 11 are relevant in the component status byte Bits 4 to 7 and 12 to 15 are reserved
- The status "x" is irrelevant
- Lowest priority is "xxxx0000", highest priority is "xxxx1000". Exception: priority "2" of "Configuration changed" which lies between "OK" and "Device disabled".
- "Unknown / higher-priority error" means that actual valid status information is not available, for example, due to a communication error at a higher level.

Status Bits "7 to 0" or "15 to 8"	Meaning	Symbol in "MSD"	Priority	Symbol in "MGD"
xxxx0000	Good		1	

Status Bits "7 to 0" or "15 to 8"	Meaning	Symbol in "MSD"	Priority	Symbol in "MGD"
xxxx0001	Device disabled		3	
xxxx0010	Shut down		4	
xxxx0011	At least one process value is simulated.		5	
xxxx0100	Local operation		6	
xxxx0101	Maintenance required		7	
xxxx0110	Maintenance demanded		8	
xxxx0111	Maintenance alarm		9	
xxxx1000	Unknown / higher-priority error		10	
xxxx1001	Configuration changed		2	

The "OS operation" bits

Bits 24 to 27 represent the "OS operation" status for managing maintenance measures and the activity status.
The status of bits is visualized by the MaintenanceStateDisplay "MSD" and by the symbols in the diagnostics faceplates.

Status Bits "27…24"	Meaning	Working on the OS	Activity status
0000	Done	-	
0001	Maintenance measure requested for "Maintenance required"		
0010	Maintenance measure requested for "Maintenance demanded"		
0011	Maintenance measure requested for "Maintenance alarm"		
x100	Not allowed		
0101	Maintenance measure requested for "Maintenance required" in progress		
0110	Maintenance measure requested for "Maintenance demanded" in progress		
0111	Maintenance measure requested for "Maintenance alarm" in progress		
1000	Canceled		
1001 1010 1011 1100 1101 1110 1111	Not allowed		

Status bits 16 to 18, 22 and 23

These bits are used for management and are not assigned to any symbols.
Bits 16 = "R" and 17 = "M" are used to indicate the master ID in the diagnostics faceplate for redundant components.

Bit	Characters	Meaning / function
16	R	Redundant component 0 = none 1= exists
17	M	Masters R = 1 and M = 0 = component 1 is master, and component 2 is "Stand-by" or "Fault" R = 1 and M = 1 = component 2 is master, and component 1 is "Stand-by" or "Fault"
18	O	Overwritten 1 = component status overwritten
22	S	Status change 1 = status was changed again
23	U	Cyclic update 1 = the component is updated cyclically

The reserved bits 19 to 21 and 28 to 31

These bits have an internal function with read only attribute.

5.4.5 Components for the visualization of diagnostics data

5.4.5.1 Symbols in the block symbols file

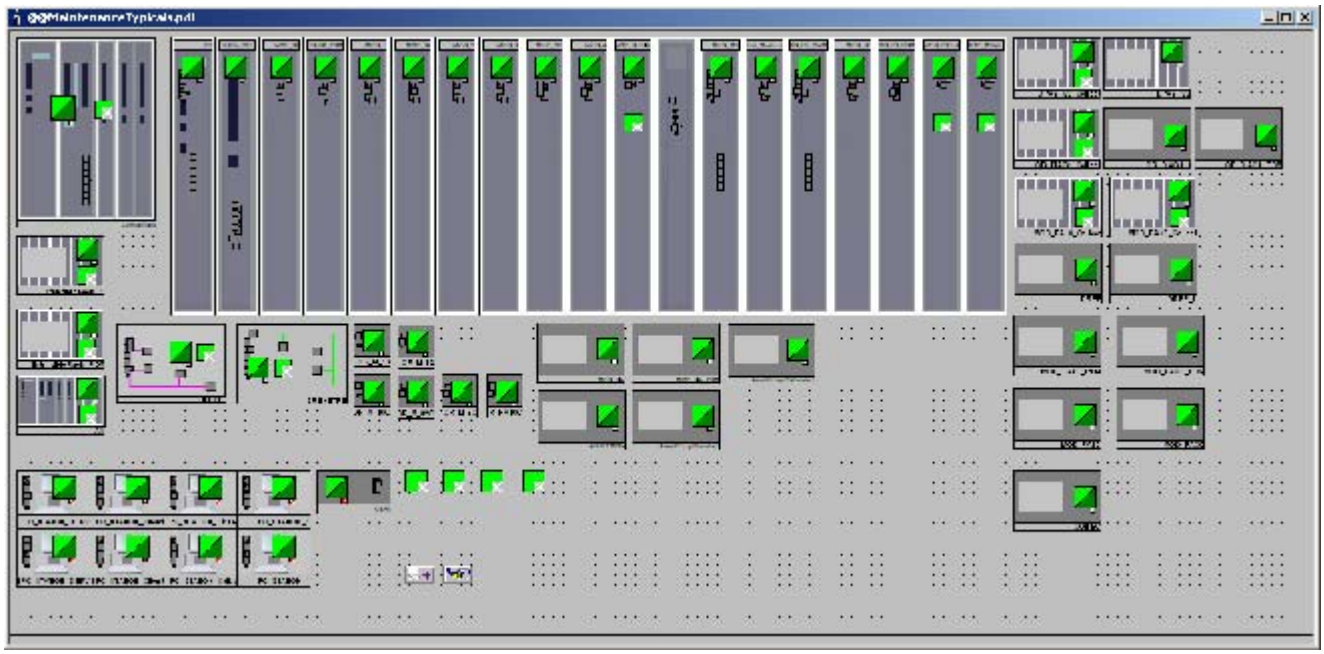
Overview

The section below shows which diagnostics-compatible components of the S7 project are visualized in the diagnostics screens:

- PC stations such as industrial PCs
- Automation systems such as an AS300
- I/O modules
- Network, Fast Ethernet OSM and ESM, Ethernet OLM and ELM
- PROFIBUS components such as modular and compact field devices
- PROFINET components
- Asset proxies
- Redundancy components

These components are visualized on the process and diagnostics screens by different block symbols. These symbols are stored in the "@@MaintenanceTypicals.pdl" file. This file name may not be changed.

Symbol changes are saved to a separate file named "@MaintenanceTypicalsXXX.pdl". The "XXX" string represent a placeholder: In the course of the creation or update of diagnostics screens in the S7 project, the program always starts searching for symbols in the most recently modified file and continues the search in ascending alphabetical order. "@@MaintenanceTypicals.pdl" is the last file scanned within this search for symbols.



The file is available in the "<installation drive> \ Programs \ SIEMENS \ WINCC \ options \ pdl \ faceplatedesigner_v6" folder. When you create an S7 project or open a session in the OS project editor, the file is copied from the installation folder to the project folder at "<project directory> \ wincproj \ <os-name> \ GraCS".

5.4.5.2 The MaintenanceStateDisplay "MSD" status display

Overview

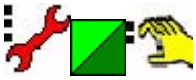
The MaintenanceStateDisplay "MSD" status display is used to visualize the component status on the diagnostics screens of the Maintenance Station. Instead of returning the status of a sublevel hierarchy, the MSD only returns the status of its own component.

This status display can be used to open the diagnostics faceplate of the component for detailed diagnostics.

The MaintenanceState "MST" component status is saved to the component tag "MS" for management.

Symbolism

The program outputs different symbols based on the component status in MaintenanceState "MST". Examples:



An AS is represented in the "AS objects overview", for example, by the symbol shown below.

The MaintenanceStateDisplay returns the AS status in this example using the symbol  = "Maintenance alarm".

For further information on possible states and symbols used, refer to the chapter "Representation of the diagnostics state in MaintenanceState "MST" > Structure of the diagnostics status word MaintenanceState "MST"".

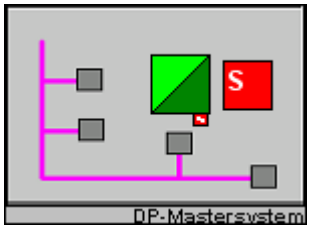
5.4.5.3 The "EventState" status display

Overview

Instead of returning the status of a sublevel hierarchy, the "EventState" status display returns the status of its own component.

The status display of a component symbol is attached to the bottom right of the MaintenanceStateDisplay "MSD".

The diagram below shows an example of a PROFIBUS DP subnet on the AS diagnostics screen.



- The "EventState" status display for this component appears as a small red square at the bottom right of the MaintenanceStateDisplay.

  EventState returns the following status:
  A diagnostics message was received or cleared and is not yet acknowledged. The message may be already cleared. Messages continue flashing until these are acknowledged. If the message persists after acknowledgment, the flashing symbol changes to non-flashing state. The symbol disappears when the message is cleared.

- The MaintenanceStateDisplay on the screen returns the  = "OK" status.

Symbolism

Symbol	Meaning
S	Maintenance alarm
F	Maintenance demanded
M	Maintenance required
	Good
	Not applicable

5.4.5.4 The MaintenanceGroupDisplay "MGD" status display

Overview

The MaintenanceGroupDisplay "MGD" returns the actual status of the component in a sublevel hierarchy on the overview and diagnostics screens.

The MaintenanceGroupDisplay "MGD" shows different status symbols, depending on the component status in the sublevel hierarchy.

The status display can be used to open the diagnostics screen which contains the sublevel components for detailed diagnostics. An active diagnostics message in the sublevel hierarchy is shown on the corresponding diagnostics screen. If no active messages are found, the program opens the diagnostics screen of the next lower level of the hierarchy.

An AS is represented in the "AS objects overview", for example, by the symbol shown below.

The MaintenanceGroupDisplay returns the  = "Maintenance alarm" on the screen.

Symbolism

The symbolism of the MaintenanceGroupDisplay differs in terms of visualization on the diagnostics screen and in the component faceplate.

Symbol in the diagnostics screens	Symbol in the faceplate	Meaning
		Maintenance alarm
		Maintenance demanded
		Maintenance required
		Good

For additional information on possible states and icons, please refer to the section titled "Representation of the diagnostics status in MaintenanceState "MST" > Structure of the diagnostics status word MaintenanceState "MST"".

5.4.5.5 Diagnostics faceplates

Overview

A diagnostics faceplate returns various information concerning the diagnostics-compatible component.

- Status displays and control elements
  These reside permanently on the upper area of the faceplate.
- Views of a diagnostics faceplate
  Users can select a faceplate view which contains the required information.
  The views return different types of information.
  - Configuration and component data
  - Diagnostics messages of the component
  - Maintenance status management

The diagnostics faceplate of a component is opened using the component symbol in the MaintenanceStateDisplay.

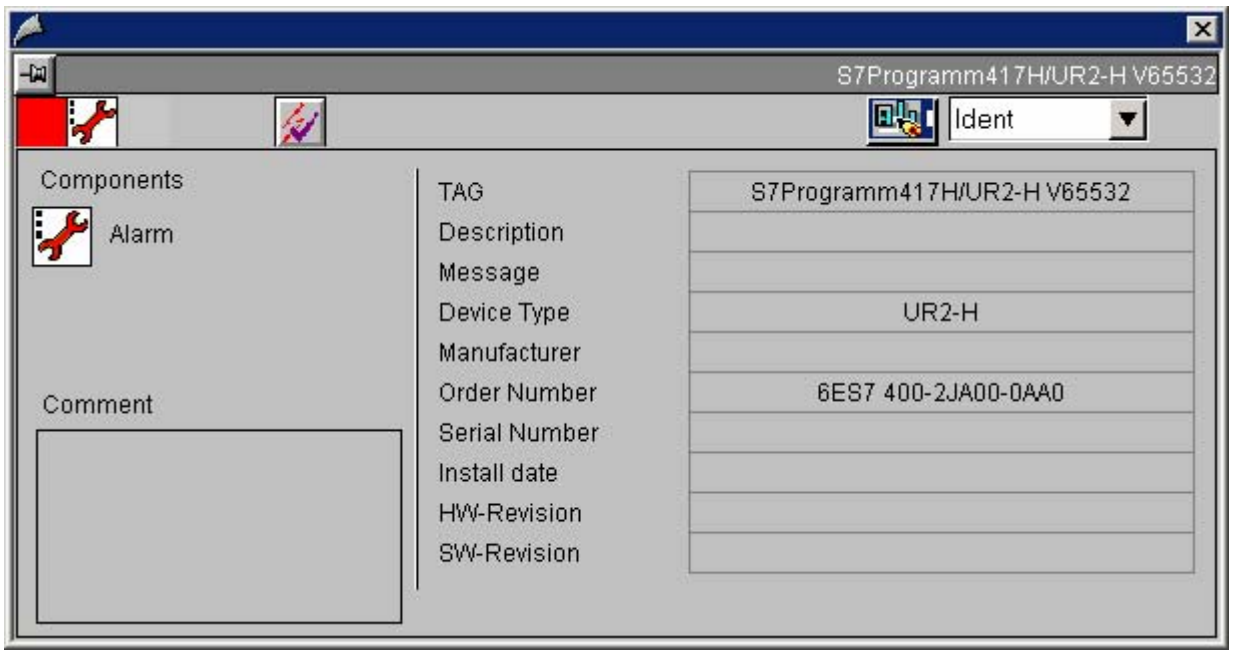
The diagram below shows an AS symbol on a diagnostics screen.

Open the corresponding diagnostics faceplate by clicking the "MaintenanceStateDisplay" (e.g. ).

Views of a diagnostics faceplate

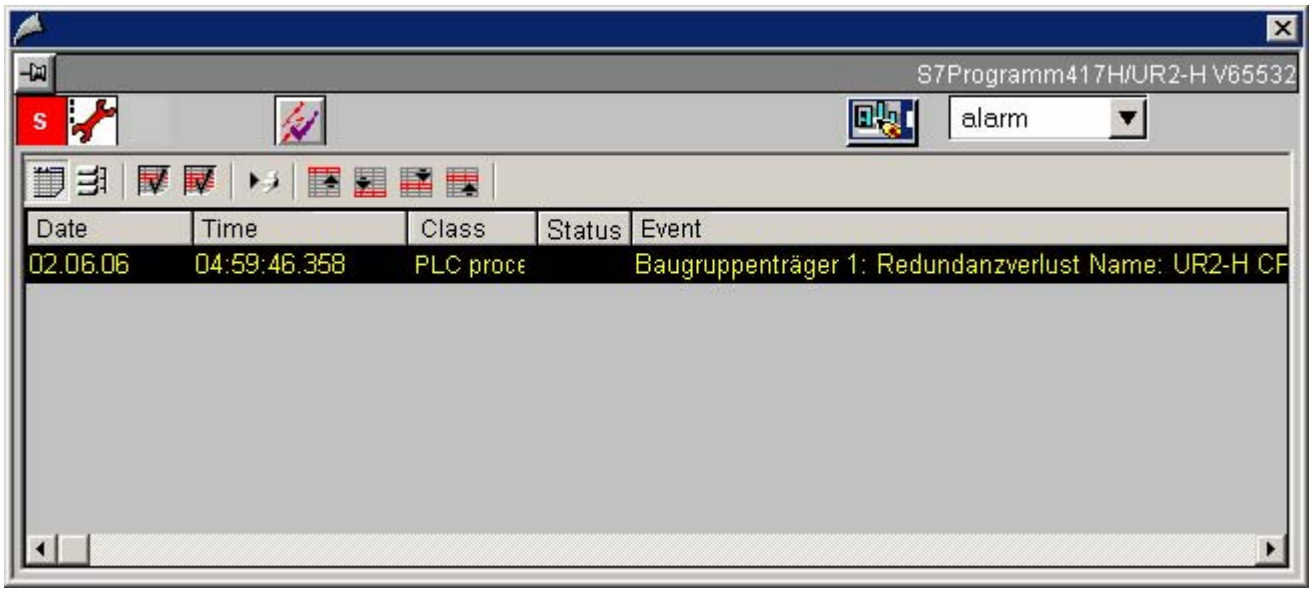
In addition to the status view, the faceplate provides various views for the output of component-specific information. There are three default views:

- Identification



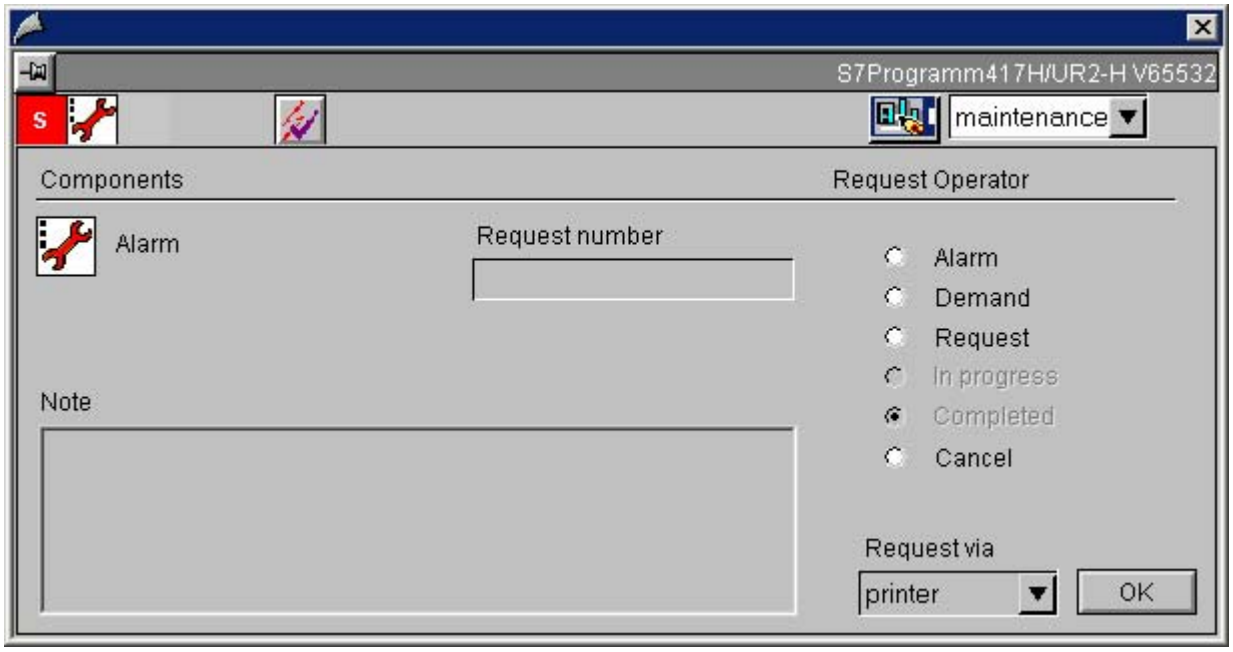
In the "Ident" view all the available information and the maintenance status are displayed for the component. The visualized data represent either offline HW configuration data or, if available, the online component data plus the date of the most recent update. The view also visualizes the status of redundant components and the corresponding master ID.

- Messages:



In the "Messages" view messages for diagnostics, operator actions and maintenance requests are output. The messages can be acknowledged and managed in this view.

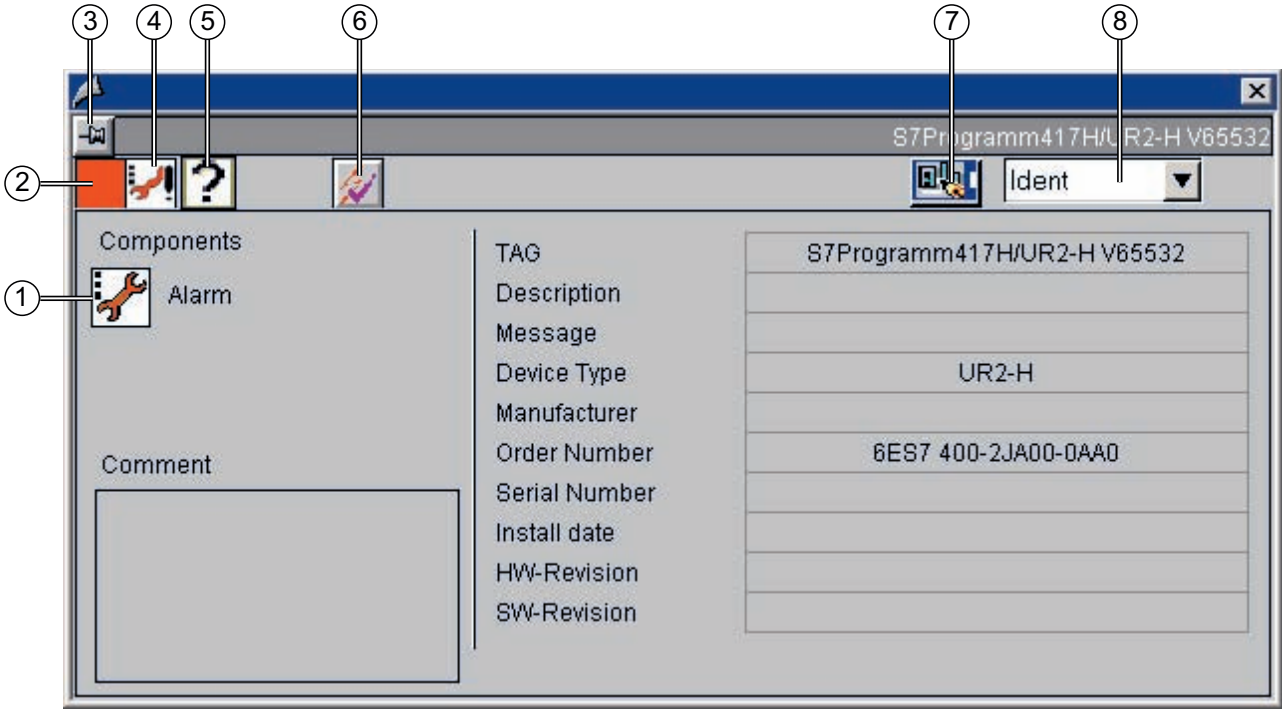
- Maintenance



The "Maintenance" view allows the user to react to maintenance requests for the respective component and to initiate and manage the corresponding maintenance task. The maintenance task requested is shown on the MaintenanceStateDisplay of the component in the diagnostics screens. The status displays of the faceplate return the progress of maintenance requested.

Status displays and control elements of the faceplate

The top edge of the faceplate contains several control elements and displays showing the status of the components and of maintenance in progress. The control elements are shown on the screen independent of the view selected.



①		Status display for the stand-alone component. The display outputs the status of each redundant component separately. As a result of a maintenance request, this display outputs the message, for example, "Maintenance alarm" instead of the status returned in the overall status display in "④". Status visualized: "Maintenance alarm"
②		Status display for diagnostics messages. Status visualized: Active diagnostics message of the component.
③		Button: Fixes the faceplate to the foreground, regardless of any change of screens in the background.
④		Status display for the stand-alone component. This display returns the overall status of redundant components. As a result of a maintenance request this display no longer returns the same status as display "①". Status visualized: Maintenance requested for "Maintenance alarm".
⑤		Display of the status of maintenance requests. This status display is hidden if no maintenance requests are active. Status visualized: Maintenance requested but not yet started.
⑥		Button: Acknowledges the messages relating to this component. The "Messages" view does not have to contain the faceplate.

⑦ 

Button:
Starts the online view of the hardware configuration "HW Config". This button is only shown if this faceplate component represents an element of the hardware project, for example, an AS.

⑧ 

Selection box:
Selects the current view of the faceplate.

The views of the diagnostics faceplate contain additional control elements and status displays. For detailed information, refer to the chapter "Working with SIMATIC Maintenance Station".

5.4.5.6 Group displays for diagnostics

Overview

The group displays are output to the overview and diagnostics screens in the so-called overview area and are also shown in Picture Tree Navigator.

The group displays show a summary of the states of all components in the nested hierarchies.

When an active diagnostics message is indicated on the message bar of the overview area, you can jump to the diagnostics screen which contains the corresponding component by clicking the group display button. The program opens the diagnostics screen of the next higher hierarchy level if several messages are active.

Symbolism

The scope of the group display depends on the Maintenance Station configuration.

The group display returns more complex status displays if you also integrated process screens of a WinCC project on the Maintenance Station. Status which may be displayed in this case:

The middle one of five buttons is relevant to Maintenance Station diagnostics. This button is used to visualize diagnostics data on a Maintenance Station which does not feature any integrated process screens of a processing plant. Status which may be returned by a group display:

Meaning of the symbols:

Priority	Description	Symbol	Color	Acknowledgment
1	Maintenance alarm	S	Yellow on black	Flashing = active, Permanent = acknowledged
2	Maintenance required	F	Yellow on black	Flashing = active, Permanent = acknowledged
3	Maintenance demanded	M or MR	Yellow on black	Flashing = active, Permanent = acknowledged
4	Good	-	Gray	-

5.4.6 Creating and managing diagnostics screens

5.4.6.1 Introduction: Creating and managing diagnostics screens

Overview of the creation and management diagnostics screens

The diagnostics screens and maintenance station functionality require specific default settings to be made, in particular in the course of initial creation.

The diagnostics screens and their hierarchy are generated in the course of project engineering.
All screens and data required are generated when you create a new maintenance station.

You can update the diagnostics screens after having changed the plant structure. In order to avoid any time-consuming generation of data, you can start by checking the update status of the diagnostics screens. Run the update only if necessary.

You can remove specific plant areas or automation systems from the diagnostics system. This would include their removal from the configured screens and from configuration data.

On completion of their creation or update, transfer the diagnostics screens and their hierarchy to the maintenance station and download the diagnostics blocks to the automation systems.

5.4.6.2 Starting WinCC OS project editor

Introduction

You need to run an initial session of WinCC OS project editor in order to configure Maintenance Station diagnostics within the WinCC project. You define specific diagnostics settings on the PC in the course of this session.

The editor session is required for the WinCC projects shown below.

- For the Maintenance Station "OS", independent of "combined" or "stand-alone" mode of operation.
- For each WinCC server which provides packages containing the diagnostics variables and messages.

NOTICE
Check the settings on the "Basic data" tab when using "WinCC OS Project Editor" in current WinCC projects to change basic screens, local actions of the computer and faceplates. If you do not check the settings on this "Basic data" tab the program restores the default and overwrites changes made to these objects.

Requirements

- Message classes 4, 5, 6 and 10 required for diagnostics messages of the Maintenance Station are generated in the "WinCC OS Project Editor" session. The messages classes may not be in use by a user-specific application in an existing WinCC project for this reason. Such a scenario could in particular develop if "WinCC OS Project Editor" was never started in this WinCC project. If these classes are already being used you need to assign other, free message classes to the user-specific application before you run "WinCC OS Project Editor".
- The Maintenance Station "OS" was compiled at least once using the "Compile OS" function. Execute the function in step "H3" as described in "Overview of Maintenance Station engineering" to implement a new PC.

Procedure

1. Open the current WinCC project in SIMATIC Manager. In the navigation window of SIMATIC Manager, select the PC station of the Maintenance Station, and then select the corresponding "OS" symbol. Select "Open Object" from the shortcut menu. The WinCC project opens.
2. Start the OS project editor by double-clicking the corresponding symbol on the navigation window of WinCC Explorers.
3. Change to the "General" tab. Activate the "Complete configuration (loss of support for online DeltaLoading)" check box on the "Activities when processed by project editor" area.
4. Change to the "Message configuration" tab. Click "…" on the "Message classes/types" area to open a selection dialog box. Select the file "MessageMaintenanceStation.cfg" from "WinCC > Options > SSM" in the WinCC installation folder. Close the dialog box by clicking "Open". This configuration file only uses the message classes 4, 5, 6 and 10 as required for diagnostics.
5. Change to the "Layout" tab. Check the settings of the "Available layouts" window and of the "Monitor configuration" area. Select the settings as required.
6. Check the settings on the "Basic data" tab. This tab shows all changes made to objects of the basic screens, actions and faceplates within the WinCC project. To accept these changes, deactivate the check box at the corresponding object.
   Note the information in the preface!
7. Check the settings of the other tabs and edit these as required.
8. Click "OK" to run the configuration process.
9. Close the WinCC project by selecting "File > Close".

Result

"WinCC OS Project Editor" has configured various diagnostics settings in the WinCC project.

NOTICE
On completion of the "WinCC OS Project Editor" session, check the start screen configuration for your current WinCC projects in the "Computer properties" dialog box. The OS Project Editor sets the Maintenance Station user interface as start screen.

5.4.6.3 Defaults for the creation of diagnostics screens

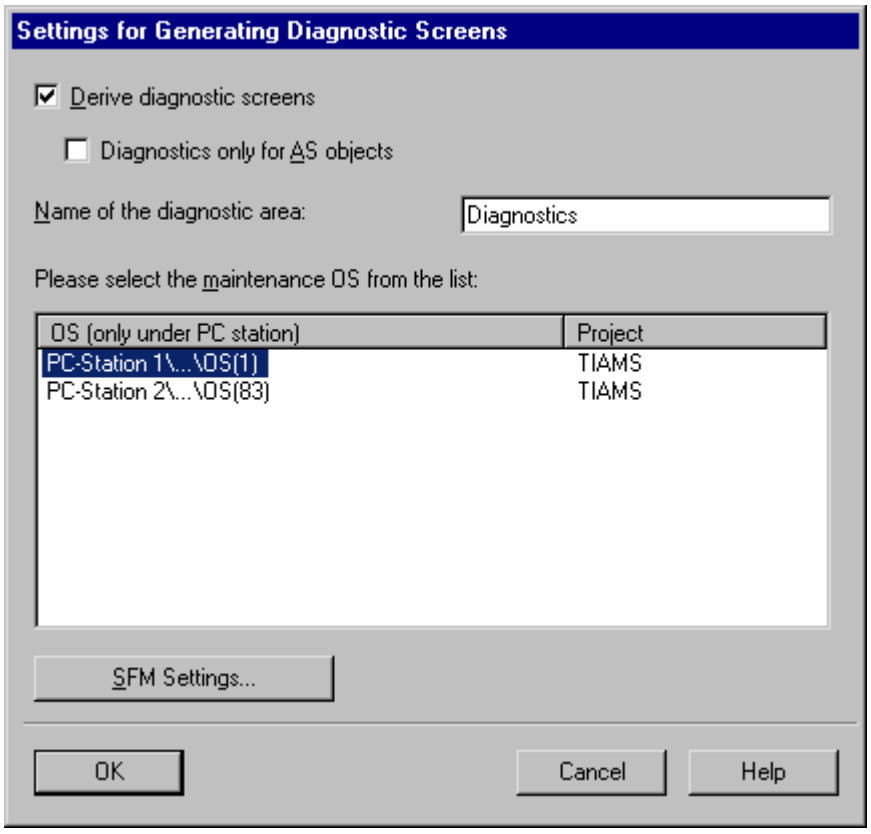
Defaults for the creation of diagnostics data and screens

The creation of diagnostics screens and Maintenance Station functionality is based on various settings. These settings are defined in the "Settings for Generating Diagnostics Screens" and "Report system errors" dialog boxes.

The dialog box can be opened as shown below. Select the overall project from the navigation window.

- By selecting "Options > Diagnostics screens > Settings…" in SIMATIC Manager.
- By selecting "Diagnostics screens > Settings…" from the shortcut menu

Defaults in the "Settings for Generating Diagnostics Screens" dialog box.



The dialog box contains the elements and setup options shown below.

Element	Meaning
Check box "Derive diagnostics screens"	Activates the generation of diagnostics screens and data. When the check box is deactivated, the program no longer generates any diagnostics screens and the entire Maintenance Station functionality is disabled.
Check box "Diagnostics only for AS objects"	Activates the generation of diagnostics screens only for AS objects. The program no longer generates diagnostics screens for PC stations and network components or the Maintenance Station overview screen.
Input box "Name of the diagnostic area"	Defines the name of the diagnostics area. This name is set on the area selection button in the overview area and in the messages of the "Area" message block.
List "Please select the maintenance OS from the list"	Select the PC station used as Maintenance Station. You can only select PC stations.
Button "SFM Settings..."	Opens the SFM Settings dialog box.

Default settings for the "Report system errors" function

Note

The "SFM Settings…" dialog is not required when defaults are set for the creation / update of diagnostics screens. The system automatically includes certain defaults during initial generation of the data. You only configure the settings in this dialog box if you want to set other defaults.

You open the "Configuration of Maintenance Station diagnostics ..." dialog box by clicking the "SFM Settings..." button in the "Settings for Generating Diagnostics Screens".

The "Diagnostics support" tab of this dialog box is used to define additional settings for the Maintenance Station function.

Note

This documentation does not cover any options of this dialog which are irrelevant to the Maintenance Station function. For further information on these options, refer to the SIMATIC STEP 7 documentation.

Element	Meaning
"Apply SFM settings to all AS stations" check box	Activates the SFM settings at all AS of this S7 project. The check box is set by default when you update or initially create diagnostics screens. The default setting no longer applies to all AS if this check box is deactivated. The program automatically deactivates the check box when you open the "HW Config" editor after having selected an AS for editing the settings. This action may involve the assignment of a different FB number. To reactivate this function open this dialog in the "Settings for Generating Diagnostic Screens" dialog box and then set the check box. This check box is not shown in the dialog box opened in the "HW Config" editor after you selected an AS.

5.4.6.4 Creating defaults for initial generation of the diagnostics screens

Introduction

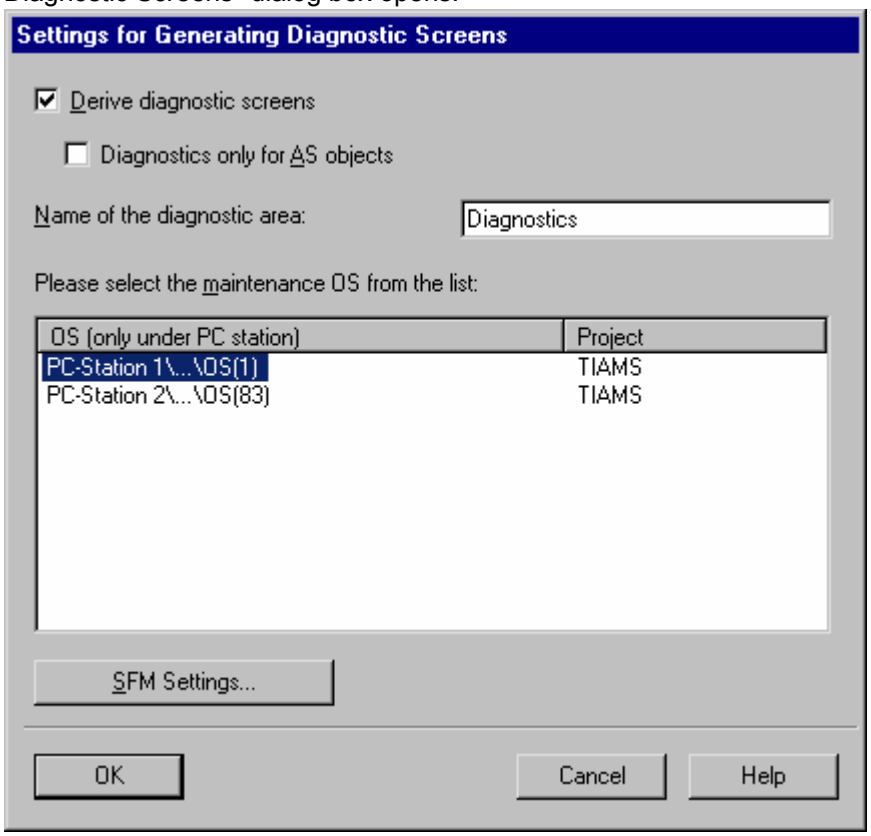
Define or verify the settings outlined in the next section if you have not yet generated any diagnostics screens and data for the Maintenance Station.

Requirements

- The Maintenance Station "OS" was compiled at least once using the "Compile OS" function.
- Run "WinCC OS Project Editor" in the WinCC project before you continue.

Procedure

1. Select the project folder in the navigation window of the SIMATIC Manager. Select "Diagnostics screens > Settings..." from the shortcut menu. The "Settings for Generating Diagnostic Screens" dialog box opens.



2. Activate the "Derive diagnostic screens" check box. Activate the "Diagnostics only for AS objects" check box to run Maintenance Station diagnostics only for AS objects and their sublevel components.
3. Define the name of the area selection button in the overview area in the "Name of the diagnostic area:" input box. The name is also entered as text in the "Area" message block.

4. Select the Maintenance Station PC from the "Please select the maintenance OS from the list" selection box. You can only select PC stations.
5. You can ignore the "SFM Settings…" dialog when you set the defaults. The system automatically includes certain defaults during initial generation of the data. You only configure the settings in this dialog box if you want to set other defaults.
6. Close the "Settings for Generating Diagnostic Screens" dialog box by clicking "OK".

Result

The defaults for initial generation of the diagnostics screens and data are set.

5.4.6.5 Creating new diagnostics screens

Introduction

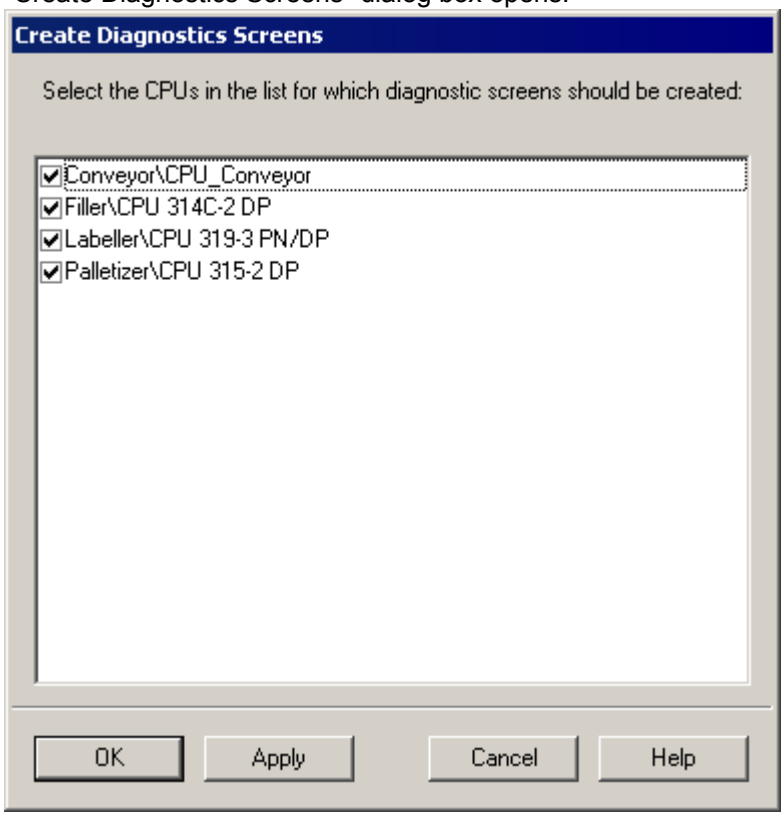
Take the steps described in the next section if you have not yet generated any diagnostics screens and data for the Maintenance Station in the S7 project. The instructions apply to a Maintenance Station which is, for example, to be created on a new PC or integrated into an existing WinCC station.

Requirements

- The new Maintenance Station PC must be registered in the S7 project.
- Run "WinCC OS Project Editor" in the WinCC project before you continue. On systems which contain several WinCC servers, you also need to run the "OS Project Editor" on each WinCC server that provides packages with diagnostics variables and messages.
- You have set the defaults in the "Settings for Generating Diagnostics Screens" dialog box.
- Install and configure SNMP OPC Server if you want to run diagnostics of SNMP components. The SNMP components must be assigned to the SNMP OPC Server.

Procedure

1. Select the project folder in the navigation window of the SIMATIC Manager.
2. Select "Diagnostics screens > Create diagnostics screens..." from the shortcut menu. The "Create Diagnostics Screens" dialog box opens.



3. Select the automation systems for which you are going to generate diagnostics screens and blocks.
4. Confirm the selection by clicking "OK. The program now starts generation and outputs a progress bar.
5. Acknowledge the message informing you that generation has successfully completed.

Result

You have successfully created the new diagnostics screens and blocks.

Note

Finally, compile the diagnostics screens and blocks and download these to the corresponding AS, or download the diagnostics screens to the Maintenance Station.

5.4.6.6 Verifying the update status of diagnostics screens and data

Introduction

The diagnostics screens and data may no longer be up-to-date when you generate the diagnostics screens and then modify configuration data. This is relevant in particular when you change the hardware configuration or edit the default settings, for example, in the "General" tab of the "Report system errors" dialog box.

This section describes how to check the update status of the configuration of diagnostics screens and data.

Requirements

The diagnostics screens were generated at least once before.

Procedure

1. Select the AS whose update status you want to verify from the navigation window of SIMATIC Manager. Double-click the "Hardware" symbol on the right pane. The "HW Config" dialog box opens.
2. Select the CPU of the AS from the list on the station window.
3. Select "Options" > "Report system errors...". The "Report system errors" dialog box opens.
4. Change to the "Diagnostics support" tab.
5. Verify that the status bar of the dialog returns the message "Diagnostics blocks are updated".
6. An update is not necessary if you see this text. Close "HW Config" by selecting "Station > Close".
7. Update the diagnostics screens and data if this text is not output. Continue at the "Updating diagnostics screens" section.

Result

You verified the update status of the diagnostics screens and data.

5.4.6.7 Updating diagnostics screens

Introduction

The diagnostics screens must be updated after their initial creation if changes were made to the S7 project which have an impact on the diagnostics screens: for example, if new components were added.

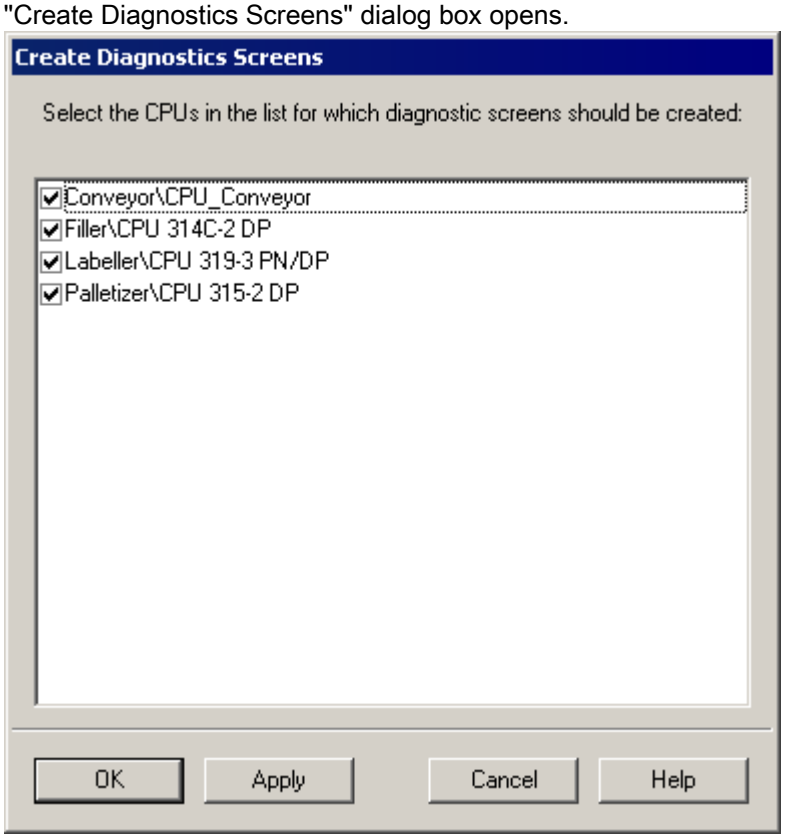
For further information on the verification of the update status, refer to the "Verifying the update status of diagnostics screens and data" section.

Requirements

The diagnostics screens were created previously.

Procedure

1. Select the project folder in the navigation window of the SIMATIC Manager.
2. Select "Diagnostics screens > Create diagnostics screens..." from the shortcut menu. The "Create Diagnostics Screens" dialog box opens.



3. The list highlights the automation systems for which you generated diagnostics screens and data in the previous update session. Check the list and modify the settings if necessary.
4. Confirm the selection by clicking "OK. The program now runs the update and outputs a progress bar.
5. Acknowledge the message informing you that generation has successfully completed.

Result

You have successfully updated the diagnostics screens and blocks.

Note

Finally, compile the diagnostics screens and blocks and download these to the corresponding AS, or download the diagnostics screens to the Maintenance Station.

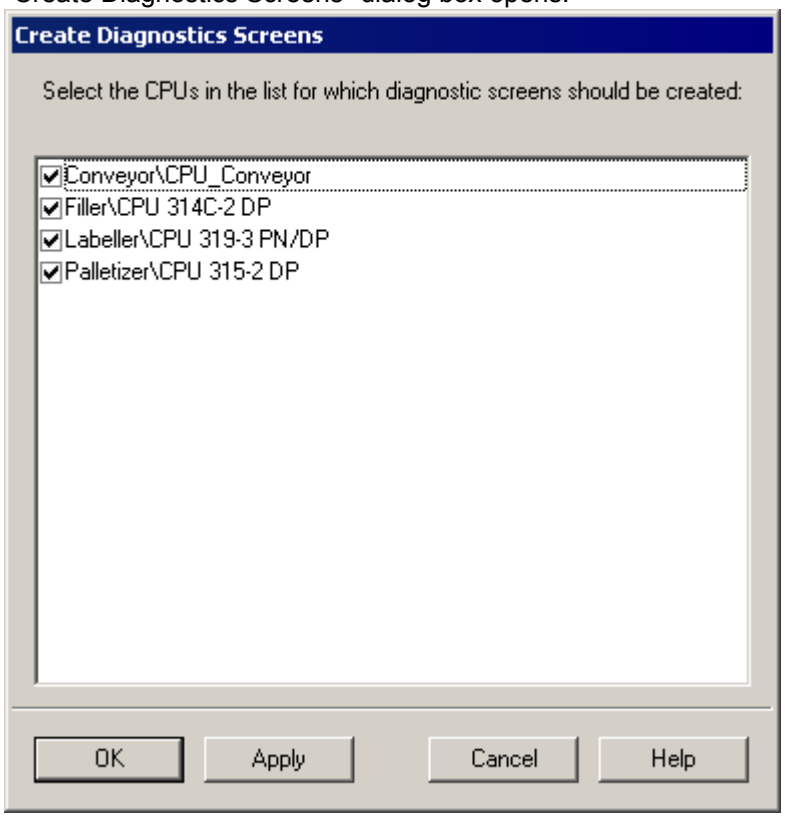
5.4.6.8 Deleting CPU or AS data from diagnostics data

Introduction

You may need to delete one or more AS, along with their sublevel components, from diagnostics data once changes have been made to configuration data or the plant configuration.

Procedure

1. Select the project folder in the navigation window of the SIMATIC Manager.
2. Select "Diagnostics screens > Create diagnostics screens..." from the shortcut menu. The "Create Diagnostics Screens" dialog box opens.



3. The list highlights the CPUs of the automation systems for which you generated diagnostics screens and data in the previous update session. Deactivate the check box next to the CPU entry of the automation system you want to delete from diagnostics data. You can edit this setting for several CPUs.
4. Click "Apply" to save the current setting.
5. Click "Cancel" to close the dialog box and to discard the update of diagnostics screens and data for the time being.
6. Verify and edit the list as required, and then click "OK" to immediately update the diagnostics screens and blocks. The program now runs the update and outputs a progress bar. Acknowledge the message informing you that generation has successfully completed.

Result

The diagnostics data of one or several AS and of the sublevel components are deleted from diagnostics.

Note

Finally, compile the updated diagnostics screens and blocks and download these to the corresponding AS, or download the diagnostics screens to the Maintenance Station.

5.4.6.9 Compiling diagnostics screens and downloading these to the maintenance station

Introduction

The diagnostics screens you generated or updated must be compiled and downloaded to the Maintenance Station.

You can run the "Compile" and "Download" functions in a single operation using the "Compile and download OS" command. This section describes this procedure.

You can also select the "OS" from the navigation window and then execute both functions separately using the "Compile" and "PLC > Download" commands. This procedure is recommended in various scenarios:

- A download in run is ruled out for reasons of safety.
- If the download is to be initiated later for time reasons.
- If the quality of configuration data is to be checked based on the compiler log.

Requirements

The diagnostics screens were generated at least once or were updated in the course of configuration changes.

Procedure

1. Select the Maintenance Station PC from the Navigator of SIMATIC Manager.
2. Select the "PLC > Compile and download objects" command from the shortcut menu.
3. The "Compile and download objects" dialog box opens and shows the selected components on the "Selection table" area. Expand the folder structure in the "Objects" column until all objects are displayed.
4. Check the "Compile" and "Download" columns. The check boxes must be activated in both columns in order to execute both functions in a single step.
   You can also decide only to run the compilation and discard the download for the time being if you are short on time or for reasons of safety.
5. Click "Start". A message is output to indicate program changes in run. After having checked the message, you can cancel the operation and return to the dialog, for example, in order to execute only the "Compile" function. Acknowledge the message and start the operation by clicking "OK".
6. Progress of the compile and download operation is indicated on the screen.
7. The program outputs the log to the screen on completion of the operation. Check the log and then close this view.
8. Close the "Compile and download objects" dialog box by clicking "Close".

Result

The diagnostics screens are compiled and downloaded to the Maintenance Station.

5.5 Integrating SIMATIC Maintenance Station into an existing WinCC project

5.5.1 Introduction

Configuration with integration into a WinCC project

- You need to set up diverse computer and project properties for integration.
- User rights are verified and adapted to maintenance station diagnostics.
- Configure the logical links between the WinCC project and the diagnostics screens.

5.5.2 Settings in the WinCC project

Requirements

The diagnostics screens were generated at least once or were updated and downloaded to the Maintenance Station.

Overview of settings in the WinCC project

In order to integrate the maintenance station in a current WinCC project, you need to check diverse settings in this project after having created the diagnostics screens.

Project properties

Check the project properties and in particular the project type definition the settings in the "Hotkeys" and "Options" tabs.

For additional information, please refer to "Setting up the WinCC project (Page 142)".

Computer properties

Check the computer properties and in particular the correpsonding parameters set in the "Graphics Runtime" tab. Check the screen name setting in the "Start screen" field. This name determines the start screen of the WinCC user interface:

- If the input box contains the name of the start screen of the process screens, the program opens the user interface with the previously used process screens.
- If the input box shows the name "@screen.pdl", the program initially opens the diagnostics screens.

You can program corresponding links to allow you to change between the user interface of the process screens and diagnostic screens. These links are described in the sections below.

Check the settings in the "Window attributes" and "Shutdown" areas.

For additional information, please refer to "Defining computer properties of the WinCC project (Page 143)".

User rights and authorizations

Open WinCC User Administrator to check existing users and their authorizations.

On the Maintenance Station, WinCC OS Project Editor adds the "Diagnostics" column to the user rights table. User rights granted in the "Enabled" column are automatically assgined in the "Diagnostics" column. However, if the authorization is disabled in the "Enabled" column you can only assign it for diagnostics.

Create new users and user groups as required and assign permissions which cover, for example, only diagnostics or the default permissions defined in the "Enabled" column.

For additional information, please refer to "Checking and creating users and user rights (Page 147)".

5.5.3 Linking process screens of the current WinCC project with the diagnostics screens

Introduction

The diagnostics screens of the Maintenance Station can be integrated in the WinCC project of a WinCC station previously used as process control station.

This integration requires the creation of logical links to interconnect the user interfaces in the process and diagnostics screens.

This section shows how to logically link a process screen with the diagnostics screens.

Requirements

The diagnostics screens were generated or updated in the S7 project.

Procedure

1. Open the "Graphics Designer" editor in the WinCC project. Select "File > Open". The file selection dialog opens.
2. Select the process screen on which you want to set the logical link to the diagnostics screens. Confirm the selection with "OK".
3. In the Object Palette, click the "Button" object on the "Windows objects" area.
4. Position the mouse pointer on an area of the open process screen and keep the mouse button pressed to draw the size of the "Button" object.
5. The "Button Configuration" dialog opens. Type the text you want to assign to the button into the "Text" input box.
6. If the function requires access protection, open a corresponding selection dialog box by clicking "Authorization…" and then assign the permission as required.
7. Enter the name "@screen.pdl" in the input box on the "Change Picture on Mouse Click" area. This object represents the start screen of the Maintenance Station user interface. You can also click the corresponding button to open a selection dialog in which you can assign the "@screen.pdl" screen.
8. Click "OK" to close the dialog box and save the process screen.

Result

You have successfully configured a button function on a process screen for changing to the overview of diagnostics screens of the Maintenance Station.

5.5.4 Configuring the logical link of diagnostics screens with the process screens of a current WinCC project

Introduction

The diagnostics screens of the Maintenance Station can be integrated in the WinCC project of a WinCC station previously used as process control station.

This integration requires the creation of logical links in the process and diagnostics screens which interconnect the user interfaces.

This section describes the procedure of creating a logical link in the diagnostics screens to the process screens.

The user interface of the diagnostics screens contains static and dynamic screen elements. The logical link should preferably be created for this reason in static screen elements such as the overview area or in the toolbar sets.
Toolbar set 2 is used in this example, as this set provides the most space reserves. The overview are is not suited quite as well, as this area is always overwritten with area selection buttons and group displays and does not provide any larger free spaces in the remaining sections.

Note

Check the settings on the "Basic data" tab when you run "WinCC OS Project Editor" after having integrated the button in the overview area or the button sets of the user interface. If you do not check these settings, the program restores default settings and overwrites the changes made to these objects!

You could also integrate the object in the Maintenance Station overview screen, as this screen is not overwritten when you generate the diagnostics screen and when running the "WinCC OS Project Editor".

Requirements

- The diagnostics screens were generated or updated in the S7 project.
- The WinCC project was opened in SIMATIC Manager.

Procedure

1. Open the "Graphics Designer" editor in the WinCC project. Select "File > Open". The file selection dialog opens.
2. Select the "@Buttons12.pdl" screen of toolbar set 2 in which you are going to set the logical link to the process screens. Confirm the selection with "OK".
3. In the Object Palette, click the "Button" object on the "Windows objects" area. Position the mouse pointer on an area of the open screen and keep the mouse button pressed to draw the size of the "Button" object.
4. The "Button Configuration" dialog opens. Type the text you want to assign to the button into the "Text" input box.
5. If the function requires access protection, open a corresponding selection dialog box by clicking "Authorization…" and then assign the permission as required.
6. Close the dialog box by clicking "OK". Adjust the size and position of the button you inserted to suit requirements.
7. Double-click the button. The "Object properties" dialog box opens.
8. On the "Event" tab, select the "Mouse" entry from the "Button" folder.
9. Select the "Mouse click" event from the table. Position the mouse pointer onto the lightning bitmap in the same row of the "Action" column. Select "C-Action" from the shortcut menu. The "Edit actions" dialog box opens.
10. You have several options of configuring the change from the diagnostics user interface to the process screens. Select the "OpenHomePicture" function from the "Internal functions > graphics" folder to configure a jump from the process screens to the start screen of the WinCC project. The start screen of the user interface of the process screens is entered as start screen. Select the "OpenPicture" function from the "Default functions > graphics" folder to configure a function for changing between process screens. Enter the screen name as parameter. Double-click the function to enter it in the input box. Close the dialog box by clicking "OK".

    Note

    When using the "OpenPicture" function or the "Button" object with "Change Picture on Mouse Click" function in a specific configuration to change to the process screens, the screen called may be output to the working area of the diagnostics user interface.

11. Confirm the warning of pending compilation by clicking "Yes".
12. Close the "Object properties" dialog box. Save the "@Buttons12.pdl" screen.

Result

The change to the start screen of the process screens is configured in toolbar set 2 of the diagnostics screens.

Note

This new configuration has changed the basic data of the WinCC project. Check the settings of the "Basic data" tab in "WinCC OS Project Editor".
Any changes made to objects such as basic screens, local computer actions and faceplates are indicated on this tab. You restore factory defaults and overwrite your changes if you activate the check box at a modified object!

5.6 Configurations in the WinCC project

5.6.1 Basic settings in the WinCC Project

Introduction

In a WinCC project special properties for the project and thus for the operation of the Maintenance Station are configured.

- Project settings
- Computer properties

These properties are to be configured and tested for the following WinCC projects.

- The WinCC project of the Maintenance Station, particularly when creating a new Maintenance Station.
- The WinCC project of every WinCC Server that makes data available for the Maintenance Station.
  For additional information on this topic, please refer to "Specifying the computer properties of a WinCC server (Page 145)".

Note

Always use SIMATIC Manager to create and modify the plant structure and the hierarchy of diagnostics screens. The "Compile OS" function is otherwise going to overwrite or fail to update data of the WinCC project you edited in SIMATIC Manager.

Basic settings in the WinCC Project on the Maintenance Station

Project settings

Configure the internal project settings.

- Project type
  The Maintenance Station project may be a "multiuser" or "single-user" type. The project type is selected depending of the system type of the overall system.

  Note

  If the project type is changed after the diagnostics screens have been created for the first time, please note the information in "Changing the project type in WinCC (Page 149)".

- Update cycles
  Determines the rate at which the dynamic display, for example, of a tag value or status, is updated in the active process. The dialog box outputs a list of all available default update cycles. You can define additional user-specific update cycles on this dialog box to suit specific requirements of your project.
- Hotkeys
  You can define "Logon", "Logoff" and "Hardcopy" hotkey functions. The plant operator can use these hotkeys within the active process.
- Runtime options
  These options are used to specify the properties with regard to the activation and the characteristics in Runtime, for example whether activation of the Maintenance Station on the Engineering Station is permissible.

Computer properties

The computer properties define Maintenance Station characteristics such as the Runtime language, time zone, window attributes and cursor control in the active process.

The computer properties are grouped in different tabs:

- "General" tab
  No settings are required in this tab. The compute name and type are set automatically. The entry in the "Computer name" field represents the name of the computer currently running the WinCC project. It also represents the network name of the station. This name is automatically replaced with the name of the target computer to which you download the project.
- "Startup" tab
  In this tab you specify in the so-called startup list which applications are required in process operation and are started automatically when the WinCC projects of the Maintenance Station is started. Usually, you do not have to modify any settings on this tab, as these values are set automatically.

  Note

  If the S7 project of the Maintenance Station contains a WinCC Server that provides data for the Maintenance Station, the startup list has to contain certain applications. For additional information on this topic, please refer to the section titled "Specifying the computer properties of a WinCC Server".

In order to minimize the load on the computer, you should only activate those applications that are also required for process operation. By contrast to the Maintenance Station Client which requires activation of the "Graphics Runtime" application, this application can be deactivated on a Maintenance Station Server without operating and monitoring functions.

- "Parameters" tab
  On this tab you can set properties such as the process runtime language or the time zone. It also allows you to disable Windows hotkeys. Such settings prevent the startup of additional applications which may have a negative impact on Maintenance Station performance in the active process.

  Note

  The Windows hotkeys usually do not have to be disabled in the engineering phase. You disable all Windows hotkeys the plant operator may not use after you configured the system and released the active process.

- "Graphics-Runtime" tab
  In this tab you specify all the settings that apply for displaying in process operation. Usually, you do not have to edit these tab settings. Additional visualization settings can be made in OS Project Editor.

  Note

  When operating the plant in test mode, you can activate the "maximize" and "minimize" window attributes, for example. This allows you to quickly change from the runtime view to other applications when running the system in test mode. However, you should disable these settings when you release the plant to the active process.

- "Runtime" tab
  This tab is used to define settings for the active process.
  When using VB scripting, you can set up a VBS debugger at the "VBS Debug Options" areas. On this tab you can also define a process screen cache and the appearance of the mouse pointer for the indication of specific control options to the plant operator.

For more detailed information, please refer to the documentation for SIMATIC WinCC.

5.6.2 Setting up the WinCC project

Introduction

The internal properties are defined in the project properties dialogs.

Requirements

- The configuration of the hardware in the S7 project is up-to-date.
- The diagnostics screens were created or updated, and compiled with "Compile OS".
- The WinCC project of the maintenance station is opened in SIMATIC Manager.
- "WinCC OS Project Editor" must have been started before you initially generated the diagnostics screens.

Procedure

1. Select the project folder from the navigation window of the WinCC Explorer. The folder is assigned the name of the PC station in SIMATIC Manager. Select the menu command "Edit > Properties". The "Project properties" dialog box opens with the "General" tab.
2. Check the settings on the "General" tab. You can define "multiuser" or "single-user" project type for the maintenance station, depending on the overall system configuration. The "multiuser project" type is assigned accordingly to the maintenance station if your system configuration contains any other WinCC station with multiuser project.
3. Change to the "Update cycles" tab. You can define user-specific update cycles on this dialog box to suit specific requirements of your project.
4. Change to the "Hotkeys" tab. The "Actions" list returns various actions which you can assign a hotkey function. Continue at step 6 if you do not want to define any assignments.
5. Click in the field below the "Assign" button if you want to assign a hotkey. Press the key combination you want to assign on the keyboard. The key combination is displayed in the box. Accept this hotkey by clicking "Assign".
6. Change to the "options" tab to check its settings. Check in particular the "Allow activation on the ES" option. Set this option to enable activation of the maintenance station on the ES of the S7 project.
7. Click "OK". This accepts all entries made and closes this dialog box.

Result

You defined various hotkeys and user-specific cycles for maintenance station runtime.

For more detailed information on these dialog boxes, please refer to the SIMATIC WinCC documentation.

5.6.3 Defining computer properties of the WinCC project

Introduction

The computer properties determine the runtime properties of the maintenance station.

The following description applies for the WinCC project of the Maintenance Station.

Requirements

- The configuration of the hardware in the S7 project is up-to-date.
- You created or updated the diagnostics screens and executed the "Compile and download OS" function to download these to the WinCC project of the maintenance station.
- The WinCC project of the maintenance station is opened in SIMATIC Manager.

Procedure

1. Select the "Computer" object in the navigation window of WinCC Explorer. Select the menu command "Edit > Properties". The "Computer list properties" dialog box opens. In the S7 environment, the "Computer list" returns exactly the computer that you have selected in the SIMATIC Manager and have opened in the WinCC project.
2. Select the computer and click the "Properties" button. The "Computer properties" dialog box opens, and the "General" tab is displayed.
3. Usually, you do not have to make any settings on the "General" and "Startup" tabs. Change to the "Parameters" tab.
4. Set the languages as required at the "Runtime language" and "Default runtime language" selection boxes. Check the time zone settings at the "Runtime timebase" selection box.
5. Disable specific Windows hotkeys on the "Disable hotkeys" area. Activate the corresponding check box.

   Note

   The Windows hotkeys are usually not disabled in the engineering phase. You disable all Windows hotkeys the plant operator may not use after you configured released the system for the active process.

6. Change to the "Graphics Runtime" tab. Define all visualization setting for runtime, for example, window attributes, deactivation of functions, hotkeys and cursor control. Additional visualization settings can be made in OS Project Editor.

   Note

   When operating the plant in test mode, you can, for example, activate the "maximize" and "minimize" window attributes. This allows you to quickly change from the runtime view to other applications when running the system in test mode. However, you should disable these settings when you release the plant to the active process.

7. Change to the "Runtime" tab. Define the users-specific settings for maintenance station runtime.
   When using VB scripting, you can set up a VBS debugger at the "VBS Debug Options" areas.
   Define a process screen cache on the "Screen cache" area.
   The "Mouse pointer" area offers additional cursor images you can set for runtime control options. Open the selection dialog by clicking "...", and then select the cursor. The currently configured cursor representations are shown on the right side of the "..." buttons.
8. Click "OK". This confirms your entries and closes this dialog box.
9. Click "OK" to close the "Computer list properties" dialog box.

Result

The Maintenance Station properties in runtime are configured.

For more detailed information, please refer to the documentation for SIMATIC WinCC.

5.6.4 Specifying the computer properties of a WinCC server

Introduction

Properties of the WinCC project in Runtime are specified in the computer properties.

The following description applies for a WinCC Server that makes data available for the Maintenance Station and is integrated in the S7 project of the Maintenance Station.

Certain applications have to be contained in the startup list of this WinCC Server.

Requirements

- The configuration of the hardware in the S7 project is up-to-date.
- The WinCC Server that makes data available for the Maintenance Station is integrated in the S7 project of the Maintenance Station.
- The WinCC project of the WinCC servers is opens by means of the SIMATIC Manager.

Procedure

1. Select the "Computer" object in the navigation window of WinCC Explorer. Select the menu command "Edit > Properties". The "Computer list properties" dialog box opens.
2. In the S7 environment, the "Computer list" returns exactly the computer that you have selected in the SIMATIC Manager and have opened in the WinCC project.
3. Select the computer and click the "Properties" button. The "Computer properties" dialog box opens, and the "General" tab is displayed.
4. You do not have to carry out any settings in the "General" tab. Change to the "Startup" tab.
5. Check whether the following applications are activated in the startup list in the "Sequence when starting WinCC" list box and activate the missing application, if necessary.
   - Text Library Runtime
   - Alarm Logging Runtime
   - Tag Logging Runtime
6. Check whether the following applications are contained in the startup list in the "Additional tasks/applications" list box and add the missing application, if necessary.
   - CCPerfmon.exe
   - CCCSigRTServer.exe
   - CCTTRTServer.exe
   - OSLTMHandlerX.exe
   - IMServerX.exe
7. Click "OK". The "Computer properties" dialog box closes.
8. Click "OK" to close the "Computer list properties" dialog box.

Result

The properties of the WinCC server supplying the data are checked.

For more detailed information, please refer to the documentation for SIMATIC WinCC.

5.6.5 Checking and creating users and user rights

Introduction

The setup of your Maintenance Station in the WinCC project includes the configuration of users and user rights, namely of so-called authorizations.

These users and user rights must be configured to enable user login to the Maintenance Station and operation of the elements of the user interface.

On a new Maintenance Station the program automatically creates the group of "Administrators" and the "Administrator" and assigns these members default privileges. However, Maintenance Station operation requires at least one more user with defined user rights.

On the Maintenance Station, WinCC OS Project Editor adds the "Diagnostics" column to the user rights table.

For additional information on the authorizations required, please refer to "Control elements of the toolbar sets and of the message system (Page 196)".

Additional information regarding the user administration can be found in the WinCC documentation at "Working with WinCC" and "Configuration of the User Administration".

Requirements

- The diagnostics screens were generated at least once or were updated and downloaded to the Maintenance Station.
- Run "WinCC OS Project Editor" in the WinCC project before you continue.

Procedure

1. Select the "User Administrator" editor from the navigation window of WinCC Explorer. Open it by double-clicking the symbol.
2. The navigation window shows the existing users and user groups. Continue at step 4 if you created a new WinCC project for the Maintenance Station.
3. Check the authorization of all users and user groups configured in a current project. Assign corresponding user rights to an existing user or user group in the "Diagnostics" column if you do not specifically want to set up a new user for handling diagnostics functions. Select the relevant user(s) from the navigation window. The table output on the right pane shows currently assigned authorizations. Check authorizations set in the "Diagnostics" column and assign these to the user as required. You should also check the "Administrator" privileges concerning access to diagnostics functions. Continue at step 6.
4. Check the Administrator" privileges after having created the new WinCC project. Select the "Administrator" from the navigation window. The table output on the right pane shows the currently assigned authorizations. Assign all authorizations required, for example, with attributes up to "999", by double-clicking the "Enable" column.
   User rights assigned in the "Enable" column are automatically inherited at the "Diagnostics" column. However, if the user right is disabled in the "Enabled" column you can only assign it for diagnostics.
   Repeat this step for the "Administrators" group.

5. Select the "Administrator" from the navigation window. Select "User > Change password". The password input box opens. You do not have to enter an "Administrator" password in the "Old password" input box when configuring a new project. Type the new password into the "New password" input box and then confirm this entry in the "Repeat" input box. Close the dialog box by clicking "OK".
6. Create a new user group for diagnostics as required. Select "User > Create group". Type in the name of the new group, for example, "Diagnostics maintenance", on the navigation window. Assign corresponding authorization attributes, for example, from "2" to "999" by double-clicking in the "Enable" column of the table. The setting in the "Enable" column is automatically applied to the "Diagnostics" column.
   You can also choose to assign this user group only access rights for diagnostics functions. Activate the authorizations at the "Diagnostics" column but do activate these in the "Enable" column.
7. Create a new user for diagnostics as required. Select the new group you created from the navigation window and then select "User > Create user…".
   Enter the new user name in the "Login" input box of this dialog. Type the new password into the "Password" input box and then confirm this entry in the "Repeat" input box. Activate the "Also copy group settings" check box. Close the dialog box by clicking "OK". The new user is created and group authorizations are applied.
8. Close the "User Administrator" by selecting "File > Close".

Result

Existing user rights were checked in an existing WinCC project.

The "Administrator" privileges for the new Maintenance Station were checked. A user was created as required for Maintenance Station diagnostics and assigned corresponding user rights.

5.6.6 Changing the project type in WinCC

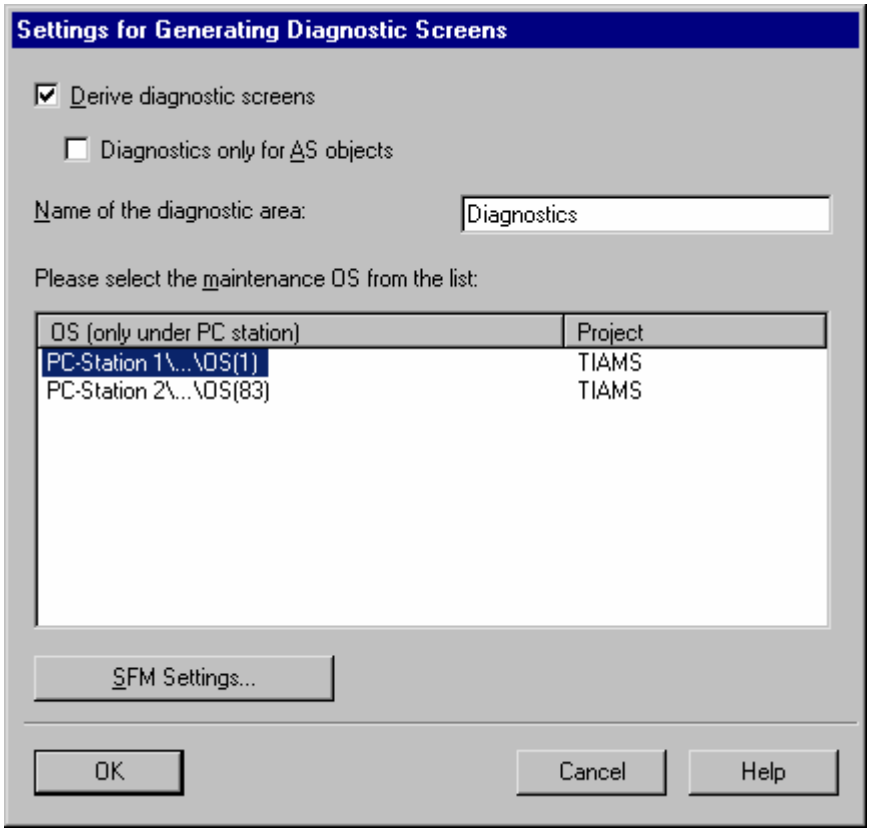
Introduction

When the Maintenance Station is in use, it may be advisable to change the project type of a WinCC project; for example, from a single-user project to a multiuser project.

- Determining the plant type results in a configuration that cannot be determined.
  For additional information on this topic, please refer to "Principle of determining the plant types (Page 26)".
- A more beneficial method of communication for the Maintenance Station Server would be to use either a direct process connection or server packages.
  For additional information on this topic, please refer to "Information on client-server architectures (Page 39)".

Procedure

1. Select the project folder in the navigation window of the SIMATIC Manager. Select "Diagnostics screens > Settings..." from the shortcut menu. The "Settings for Generating Diagnostic Screens" dialog box opens.



2. Deactivate the "Derive diagnostic screens" check box. Click "OK" to confirm the message that follows and close the dialog box.
3. A "Report system errors" message will then appear for each configured AS. Select the "No" option for all messages so that the diagnostics blocks are not deleted.
4. In the SIMATIC Manager navigation window, highlight the PC station whose WinCC project type you wish to change. Navigate to the corresponding "OS" icon via this PC station. Select "Open Object" from the shortcut menu.
   The WinCC Explorer opens.
5. Select the project folder from the navigation window of the WinCC Explorer. The folder is assigned the name of the PC station in SIMATIC Manager. Select "Edit > Properties".
   The "Project properties" dialog box will open.
6. On the "General" tab, change the project type setting to the one you require. Close the dialog box by clicking "OK".
7. Click "Yes" to confirm the message that follows ("Change project type") and close the WinCC Explorer by selecting "File > Exit".
8. Select the project folder in the navigation window of the SIMATIC Manager. Select "Diagnostics screens > Settings..." from the shortcut menu. The "Settings for Generating Diagnostic Screens" dialog box opens.
9. Activate the "Derive diagnostic screens" check box. Close the dialog box by clicking "OK". Click "OK" to confirm the message that follows.
10. Select the project folder in the navigation window of the SIMATIC Manager. Select "Diagnostics screens > Create diagnostics screens..." from the shortcut menu. The "Create Diagnostics Screens" dialog box opens.
11. The list highlights the automation systems for which you generated diagnostics screens in the previous update session. Change the settings if necessary.
12. Confirm the selection by clicking "OK". The update procedure starts. Acknowledge the message informing you that generation has successfully completed.

Result

The WinCC project type has been changed.

5.6.7 Configuring the default server for client control messages

Introduction

In the project for the Maintenance Station Server client, what is known as a default server must be defined so that control messages can be triggered and displayed via a Maintenance Station/WinCC Client (for example, if a maintenance task has been initiated in the maintenance view).

Procedure

1. In the navigation window of the SIMATIC Manager, select the PC station of the Maintenance Station Client or WinCC Client, and then select the corresponding "OS" icon. Select "Open Object" from the shortcut menu. The WinCC Explorer opens.
2. Select the "Server data" icon in WinCC Explorer.
3. Select "Default server..." in the shortcut menu. The "Configure default server" dialog box opens.
4. In the "Symb. computer name" field, select the name of the Maintenance Station Server for the "Alarms" component.
5. In the "Symb. computer name" field, select the name of the Maintenance Station Server for the "Archive" component.
6. Close the dialog box by clicking "OK".
7. Close the WinCC Explorer by selecting "File > Exit".

Result

Control messages for operations on the Maintenance Station/WinCC Client are triggered and can also be displayed.

Note

You still need to download the changes to the client.

Please note that these changes will only take effect once WinCC Runtime has been restarted on the client.

5.7 Diagnostics on Maintenance Station Server

Running maintenance station diagnostics on a Maintenance Station Server

A PC previously operated as Maintenance Station Server can also be used to run maintenance station diagnostics.

Maintenance station functionality requires that the "Graphics Runtime" application is active in the WinCC project of the Maintenance Station Server.

To activate this application, select the "Startup" tab from the "Computer properties" dialog box, and then set the "Graphics Runtime" check box at the "Startup sequence of WinCC Runtime" list.

The Maintenance Station user interface opens on the Maintenance Station Server when you restart the WinCC project. You login to the station by entering one of the configured user names.

License agreements apply same as to any Maintenance Station Client.

5.8 Complete export of component data

Overview

What is known as a complete export can be used to export all the SIMATIC Maintenance Station components with diagnostics capability for further processing in other applications.

The complete export is started via the  button in the overview screen of the Maintenance Station.

The data from all the components with diagnostics functionality are exported to the "@XML_Export.sml" file.

Storage of the export file

The storage path for the export file is specified by using the WinCC tag "@ExportPath".

This is an internal tag of the data type "Text tag 16-bit character set". The path for the storage of the export file is configured as the start value for the tag, for example to external drives as "\\<pc_name>\<released_directory>\<directory>" or to local drives as "<drive_name>\<directory>".

See also

Overview of control elements in the diagnostics screens (Page 190)

Starting the complete export of the component data (Page 229)

5.9 Exporting the data of an individual component

5.9.1 Introduction to exporting the data of an individual component

Overview

During diagnostics with the SIMATIC Maintenance Station the data of an individual component is displayed in the various views in the diagnostics faceplate of this component.

- I&M data (online /offline)
- Messages
- Status of a maintenance job.

The so-called individual export can be used to export the data of an individual component in XML format for further processing in other applications.

- CMMS applications or applications of the ERP level.
- WinCC add-on "Alarm Control Center ACC":
  The Alarm Control Center sends WinCC messages fully automatically to a variety of possible receivers such as text messages to mobile phones, pagers, e-mail.
- WinCC add-on "PM-MAINT":
  PM-MAINT is a branch- and technology-neutral maintenance planning tool for preventative maintenance.

This section describes examples for the individual export for the WinCC add-ons "Alarm Control Center ACC" and "PM-MAINT".

Identifying components with the Asset ID

The asset ID is used to identify the components and must be unique across the entire project. The asset ID is a character string of 32 characters that is transferred to the export file when an individual export is carried out.

Configuring the asset ID

- When creating new S7 projects with STEP 7 V5.4 SP3 or higher, the asset ID is generated automatically for all components configured in the "HW Config" editor.
- When migrating S7 projects that were created before STEP 7 V5.4 SP3, the asset ID for all configured components must be created manually on a one-off basis. The "Allocate asset ID..." function in the "HW Config" editor is used for this purpose.
  In "HW Config", each configured AS station is opened once and the "Allocate asset ID..." function in the "Edit" menu started. The function creates unique asset IDs for the AS and its corresponding subcomponents, and also indicates in a dialog box where these can be edited (if necessary). Once the dialog box has been confirmed, the AS station still needs to be saved, compiled and downloaded.
  This is particularly necessary if the asset ID will continue to be used, e.g. by PM-MAINT.
- For each asset proxy, the asset ID must be allocated manually by means of configuration in the corresponding instance blocks.
  For additional information on this topic, please refer to "Configuring an asset ID for individual export with a standard asset proxy (Page 66)".

Principle for configuration and data export

Configuration

Every application for which the data of the SIMATIC Maintenance Station are to be exported is a so-called export target. In order to manage the export process, various internal tags with the prefix "@ASSET_EXPORT" are created in SIMATIC WinCC for each export target. The tag name contains a numerical placeholder for assigning the tags to an export target. Each number stands for an export target.

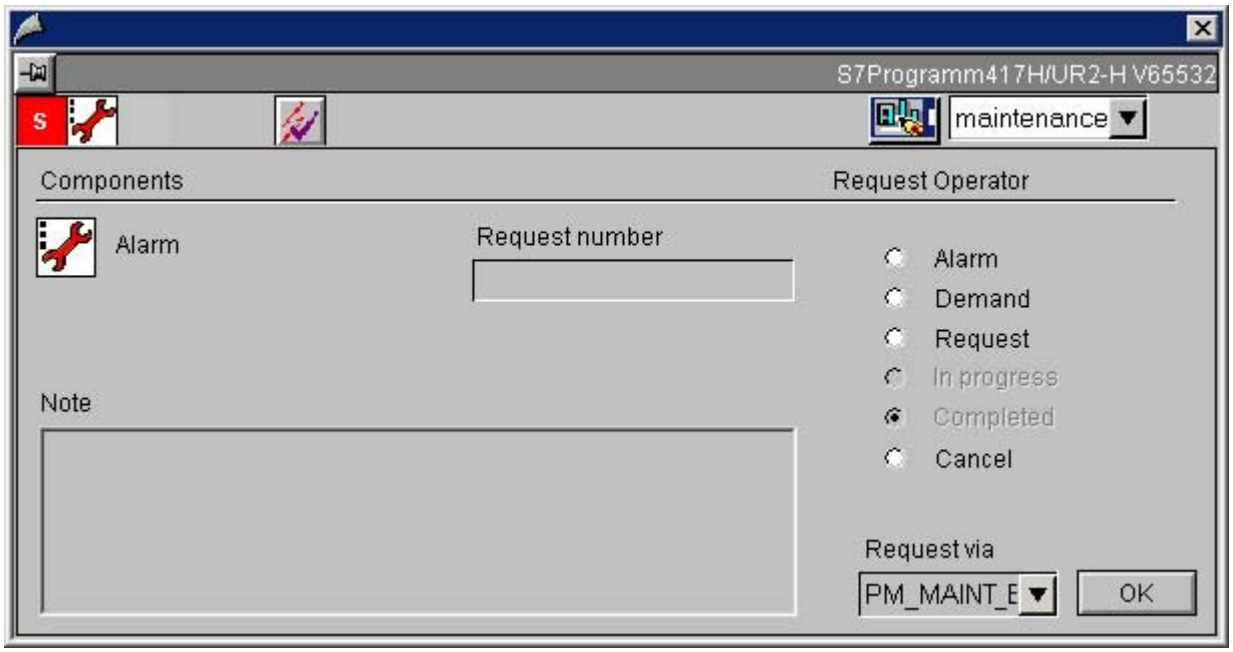
For additional information on the tags used, please refer to "Creating tags for exporting the maintenance data (Page 160)".

Global scripts are used for the data export for PM-MAINT and Alarm Control Center. When exported to PM-MAINT the data are converted by the script into the format required for PM-MAINT.

Exporting the data

The procedure for exporting the data is started by the user in the diagnostics faceplate of a component; for example, after the maintenance status has changed or a maintenance measure has been introduced.

In the diagnostics faceplate of the component, the required export target is selected in the "Request via" field of the "Maintenance" view. The export is started by using the "Execute" button.



The data is exported in an export file in XML format. The corresponding tags in WinCC for managing the process are used.

Name of export file

The name of the export file has the following format: "<Tagname>.<Asset ID>_JJJJ-MM-TT_HH_MM_SS.XML".

The elements have the following meaning:

- "<Tag_name>" = Configured component designation.
- "<Asset ID>" = ID number of the component.
- "YYYY-MM-DD_HH_MM_SS" = Date and time when the component data was exported.
- "xml" = File type

Storage of the export files

The export file is stored in the default path "<WinCC_project_directory> / AssetExport".

A subdirectory for this default path can optionally be defined by using the tag "@ASSET_EXPORT_<n>_DIR".

Directory structure when the example scripts are used

- If the example script for PM-MAINT is used, the data are converted into the format required for PM-MAINT during exporting. The converted data are stored in the subdirectory "OUT2".
- If the example script for Alarm Control Center is used, the data are stored in the subdirectory "OUT" during exporting.

Note

The export file is not deleted by the Maintenance Station. If required, this step must be carried out by either the user or the application that receives the data.

Status changes at the maintenance station

When the status changes - for example, after the maintenance job has been terminated - exporting has to be restarted by the user to transfer the status to the application (such as the Alarm Control Center) for further processing.

See also

Exporting the data of a single component (Page 230)

Overview of the data export for PM-MAINT (Page 164)

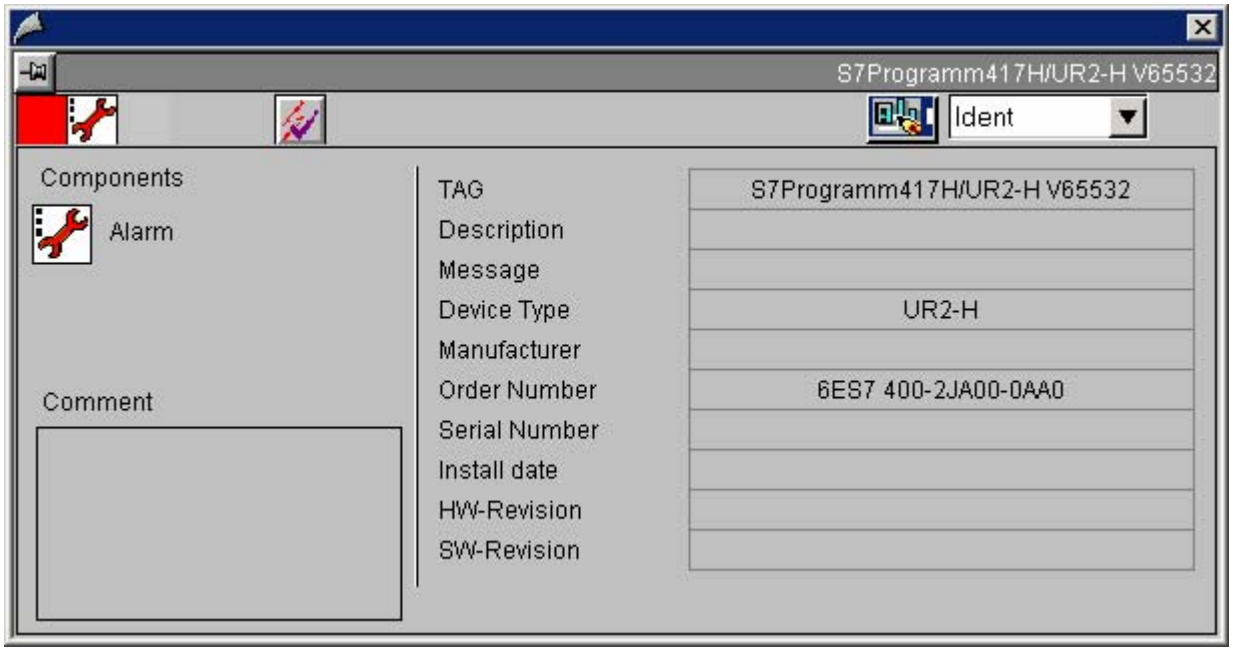
Overview of the data export for the Alarm Control Center (Page 174)

5.9.2 Data in the export file

Overview of the data

When the component data of the Maintenance Station are exported to an application for further processing, such as PM-MAINT, the data from the diagnostics faceplate is stored in XML format.

For information about storing the export file please refer to the chapter "Exporting component data for other applications".



In the XML file the data are structured into the following sections:

- "DocumentInfo"
  Contains general data, for example creation date, user name, PC name.
- "Maintenance Information"
  Contains the data of the "Maintenance" view of the diagnostics faceplate, for example maintenance status, number of the maintenance job.
- "Alarms"
  Shows the pending maintenance messages of this component from the "Maintenance" view of the diagnostics faceplate.
- Equipment Information
  Contains the component data from the "Ident" view of the diagnostics faceplate.

Data of the "Maintenance Information" section

The following table shows the meaning of the data in the export file in the XML tag "<b2mml:MaintenanceInformation>".

The information described in the table in the "XML tag" column is available in XML format in the XML tag, for example "<b2mml:Problem>".

XML-Tag < b2mml:...>	Display in the faceplate	Meaning
Problem	"Note" field	Information or note
Requestor	No display	User who is currently logged in
Status	"Request operator" status display	Status display
SubmissionDate	No display	Date
MaintenanceWorkOrderID	Maintenance work order no.	Number
EquipmentID	No display	Installation date / HW Config

Data of the "Equipment Information" section

The following table shows the meaning of the data in the export file in the XML tag "<b2mml:EquipmentInformation>".

The information described in the table in the "XML tag" column is available in XML format in the XML tag, for example "<b2mml:ValueString>".

```
<b2mml:EquipmentProperty>
    <b2mml:ID>MANUFACTURER_NAME <ID>
        <b2mml:Value>
        <b2mml:ValueString>SIEMENS AG<ValueString>
        ......
        <b2mml:Value>
<b2mml:EquipmentProperty>
```

XML tag < b2mml:ID>	Field display in the faceplate	Meaning / source
NAME	Name or designation in the title of the faceplate	Name or designation in the title of the faceplate a) Standard: Name of the S7 project and component name b) At switches: IP address
DEVICE_TYPE	"Device type"	Device type / HW Config
MANUFACTURER_NAME	"Manufacturer"	Manufacturer / Online data
ORDER_ID	"Order number"	Order number / Online data
SERIAL_NUMBER	"Serial number"	Serial number / Online data from the device
INSTALLATION_DATE	"Installation date"	Installation date / HW Config
HARDWARE_REVISION	"HW revision"	Hardware revision / Online data
SOFTWARE_REVISION	"SW revision"	Software revision or firmware revision / Online data
TAG_FUNCTION	"Tag"	Name or designation a) Standard: Component name (without name of the S7 project) b) At switches: IP address
TAG_LOCATION	"Description"	Description or location / Online data from the device
DESCRIPTOR	"Notification"	Notification / Online data
COMMENT	"Comment"	Comment / HW Config Note: The text in the "Comment" field is also displayed in the title bar of the faceplate.

For additional information on the source of the data, please refer to "Source and visualization of component data (Page 90)".

5.9.3 Creating tags for exporting the maintenance data

Introduction

In order to export data of an individual component, various internal tags are created in SIMATIC WinCC in order to manage the export process for each export target.

The following table shows the possible tags: Not all the tags are required, depending on the export target.

Name	Function	Type
@ASSET_EXPORT_<n>_NAME	Name of the export target. This name is displayed in the diagnostics faceplate of the component as an export option. The name is defined as the start value of the tag.	Text 16-bit character set
@ASSET_EXPORT_<n>_USERDATA	Optional tag. This information is included in the export and can serve to differentiate several export targets, for example as a group for Alarm Control Center. The information is defined as the start value of the tag.	Text 16-bit character set
@ASSET_EXPORT_<n>_DIR	Optional tag. The export file is stored in the default path "<WinCC_project_directory> / ASSETEXPORT". The tag can be used to define a subdirectory for this default path in which the export file is stored. If the tag for an export target does not exist, the export file is stored in the default path "<WinCC_project_directory> / AssetExport". The directory name is defined as the start value of the tag.	Text 16-bit character set
@ASSET_EXPORT_<n>_FLAGS	Optional tag. The tag is not used at present. If the tag does not exist, the value "0" is used.	Integer unsigned 32 Bit

Name	Function	Type
@ASSET_EXPORT_FINISHED	Optional tag. A script can be used for the export function. During the export this tag is used as the trigger for this script. The tag is only required once in the project, even if several export targets are defined. The tag therefore does not contain a numerical placeholder "<n>".	Integer unsigned 32 Bit

Assignment of the tags to the export target

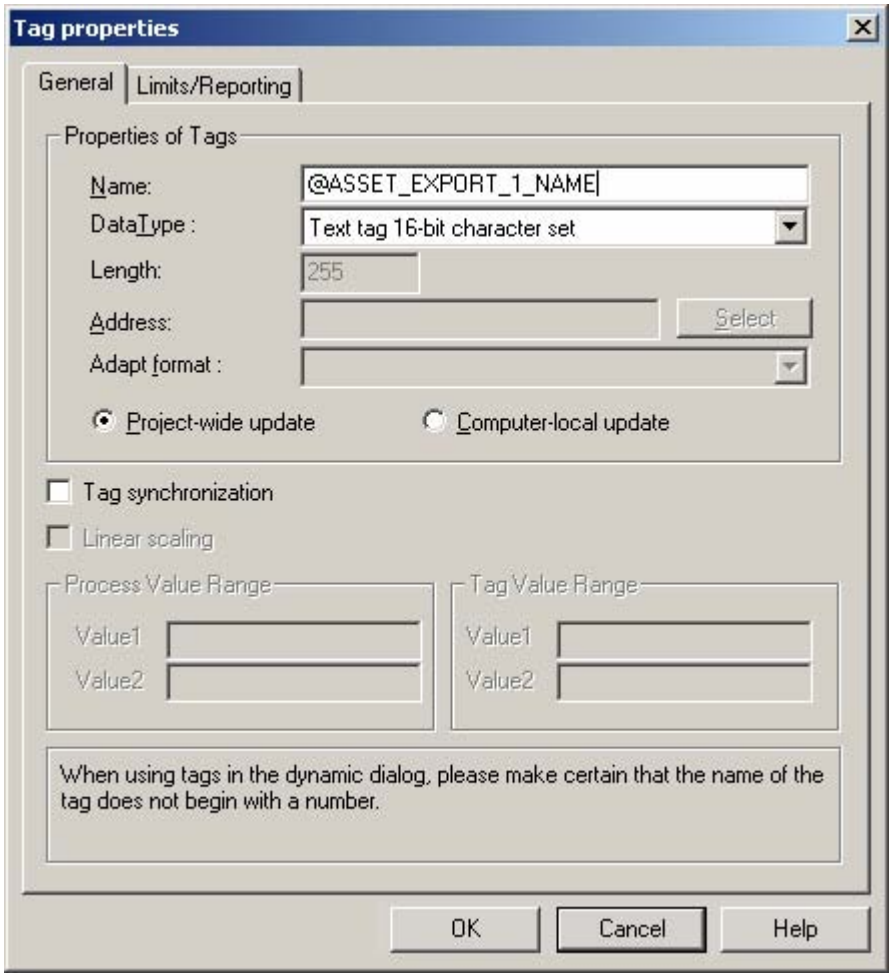
The numerical placeholder "<n>" in the tag name is used to assign the individual tags to an export target. Each number stands for an export target. The tag "@ASSET_EXPORT_FINISHED" does not contain any numerical placeholder since it is not assigned to an export target.

Note

The export targets must be numbered consecutively.

Procedure

1. Open the WinCC project of the Maintenance Station.
2. In the directory window select the "Tag Management> Internal Tags" directory and open the shortcut menu.
3. Select the menu command "New Tag....". The "Properties Tag" dialog box opens.
4. Enter the name of the export tag in the "Name" field, for example "@ASSET_EXPORT_1_NAME". In the process, enter the number of the export target instead of the numerical placeholder in the name.
5. In the "Data type" field select the corresponding type in accordance with the table above, for example "Text tag 16-bit character set".



6. If text tags do not apply here, continue with step 7.
   In the case of a "Text" type tag, the start value still needs to be configured.
   Change to the "Limits/Logging" tab. Select the check box for the "Start value" field and enter the desired value or text. The use of the text depends on the tags and is listed in the table above.
7. Close the dialog box by clicking "OK".
8. Repeat steps 2 to 7 in order to create all the required tags for this export target.
9. Close the WinCC project.

Result

The tags for the data export to an export target have been created.

If necessary, repeat these steps to create the tags of additional export targets.

See also

Configuring the data export for PM-MAINT (Page 166)

Configuring the data export for Alarm Control Center (Page 176)

5.9.4 Overview of the data export for PM-MAINT

Introduction

The SIMATIC WinCC add-on "PM-MAINT" is a branch- and technology-neutral maintenance planning tool for preventative maintenance. PM-MAINT offers extensive possibilities for connecting to automation systems of different manufacturers and in addition to a purely calendar-controlled maintenance also a real performance- and/or event-controlled maintenance.

Overview

The messages of the SIMATIC Maintenance Station for diagnostics, operator actions and maintenance demands of an individual component can be passed on by means of the individual export at PM-MAINT. These data can then be processed further in PM-MAINT and are used for event-controlled maintenance planning.

Before using the individual export, the plant hierarchy of the components used must be integrated according to PM-MAINT, via what is known as the CAx data.

Configuration

- The following tags are created for the "PM MAINT" export target in WinCC:
  - "@ASSET_EXPORT_<n>_NAME".
    The name of the export target is specified as the start value of the tag, for example "PM_MAINT_Export".
  - "@ASSET_EXPORT_FINISHED"
    The tag serves as the trigger for executing a global script.
- The export file is stored in the default path "<WinCC_project_directory> / AssetExport". A subdirectory for this default path can optionally be defined by using the tag "@ASSET_EXPORT_<n>_DIR", for example "PM_MAINT_Export_DIR".
- A global script is defined by the user for transferring the data to PM-MAINT.
  An example script is supplied on the DVD of the Maintenance Station and is described in the topic "Example script for the export to PM-MAINT".
  The global script is inserted under VBS Editor in the WinCC editor "Global Script".
- The tag "@ASSET_EXPORT_FINISHED" is configured as a trigger for the global script.
- For the data format in the export file stylesheets are furthermore required in order to convert the data into a format that can be processed by PM-MAINT.
  The files "PM_MAINT_cax.xsl" and "PM_MAINT_workflow.xsl" are supplied as examples of stylesheets on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products/PM-MAINT_Integration" .

Exporting the data

Exporting of the data to PM-MAINT is carried out by the user in the diagnostics faceplate in the "Maintenance" view. The export is not carried out automatically.

The export target is selected in the "Request via" field and the export started by using the "Execute" button.

During exporting the data are converted into the format required for PM-MAINT. Stylesheets are used to this purpose. If the example script is used, these stylesheets are contained in the "Stylesheets" subdirectory.

After conversion the export file is stored by the example script in the subdirectory "OUT2" under the export directory for PM-MAINT.

Integrating data in PM-MAINT

In PM-MAINT the subdirectory "OUT2" is configured as the import directory.

To transfer the plant hierarchy of the components being used to PM-MAINT, the CAx data need to be exported in the SIMATIC Manager and imported into PM-MAINT.
For more detailed information on this topic, please refer to "Importing the plant hierarchy into PM-MAINT (Page 169)".

For more detailed information about the integration of data in PM-MAINT, please refer to the PM-MAINT documentation.

See also

Introduction to exporting the data of an individual component (Page 153)

5.9.5 Configuring the data export for PM-MAINT

Introduction

The following section describes the configurations for exporting data of an individual component for PM-MAINT:

- Creation of the export directory and the subdirectory for the stylesheets.
- Integration of the example script in WinCC.
- Configuration of the trigger for the example script.
- Use of supplied stylesheets for the conversion of the data into the format required for PM-MAINT.

The example script from the topic "Example script for the data export to PM-MAINT" is used to this purpose. The example script is also supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products/PM-MAINT_integration/Scripts".

Note

Before using the example script check the file names and path specifications configured in it against the real directory structure of the PC that is used and adapt them if necessary.

Requirements

The following tags are used for the "PM MAINT" export target and have to be created in WinCC:

- "@ASSET_EXPORT_<n>_NAME".
  The name of the export target is defined as the start value of the tag. The example script uses "PM_MAINT_Export".
- "@ASSET_EXPORT_FINISHED"
  The tag serves as the trigger for executing a global script.
- "@ASSET_EXPORT_<n>_DIR"
  The tag can be used optionally and specifies the subdirectory of the default path "<WinCC_project_directory> / AssetExport" in which the export file is to be stored. The directory name is specified as the start value. The example script uses "PM_MAINT_Export_DIR".

For additional information about creating the tags please refer to the topic "Creating tags for exporting the maintenance data".

Procedure

1. In the Windows Explorer navigate in the navigation window to the directory of the WinCC project of the Maintenance Station. By default the WinCC project lies in the directory of the corresponding S7 project in the subdirectory "wincproj / <wincc_project_name>".
2. Create a new subdirectory called "AssetExport". Create a subdirectory called "Stylesheet" under the directory "AssetExport".
3. Change to the subdirectory "wincproj / <wincc_project_name>" and open the WinCC project of the Maintenance Station by double-clicking the file "<wincc_project_name>.mcp". The WinCC Explorer opens.
4. Select the entry "Global Script" in the navigation window. Open the shortcut menu and select the "Open VBS Editor" command.
5. In the navigation window of the VBS Editor select the "Actions" tab. Click in the tab and select the menu command "New > Action" in the shortcut menu.
6. Copy the code of the example script from the topic "Example script for the data export to PM-MAINT" and insert it into the new action between the code lines "Function action" and "End Function". Check that these code lines do not exist double after being inserted.
7. Save the action by using the menu command "File > Save". Since this is a new action, the "Save As" dialog box opens. Enter the name of the action, for example "PM_MAINT_Transform".
8. The tag "@ASSET_EXPORT_FINISHED" is configured as a trigger for the script. To do so, select the menu command "Options > Info / Trigger". The "Properties" dialog box is opened. Change to the "Trigger" tab. Select the "Tag" entry in the navigation window and click "Add". The "Add trigger" dialog box opens. Enter the name "@ASSET_EXPORT_FINISHED" in the "Tag name" field. Click "Add" in order to add the tag to the "trigger name" table. You can alternatively use the "..." button to open a selection dialog and select the tag from it.
   Close the dialog box by clicking "OK".
9. Close the "Properties" dialog box by clicking "OK". Save the action by using the menu command "File > Save".
10. Close the VBS Editor by using the menu command "File > Exit".
11. Stylesheets are furthermore required for the format of the data in the export file.
    The files "PM_MAINT_cax.xsl" and "PM_MAINT_workflow.xsl" are supplied as examples of stylesheets on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products/PM-MAINT_Integration/Stylesheets" . In the Windows Explorer copy these files into the directory "<wincc_project_name> / AssetExport / Stylesheets" that you created in step 2.

Result

The required configurations specified in the introduction for the data export to PM-MAINT have been implemented.

Note

If you use the example script, no additional directories have to be created manually. The subdirectories configured in the example script and in the optional tag "@ASSET_EXPORT_<n>_DIR" are created automatically when the script is started for the first time.

See also

Creating tags for exporting the maintenance data (Page 160)

Example script for the data export to PM-MAINT (Page 170)

5.9.6 Importing the plant hierarchy into PM-MAINT

Introduction

To transfer the plant hierarchy of the components being used to PM-MAINT, the CAx data need to be exported in the SIMATIC Manager and imported into PM-MAINT.

Procedure

1. Export the CAx data from the SIMATIC Manager. To do this, select the project folder from the SIMATIC Manager, followed by "Options >CAx data > Export...". The "Export CAx data" dialog box opens.
2. Select the target folder in the field of the same name.
3. The table displays the stations whose data can be exported. Check the selection.
4. Start the export process by clicking the "Export" button. In the target folder, an XML file is created for each station selected. Once the process is complete, the table will display the status for each station exported.
5. Close the dialog box by clicking "Close".
6. In Windows Explorer, copy the "CAX2PM-Maint.vbs" script from the "Additional_Products\PM-MAINT_integration\Scripts\" folder on the Maintenance Station product DVD to your local hard drive.
7. Adapt the paths in the local copy of the "CAX2PM-Maint.vbs" script.
8. Execute the script to convert the CAx data into PM-MAINT format and import them into PM-MAINT.

Result

The plant hierarchy of the components being used is imported into PM-MAINT.

5.9.7 Example script for the data export to PM-MAINT

Overview

The following global script can be used to export data of an individual component for PM-MAINT:

Note

Before using the example script, check the file names and path specifications configured in it against the real directory structure of the PC that is used and adapt them if necessary.

The following files and directories are used in this script:

- The directory "<WinCC_project_directory> / AssetExport / PM_MAINT_Export_DIR / OUT".
  The directory is created automatically when the script is started for the first time.
- The stylesheets "PM_MAINT_cax.xsl" and "PM_MAINT_workflow.xsl" in the directory "<WinCC_project_directory> / AssetExport / Stylesheet".
  The stylesheets are also supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products/PM-MAINT_integration/Stylesheets".

For additional information about using the example script please refer to the topic "Configuring the data export for PM-MAINT".

The example script is supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products/PM-MAINT_integration/Scripts".

Example

```
Option Explicit
Function action

' FilesystemObject doc: http://msdn2.microsoft.com/en-
us/library/hww8txat.aspx
' Files Object doc: http://msdn2.microsoft.com/en-
us/library/18b41306.aspx
' Folder Object doc: http://msdn2.microsoft.com/en-
us/library/1c87day3.aspx

Dim ExportTarget


Dim fso
Dim folder
Dim fc
Dim f1

Dim a
'a = 1 / 0


' Load XSL Stylesheet
Dim xsl
Set xsl = CreateObject("MSXML2.DOMDocument.3.0")
xsl.async = false
xsl.load(HMIRuntime.ActiveProject.Path &
"\AssetExport\Stylesheet\PM_MAINT_workflow.xsl")


Set fso = CreateObject("scripting.filesystemobject")
Set folder = fso.GetFolder(HMIRuntime.ActiveProject.Path &
"\AssetExport\PM_MAINT_Export_DIR\Out\")
Set fc = folder.Files

'On Error Resume Next

For Each f1 In fc
    If Right(f1.name, 4) = ".xml" Then

        'debug script for Interlink.dll
        Dim il
        Dim job
        Dim xmlfile
        Dim MessageText

        xmlfile = f1.Path 'the chosen XML file
```

```
''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''
        Dim objXML
        'Set objXML = CreateObject("MSXML2.DOMDocument.6.0")
        Set objXML = CreateObject("MSXML2.DOMDocument.3.0") '
delivered with IE 6.0SP1, see http://support.microsoft.com/kb/269238

        '  check Document structure on load
        objXML.validateOnParse = True

        ' load Document
        Dim xml
        Set xml = CreateObject("MSXML2.DOMDocument.3.0")
        xml.async = False
        xml.load(xmlfile) 'Load XML file

        Dim destName
        Dim destFile
        Dim pos
        pos = InStrRev(xmlfile, "\", -1, vbTextCompare)
        If pos > 0 Then
            pos = InStrRev(xmlfile, "\", pos - 1, vbTextCompare)
            If pos > 0 Then
                'Destination Directory for PM Maint Import Path
                destName =
"\\<Destination_PC>\<PM_MAINT_ImportPath>\" & f1.name

        '        destName = Left(xmlfile, pos) & "out2\" & f1.name

                ' Transform
                Set destFile = fso.CreateTextFile(destName, True,
False)
                destFile.Write(xml.transformNode(xsl))
                Set destFile = Nothing

                ' save to new file

            End if
        End if
```

```
''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''

        ' rename file to prohibit processing the same file again
        fso.MoveFile f1.Path, f1.Path & ".bak"
    End if
Next


End Function
```

See also

Configuring the data export for PM-MAINT (Page 166)

5.9.8 Overview of the data export for the Alarm Control Center

Introduction

The SIMATIC WinCC add-on "Alarm Control Center (ACC)" sends WinCC messages fully automatically to a variety of possible receivers such as text messages to mobile phones, pagers, language output to phone, e-mail, LAN message to PC, PDA or Webpad (MOBIC).

The modular Alarm Control Center and the available options allow individual adaptation to the requirements - from a stand-alone solution to company-wide communication solutions. Additional functions are:

- Integrated shift and person management for time-dependent delivery of messages to different persons.
- Extensive escalation system for reliable delivery of messages even when individual receivers cannot be reached.
- Network-wide operation and configuration through Web capability.

Overview

The messages of the SIMATIC Maintenance Station for diagnostics, operator actions and maintenance demands of an individual component can be passed on to the Alarm Control Center. The Alarm Control Center then sends these messages fully automatically to various receivers such as the maintenance personnel.

Configuration

- The following tags are created for the "Alarm Control Center" export target in WinCC:
  - "@ASSET_EXPORT_<n>_NAME".
    The name of the export target is specified as the start value of the tag, for example, "ACC_Export".
  - "@ASSET_EXPORT_FINISHED"
    The tag serves as the trigger for executing a global script.
- The export file is stored in the default path "<WinCC_project_directory> / AssetExport". A subdirectory for this default path can optionally be defined by using the tag "@ASSET_EXPORT_<n>_DIR", for example, "ACC_Export".
- A global script is defined by the user for transferring the data to Alarm Control Center. An example script is supplied on the DVD of the Maintenance Station and is described in the topic "Example script for the export to Alarm Control Center".
  The global script is inserted under VBS Editor in the WinCC editor "Global Script".
  The tag "@ASSET_EXPORT_FINISHED" is configured as a trigger for the global script.
- Similarly, the license number of the Alarm Control Center is configured in an XML file in the Maintenance Station for data transmission.

Exporting the data

Exporting of the data to Alarm Control Center is carried out by the user in the diagnostics faceplate in the "Maintenance" view. The export is not carried out automatically.

The export target is selected in the "Request via" field and the export started by using the "Execute" button.

The export file is stored by the example script in the subdirectory "OUT" under the configured export directory.

Integration of the data in the Alarm Control Center

For more detailed information about integrating data in Alarm Control Center, please refer to the Alarm Control Center documentation.

Configuration in the Alarm Control Center

The following points have to be observed at the configuration in the Alarm Control Center:

- The coupling agent "OpenInterface" with "ACC Open Interface Runtime license (CAL)" is required.
- The send channel "ACC LAN Message" is preferred. The router must have been set up.
- The "Administrator" user must be set up for the channel "ACC LAN Message". Set "localhost" as the phone number.

Use in case of distributed systems

If the SIMATIC Maintenance Station is used as a distributed system, the ACC agent must be installed on the Maintenance Station Server.

The Alarm Control Center server can be installed on a different PC.

See also

Introduction to exporting the data of an individual component (Page 153)

5.9.9 Configuring the data export for Alarm Control Center

Introduction

The following section describes the configurations for the data export to the Alarm Control Center "ACC":

- Creating the export directory.
- Integration of the example script in WinCC.
- Configuration of the trigger for the example script.

The example script from the topic "Example script for the data export to Alarm Control Center" is used to this purpose. The example script is also supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products / ACC_integration / Scripts".

Note

Before using the example script check the file names and path specifications configured in it against the real directory structure of the PC that is used and adapt them if necessary.

Requirements

The following tags are used for the "Alarm Control Center" export target and have to be created in WinCC:

- "@ASSET_EXPORT_<n>_NAME".
  The name of the export target is defined as the start value of the tag. The example script uses "ACC_Export".
- "@ASSET_EXPORT_FINISHED"
  The tag serves as the trigger for executing a global script.
- "@ASSET_EXPORT_<n>_DIR"
  The tag can be used optionally and specifies the subdirectory of the default path "<WinCC_project_directory> / AssetExport" in which the export file is to be stored. The directory name is specified as the start value. The example script uses "ACC_Export".

For additional information on creating tags, please refer to "Creating tags for exporting the maintenance data (Page 160)".

Procedure

1. In the Windows Explorer navigate in the navigation window to the directory of the WinCC project of the Maintenance Station. By default the WinCC project lies in the directory of the corresponding S7 project in the subdirectory "wincproj / <wincc_project_name>".
2. Create a new subdirectory called "AssetExport".
3. Change to the subdirectory "wincproj / <wincc_project_name>" and open the WinCC project of the Maintenance Station by double-clicking the file "<wincc_project_name>.mcp". The WinCC Explorer opens.
4. Select the entry "Global Script" in the navigation window. Open the shortcut menu and select the "Open VBS Editor" command.
5. In the navigation window of the VBS Editor select the "Actions" tab. Click in the tab and select the menu command "New > Action" in the shortcut menu.
6. Copy the code of the example script from the topic "Example script for the data export to Alarm Control Center" and insert it into the new action between the code lines "Function action" and "End Function". Check that these code lines do not exist double after being inserted.
7. Save the action by using the menu command "File > Save". Since this is a new action, the "Save As" dialog box opens. Enter the name of the action, for example "ACC_Send_Messages".
8. The tag "@ASSET_EXPORT_FINISHED" is configured as a trigger for the script. To do so, select the menu command "Options > Info / Trigger". The "Properties" dialog box is opened. Change to the "Trigger" tab. Select the "Tag" entry in the navigation window and click "Add". The "Add trigger" dialog box opens. Enter the name "@ASSET_EXPORT_FINISHED" in the "Tag name" field. Click "Add" in order to add the tag to the "trigger name" table. You can alternatively use the "..." button to open a selection dialog and select the tag from it.
   Close the dialog box by clicking "OK".
9. Close the "Properties" dialog box by clicking "OK". Save the action by using the menu command "File > Save".
10. Close the VBS Editor by using the menu command "File > Exit".

Result

The required configurations specified in the introduction for the data export to Alarm Control Center have been implemented.

Note

If you use the example script, no additional directories have to be created manually. The subdirectories configured in the example script and in the optional tag "@ASSET_EXPORT_<n>_DIR" are created automatically when the script is started for the first time.

5.9.10 Configuring the license number of the Alarm Control Center for the export function

Introduction

The license number of the Alarm Control Center "ACC" is required as a parameter in the export file when exporting individual items. As a result, the license number must be called in the "ACC", and configured in the "logininfo.xml" file in the Maintenance Station.

By way of example, the "logininfo.xml" file is also supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products / ACC_integration / LoginInfo".

Requirements

- The license number of the Alarm Control Center is known.
  You can find the license number in the "System overview" of the Alarm Control Center in the "OpenInterface" entry under "Coupling agents".

Procedure

1. In Windows Explorer, navigate to the DVD of the SIMATIC Maintenance Station where you will find the directory "Additional_Products / ACC_integration / LoginInfo".
2. Copy the subdirectory "ACC" from the DVD, as a subdirectory, to the local WinCC project directory of the Maintenance Station under "<wincc_project_name>".
   By default the WinCC project lies in the directory of the corresponding S7 project in the subdirectory "wincproj / <wincc_project_name>".
   This "<wincc_project_name> / ACC" path for the XML file is used in the example script.
3. Open the "logininfo.xml" file using an XML editor such as Windows Notepad.
4. Enter the license number of the Alarm Control Center under the "<License>" parameter.
   The format in the example file has been preselected.
5. Save the file and exit the editor.

Result

The license number of the Alarm Control Center is configured for exporting individual items.

5.9.11 Example script for exporting data to the Alarm Control Center

Overview

The following global script can be used to export data of an individual component for the Alarm Control Center.

Note

Before using the example script, check the file names and path specifications configured in it against the real directory structure of the PC that is used and adapt them if necessary.

The following files and directories are used in this script:

- The directory "<WinCC_project_directory> / AssetExport / ACC_Export".
  The directory is created automatically when the script is started for the first time.
  The "OUT" subdirectory is also created at this point.

For additional information about using the example script, please refer to the topic "Configuring the data export for Alarm Control Center".

The example script is supplied on the DVD of the SIMATIC Maintenance Station in the directory "Additional_Products / ACC_integration / Scripts".

Example

```
Option Explicit
Function action

' FilesystemObject doc: http://msdn2.microsoft.com/en-
us/library/hww8txat.aspx
' Files Object doc: http://msdn2.microsoft.com/en-
us/library/18b41306.aspx
' Folder Object doc: http://msdn2.microsoft.com/en-
us/library/1c87day3.aspx

Dim ExportTarget
Dim ServiceUnit
Dim loginInfoPath
ServiceUnit = "9999"
ExportTarget = "ACC_Export"
LoginInfoPath = HMIRuntime.ActiveProject.Path & "\ACC\logininfo.xml"

Dim fso
Dim folder
Dim fc
Dim f1

' activate debugger
Dim a
'a = 1 / 0


Set fso = CreateObject("scripting.filesystemobject")
Set folder = fso.GetFolder(HMIRuntime.ActiveProject.Path &
"\AssetExport\" & ExportTarget & "\Out\")
Set fc = folder.Files

On Error Resume Next

For Each f1 In fc
    If Right(f1.name, 4) = ".xml" Then

        'debug script for Interlink.dll
        Dim il
        Dim job
        Dim xmlfile
        Dim MessageText

        xmlfile = f1.Path


        If Len(ServiceUnit) <= 0 Then ServiceUnit = "9999"
```

```
''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''
        Dim objXML
        'Set objXML = CreateObject("MSXML2.DOMDocument.6.0")
        Set objXML = CreateObject("MSXML2.DOMDocument.3.0") '
delivered with IE 6.0SP1, see http://support.microsoft.com/kb/269238

        ' check structure of document while loading
        objXML.validateOnParse = True

        ' load document
        If Not objXML.Load(xmlfile) Then
            ' Error while loading
            HMIRuntime.Trace "Error while loading document." &
vbCrLf & vbCrLf _
            & "Reason: " & objXML.parseError.reason & vbCrLf _
            & "Line: " & objXML.parseError.Line
            Exit Function
        Else
            Dim child

            MessageText = "Maintenance Request: "

            Set child =
objXml.documentElement.selectSingleNode("/Document/b2mml:EquipmentIn
formation/b2mml:Equipment/b2mml:EquipmentProperty/b2mml:Value/b2mml:
ValueString[../b2mml:Key='Name']")
            MessageText = MessageText & " Tag=" & child.text
            'HMIRuntime.Trace child.NodeName & " = " & child.text &
vbNewLine

            Set child =
objXml.documentElement.selectSingleNode("/Document/b2mml:Maintenance
Information/b2mml:MaintenanceRequest/b2mml:Problem")
            MessageText = MessageText & " / Problem=" & child.text

            Set child =
objXml.documentElement.selectSingleNode("/Document/b2mml:Maintenance
Information/b2mml:MaintenanceRequest/b2mml:Requestor")
            MessageText = MessageText & " / Requestor=" & child.text

            Set child =
objXml.documentElement.selectSingleNode("/Document/b2mml:Maintenance
Information/b2mml:MaintenanceRequest/b2mml:Status")
            MessageText = MessageText & " / Status=" & child.text
            HMIRuntime.Trace "MessageText = " & MessageText &
vbNewLine
        End If
```

```
''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''

        'Create and initialize Interlink and Job helper objects
        Set il = HMIRuntime.DataSet("il").Value
        'Set job = HMIRuntime.DataSet("job").Value ' always create a
new job object

        If IsEmpty(il) Then
            Set il = CreateObject("FSP3Interlink.Interlink")

            'Load login info from File
            Dim file
            Dim logininfo
            Set file = fso.OpenTextFile(LoginInfoPath)
            loginInfo = file.ReadAll()

            'chose connection method (default is dcom)
            Dim ComputerName
            Set ComputerName = HMIRuntime.Tags("@LocalMachineName")
            'Set ComputerName = HMIRuntime.Tags("@ServerName")
            ComputerName.Read
            'il.AddGateway "tcp://localhost", 5, loginInfo, nothing,
false
            'il.AddGateway "soap://FSP3SERVER/fsp3", 5, loginInfo,
nothing, false
            'il.AddGateway "dcom://" & ComputerName.Value, 5,
loginInfo, Nothing, False
            il.AddGateway "dcom://localhost", 5, loginInfo, Nothing,
False

            HMIRuntime.DataSet.Add "il", il
        End If

        If IsEmpty(job) Then
            Set job = CreateObject("FSP3Interlink.Job")
            HMIRuntime.DataSet.Add "job", job
        End If
```

```
            'Prepare Job object
            job.MsgText = MessageText
            job.AddAlarmGroupToCall(ServiceUnit)

            'Submit Job
            Dim sHost
            Dim sJobID
            sHost = ""
            sJobID = il.SubmitJob("", "", job, sHost)

            HMIRuntime.DataSet.Add "host", sHost
            HMIRuntime.DataSet.Add "jobid", sJobID

            ' rename file to prohibit processing the same file again
            fso.MoveFile f1.Path, f1.Path & ".bak"
        End If
    Next


    End Function
```

See also

Configuring the data export for Alarm Control Center (Page 176)

Configuring the license number of the Alarm Control Center for the export function (Page 178)

Working with SIMATIC Maintenance Station 6

6.1 Overview of diagnostics and maintenance using the maintenance station

Overview of diagnostics and maintenance

This chapter describes diagnostics and maintenance functionality of SIMATIC Maintenance Station.

Starting the Maintenance Station

Activate WinCC on the PC used to run the Maintenance Station diagnostics functions. The user must log in to access the diagnostics functions.

Layout of the diagnostics screens

The diagnostics screens are output with a user interface which is split into three areas. The user interface features static and dynamic control elements and displays.

Control elements for diagnostics

The user interface of the Maintenance Station provides various control elements and displays. These are used to navigate in the hierarchy of diagnostics screens and to execute specific functions in the overview area and in the toolbar.

General diagnostics

This chapter describes the basic diagnostics procedures and options.

Diagnostics of AS, PC stations and network components

The next three chapters, i.e. the "AS objects", "PC stations" and "Network components" sections, are focused on the description of directed component diagnostics.

Maintenance requests and status management

In Maintenance Station diagnostics, the maintenance requests for components concerned are displayed with different priorities. The user can check the maintenance request and initiate an appropriate maintenance task. The status of the maintenance task is managed on the diagnostics faceplate.

Additional topics in this chapter

- Exporting component data
- Diagnostics status of redundant components
- Changeover between SIMATIC Maintenance Station and PCS 7 Maintenance Station.

6.2 Starting the maintenance station

Introduction

The Maintenance Station is ready for operation upon conclusion of engineering.

Requirements

- Hardware configuration data in the S7 project are up-to-date, compiled and downloaded to the AS. In order to visualize diagnostics data of the Maintenance Station on a PC and use the "Loop-in-HW-Config" function, the S7 project must be copied from the S7 ES to this PC.
- You created or updated the diagnostics screens and downloaded these to the WinCC project of the Maintenance Station.
- Configure the interconnections between the process screens and the Maintenance Station user interface when the Maintenance Station is integrated in an existing WinCC project. The user rights of previously configured users must be adapted to enable user access to diagnostics functions.

Procedure

1. Open the WinCC project on the Maintenance Station or, in distributed systems, on the Maintenance Station Client.
   Open the WinCC project in which you have integrated the Maintenance Station.
2. Click the "Activate" toolbar button to activate the WinCC project.
3. The login dialog opens after startup of the WinCC project. Log on using one of the configured user names.
   The previous user accounts remain valid when the Maintenance Station is integrated in an existing WinCC project.
4. The Maintenance Station user interface opens and is ready for diagnostics after the user is logged in.
   The Maintenance Station in the existing WinCC project initially starts with the current user interface and the process screens. You can use the configured links to change to the Maintenance Station user interface and to return to the process screens when diagnostics is completed.

Result

The Maintenance Station is active.

6.3 Structure of the diagnostics screens

Introduction

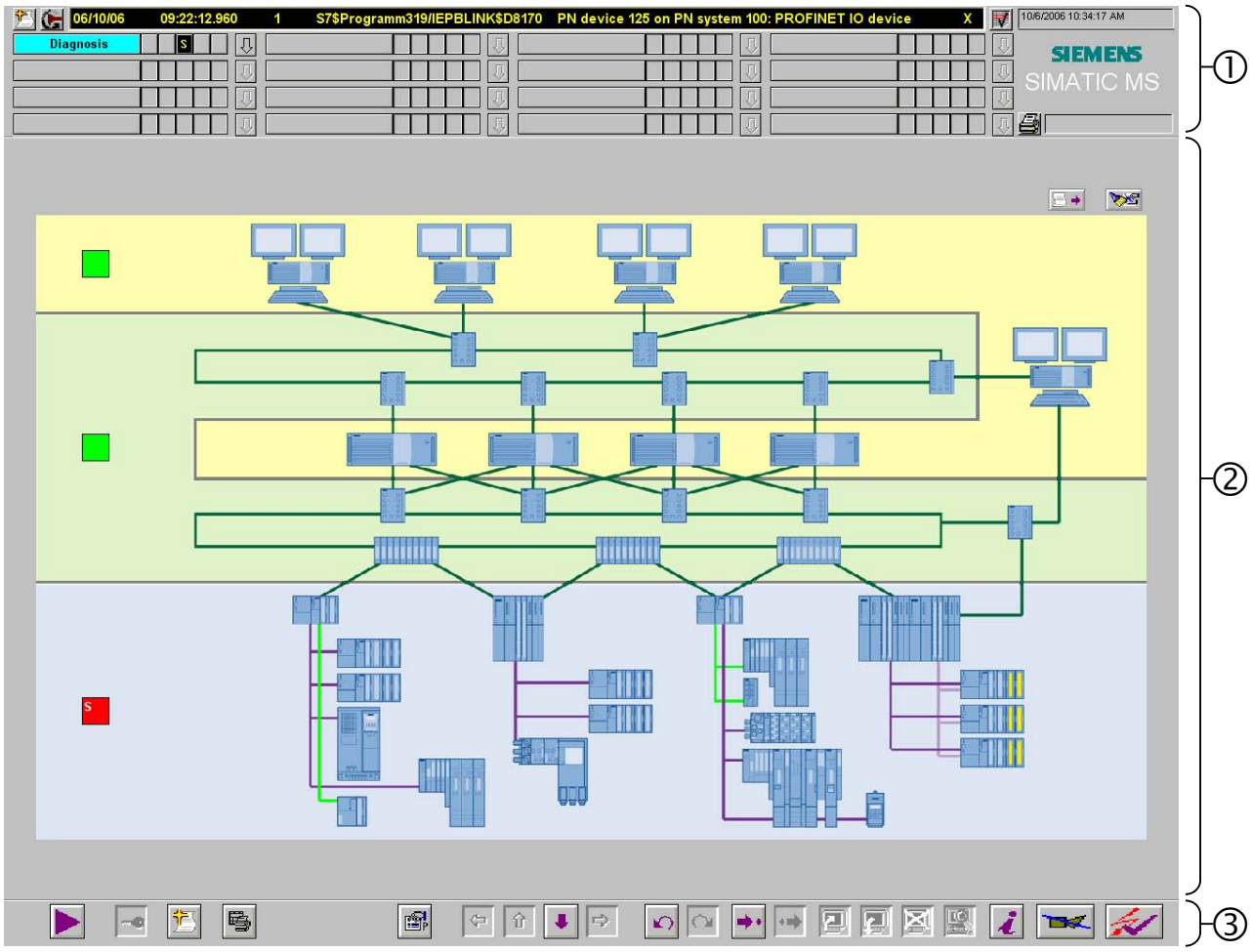
Diagnostics data are visualized on the overview and diagnostics screens of SIMATIC Maintenance Station. The diagnostics screens are automatically generated and allocated to the hierarchy in the course of engineering.

Layout of the diagnostics screens

The overview and diagnostics screens have a uniform layout and are divided into different areas:

- Overview area
- Working area
- Toolbar

The areas are determined by the configuration.



① Overview area
② Working area
③ Toolbar

Overview area (1)

The overview area is displayed permanently. Its group displays for the various plant units and the message bar provide an overview of the entire system. The operator can refer to the group displays, the area selection buttons and to various toolbar buttons to react to the displayed status.

Each plant area is represented by an area selection button and a group display. The area selection button is used to jump directly to the diagnostics screen at root level of the screen hierarchy of this plant area. When an active message is indicated, the operator can use the group display to change directly to the diagnostics screen which shows the originating message.
Picture Tree Navigator is an additional tool for navigation in the screen hierarchy.

Working area (2)

The working area is used to visualize the overview and diagnostics screens of individual components for diagnostics. It can also be used to visualize process screens of a WinCC project which is integrated in the Maintenance Station and used for operating and monitoring. The process screens must also be managed in WinCC Picture Tree Manager.

The working area also outputs the faceplates, control windows, message lists or dialog boxes called by the operator.

Toolbar (3)

The permanently shown toolbar consists of two button sets which can be toggled by the user. These toolbar sets contain various functions which can be used, for example, for navigation in the screen hierarchy, or to call process screens and dialogs.

Note

The content of the button sets depends on the configuration of the Maintenance Station. Certain buttons mentioned in this documentation may be deactivated or may not be available in the actual diagnostics screens of the Maintenance Station.

6.4 Control elements for diagnostics

6.4.1 Overview of control elements in the diagnostics screens

Introduction

This chapter provides an overview of various control options such as navigation which are available in the diagnostics screens of the Maintenance Station.

Note

Component diagnostics and the management of maintenance tasks are described in separate chapters.

Overview of control elements in the diagnostics screens

The control elements are allocated to the various areas of the user interface.

Overview area

The overview area returns a compact view of the plant status and provides various control elements and functions:

- The "Loop-in-Alarm" function: Jump to the diagnostics screen which outputs the cause of the message.
- User navigation in the screen hierarchy using Picture Tree Navigator.
- Operating the group displays.
- Control elements of the overview area which can be used, for example, to acknowledge active messages or to start Picture Tree Navigator.

Working area

The working area is used to visualize process and diagnostics screens and to perform component diagnostics.

- Navigation

Users can navigate in the hierarchy levels using either Picture Tree Navigator, or the toolbar icons. The diagnostics screens of the working area allow easy navigation.
The diagnostics status displays can be used, for example, to change from higher-level screens such as overview screens to screens of the sublevel hierarchy. You navigate to higher levels in the hierarchy using the toolbar buttons, the Picture Tree Navigator or the control elements of the overview area.

- Action

An action is enabled when the mouse pointer is transformed into a lightning bitmap after having been positioned on the symbol of the component. A diagnostics faceplate can be opened, for example, using the MaintenanceStateDisplay "MSD". The MaintenanceGroupDisplay "MGD" can be used to change directly from a sublevel diagnostics screen to a corresponding diagnostics screen when a diagnostics message is active. If several messages are active in different screens, the program jumps to the next higher level.

- Additional functions
  The functions outlined below are integrated in the overview screen.
  - The "Export" function  :
    This function, the so-called complete export, is used to export all the component data. These may be offline configuration data of an S7 project or, if available, online data. For additional information on the complete export function, please refer to the sections "Complete export of component data (Page 152)" and "Starting the complete export of the component data (Page 229)".

    The "Enable for area" authorization for the diagnostics area is required in WinCC for executing the function.
    The so-called individual export is furthermore available for exporting the data of an individual component. For additional information, please refer to "Introduction to exporting the data of an individual component (Page 153)".
  - "Message correction"  :
    This function checks for inconsistency between active messages and the current plant configuration.
    You may not be able to acknowledge messages which remain active when you replace defective components. This scenario may develop when the component name has changed, for example, the computer name in Windows.
    The "Message correction" checks for this inconsistency and automatically corrects it.
    Activation of a button triggers a control message.
    The "Enable for area" and "Advanced process operations" authorizations for the diagnostics area are required in WinCC for the execution of the function.

Toolbar

The toolbar sets contain various control functions, for example, for navigating in the screen hierarchy or for selecting screens or dialogs. System functions such as language changes are also integrated.

6.4.2 Control elements of the overview area

Control elements of the overview area

The overview area returns a constant overview of the plant status. The various control elements allow the operator to react to changes indicated.

The message bar outputs the active message, however, without offering any control elements.

Symbol / element	Functionality
 Extended message line	Opens the extended message bar. All incoming messages are output in list format to the message window of the working area.
 "Loop-in-alarm" function	This function triggers a change to the diagnostics screen showing the cause of an active message.
 Message acknowledgment button	Acknowledges the message shown in the message bar of the overview screen.
 Area selection button	Outputs the root process screen or diagnostics screen of this plant area to the working area. The range selection button is active if shown with black letters on a gray background. The cyan background color indicates that a process or diagnostics screen of the corresponding plant area is already shown on the working area.
 Group display	Shows the plant status of the corresponding area in compact format. Any button of the group display indicating an active message can be used to change pictures. This element is used to view the process or diagnostics screen which indicates the cause of the message.
 Picture Tree Navigator	Opens the Picture Tree Navigator for navigation in the hierarchy of process and diagnostics screens.
 Screen dump	Outputs the active screen content to the default printer of the computer.
 Logged on user	Displays the name of the logged on user. The login dialog for changing the user is opened by clicking in this field.

6.4.3 Operating the group displays

Introduction

A group display outputs a summary of the status of diagnostics messages.

- The overview area is used to output a group display for the "Diagnostics" plant area and for the entire sublevel hierarchy.
- Picture Tree Navigator always returns the status of a group display for a specific area or for the diagnostics screen. The status of the sublevel hierarchy is always integrated in this case.

The group display allows the change to the diagnostics screen which indicates the message event. If several messages are active the function always outputs the diagnostics screen which contains all events.

The jump function is available for all messages signaled, i.e. for new messages, and for acknowledged messages which have not been cleared yet.

Requirements

The group display signals an active diagnostics message by highlighting a button.

Procedure

1. On the overview area, click the middle one of the five buttons of the group display of the "Diagnostics" area.

Result

The diagnostics screen which contains the message event is output to the working area.

6.4.4 Triggering the "Loop-in-Alarm" function

Introduction

The "Loop-in-Alarm" function can be used to trigger a change to the diagnostics screen which contains the message event.

The "Loop-in-Alarm"  icon is available at the following locations:

- On the left of the message bar of the overview area.
- On the message list toolbar.

This function always relates to the message which is indicated or which is selected from the message list. The component faceplate is opened on the working area if it is not possible to assign this message a specific diagnostics screen.

The assignment of components to the diagnostics screen is configured in the block list editor of WinCC. Assignments are not possible within the active process.

Requirements

- A message is output to the message bar of the overview area or to the message list. This function is not supported for system messages.
- The message is configured for the function. The "Loop-in-Alarm" column must be set in the message in WinCC Alarm Logging. The component must be assigned a start screen in the WinCC block list Editor.

Procedure

1. Click  on the overview area to the left of the message bar. The program changes the screen.

Result

The diagnostics screen which indicates the message event is output to the working area. The component for which the message is output to the message bar is highlighted in cyan color.

The "previous screen"  icon of toolbar set 1 is used to return to the previously selected diagnostics screen.

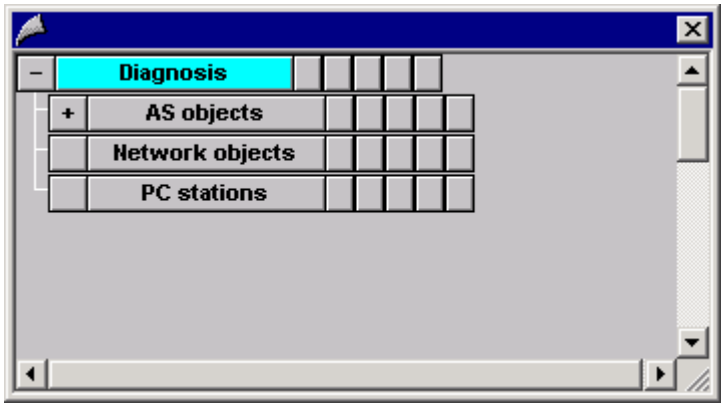
6.4.5 Navigating with Picture Tree Navigator

Introduction

Picture Tree Navigator is used to navigate in the hierarchy of process and diagnostics screens. The navigator returns a clear graphical view of the hierarchy.

Picture Tree Navigator lets you select and visualize specific screens.

Picture Tree Navigator can be moved or remain open permanently on the working area.



Requirements

- The diagnostics screens return the actual status of the configuration.
- "WinCC OS Project Editor" was executed in the WinCC project.

Procedure

1. In the overview area, click the icon next to the required plant area. Picture Tree Navigator opens on the working area.
2. Expand or reduce the directory structure by clicking the "+" or "-" character to the left of the area or screen name. The group displays to the right of the area and screen names return the current state and indicate messages which are active in the diagnostics screens or in their sublevel hierarchy. Right-click the group display in Picture Tree Navigator to view the name of the screen from which the message originates. Left-click the group display button to view the screen showing the message event.
3. Navigate to the required area or screen name in the tree structure and then click it. The corresponding process or diagnostics screen is output.
4. You can view further screens when diagnostics of the current process / diagnostics screen is completed. Click the corresponding name or group display in Picture Tree Navigator.

Result

The required process or diagnostics screen is output to the working area by navigating in the tree structure or using an element of the group display.

6.4.6 Control elements of the toolbar sets and of the message system

Control elements of the toolbar sets 1 and 2

The "Symbol" column contains the symbol with the short info as shown in both toolbar sets. The user rights required to execute this function are defined in the "Authorization required" column. User rights are managed and assigned in the WinCC "User Administrator".

Symbol	Function	Authorization required
Toolbar set 1		
 Change to toolbar set 2	Shows button set 2 on the toolbar. Toolbar set 1 is displayed by default.	None
 Password	Opens the default "System Login" dialog box on the working area for user login or change. The "SIMATIC Logon Service" dialog is output if SIMATIC Logon is deployed in the process control system.	System change
 Message system	Opens the message system and outputs the new messages list to the working area. The new events list shows messages that were not acknowledged yet. A special toolbar set is displayed when the message system is open. The function is described below.	Enable for area
 Log files	Opens the "Log files" dialog box with an overview of all log files. The dialog box is output to the foreground of the working area and overlays the process and diagnostics screens shown. The size and position can be modified.	Enable for area
 Call / merge trend groups	Opens the "Call / merge trend groups" system dialog for the visualization of the trends of selected process values. This function is not supported in SIMATIC Maintenance Station and the button is not shown for this reason. This function is supported when you integrate the diagnostics functions for PCS 7 and S7 projects and run these functions on a PCS 7 Maintenance Station Client.	Enable for area
 Screen selection by process tag	Opens the "Screen selection by process tag" system dialog. This function is not supported in SIMATIC Maintenance Station and the button is not shown for this reason. This function is supported when you integrate the diagnostics functions for PCS 7 and S7 projects and run these functions on a PCS 7 Maintenance Station Client.	Enable for area
 Screen selection by name	Opens the "Select screen by name" system dialog. The dialog box is output to the foreground of the working area and overlays the process and diagnostics screens shown. The size and position can be modified.	Enable for area

Symbol	Function	Authorization required
 Screen left	Visualizes the process or diagnostics screens which is located on the same hierarchy level to the left of the currently output process or diagnostics screen. This function is used to navigate in the hierarchy and to view the process or diagnostics screens.	None
 Screen up	Visualizes the process or diagnostics screens which is located on the next higher hierarchy level to the currently output process or diagnostics screen. This function is used to navigate in the hierarchy and to view the process or diagnostics screens.	None
 Detail screen	Visualizes the process or diagnostics screens which is located on the next lower hierarchy level to the currently output process or diagnostics screen. This function is used to navigate in the hierarchy and to view the process or diagnostics screens.	None
 Screen right	Visualizes the process or diagnostics screens which is located on the same hierarchy level to the right of the currently output process or diagnostics screen. This function is used to navigate in the hierarchy and to view the process or diagnostics screens.	None
 Previous screen	Outputs the recently viewed process or diagnostics screen to the working area.	None
 Save screen	Saves the process or diagnostics screen which is currently active on the working area. The saved screen can be called again using the "Restore screen" function.	None
 Restore screen	Calls the process or diagnostics screen you previously saved using the "Save screen" function.	None
 Restore composition	Opens the "restore composition" system dialog on the working area. You can change the position but not the size of this dialog box. The dialog outputs a selection of the screen composition previously saved using the "Save composition" function. Screen compositions are assigned and only made available to the logged on user.	Enable for area
 Save composition	Opens the "Save composition" system dialog on the working area. You can change the position but not the size of this dialog box. This function is used to save the process or diagnostics screen currently output to the working area with a user-specific name.	Enable for area

Symbol	Function	Authorization required
 Delete composition	Opens the "Delete composition" system dialog on the working area. You can change the position but not the size of this dialog box. This function is used to delete the process or diagnostics screen the user saved with a specific file name.	Enable for area
 System configuration	Opens the plant configuration screen you configured in the S7 project on the PC station or in the WinCC project using the "Lifebeat Monitoring" editor. This function is used to monitor PC stations and automation systems (AS) which can be accessed via PC networks and industrial networks. The program displays the operating state of all monitored objects of the active process.	Enable for area
 Screen information	Opens a dialog box on the working area to output information about the currently visualized process or diagnostics screen. You can change the position but not the size of this dialog box on the working area.	None
 Acknowledge horn	Acknowledges the active signal of a signal generator such as a horn. This acknowledgment does not include the triggering message. This function is also available in toolbar set 2 and in the message system.	None
 Acknowledge message	Acknowledges all messages shown in the new events list which is output to the working area. This acknowledgment also includes the top priority message shown on the message bar of the overview area. This function is also available in toolbar set 2.	None
Toolbar set 2		
 Change to toolbar set 1	Toggles toolbar sets 1 and 2.	None
 Language change	Opens a dialog box in which you can select the dialog language. You can change the position but not the size of this dialog box.	Monitoring
 BATCH Control Center	Opens the SIMATIC BATCH Control Center application. You can only run this application if SIMATIC BATCH is installed and after having executed BATCH Start Coordinator. This function is irrelevant to SIMATIC Maintenance Station. The button is not activated for this reason.	None
 SFC visualization	Opens the "Open SFC" dialog box on the working area. The toolbar button and the help system are only available if the "SFC Visualization" software package is installed. This function is irrelevant to SIMATIC Maintenance Station. The button is not activated for this reason.	Monitoring

Symbol	Function	Authorization required
 User authorization	Opens the "User Administrator" editor. User rights are managed and assigned in the "User Administrator" editor. All changes to user rights are immediately applied to the process control system. You can change the size and position of this dialog box.	User administration
 Exit runtime	Opens the "Exit runtime" dialog box. This function closes Runtime on the Maintenance Station and of an integrated WinCC system.	System change

Toolbar control functions of the message system

Symbol	Function	Authorization required
 Previous screen	Exits the message system and returns you to the previously selected process screen on the working area.	None
 New list	Outputs the new events list to the working area. The new events list shows messages that were not acknowledged yet.	Enable for area
 Old list	Shows all acknowledged messages which have not yet been cleared.	Enable for area
 Outgoing list	Shows all cleared messages which have not yet been acknowledged.	Enable for area
 Process control list	Shows all process control messages of the AS, of field devices, of I/O devices and of PC stations.	Enable for area
 Operator list	Shows all control messages such as control actions in the faceplates.	Enable for area

Symbol	Function	Authorization required
 Chronicle list	Shows all process control events.	Enable for area
 Print message tracking log	Prints a chronological message tracking log to the printer. The log is output to page- or line-oriented printers.	Enable for area
 Acknowledge horn	Acknowledges the active signal of a signal generator such as a horn. Same function as in toolbar sets 1 and 2.	None
 Acknowledge message	Acknowledges all messages shown in the message list output to the working area.	None

6.4.7 Overview of the message list functions

Introduction

The maintenance station features diverse toolbar functions for the visualization of entries in the message lists.

Messages are visualized in different lists:

- In the "Messages" view of the diagnostics faceplate.
- In the message lists you open using using the toolbar buttons, for example, new events list, old events list.
- Using the "Message system" button on the overview area.

Note

The various message list do not always provide all of the functions described, for availability depends on user rights configured in the User Administrator.

Overview of the message list functions

Symbol	Function
 View message list	Shows the currently active messages.
 View long-term archive list	Shows the messages saved to the long-term archive list.
 Set the selection	Opens the "Define selection" dialog box. The selection criteria for visualization of messages in the message lists is defined in this dialog box. All messages which do not match the selection criteria are saved but not displayed.
 Acknowledging an alarm	Acknowledges the selected message. The selection is indicated by means of a selection triangle.
 Acknowledge all visible messages	Acknowledges all active visible messages in the message window that require acknowledgment, unless they require separate acknowledgment.
 Enable/disable auto-scrolling	Enables or disables auto-scrolling The current message is output at the top edge of the window when the auto-scroll function is active. The old messages are shifted down in the list. This also represents the default setting in OS Project Editor. The message processing functions only apply to active messages. Manual scrolling using the "View previous message" button is disabled, for example. If auto-scrolling is disabled, you can select individual messages using the mouse. Subsequent message processing functions refer to this selected message.
 Print message log	Outputs the message log to a connected printer. All messages in the message window are output to the printer. A selection dialog box is not displayed.

Symbol	Function
 View first message	Jumps to the first or oldest message in the message window. This function is only available if "Autoscroll" is disabled.
 View last message	Jumps to the last or most recent message in the message window. This function is only available if "Autoscroll" is disabled.
 View next message	Scrolls one message down in the message window. The function is only available if "Autoscroll" is disabled.
 View previous message	Scrolls one message up in the message window. The function is only available if "Autoscroll" is disabled.
 Message info text	Opens the "Message info text" dialog box. This dialog box returns an info text, provided it exists in the message configuration. The "X" entry in the "Info" message column indicates whether a message info text is configured.
 Message comment	Opens the "Message comment" dialog box. You can type in a comment relating to the message in the "Comment" input box of the dialog box. This function is only available in the message lists of archived messages, for example, in the history list.
 Loop-in-Alarm	This function triggers the change to the diagnostics screen showing the cause of an active message.
 Sorting	Opens the "Sort" dialog box. You can set various sorting criteria for the output of messages in this dialog box, for example, by message blocks or by column headers.

6.5 General diagnostics

6.5.1 Viewing maintenance messages

Introduction

The "Messages" view of the diagnostics faceplate returns messages relating to diagnostics, operator actions and maintenance requests for this component. The messages can be acknowledged and managed in this view.

Procedure

1. Select the "Diagnostics" area on the Maintenance Station. The overview screen opens. The screen displays the current status of the PC station, network components and AS objects areas by means of icons (for example,
    or ).
2. In the overview screen, click the MaintenanceGroupDisplay, e.g.
    .
   The display status  indicates an active diagnostics message. The program opens the diagnostics screen, which returns the cause of the message.
   When the display has the status  , the overview of the AS objects is displayed.
3. Click a component icon in the MaintenanceStateDisplay of the overview, e.g.
    . The diagnostics faceplate of this component opens. The "Ident" view is output by default.
4. Select the "Messages" entry from the selection box.
5. The "Messages" view returns the active messages relating to this component. The toolbar provides various functions such as message selection and print commands.

Result

The diagnostics faceplate outputs component-specific messages relating to diagnostics, control actions and maintenance requests.

For additional information on this topic, please refer to "Overview of the message list functions (Page 201)".

6.5.2 Viewing identification data of a component in offline mode

Introduction

All available information of the hardware configuration, namely the identification data, are visualized on the "Ident" view of the diagnostics faceplate. These data are considered offline data, as these do not originate from the actual component, but rather from the HW configuration.

Requirements

The component is registered in the hardware configuration data of the S7 project.

Procedure

1. Select the "Diagnostics" area on the Maintenance Station. The overview screen opens.
2. Click the MaintenanceGroupDisplay status display in one of the three areas of the overview screen, e.g.

   . The corresponding overview, such as the "AS objects overview", opens.
3. Click a component icon in the MaintenanceStateDisplay of the overview, e.g.

   
   . The diagnostics faceplate of this component opens.
4. The "Ident" view is output by default. Select the "Ident" entry from the selection box if the view is not opened automatically.
5. Configuration data are output to the right section of the "Ident" view. Data which are not configured do not appear in the corresponding fields.

Result

The "Ident" view returns all information of the hardware configuration and the maintenance status relevant to the component. The view also returns the status of redundant components and the master ID.

6.5.3 Viewing identification data of a component in online mode

Introduction

Online data originate directly from the component. By contrast to these data, the offline data originate from the hardware configuration in the S7 project.

Both types of data can be visualized in the "Ident" view of a diagnostics faceplate. Online data can be identified based on the indication of the data and time of the most recent change.

The corresponding component must support the visualization of online data.

Requirements

- The component is registered in the hardware configuration data of the S7 project.
- The corresponding component must support the visualization of online data.

Procedure

1. Select the "Diagnostics" area on the Maintenance Station. The overview screen opens.
2. Click the MaintenanceGroupDisplay status display in one of the three areas of the overview screen, e.g.

   . The corresponding overview, such as the "AS objects overview", opens.
3. Click a component icon in the MaintenanceStateDisplay of the overview, e.g.

   
   . The diagnostics faceplate of this component opens.
4. The "Ident" view is output by default. Select the "Ident" entry from the selection box if the view is not opened automatically.
5. Data are output to the right section of the "Ident" view. Missing or non-configured data do not appear in the corresponding fields.
   The view also returns the date of the "Last change". This information is also an indicator for the visualization of online data.
6. You can update the component data displayed by clicking "Update".

Result

The "Ident" view returns the online data of the component and the maintenance status. The view also returns the status of redundant components and the master ID.

6.6 Diagnostics of AS and of sublevel components

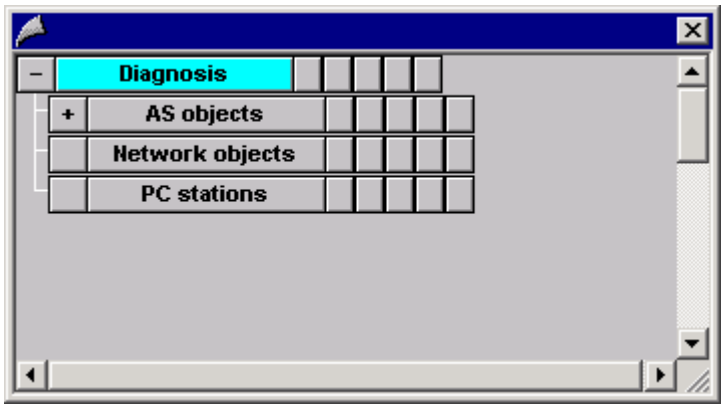
6.6.1 Overview of the diagnostics status of all AS objects

Introduction

An overview of the diagnostics status of all AS objects can be obtained from the AS objects overview screen.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. Click "AS objects" in the folder structure of Picture Tree Navigator. The AS objects overview opens.
4. Check the status displays in the component icons, e.g.

 .

The MaintenanceStateDisplay returns the status of the actual component, e.g.

 .

The EventState status display is attached to the bottom right of the MaintenanceStateDisplay and returns the status of the messages for this component. The small red square in our example indicates an active message.

Result

The diagnostics status of the AS objects is checked.

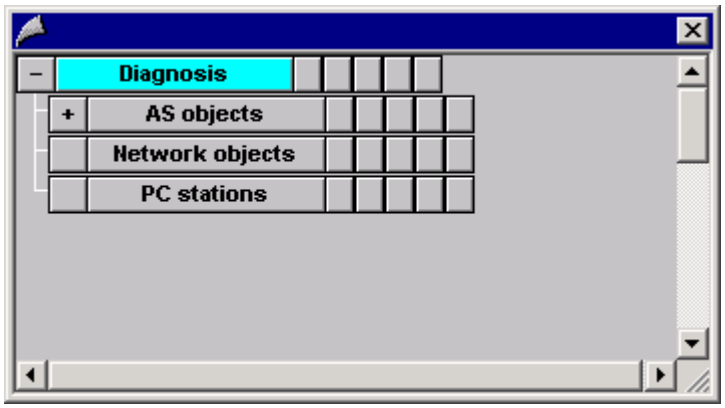
6.6.2 Diagnostics status of an AS

Introduction

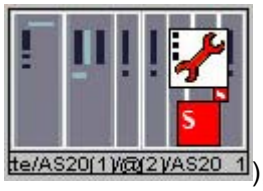
You can check the diagnostics status of an AS by opening the AS objects overview on the overview screen, or view status details in the diagnostics faceplate.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. In order to check the overall status of a specific AS and of its sublevel hierarchy, click "AS objects" in the tree structure of Picture Tree Navigator. The AS objects overview opens.
4. To check the diagnostics status of a stand-alone AS, select the AS objects overview, click the relevant AS icon (e.g.



), and then click the MaintenanceStateDisplay in this icon, e.g. 
.

5. The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.
6. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

.

7. Change to the "Messages" view to check the active messages re this component. Use the toolbar functions to analyze the message history of this component.

8. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.
9. You can open "HW Config" by clicking  in order to check the hardware data of the component. SIMATIC STEP 7 must be installed on the PC used to visualize the diagnostics data and the S7 project must be available on this PC.
10. Close the diagnostics faceplate.

Result

The diagnostics status of the AS is checked.

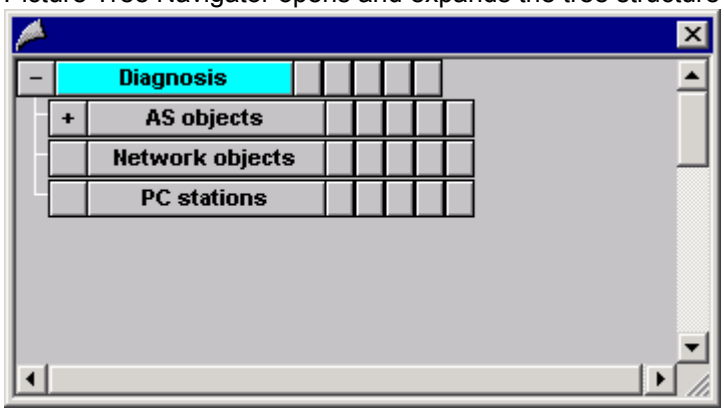
6.6.3 Diagnostics status of central and expansion racks

Introduction

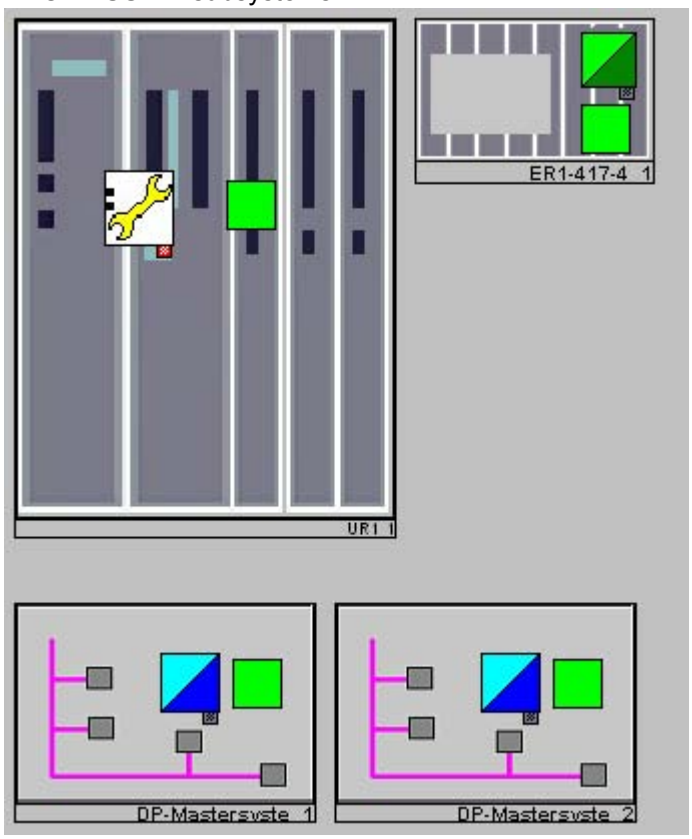
You check the diagnostics status of central and expansion racks on the diagnostics screen of the corresponding AS. Status details can be viewed on the diagnostics screens of the racks or on the diagnostics faceplates.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. Expand the tree structure of Picture Tree Navigator to view the required AS entry by clicking the "+" icons, starting at the "AS objects" entry. Click the AS entry. The program displays the diagnostics screen of the AS and the sublevel hierarchy.
   The sample screenshot below shows the central rack, an expansion rack and two PROFIBUS DP subsystems.



4. Continue at step 6 to run diagnostics of the actual central and expansion racks.
5. You can also check the status of individual modules installed in the central and expansion racks. Click the MaintenanceGroupDisplay on the corresponding rack icon, e.g.

    . The diagnostics screen for a rack, along with the modules, is displayed.
6. In the diagnostics screen, click the MaintenanceStateDisplay in the icon of the component or module required, e.g.

    . The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.

7. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

8. Change to the "Messages" view to check the active messages re this component. Use the toolbar functions to analyze the message history of this component.
9. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.
10. You can open "HW Config" by clicking  in order to check the hardware data of the component. SIMATIC STEP 7 must be installed on the PC used to visualize the diagnostics data and the S7 project must be available on this PC.
11. Close the diagnostics faceplate.

Result

The diagnostics status of the central or expansion rack is checked.

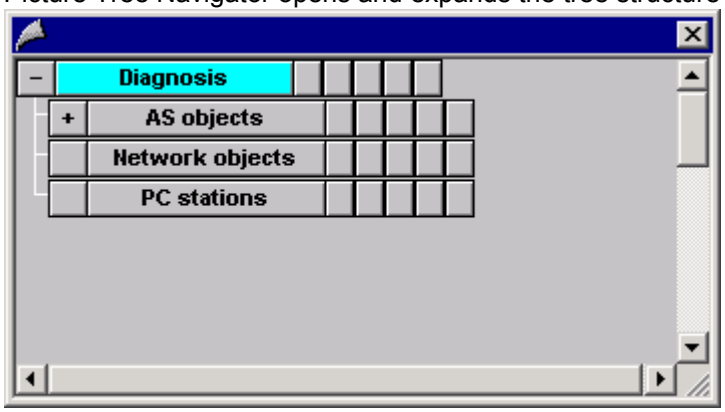
6.6.4 Diagnostics status of DP slaves, PROFINET IO networks and devices

Introduction

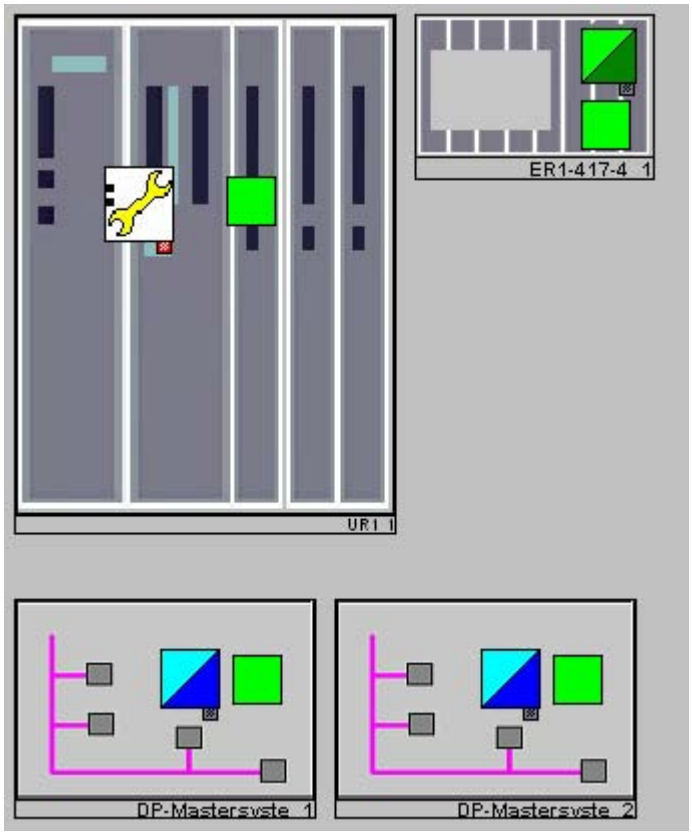
You check the diagnostics status of DP slaves / PROFINET components on the diagnostics screen of the corresponding AS. Status details can be viewed on the diagnostics screens of the AS or DP system or on the diagnostics faceplates.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.

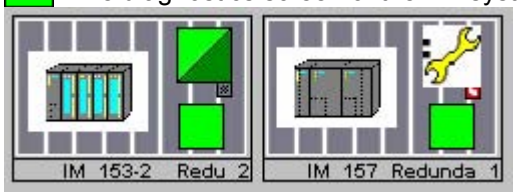


3. Expand the tree structure of Picture Tree Navigator to view the required AS entry by clicking the "+" icon. Click the AS entry. The program displays the diagnostics screen of the AS and the sublevel hierarchy.
   The sample screenshot below shows the central rack, an expansion rack and two PROFIBUS DP subsystems. This screen also displays the PROFINET components of the AS.



4. Continue at step 7 to run diagnostics of the actual DP master system.
5. It is also possible to check the status of individual modules and DP slaves in one of the visualized DP subsystems. Click the MaintenanceGroupDisplay in the icon of the corresponding DP system, e.g.

    . The diagnostics screen of the DP system opens with a view of its interface modules.



   The DP system in this example contains an IM153 and an IM157 interface module. Continue at step 7 to run diagnostics of a module.

6. Click the MaintenanceGroupDisplay in the icon of the corresponding module to check the status of the submodules, e.g.

    . The diagnostics screen of the module opens. The example of the IM153 shows the power supply modules and I/O modules in the rack.

7. In the diagnostics screen, click the MaintenanceStateDisplay in the icon of the component or module required, e.g.

    . The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.

8. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

    .

9. Change to the "Messages" view to check the active messages re this component. Use the toolbar functions to analyze the message history of this component.

10. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.

11. You can open "HW Config" by clicking  in order to check the hardware data of the component. SIMATIC STEP 7 must be installed on the PC used to visualize the diagnostics data and the S7 project must be available on this PC.

12. Close the diagnostics faceplate.

Result

You checked the diagnostics status of a DP slave, or of the corresponding DP system, or of a PROFINET component.

6.6.5 Diagnostics status of drives, sensors and other components

Diagnostics status of drives, sensors and other components of the field bus systems

The diagnostics functions for the components described below are implemented using an Asset Proxy, for example, of the "Extended" type.

- Components which do not support standard diagnostics because these are not standard slaves, for example.
- Components of "DRIVE ES".
- Components not configured in the S7 project.

The user configures the data of the diagnostics status interface and of diagnostics messages. It is not possible for this reason to specify basic factors which determine the output of diagnostics messages and states concerning such components.

The description of the functions listed below are derived from the descriptions relating to general component diagnostics in the Maintenance Station.

- Display of the component as icon in the diagnostics screens.
- Automatic implementation of diagnostics messages and states in the hierarchy of status and group displays.

6.7 Diagnostics of PC stations

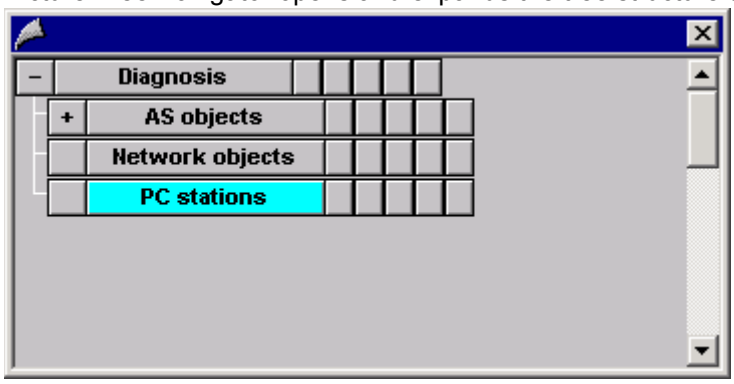
6.7.1 Overview of the diagnostics status of the PC stations

Introduction

The diagnostics status of all PC stations can be obtained from the PC stations overview screen.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. Click "PC Stations" in the tree structure of Picture Tree Navigator. The PC stations overview screen opens.
4. Check the status displays in the component icons, e.g.

The MaintenanceStateDisplay returns the status of the actual component, e.g.

The EventState status display is attached to the bottom right of the MaintenanceStateDisplay and returns the status of the messages for this component. The small red square in our example indicates an active message.

Result

You checked the diagnostics status of the PC stations.

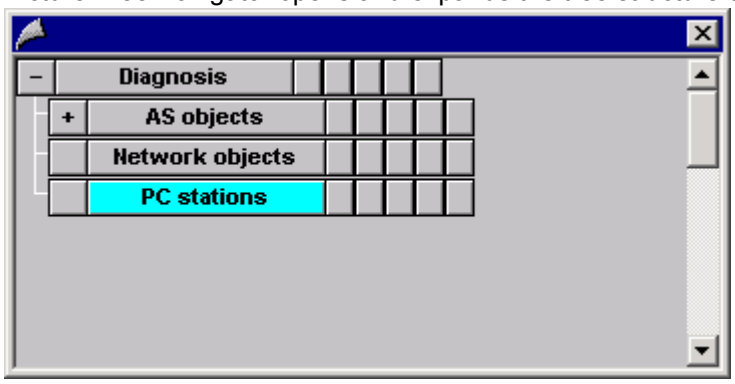
6.7.2 Diagnostic status of a PC station

Introduction

You can check the diagnostics status of a PC station by opening the PC station overview on the overview screen. Status details are returned in the diagnostics faceplate.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. In order to check the status of a specific PC station, click "PC Stations" in the tree structure of Picture Tree Navigator. The PC stations overview opens and outputs the diagnostics status of all PC stations.
4. To check the status of a specific PC station, click the icon for the required PC station, e.g.

followed by the MaintenanceStateDisplay in this icon, e.g.  .

The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.

5. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

.

6. Change to the "Messages" view to check the active messages re this component. Use the toolbar functions to analyze the message history of this component.
7. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.
8. Close the diagnostics faceplate.

Result

You checked the diagnostics status of the PC station.

6.7.3 Checking the diagnostics status of an industrial PC

Introduction

You can check the diagnostics status of an industrial PC by opening the PC station overview on the overview screen. Status details are returned in the diagnostics faceplate.

A SIMATIC Industrial PC is configured in the project as SNMP component, however, instead of visualizing the PC as network component in the diagnostics screens, the program displays it in the "PC stations" area.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.
3. In order to check the status of a specific industrial PC, click "PC Stations" in the tree structure of Picture Tree Navigator. The PC stations overview opens and outputs the diagnostics status of all PC stations and of SIMATIC industrial PCs.
4. To check the status of a specific industrial PC, click the icon for the required industrial PC, e.g.

   followed by the MaintenanceStateDisplay in this icon, e.g.  .

   The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.
5. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

   .
6. Change to the "Messages" view to check the active messages re this component. Use the toolbar functions to analyze the message history of this component.
7. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.
8. The "Monitoring 1" to "Monitoring 3" views are available for SIMATIC PC diagnostics. Change to the "Monitoring 1" view to check the displays. This view outputs the temperature displays for PC components such as the CPU or mainboard.

9. Change to the "Monitoring 2" view to check the displays. This view returns the rpm of the PC fan.
10. Change to the "Monitoring 3" view to check the displays. This view returns data of the hard disk drives of the PC, for example, the type, the serial number, and the status.
11. Close the diagnostics faceplate.

Result

You checked the diagnostics status of the SIMATIC Industrial PC.

6.8 Diagnostics of network components

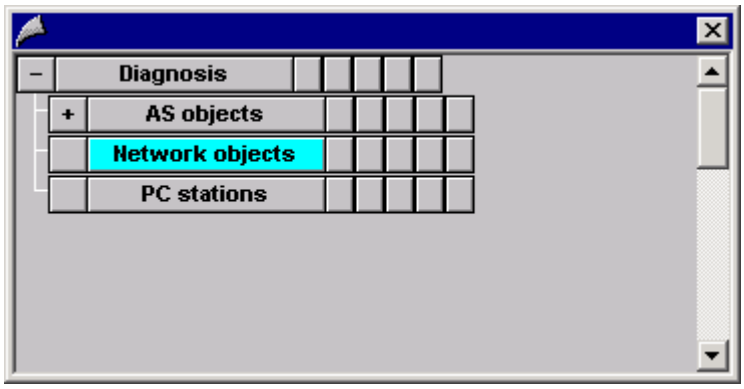
6.8.1 Overview of the diagnostics status of the network components

Introduction

You can view the diagnostics status of all network components on the network components overview.

Procedure

1. Click the "Diagnostics" area selection button in the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. Click "Network objects" in the folder structure of Picture Tree Navigator. The network components overview opens.
4. Check the status displays in the component icons, e.g.

 .

The MaintenanceStateDisplay returns the status of the actual component, e.g.

 .

The EventState status display is attached to the bottom right of the MaintenanceStateDisplay and returns the status of the messages for this component. The small red square in our example indicates an active message.

Result

You checked the diagnostics status of the network components.

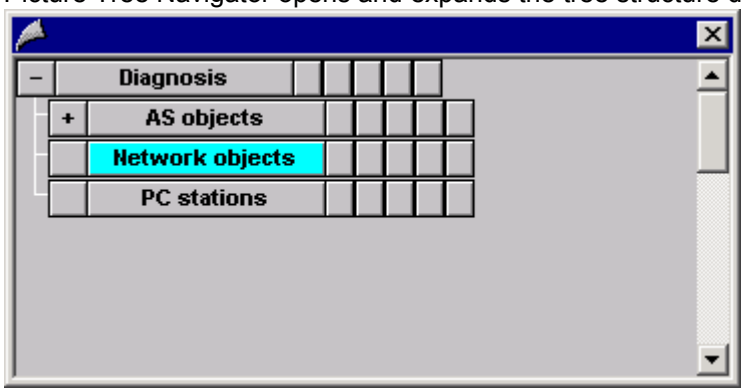
6.8.2 Diagnostics status of a network component

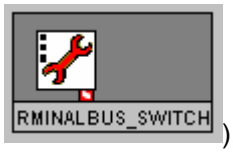
Introduction

You can check the diagnostics status of a network component by opening the network components overview on the overview screen, or by viewing status details in the diagnostics faceplate.

Procedure

1. Click the "Diagnostics" area selection button on the overview area. The Maintenance Station overview screen opens.
2. In the overview area, click the  icon next to the "Diagnostics" area selection button. Picture Tree Navigator opens and expands the tree structure down to the overviews.



3. In order to check the status of a specific network components, click "Network objects" in the tree structure of Picture Tree Navigator. The network components overview opens.
4. To check the diagnostics status of an individual network component, select the network components overview, click the icon for the component required (e.g. 

), and then click the MaintenanceStateDisplay in this icon, e.g.  .
5. The diagnostics faceplate opens with the "Ident" view. The "Component" area in the left-hand area of this view displays the status of the actual component, as well as that of any existing redundant device. The component data are displayed in the right-hand area.

6. Check the status views in the upper area of the faceplate. In addition to the component status, these views also display the status of requested and initiated maintenance tasks, e.g.

7. Change to the "Messages" view to check the active messages relating to this component. Use the toolbar functions to analyze the message history of this component.
8. Change to the "Maintenance" view to check the status. Respond to maintenance requests of the system by initiating a maintenance task in this view or by setting the request to "Cancel". You can change the request to "In progress" or "Completed" status if a maintenance task has already been initiated.
9. Close the diagnostics faceplate.

Result

You checked the diagnostics status of the network component.

6.9 Maintenance management

6.9.1 Maintenance states

Introduction

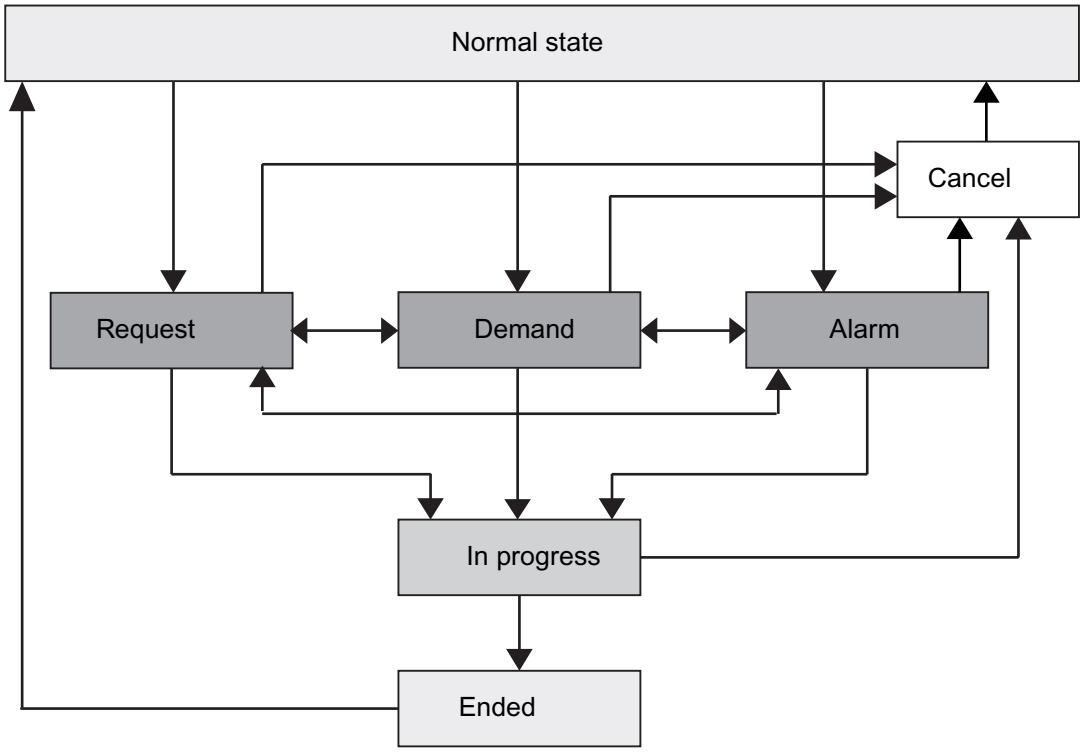
SIMATIC Maintenance Station supports users in terms of plant diagnostics, initiation of maintenance tasks and maintenance status management.

The Maintenance Station returns diagnostics messages relating to components requiring maintenance to the plant operator. The operator can use this information to run directed diagnostics of this component and to initiate maintenance tasks as required.

The status of maintenance tasks

A maintenance task may assume different states on the Maintenance Station. The diagram below shows the possible status transitions.

It also shows that the operator can cancel maintenance tasks in the various states.



Status transitions are set in the "Maintenance" view of the component's diagnostics faceplate. The section below shows the basic sequence of maintenance operations.

- The operator can request maintenance while the system is in normal operating state or after having received a diagnostics message. The user sets the "Maintenance alarm", or the "Maintenance required", or the "maintenance demanded" priorities.
  The user can either maintain or change the priority defined in the diagnostics message when requesting maintenance.
  The faceplate returns the symbol of the maintenance task requested and the progress status after the user has defined priorities.

Rating	Name	Message symbol	Symbol for the requested maintenance task
Low	Maintenance required		
Medium	Maintenance demanded		
High	Maintenance alarm		

- The user sets the "In progress" status at the start of maintenance at the corresponding component.
- The user sets the "Completed" maintenance status on completion of this task. The faceplate returns the actual status of the component in the status view. The progress symbol is cleared automatically.

For details on the maintenance sequence, refer to the section "Sequence of maintenance tasks".

6.9.2 Sequence of a maintenance task

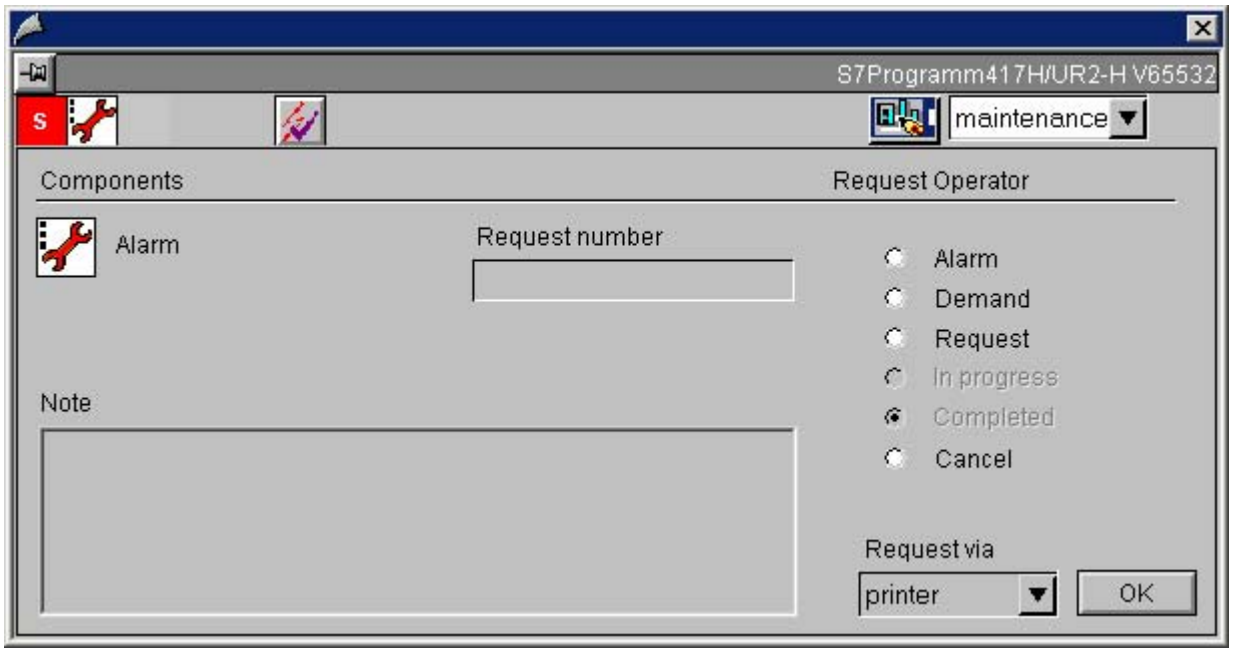
Overview of the progress of a maintenance task

This section provides and overview of the sequence of a maintenance task.

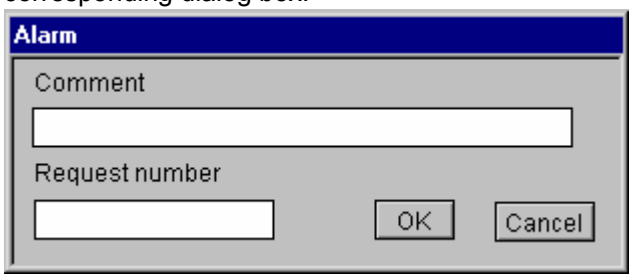
The example describes the maintenance tasks initiated as a reaction to a maintenance alarm.

Requesting a new maintenance task

- Open the diagnostics faceplate of the component on the diagnostics screen by clicking the MaintenanceStateDisplay on the component symbol. Change to the "Maintenance" view.



- Select on the of options on the "Request Operator" area, i.e. "Alarm", "Request", "Demand" or Cancel". The "In progress" and "Completed" options are grayed out for new operations. You can enter a comment and a work instruction number in the next dialog box.
  You can accept the "maintenance requirement", or the "maintenance demand" or the "maintenance alarm" level proposed by the system in the "Component" area, or select a different phase, for example, by changing from the "maintenance demand" to the "maintenance requirement" status.
  The "Alarm" option is selected for this example; the screenshot below shows the corresponding dialog box.



- You can type a comment into the "Comment" input box, for example, to describe the maintenance task.
  Enter the corresponding number in the "Work instruction number" input box. This number denotes a work package to be executed. The work instruction number is used as information for the transfer to EAM/CMMS systems and is entered in the protocol.
  The diagnostics faceplate returns the comment in the "Comment" field and the number you entered in the "Work instruction number" field.
  The program clears the "Work instruction number" and "Note" fields of the diagnostics faceplate when a maintenance task is completed or canceled.
- You can output your settings to a specific target such as a printer by selecting it from the "Request via" drop-down menu.
  You can alternatively also select a so-called export target, in as far as it has been configured. This allows the data of the component to be exported for other applications for further processing such as the WinCC add-ons "PM-MAINT" or "Alarm Control Center".
- The status bars on the top left of the faceplate change after you have set the priorities.

  The MaintenanceStateDisplay  returns the "Maintenance requested for maintenance alarm" status.

  The progress status displays the  icon. This icon corresponds to the status "Component maintenance requested, however, the task is not yet in progress, or has been completed or canceled".

Maintenance task in progress

- You change the status of the currently requested maintenance operation at the start of maintenance activities. Activate the "In progress" option on the component faceplate.
- Change to the status bars in the upper section of the faceplate.

  The MaintenanceStateDisplay shows:

   = "Maintenance requested for maintenance alarm"

   = "In progress".

Maintenance task completed

- Activate the "Completed" option on the component faceplate when all maintenance tasks for this components have been completed.
- Change to the status bars in the upper section of the faceplate. The component status bar returns the actual status of the component. The progress status is cleared again.

Note

Activate the "Completed" or "Canceled" option on the component faceplate to indicate completion or cancellation of a maintenance task. The progress symbol is cleared from the faceplate in both situations.

6.10 Exporting component data

6.10.1 Starting the complete export of the component data

Introduction

The data of all the components with diagnostics capability are exported by means of the so-called complete export. These may be offline configuration data of an S7 project or, if available, online data.

Requirements

- The "Enable for area" authorization for the diagnostics area is required in WinCC for the function.

Procedure

1. Change to the Maintenance Station overview screen. To do so, click the corresponding area selection button, for example, "Diagnostics" in the overview screen.
2. Click  . The complete export is started.

Result

The complete export is started and the data of the components are exported to the "@XML_Export.sml" file.

See also

Complete export of component data (Page 152)

Overview of control elements in the diagnostics screens (Page 190)

6.10.2 Exporting the data of a single component

Introduction

The "Maintenance" view in the diagnostics faceplate of a component lets the user react to maintenance requests by initiating and managing corresponding maintenance tasks.

In this view the data of the individual component to be exported for other applications that process these data further such as the WinCC add-ons "PM-MAINT" or "Alarm Control Center".

Requirements

- Each application for which the data is to be exported is referred to as an export target. The corresponding variables have to be created in WinCC for every export target.
- Depending on the respective export target, additional conditions have to be fulfilled, for example a global script has to be configured that also carries out conversion of the formats in order to export to PM-MAINT.

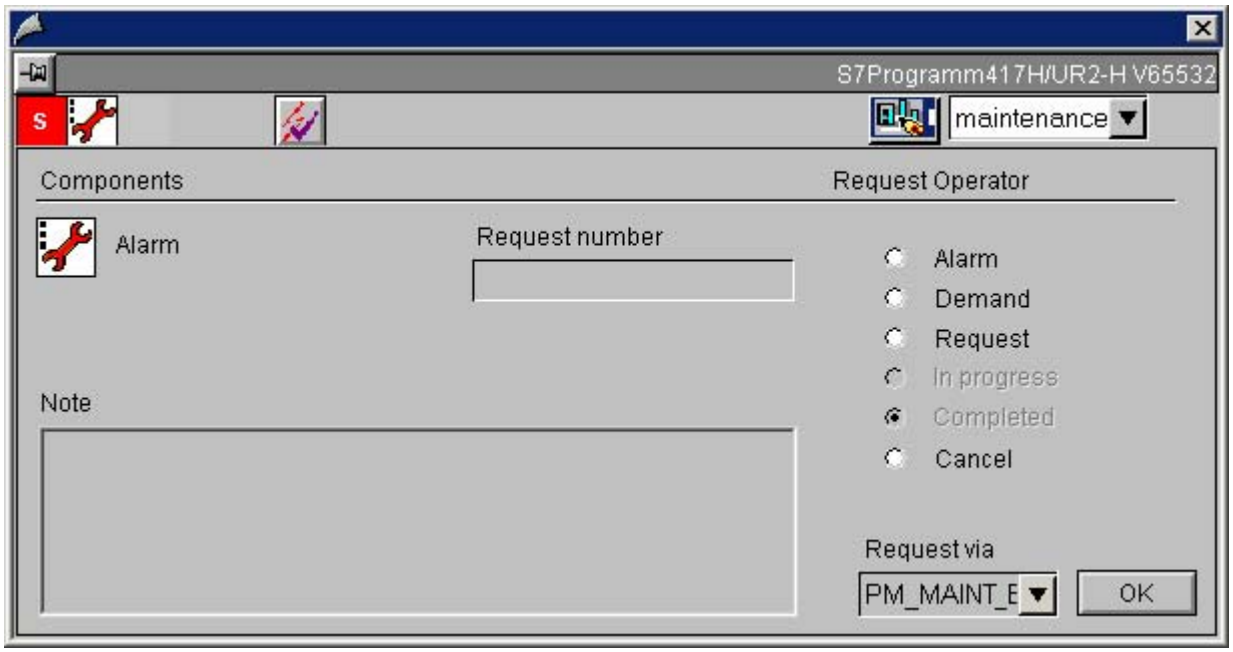
Detailed information about the required configurations and the data export is available in the chapter "Exporting component data for other applications".

Note

Please also observe the requirements that apply for importing the data into the applications for further processing: These are described in the relevant documentation.

Procedure

1. Navigate in the diagnostics screens of the Maintenance Station to the desired component and open the diagnostics faceplate of this component.
2. Select the "Maintenance" view. Check the status and the maintenance demand in the "Request operator" area and change the status if required.



3. Select the name of the required export target, such as "PM_MAINT", from the "Request via" drop-down list box.
4. Click "Execute".

Result

The data of the individual component are exported to an XML file. The export file is stored in the default path "<WinCC_project_directory> / AssetExport". If the variable "@ASSET_EXPORT_<n>_DIR" exists, the file is stored in the subdirectory that is specified in this variable.

Note

Status changes at the maintenance station

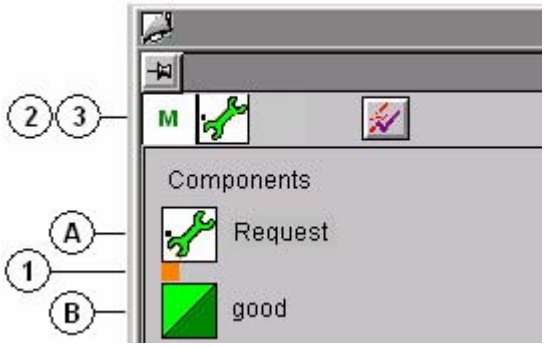
When the status changes - for example, after the maintenance job has been terminated - exporting has to be restarted by the user to transfer the status to the application (such as the Alarm Control Center) for further processing.

For additional information, please refer to "Introduction to exporting the data of an individual component (Page 153)".

6.11 Diagnostics status of redundant components

Introduction

Redundant components are visualized on the diagnostics faceplate of each redundancy partner. The faceplate outputs a MaintenanceStateDisplay for each one of the redundant partners. The master is identified by a small orange square below the corresponding MaintenanceStateDisplay.



Ⓐ MaintenanceStateDisplay of redundant component "A"
Ⓑ MaintenanceStateDisplay of redundant component "B"
① Master identifier
② MaintenanceGroupDisplay
③ MaintenanceStateDisplay for the overall status

The screenshot shows the diagnostics status described below.

Redundant component "A" shows the "Maintenance demanded" status. Redundant component "B" shows the "Good" status. The "maintenance demanded" self-diagnostics status is derived from the table below based on this information. The faceplate returns this status in MaintenanceStateDisplay "③". in addition, MaintenanceGroupDisplay "②" returns the maintenance demanded status "M".

The status is also indicated by the component views below.

-  In the MaintenanceStateDisplay of the component symbol on the diagnostics screen
-  In the MaintenanceGroupDisplay in the higher-level hierarchy of the component's diagnostics screen

Diagnostics status of redundant components

The "MaintenanceStateDisplay" for redundant components is composed of the redundancy partners A and B. The table below shows the impact of the diagnostics status of each redundancy partner on the status display of the faceplate.

Redundant component A	Redundant component B	MaintenanceStateDisplay in the diagnostics faceplate
Good	Good	 Good
Unknown / not verified	Good	 Good
Component disabled	Good	 Good
Shut down	Good	 Maintenance requested
At least one process value is simulated	Good	 Good
Local operation	Good	 Good
Maintenance required	Good	 Maintenance demanded
Maintenance demanded	Good	 Maintenance requested
Maintenance alarm	Good	 Maintenance requested
Good	Component disabled	 Good
Unknown / not verified	Component disabled	 Component disabled
Component disabled	Component disabled	 Component disabled
Shut down	Component disabled	 Shut down
At least one process value is simulated	Component disabled	 At least one process value is simulated
Local operation	Component disabled	 Local operation
Maintenance required	Component disabled	 Maintenance demanded
Maintenance demanded	Component disabled	 Maintenance requested
Maintenance alarm	Component disabled	 Maintenance alarm
Good	Shut down	 Maintenance requested
Unknown / not verified	Shut down	 Shut down
Component disabled	Shut down	 Shut down

Redundant component A	Redundant component B	MaintenanceStateDisplay in the diagnostics faceplate
Shut down	Shut down	 Shut down
At least one process value is simulated	Shut down	 At least one process value is simulated
Local operation	Shut down	 Local operation
Maintenance required	Shut down	 Maintenance demanded
Maintenance demanded	Shut down	 Maintenance requested
Maintenance alarm	Shut down	 Maintenance alarm
Good	At least one process value is simulated	 Good
Unknown / not verified	At least one process value is simulated	 At least one process value is simulated
Component disabled	At least one process value is simulated	 At least one process value is simulated
Shut down	At least one process value is simulated	 At least one process value is simulated
At least one process value is simulated	At least one process value is simulated	 At least one process value is simulated
Local operation	At least one process value is simulated	 Local operation
Maintenance required	At least one process value is simulated	 Maintenance demanded
Maintenance demanded	At least one process value is simulated	 Maintenance requested
Maintenance alarm	At least one process value is simulated	 Maintenance alarm
Good	Local operation	 Local operation
Unknown / not verified	Local operation	 Local operation
Component disabled	Local operation	 Local operation
Shut down	Local operation	 Local operation
At least one process value is simulated	Local operation	 Local operation

Redundant component A	Redundant component B	MaintenanceStateDisplay in the diagnostics faceplate
Local operation	Local operation	 Local operation
Maintenance required	Local operation	 Maintenance demanded
Maintenance demanded	Local operation	 Maintenance requested
Maintenance alarm	Local operation	 Maintenance alarm
Good	Maintenance required	 Maintenance demanded
Unknown / not verified	Maintenance required	 Maintenance demanded
Component disabled	Maintenance required	 Maintenance demanded
Shut down	Maintenance required	 Maintenance demanded
At least one process value is simulated	Maintenance required	 Maintenance demanded
Local operation	Maintenance required	 Maintenance demanded
Maintenance required	Maintenance required	 Maintenance demanded
Maintenance demanded	Maintenance required	 Maintenance requested
Maintenance alarm	Maintenance demanded	 Maintenance alarm
Good	Maintenance requested	 Maintenance requested
Unknown / not verified	Maintenance requested	 Maintenance requested
Component disabled	Maintenance requested	 Maintenance requested
Shut down	Maintenance requested	 Maintenance requested
At least one process value is simulated	Maintenance requested	 Maintenance requested
Local operation	Maintenance requested	 Maintenance requested
Maintenance demanded	Maintenance requested	 Maintenance requested
Maintenance requested	Maintenance requested	 Maintenance requested
Maintenance alarm	Maintenance requested	 Maintenance alarm

Redundant component A	Redundant component B	MaintenanceStateDisplay in the diagnostics faceplate
Good	Maintenance alarm	 Maintenance requested
Unknown / not verified	Maintenance alarm	 Maintenance alarm
Component disabled	Maintenance alarm	 Maintenance alarm
Shut down	Maintenance alarm	 Maintenance alarm
At least one process value is simulated	Maintenance alarm	 Maintenance alarm
Local operation	Maintenance alarm	 Maintenance alarm
Maintenance demanded	Maintenance alarm	 Maintenance alarm
Maintenance requested	Maintenance alarm	 Maintenance alarm
Maintenance alarm	Maintenance alarm	 Maintenance alarm
Good	Unknown / not verified	 Good
Unknown / not verified	Unknown / not verified	 Unknown / not verified
Component disabled	Unknown / not verified	 Component disabled
Shut down	Unknown / not verified	 Shut down
At least one process value is simulated	Unknown / not verified	 At least one process value is simulated
Local operation	Unknown / not verified	 Local operation
Maintenance demanded	Unknown / not verified	 Maintenance demanded
Maintenance requested	Unknown / not verified	 Maintenance requested
Maintenance alarm	Unknown / not verified	 Maintenance alarm

6.12 Changeover between SIMATIC Maintenance Station and PCS 7 Maintenance Station

Changeover between SIMATIC Maintenance Station and PCS 7 Maintenance Station

PCS 7 and S7 projects can be used in a production plant. However, both plant areas are separated up to server level, starting at the AS. Each area contains its own severs for plant operation and monitoring. Diagnostics data are also prepared and processed on separate Maintenance Station Servers in these plant areas.

The two plant areas can share a single Maintenance Station for diagnostics. To this purpose a PCS 7 Maintenance Station Client is operated on a separate PC. The server packages outputs by the Maintenance Station Servers of both areas are imported to this PC.

The diagnostics screens of the PCS 7 and S7 plant sections each have their own area on the Maintenance Station. The notation of both areas can be selected using the area selection buttons on the overview area.

- In the PCS 7 project the name is defined in the plant view in the properties of the "Diagnostics" section in the "OS area identifier" field.
- In the S7 project, the name is defined in the "Name of the diagnostics area" input box in the "Derive settings for diagnostics screens" dialog box.

Note

The "Loop-in-HW Config" function is not possible on the Maintenance Station with PCS 7 and S7 plant sections.

Glossary

AS

AS = Automation System

Asset

Assets are the various plant components. The term "plant assets" denotes components or devices of the plant / machinery which are serviced by maintenance personnel.

Asset ID

The asset ID is used to identify the components and must be unique across the entire project. The asset ID is a character string of 32 characters that is transferred to the export file when an individual export is carried out.

Configuring the asset ID

- When creating new S7 projects with STEP 7 V5.4 SP3 or higher, the asset ID is generated automatically for all components configured in the "HW Config" editor.
- When migrating S7 projects that were created before STEP 7 V5.4 SP3, the asset ID for all configured components must be created manually on a one-off basis. The "Allocate asset ID..." function in the "HW Config" editor is used for this purpose.
  In "HW Config", each configured AS station is opened once and the "Allocate asset ID..." function in the "Edit" menu started. The function creates unique asset IDs for the AS and its corresponding subcomponents, and also indicates in a dialog box where these can be edited (if necessary). Once the dialog box has been confirmed, the AS station still needs to be saved, compiled and downloaded.
  This is particularly necessary if the asset ID will continue to be used, e.g. by PM-MAINT.
- For each asset proxy, the asset ID must be allocated manually by means of configuration in the corresponding instance blocks.
  For additional information on this topic, please refer to "Configuring an asset ID for individual export with a standard asset proxy".

Asset Management

The term Asset Management generally encompasses activities and measures taken to maintain or increase the value of a plant. In addition to plant management, plant automation and their optimization, these measures include in particular the maintenance and increase of asset values.

Asset Proxy

The Asset Proxy acts as component representative in the diagnostics system. It is implemented for components which are not standard slaves and do not belong to the SIMATIC family. The function blocks and instance DBs for the asset proxy are programmed in the user program of the AS. A defined interface is used to manage "MaintenanceState" diagnostics data and transfer messages. The "Extended" or "Standard" type is used, depending on the component.

CMMS

Computerized Maintenance Management System. CMMS is a computerized system which is used to plan, manage and analyze maintenance. This includes request management and execution, personnel planning and management, spare parts and materials.

EAM

Enterprise Asset Management System. EAM functionality is closely related to CMMS.

ES

ES = Engineering Station

Event State

Status display for diagnostics messages of the component.

Maintenance Station Client

A WinCC Client for the visualization of process and diagnostics screens with diagnostics control functionality.

Maintenance Station Server

A WinCC server which features enhanced diagnostics functionality.

MaintenanceState

Representation of the diagnostics status in MaintenanceState "MST"

The diagnostics maintenance states of a component are managed in status word MaintenanceState "MST".

MGD MaintenanceGroupDisplay

MGD = MaintenanceGroupDisplay. Status display for the output of the maintenance status of sublevel components.

MSD MaintenanceStateDisplay

MSD = MaintenanceStateDisplay. Status bar for the output of the maintenance status of the stand-alone component.

OS

OS = Operator Station

Plant Asset Management

Plant asset management denotes maintenance tasks which are suitable to preserve or add values. An important aspect in this context is an optimal cost ratio of value-adding maintenance and plant availability.

In addition to the collection of data for the analysis of the plant's technical state, plant asset management also makes decisions concerning maintenance measures to be taken.

Plant asset management system

A plant asset management system is an IT system that provides the following functionality:

- Collection of online information for the assessment of the plant and components state.
- Support of decisions concerning maintenance measures to be taken.
- Preparation and execution of maintenance measures.
- Interface to other systems for asset management such as EAM/CMMS or business management.

SIMATIC Maintenance Station Combined

SIMATIC Maintenance Station Combined: The SIMATIC Maintenance Station is integrated into an existing WinCC station.

SIMATIC Maintenance Station Stand-alone

SIMATIC Maintenance Station Stand-alone: SIMATIC Maintenance Station is implemented on a new or separate PC which is dedicated to operation of the SIMATIC Maintenance Station.

SNMP

Simple Network Management Protocol. The protocol supports central management of multiple network components.

WinCC client

General term used of a PC which is used to visualize and operate the process screens or diagnostics screens.

WinCC multiuser project

A WinCC multiuser project can generate its own packages and upload the packages from other WinCC multiuser projects. The packages can be uploaded from WinCC clients and WinCC multiuser projects. Communication with other WinCC multiuser stations is handled by server-server communication functions. The PC running the multiuser project features a process bus interface for communication with the corresponding automation systems. The multiuser project supports several WinCC clients.

WinCC multiuser station

WinCC station running a project of the type "WinCC multiuser project".

WinCC Server

A WinCC Server receives and processes the process data for operating and monitoring the system. The process data can be transferred via direct process connection or by other WinCC Servers. Operation and monitoring takes place on one or more WinCC clients.

If several WinCC Servers are used, the data can be distributed across them. This means that, in a large system, different components can be processed on separate servers, for example. Systems that are distributed in this way offer the following advantages:

- Good scalability
- Separate system components
- Greater availability as a result of good scalability and separate system components.
- A WinCC Server can access several other WinCC Servers at the same time (server-server communication).

If configured as a SIMATIC Maintenance Station Server, a WinCC Server can also execute diagnostics and maintenance functions.

WinCC single-user project

WinCC single-user projects are interconnected directly with the corresponding automation systems. Generation of packages is not supported. Communication with other WinCC stations and server-server communication are ruled out for this reason.

WinCC single-user station

WinCC station running a project of the type "WinCC multiuser project".

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