

SIEMENS

SIMATIC

Industrial PC SIMATIC IPC DiagMonitor




Operating Manual

Introduction	1
SIMATIC IPC DiagMonitor software components	2
Quick-Start Guide	3
Hardware and software requirements	4
Installing and removing the software	5
Description of the DiagMonitor Management Explorer	6
Diagnostics data via Windows Performance Counters	7

Legal information

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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
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.


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.

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The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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

Table of contents

1	Introduction	6
2	SIMATIC IPC DiagMonitor software components	7
3	Quick-Start Guide	8
4	Hardware and software requirements	9
4.1	Hardware requirements	9
4.2	Software Requirements	10
4.3	Industrial Security	11
5	Installing and removing the software	12
5.1	Installation.....	12
5.2	Removal.....	12
6	Description of the DiagMonitor Management Explorer	13
6.1	Starting Management Explorer	13
6.2	The Management Explorer	13
6.3	Displaying the properties of a station.....	13
6.4	Displaying the properties of a group	14
6.5	Displaying the properties of an element	14
6.6	Selecting the view	14
6.7	Interpreting status information in the Management Explorer.....	15
6.8	Acknowledging alarms in the Management Explorer	15
6.9	The "Properties..." Window.....	16
6.10	Mapping an alarm to a display.....	16
6.11	Configuring the watchdog	17
6.12	Configuration of hard disk space monitoring	18
6.13	Reading the properties of a registered application	18
6.14	Changing the settings of the Management Explorer	19
6.15	Starting the Alarm Manager from the Management Explorer.....	19
6.16	The Alarm Display.....	19
6.17	Acknowledging alarms with the Alarm Display	20
6.18	Changing the message text of the Alarm Display.....	20
6.19	Displaying events with the Event Viewer	20
6.20	The Alarm Manager	20

6.21	Start Alarm Manager	20
6.22	The Alarm Manager in the system tray	21
6.23	The "Alarm Manager - Settings" Window	21
6.24	Adding a new application in the Alarm Manager	21
6.25	Changing an application in the Alarm Manager	22
6.26	Removing an application in the Alarm Manager	22
6.27	Acknowledging alarms with the Alarm Manager	22
6.28	Changing settings of the Alarm Manager	23
6.29	Adding a station	23
6.30	Removing a station	23
6.31	Grouping stations	24
6.32	Saving stations and groups	24
6.33	Email options	25
6.34	SMS options	27
6.35	Using macros in e-mail and SMS notification	28
6.36	SNMP options	29
6.37	Revisions	29
6.38	Monitoring Windows tasks	30
6.39	Service mode	31
6.40	Connection error	31
6.41	Set notifications for termination of connection	31
6.42	OPC server options	32
6.43	OPC tag assignment	33
6.44	OPC Tag List	33
6.45	Self-test	34
6.46	OPC UA server	34
6.47	Starting or stopping the OPC UA server	35
6.48	MiniWeb Server	35
6.49	Starting and stopping the MiniWeb server	35
6.50	Changing the MiniWeb Network Port	35
6.51	Opening the MiniWeb Site	36
6.52	Changing the Links on the MiniWeb Site	36
6.53	"Temperatures" Group	36
6.54	"Fan" Group	37

6.55	"Voltages" Group	37
6.56	"Hard disk" Group	38
6.57	"LEDs" group	38
6.58	"Monitoring" Group.....	39
6.59	"Operating Hours" Group.....	39
6.60	"BIOS" Group.....	40
6.60.1	SMBIOS	40
6.61	BIOS settings	40
6.62	BIOS version.....	42
6.63	Display of Alarms.....	44
7	Diagnostics data via Windows Performance Counters	45
	Index.....	46

Introduction

Even in their basic versions, SIMATIC Industry PCs come with optional monitoring functions. When used in combination with the appropriate software, the following functions for displaying, monitoring and controlling are available:

- Temperature monitoring (over-temperature, under-temperature or cable break at a temperature sensor)
- Fan monitoring (fan speed too low, fan failure, or a break in a tachometer line)
- Monitoring of the battery level
- Monitoring of hard disks with S.M.A.R.T functionality even in a RAID system
- Watchdog (hardware or software reset of the computer)
- Operating hours meter (information on the cumulative run time)

With the SIMATIC IPC DiagMonitor software, you can use these functions for local monitoring. You can use the DiagMonitor Management Explorer application for general monitoring or DiagMonitor Alarm Manager for notification of individual alarms.

This documentation describes the functionality of SIMATIC IPC DiagMonitor software.

SIMATIC IPC DiagMonitor software components

The following components are included in the scope of delivery:

Software Components	Explanations
DMDataEngine	This service returns status information of the monitored device components to SIMATIC IPC DiagMonitor
DMMsgService	This service is responsible for advanced processing of alarms.
DMAAlarmManagerService	This service is responsible for advanced processing of alarms.
IPCUniDrv	Driver for hardware access.
DMOPCService	This service is responsible for communication with OPC.
DMSNMPDataEngine	This service supplies the connection to the monitored stations.
MiniWeb	This service supplies the monitoring data per HTTP.
Alarm Manager	Assigns the relevant alarms to executable programs.
Alarm Display	Lists the individual alarms for acknowledgment.
Management Explorer	Lists the monitored device components and status in an overview.

During installation, these components are copied to the system disk and are available for startup in the system.

Quick-Start Guide

The following steps are required to use SIMATIC IPC DiagMonitor monitoring:

1. Ensure that all the hardware and software requirements are met for the operation of SIMATIC IPC DiagMonitor (see section Hardware and software requirements (Page 9)).
2. Perform the SIMATIC IPC DiagMonitor installation on the SIMATIC IPC (see section Installation (Page 12)).
3. Start the DiagMonitor Alarm Manager in order to be informed of malfunctioning of the monitored device components.

Hardware and software requirements

4.1 Hardware requirements

Only the following SIEMENS products are supported:

- SIMATIC IPC227D
- SIMATIC IPC277D
- SIMATIC IPC427D
- SIMATIC IPC477D
- SIMATIC IPC627D
- SIMATIC IPC647D
- SIMATIC IPC677D
- SIMATIC IPC827D
- SIMATIC IPC847D
- SIMATIC IPC227E
- SIMATIC IPC277E
- SIMATIC IPC427E
- SIMATIC IPC477E
- SIMATIC IPC547E
- SIMATIC IPC547G

4.2 Software Requirements

Requirement

At least one network adapter with TCP/IP.

Operating systems

The SIMATIC IPC DiagMonitor software can be used with the following operating systems:

- Microsoft Windows Server 2008 R2, 64-bit
- Microsoft Windows Embedded Standard 7, 32-bit (SIMATIC IPC configuration)
- Microsoft Windows Embedded Standard 7, 64-bit (SIMATIC IPC configuration)
- Microsoft Windows 7 Ultimate, 32-bit
- Microsoft Windows 7 Ultimate, 64-bit
- Microsoft Windows Server 2012 R2, 64-bit
- Windows 10 IoT Enterprise LTSC

Restriction

Remote monitoring can only be performed via the TCP/IP Internet protocol because the employed SNMP protocol is available in this protocol family.

4.3 Industrial Security

Industrial Security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit (<http://www.siemens.com/industrialsecurity>).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under (<https://support.industry.siemens.com>).

Disclaimer for third-party software updates

This product includes third-party software. Siemens AG only provides a warranty for updates/patches of the third-party software, if these have been distributed as part of a Siemens software update service contract or officially released by Siemens AG. Otherwise, updates/patches are undertaken at your own risk. You can find more information about our Software Update Service offer on the Internet at Software Update Service (<http://www.automation.siemens.com/mcms/automation-software/en/software-update-service>).

Notes on protecting administrator accounts

A user with administrator privileges has extensive access and manipulation options in the system.

Therefore, ensure there are adequate safeguards for protecting the administrator accounts to prevent unauthorized changes. To do this, use secure passwords and a standard user account for normal operation. Other measures, such as the use of security policies, should be applied as needed.

Installing and removing the software

5.1 Installation

Because this installation places entries in the Windows registry and the system folder, it can only be performed by someone with administrator rights.

1. Start **Start.exe**.
2. Select the setup language to be used during the installation.
3. Follow the instructions displayed on the screen.

Silent installation

You have the option of installing SIMATIC IPC DiagMonitor without displaying a window during the installation process. You cannot make any input during the installation.

To do this, run the application **DMInstManager.exe**.

Note

Please note that you always need administrator rights to install an application.

5.2 Removal

As usual in Windows, you uninstall an application via the Control Panel. This SIMATIC IPC DiagMonitor name is entered in the software installation list as follows:

SIMATIC IPC DiagMonitor

The removal routine removes all components from your system. Your configuration settings are maintained.

Silent removal

You have the option of uninstalling SIMATIC IPC DiagMonitor without displaying a window during the uninstallation process.

To do this, run the application **DMInstManager.exe**.

Note

Please note that you always need administrator rights to remove an application.

Description of the DiagMonitor Management Explorer

6.1 Starting Management Explorer

The DiagMonitor Management Explorer can be configured in such a way that the application is started automatically when the system starts up. You can enable this feature as follows:

1. Select the menu command "Options > Settings...".
2. Select the "Start with Windows session" field.
3. Click "OK" to confirm the selection.

DiagMonitor Management Explorer starts automatically the next time the system starts up. The application autonomously prevents multiple starts.

Program window

The setting and size of the program window are retained during runtime.

6.2 The Management Explorer

The DiagMonitor Management Explorer provides a two-pane view similar to the Windows Explorer. In the left-hand pane, all the function groups to be monitored are listed in a tree structure below the name of the station.

The right-hand pane of the window shows the individual devices of a function group. These can be displayed in various views (see *Selecting the view* (Page 14)).

A toolbar is displayed in the program window by default. It can be hidden using the "View" menu command.

- Alarms can be acknowledged with the green check mark.
- Using the arrow left and arrow right buttons, you can move backwards and forwards through the various function groups in much the same way as in an Internet browser.

6.3 Displaying the properties of a station

To display the properties of a station, follow these steps:

1. Right-click on the station in the tree view.
2. Select the menu command "Properties" from the shortcut menu.
3. The "Station properties..." window opens and displays information on the station.

6.4 Displaying the properties of a group

To display the properties of a group, follow these steps:

1. Right-click on the group in the tree view.
2. Select the menu command "Properties" from the shortcut menu.
3. The "Group properties..." window opens and displays the number of elements contained.

6.5 Displaying the properties of an element

To display the properties of an element, follow these steps:

1. Right-click on the element in the list view.
2. Select the menu command "Properties" from the shortcut menu.
3. The "Element properties..." window opens and displays the main properties of the element.

6.6 Selecting the view

In the right-hand pane of the program window of the DiagMonitor Management Explorer, you can choose between three different representations. You can select these using the "View" menu command or the "Standard" toolbar.

The following views are available:

- **Tiles:** The elements of the sensors, for example fans or temperatures are shown in the list view graphically in the form of a scale. The values to the left of the scale show the permitted high and low limits. The value below the scale is the current value. To the right of the scale, there are two pointers. These indicate the maximum or minimum value measured up to now. To reset the max/min pointers to the current value, right-click on the required element in the list view. Select "Reset interval values"
- **Icons:** This view displays large icons and brief status information about the monitored devices.
- **Details:** This view displays small icons and detailed status information about the monitored devices.

Example of a fan: In the detailed view, apart from the type and current value, you can also see the low and high limit of the fan speed.

6.7 Interpreting status information in the Management Explorer

The station is in one of the following statuses:

- **No alarm:**

No maintenance whatsoever is necessary. The station is represented by a computer icon in the overview. All monitored device components are working normally.
- **Alarm (red):**

Maintenance work on the respective SIMATIC IPC is required. The color of the station icon has changed to red. The function groups that have an alarm are also displayed in red. Click on one of these groups to display detailed information in the right-hand pane of the program window.

Example: The CPU temperature of the station is too high --> alarm. Click on the "Temperatures" group. In the right-hand pane of the window, you will see an overview of all the temperatures of this station.
- **Outgoing alarm (yellow):**

Maintenance work on the respective SIMATIC IPC is required. An alarm was reported earlier for a function group, but it is now working normally. The icon color of the device has changed from red to yellow. If there is no other device with an alarm, the color of the station icon changes to yellow. To display detailed information, click on the relevant group.

Example: The CPU temperature of the station is too high --> alarm. By eliminating the cause of the problem or if the CPU temperature returns to normal on its own --> Outgoing Alarm. Click on the "Temperatures" group. In the right-hand pane of the window, you will see an overview of all the temperatures of this station.
- **Acknowledged alarm (red icon with green check mark):**

Maintenance work on the respective SIMATIC IPC is required. The alarm from a function group was acknowledged, the problem, however, remains. A green check mark is added to the red icon in the right-hand pane of the window. To display detailed information, click on the relevant group.

6.8 Acknowledging alarms in the Management Explorer

If an alarm occurs, the status of the function group or the station changes back to "No alarm" only after the problem has been cleared and the alarm has been acknowledged.

To acknowledge an alarm on a specific function group in the Management Explorer, switch to the relevant function group. Now, right-click on the function group involved in the right pane of the window. You can acknowledge an alarm using the displayed shortcut menu. To acknowledge several alarms within a function group or the entire station, you can use the same procedure in the tree view.

Example: Alarms are displayed for a fan and the CPU temperature. You want to acknowledge both at the same time. Right-click on the name of the station. Then select "Acknowledge alarm" in the shortcut menu.

6.9 The "Properties..." Window

This window displays the main properties of a selected station, group or element.

Special features of groups:

- **Sensors:** For fans or temperatures, the current value and the low and high limit value are displayed.
- **Displays:** For LEDs and optional 7-segment displays, you can link an alarm with an element in the "Alarm mapping" tab. See Mapping an alarm to a display (Page 16).
- **Watchdog:** You can set a timeout value and options for watchdog operation. See Configuring the watchdog (Page 17).
- **Station:** A station description can be stored.
- **Hard disks:** Limits can be defined for the free space of the partitions.

6.10 Mapping an alarm to a display

The DiagMonitor Management Explorer allows you to map occurring alarms to an LED or the optional 7-segment display. The mapping can be done for the station or an individual function group. If, for example, the fan generates an alarm, this can be recognized by an LED lighting up.

Note

The interrupt assignment is possible only for devices with a 7-segment display or LEDs.

To map an alarm, follow these steps:

1. Select the "LEDs" group in the tree view of the Management Explorer.
2. In the right pane of the window, select the required output target by double-clicking on it.
3. Now select the " Alarm mapping" tab. Under "Existing mappings" in the upper part of this pane, you can see links that have already been created.
4. To add a new mapping, select the required group from "Group" in the lower part of the window.
5. In the next step, depending on the device components, enter a hexadecimal value (00 to FF) in the "Value" box for the 7-segment display or select the color of the LED display. Select the "Flashing" box if you want the LED display to flash.
6. Now confirm the mappings with the "Add" button.
7. Exit the window with "OK".

To cancel an alarm mapping, follow these steps:

1. Change to the "Alarm mapping" tab as described above.
2. Select the mapping you want to cancel from "Existing mappings".
3. Click the "Remove" button.
4. Exit the window with "OK".

6.11 Configuring the watchdog

The monitoring function "Watchdog" (device-specific) allows you to check whether a station is still operational.

The watchdog can be enabled or disabled ("Enable watchdog" option). If the watchdog is enabled, it will be called up repeatedly at the times set under "Interval." The "Reset on" option indicates whether a hardware reset will be performed when the watchdog is run (for example, if the operating system crashes or the PC cannot be operated).

Note

Alarms

An alarm is triggered if the watchdog cannot be triggered within the specified interval. See: Display of Alarms (Page 44).

Configuring the watchdog

1. Select the "Monitoring" group in the tree view of the Management Explorer.
2. In the list view in the right-hand pane of the window, select the watchdog by double clicking on it.
3. In the "Timeout value" box, you can set the time after which the activated watchdog is restarted.
4. In the field "Software delay", a time delay for running the reset type (e.g. restart) can be set.
5. Select the "Operation: on" box to enable the watchdog.
6. Select the type of reset. The following options are available for your selection:
 - "Reset on" if you want a hardware reset to be performed if the watchdog times out.
 - "Reset off" results in no action when the watchdog times out.
 - "Restart" results in rebooting the operating system action when the watchdog times out.
 - "Shutdown" results in shutting down the operating system action when the watchdog times out.

Note

The "Reset type" property depends on the device and its setting options are limited.

6.12 Configuration of hard disk space monitoring

DiagMonitor Management Explorer offers the option of defining limits for disk space utilization for the partitions of a hard disk. As soon as the defined limit has been exceeded, this is displayed in the Management Explorer.

Proceed as follows to define a limit for the disk space utilization:

1. Select the "Hard disk" group in the tree view of the Management Explorer.
2. In the list view, in the right pane of the window, select the required hard disk by doubleclicking on it.
3. Select the required partition, e.g. "C".
4. Set the required limit as a percentage value and click on "Apply".

6.13 Reading the properties of a registered application

You can display the properties of a registered application.

Requirement

The application whose properties you wish to display must have been registered beforehand with the Watchdog. Only applications created with the DMAPI library can be registered. You will find the DMAPI library in the corresponding directory after the installation of SIMATICIPC DiagMonitor.

Procedure

1. Select the "Monitoring" group in the tree view of the Management Explorer.
2. Select the "Applications" group in the list view in the right-hand pane of the window.
3. A list of the applications registered for this station will appear.
4. Double-click on the application whose properties you wish to display.

The properties of the application are displayed.

6.14 Changing the settings of the Management Explorer

To change general settings of the DiagMonitor Management Explorer, select the "Tools" menu and then "Settings...". Here, you can then make the following settings:

- **Confirm program exit:** If this box is selected, an additional confirmation window appears when you close the Management Explorer.
- **Start with Windows:** Specifies whether or not the Management Explorer opens automatically when you start Windows.
- **Start delay:** The Management Explorer requires several services to start. If the program is started with Windows, it may be possible that not all of these services are available yet. Here you can enter a start delay in seconds to ensure that all required services will have been started.
- **Minimize to...:** The program window can be minimized to the taskbar or to the system tray.

6.15 Starting the Alarm Manager from the Management Explorer

The Alarm Manager can be called directly from the Management Explorer either to restart it or to change the settings. To open the Alarm Manager, select "Tools > Alarm Manager" in the Management Explorer menu.

6.16 The Alarm Display

The DiagMonitor alarm display lists all current local alarms that have occurred so that they can be acknowledged. The date and time at which the alarm occurred are also displayed. The lower part of the window displays a general message text. Here, for example, you might find information on what to do next and the phone number of a service technician.

See also

Changing the message text of the Alarm Display (Page 20)

6.17 Acknowledging alarms with the Alarm Display

First, start the Alarm Display. You can do this by right-clicking on the Alarm Manager icon in the system tray. Select "Acknowledge all alarms" there.

6.18 Changing the message text of the Alarm Display

You can make settings in the DiagMonitor Alarm Manager so that the Alarm Display starts whenever an alarm occurs. The Alarm display window lists all alarms that have occurred so that they can be acknowledged. A general message text is also displayed in the lower part of the window. To change this text, select the "Tools" menu in the Management Explorer. If you then select "Alarm display...", an input box opens in which you can edit the message.

6.19 Displaying events with the Event Viewer

Events such as the occurrence and acknowledgment of an alarm can be logged. To be able to use this function, "Event logging" must be enabled in the settings of the Alarm Manager (see Changing settings of the Alarm Manager (Page 23)).

1. Right-click in the tree view (left pane of the Management Explorer program window).
2. Now select "Start event log". The Event Viewer program window opens.
3. In the tree view in the left-hand pane, select the "Application" entry in the "Event Viewer". The list view in the right-hand pane then shows all the entries logged by Windows. SIMATIC IPC DiagMonitor software entries have the name "SIMATIC Diagnostic Management" in the "Source" column.
4. If you double-click on an entry, you will see further information displayed.

6.20 The Alarm Manager

The DiagMonitor Alarm Manager is used to assign alarms to applications when they occur. If, for example, a fault develops in a RAID hard disk array, the Intel® Rapid Storage Technology (RST) program can be assigned to this fault (assuming it is installed). If a hard disk fault occurs, the Intel® Rapid Storage Technology (RST) software opens.

6.21 Start Alarm Manager





After installation, the Alarm Manager is configured so that the application is started automatically when the system starts up. You disable this feature as follows:

1. You can do this by right-clicking on the Alarm Manager icon in the system tray.
2. Select the menu command "Settings..." from the shortcut menu.
3. Select the functions under "Autostart" in the "Options" tab.
4. The Alarm Manager can continue to be started manually via the Management Explorer under "Options > AlarmManager...".

The application prevents itself from being started more than once.

6.22 The Alarm Manager in the system tray

If the Alarm Manager has been started, an icon appears in the system tray. There are three different representations depending on the status:

- Connection established, no alarm : The Alarm Manager is working correctly, a connection was established to the monitored devices. There are currently no problems to report.
- Connection established, alarm : The Alarm Manager is working correctly, a problem has been detected. When the alarm is cleared, the icon changes back to a DiagMonitor icon .
- Could not establish connection to at least one station : In this state, only alarms from stations that have been successfully connected are reported. Ensure that the stations meet the requirements (Page 9) of the SIMATIC IPC DiagMonitor software.

6.23 The "Alarm Manager - Settings" Window

The "Settings" window of the Alarm Manager has two tabs:

- Applications: Manages the applications, see Adding a new application in the Alarm Manager (Page 21) , Changing an application in the Alarm Manager (Page 22) , Removing an application in the Alarm Manager (Page 22).
- Options: Makes it possible to change general settings, see Changing settings of the Alarm Manager (Page 23).

6.24 Adding a new application in the Alarm Manager

In the Alarm Manager, you can assign function groups to any application. To add a new application, follow these steps:

1. You can do this by right-clicking on the Alarm Manager icon in the system tray > "Settings...". Open the "Applications" tab.
2. Select a group from the "Possible groups" selection box. An alarm from this group will start the application.
3. Using the ">" or "<" buttons, you can add or remove a group in "Selected groups". With ">>" or "<<", you can add or remove all groups.
4. Now enter a title below this for the new application.
5. Select the storage location of the application with the "Browse..." button.
6. Use the "Stations..." button to select the stations for which the application should be run when alarms occur.
7. You can start the new application by right-clicking on the Alarm Manager icon in the system tray. This is only possible if you have selected the "Enter in shortcut menu" check box.
8. You save the new application with the "Add" button.

6.25 Changing an application in the Alarm Manager

To change the details of an application, follow these steps:

1. Select the required application.
2. Make these changes: See Adding a new application in the Alarm Manager (Page 21), items 2 to 6.
3. You can save the changes with the "Change" button.

6.26 Removing an application in the Alarm Manager

If you want to remove an application, follow these steps:

1. Select the required application.
2. Click the "Remove" button.
3. Confirm the "Delete entry?" prompt in the dialog with "Yes".

6.27 Acknowledging alarms with the Alarm Manager

The Alarm Manager offers the option of acknowledging alarms just like the Management Explorer. The Alarm Manager, however, acknowledges all alarms at the same time. It is not possible to acknowledge a specific alarm:

1. You can do this by right-clicking on the Alarm Manager icon in the system tray.
2. Select "Acknowledge all alarms".

6.28 Changing settings of the Alarm Manager

Proceed as follows to make general settings of the Alarm Manager:

1. You can do this by right-clicking on the Alarm Manager icon in the system tray.
2. Select "Settings..."
3. Change to the "Options" tab. Here, you can then make the following settings:
 - Acoustic alarm signal:
An acoustic alarm can be output via the sound card.
 - Event logging:
Events can be logged. Activate this function to save events in the event log.
Refer to Displaying events with the Event Viewer (Page 20).
 - Autostart:
Specifies whether or not the Alarm Manager opens automatically when you start Windows.

6.29 Adding a station

Stations can be added for monitoring in the station list of the Management Explorer. You can perform this as follows:

- Using the menu command "Station > Add" or
- by clicking the [*] button in the toolbar

You can add a station from the "Add Station" dialog window as follows:

1. Enter a name of a station which can be reached in the network.
2. Press the "Find..." button to easily look for a station in the network.
3. If you select the checkbox for "Local station", the local PC is automatically added in the program.

The number of stations to add is unlimited. All added stations are observed and monitored at the same time.

6.30 Removing a station

To remove a station from the station list of the Management Explorer, you first have to select the given station; you can then remove the station as follows from the station list.

- Using the menu command "Station > Remove" or
- by clicking the [x] button in the toolbar.

6.31 Grouping stations

Added stations can be assigned to a group. This enables the logical assignment of stations.

Adding a group

1. Right-click on a station.
2. Select "Add station group".
3. Enter a name for the group.
4. Confirm the next dialog.

The station is now found in the newly created group.

Moving a station to a group

1. Select a station and, keeping the mouse button pressed, drag-and-drop it on the required group.

The station has now be moved to the required group.

Removing groups

1. Right-click on a group.
2. Select "Remove group".

The group has now been removed.

6.32 Saving stations and groups

The added station and groups can be saved to a file and loaded from a file.

Saving stations

Select "File > Stations > Save..." in the Management Explorer.

Downloading stations

Select "File > Stations > Load..." in the Management Explorer.

6.33 Email options

The DiagMonitor Management Explorer allows you to have e-mails sent automatically in the event of an alarm, for example to maintenance personnel.

Start the Management Explorer and select the menu command "Options > Email..." or click on the corresponding icon [Email tool] in the toolbar.

The "Email Options" dialog window appears with the following two tabs:

"Recipient" tab

This allows you to create a standard email to be sent in the event of an alarm.

1. Select the "Email notification" check box.
2. Enter the recipient, the subject and the body of the email text in the appropriate fields. Use macros for the specific or variable parameters station, date, time and reason for the alarm. For more information, go to: Using macros in e-mail and SMS notification (Page 28)
3. Click the "Test" button to perform a trial send attempt.

"SMTP Server" tab

You first have to configure the SMTP server to be able to send emails. The entered server data are stored or retained for future email transmission. We recommend checking the server settings prior to initial operation.

1. Server information

The necessary settings are specified by the network provider.

- "Description" field: Enter a name for the SMTP server here. You can assign a name yourself.
- "Server" field: Enter the server address here.
- "Port" field: Enter the port here.

The encryption methods TLS and SSL are available for email encryption. The default port for TLS is 587 and the default port for SSL is 465.

If you do not want to send encrypted e-mails, select "n/a".

2. Security:

Enter the authentication data for your email account under network provider.

- "Sender" field: Enter the sender for the SMTP server under network provider.
- "User name" field: Enter the user name of your email account under network provider.
- "Password" field: Enter the password of your email account under network provider.

3. POP3:

There is the option for performing authentication by logging on via the POP(3) server and then sending email via SMTP server. This procedure is called "SMTP-After-POP" or "POP-Before-SMTP".

With "SMTP-After-POP", the user first accesses its mailbox on the mail server via the POP3 protocol and thereby provides authentication with their user name and associated password. A defined time window then remains for sending e-mail per SMTP. The successful POP3 authentication, for example "pop.adresse.de", is used here for authorization for sending per SMTP.

6.34 SMS options

The DiagMonitor Management Explorer allows you to have text messages sent automatically in the event of an alarm, for example, to maintenance personnel.

Start the Management Explorer and select the menu command "Options > SMS..." or click on the corresponding icon [SMS tool] in the toolbar.

The "SMS settings" dialog box appears.

To create a standard SMS to be sent automatically in the event of an alarm, proceed as follows:

1. Select the SMS notification check box.
2. Select the appropriate virtual communication port for the data transmission. The virtual COM port to be used will only be displayed once you have installed the communication software provided with your cell phone. The cell phone can also be connected to a USB port.
3. Enter the telephone number of the recipient who should be informed when a given alarm occurs.
4. Write the text to be transmitted. Use macros for the specific or variable parameters station, date, time and reason for the alarm. You can find more information at: Using macros in e-mail and SMS notification (Page 28)
5. Click the "Test" button to perform a trial send attempt.

Once the configuration is successfully completed, a text message is sent to the cell phone if an alarm occurs.

Comment:

The SMS from SIMATIC IPC DiagMonitor can only be sent to devices that support GSM.

6.35 Using macros in e-mail and SMS notification

Macros are available for e-mail and SMS notification. The current value at the time the alarm is triggered will then be inserted in place of the macros. Macros are available for the following specific or variable values:

- Station
Macro: %STATION%
- Date
Macro: %DATE%
- Time of the alarm
Macro: %TIME%
- Reason for the alarm
Macro: %REASON%

Example

- Event that triggers an alarm:
There was a fan failure at station "IPC847D" at 11:00 on May 17, 2016.
- Prepared text under the menu item Options > Email
- Text in the e-mail which is sent automatically:
%DATE%, %TIME%: Alarm at station %STATION%. %REASON%.
May 17 2016, 11.00: Alarm at station IPC847D. The low alarm limit for fan 0 (housing (front)) has been violated.

6.36 SNMP options

Here you can set the time intervals for management station's SNMP communication to the computers to be monitored.

SNMP (an acronym of "Simple Network Management Protocol") controls communication between the monitored devices and the monitoring station.

Select the menu item "Tools > SNMP...". The dialog window "SNMP settings..." opens, in which you will find the following two groups:

- "Time response" group:
 - In the "Feedback interval" window enter the time interval in which the monitoring data should be sent to the management station.
 - You can specify a timeout for the connection attempt in the "Timeout" window.
 - The "Redial attempts" window shows the number of attempts permitted to establish a connection.
- "Connection" group:
 - In the "Community" window you can set the name of the SNMP community to which a connection is to be made.

6.37 Revisions

You can determine the number of hours the device has been in operation from the "Operating hours" group and also define custom revision alarms.

All previously defined revisions are listed in the right window of the Management Explorer. After selecting the symbol of a revision, you can change the properties of this revision by right-clicking:

- "Title" window:

Shows the name of revision in the Revisions group.
- "Alarm at" window:

When these specified operating hours are reached, an alarm is triggered.
- "Alarm in" window:

An alarm is triggered if the number of operating hours equal the number of operating hours already accumulated plus the operating hours specified in this field.
- "Interval" window:

A cyclic alarm is triggered when the specified time has expired once this option is activated.

Revisions can be added or removed at any time without restriction.

6.38 Monitoring Windows tasks

In the "Monitoring > Applications" group, you can add tasks from Windows Task Scheduler to monitoring.

All the tasks monitored up to this point are found in the right window of the Management Explorer.

Adding task monitoring

Note

Task monitoring can only be added for the local station.

1. Right-click on "Monitoring > Applications".
2. Select "Add" from the shortcut menu.

The following settings can be made in the following dialog:

- Title:
Select the tasks to be monitored via "Browse...".

Note

Only tasks which were created in the Windows Task Scheduler in the "DiagMonitor" folder can be monitored.

- Path:
Absolute path of task in the Windows Task Scheduler.
- Return value for alarm:
Here, enter the return values of the task for which an alarm is to be generated. Separate several values with a semicolon, e.g.: "1;2".
- Return values without alarm:
Here, enter the return values of the task for which no alarm is to be generated. Separate several values with a semicolon, e.g.: "0;3".
- Start task every x seconds:
Set this option if DiagMonitor should trigger the task every x seconds. The task can also be triggered via the task configuration in the Windows Task Scheduler.
- Alarm for unknown values:
Set this option if an alarm should be generated for unknown return values which were not entered previously.

Removing task monitoring

1. Right-click on "Monitoring > Applications".
2. Select the task monitoring to be deleted on the right side.
3. Right-click on the required element.
4. Select "Remove" in the shortcut menu.

6.39 Service mode

In addition to the states described under Interpreting the Status Information in the Management Explorer (Page 15) a station can have in the DiagMonitor, there is another state: the service state.

Using the service mode, a station can be temporarily removed from monitoring. To do this, you need to select the corresponding station. You can then right-click to put this station into service mode or bring it back into monitoring. Alternatively, you can active or deactivate service mode using the "Computer tool" button. The computer symbol is not active in maintenance mode.

6.40 Connection error

In the event of the failure of the network or network disruptions, a connection error on a station is indicated by a small cross on the computer icon of the station.

This marking disappears at the corresponding computer icon once the problem has been corrected.

6.41 Set notifications for termination of connection

1. Select "Options > Notifications...".

In the following dialog, you can select the following messages with which you wish to be informed when a connection of a station is interrupted:

- Event Log
- E-mail (only if configured beforehand)
- SMS (only if configured beforehand)

6.42 OPC server options

OPC (OLE Process Control) is a technology for exchanging and using shared data between a range of applications. OPC has a variety of substandards that have been independently implemented for specific usage cases. OPC can thus be used for realtime monitoring, data archiving, alarming and for the latest application, controlling (instruction transmission).

Industry PCs can use the OPC functionality of the SIMATIC IPC DiagMonitor to transmit monitoring data to SIMATIC applications. Each SIMATIC station can be viewed as an OPC DA client. OPC client functionality enables you to transfer data from SIMATIC IPC DiagMonitor to a different OPC application, for example:

- SIMATIC WinAC
- SIMATIC WinCC/WinCC flexible
- SIMATIC NET

The data can be visualized for the specific application using these programs.

An OPC server is required to integrate the SIMATIC IPC DiagMonitor data into a SIMATIC application. The OPC server can be located on the same computer as the monitoring station or on a dedicated computer.

Select the menu command "Options > OPC Server..." or simply press the corresponding button "OPC server tool" in the toolbar. The "OPC Server Configuration" dialog window appears, in which you can configure the OPC functionality:

1. Computer name: Enter the name of the PC for which you know that an OPC server installed there is active. You can alternatively search for the PC using the "Browse" button.
2. OPC server: Enter the name of the OPC server. If the OPCEnum service has been started on the server and the current user has access permissions for this service via DCOM, a list of installed OPC servers can also be displayed using the "Browse" button.
3. Group name: Here you can specify the group within which the OPC tags should be created.
4. Logon information: A user account is often required to successfully connect to an OPC server. If you activate the "Log on with another user" function and enter the user name, domain and password, this information will be used to log on to the OPC server.
5. Templates: You can specify templates for the tag names in this dialog. They are used to save time renaming tags when the OPC server expects a certain name format. Enter the desired name in the selection list to create a new template. In the field below, you can create the name template. Certain character strings, such as "%s", will be replaced by the station name. The format of the tag must match the formats defined on the OPC server. You can select a separate template for each server.

Apply your settings and confirm with "OK". The selected servers are shown in the right group window.

The assignment or addition of tags is described in the section OPC Tags Assignment (Page 33). You can use the "Tags" button (see OPC Tag List (Page 33)) to display the tags monitored on the server.

Saving and loading the configuration

In the "Configuration" field, you can save the current OPC client configuration as well as the configuration of the tag assignment to a file or load them from a file.

6.43 OPC tag assignment

After selecting a station or one of the element groups below it, you can right-click and select the "OPC..." option to open the dialog window for configuring OPC tags. There you can select tags for transmission to the OPC server previously selected.

The displayed window is divided into two groups.

"DM" group:

- In the upper section of the window you will find the name of the previously selected group or station. For example, there are two fans, Fan[0] power supply fan and Fan[1] processor fan in the "Fans" group.
- The lower section of the window shows all the properties of the selected elements. The OPC type and a brief description are provided in addition to the name. The selection of the tags to be transferred is made by setting a check mark and then confirming it with the right arrow symbol. If you want to change the tag names, click once right on the corresponding tag and enter the new name.

"OPC" group:

- The upper window displays the selected OPC server where the tags are to be transferred (see OPC Server Options (Page 32)).
- The lower window lists the tags to be transferred to the corresponding OPC server. If you wish to remove an element from the list, use the left arrow symbol to do so. You can use the right arrow symbol to add an element.

6.44 OPC Tag List

Press the "Tags" button to get an overview of all tags to be transferred to the OPC server.

The left group window shows the data of the connected OPC server and the group; the right window lists all of the OPC tags. The corresponding station of the tags is clearly indicated in addition to the name of the tags.

You can remove the unused tags from the list by pressing the "Remove Tag" button.

6.45 Self-test

You can use the DiagMonitor Management Explorer to perform a self-test for individual fans or all fans. This is used to determine if the maximum speed of the fans is sufficiently high to ensure trouble-free operation.

After selecting a fan or the Fans group, you can open the properties dialog with a right-click. Open the "Self-test" tab.

- "Title" window:
Specifies the name of the self-test as shown in the Revisions group.
- "Alarm at" window:
When these specified operating hours are reached, the self-test is started and an alarm is triggered.
- "Alarm in" window:
An alarm is triggered if the number of operating hours equal the number of operating hours already accumulated plus the operating hours specified in this field.
- "Silent alarm" window:
Activate this option when no alarm should be triggered when the self-test is performed. This will not prevent an alarm for a wear limit defined by the manufacturer.
- "Interval" window:
Once this option is activated, a cyclical self-test is triggered after the specified time has expired.
- "Test now" button:
A self-test of the affected fans is started immediately when this button is pressed.

Note

It is not possible to perform a self-test for all fans or in all devices.

6.46 OPC UA server

The OPC UA server makes information about the industry protocol OPC UA available.

Make sure that these ports have been enabled in the firewall of your operating system. For further information on the configuration of the OPC UA server, refer to the included documentation, see installation directory.

Following installation, you can start and stop the OPC UA server via the Management Explorer. For additional details, see Starting or stopping the OPC UA server (Page 35).

6.47 Starting or stopping the OPC UA server

1. Open the Management Explorer.
2. Select "OPC UA" from the "Options" menu.

6.48 MiniWeb Server

The MiniWeb server provides information on the system via HTTP/HTTPS.

Make sure that these ports have been enabled in the firewall of your operating system. For additional information on changes, see Changing the MiniWeb Network Port (Page 35).

Following installation, you can start and stop the MiniWeb server via Management Explorer. For additional details, see Starting and stopping the MiniWeb server (Page 35).

6.49 Starting and stopping the MiniWeb server

1. Start the Management Explorer.
2. Select "Web server" from the "Options" menu.

6.50 Changing the MiniWeb Network Port

The default values for the network ports are 5009 for HTTP and 5449 for HTTPS. If you want to change the setting, follow these steps:

1. Start the link "Start > Programs > Siemens Automation > DiagMonitor > WebServer > Configuration".
2. Search for the line `<PORTNUMBER VALUE="5009"/>`.
3. Change the value of the respective http port.
4. Search for the line `<SSLPORTNUMBER VALUE="5449"/>`.
5. Change the value of the respective HTTPS port.
6. Save and close the file.
7. Restart the MiniWeb service (see Starting and stopping the MiniWeb server (Page 35)).

6.51 Opening the MiniWeb Site

If the MiniWeb service has been started (see Starting and stopping the MiniWeb server (Page 35)), you can open the website using a browser. If you want to open the website of the local computer, enter the following address in the address line of the browser:

http://localhost:5009 or **https://localhost:5449**. If you want to open the website of another computer: **http://computer name:5009** or **http://IP address of the computer:5009**. Make sure that the firewall of your operating system has been configured so that you can access the respective port.

6.52 Changing the Links on the MiniWeb Site

The MiniWeb site displays different Internet links to Siemens support sites in the menu item "Links". If you want to change or add links at a later time, follow these steps:

1. Start the link "Start > Programs > Siemens Automation > DiagMonitor > WebServer > Links".
2. If you want to add a new link, open the links as an administrator (right-click), copy one of the lines and change it as necessary.

"NAME =" is the displayed name, "TARGET=" the link to the target address.

3. Save and close the file.

6.53 "Temperatures" Group

The "Temperatures" group indicates the status of the existing temperature sensors (device-dependent).

The temperature will be displayed in a thermometer symbol, depending on the view.

- The unit is °C (Celsius) for metric settings
- The unit is °F (Fahrenheit) for Anglo-American settings

Proceed as follows to change this setting:

1. Start the country setting in the Control Panel.
2. You select the measuring system in the "Numbers" tab under "Measuring system."
3. Re-start Management Explorer.

The last temperature measurement is displayed below the thermometer symbol. To the left of the temperature scale are the minimum and maximum allowed values. Violation of these limits will trigger an alarm. To the right of the temperature scale are the minimum and maximum measured values.

Alarms

If the temperature exceeds or falls below the specified maximum or minimum value, this is displayed in the status of the sensor (see Display of Alarms (Page 44)).

6.54 "Fan" Group

The "fan" group indicates the status of the existing fans (device-dependent).

The fan speed is represented in a fan symbol, depending on the selected view; all speeds are indicated in revolutions per minute. The last speed measurement is displayed below the fan symbol. To the left of the speed scale are the minimum and maximum allowed values. Violation of these limits will trigger an alarm. To the right of the speed scale are the minimum and maximum measured values.

Alarms

If the speed falls below the indicated minimum value, such a reaction will be displayed in the sensor status (see Display of Alarms (Page 44)).

6.55 "Voltages" Group

The "Voltages" group indicates the status of the existing voltage sensors (device-dependent).

The voltage of a backup battery (CMOS), a redundant power supply (device-dependent) or an uninterruptible power supply (device-dependent) can be monitored.

The backup battery voltage is monitored to establish whether it is ok, critical or faulty.

Note

Backup battery (CMOS)

Replace the backup battery immediately if the sensor indicates a critical or faulty status.

Redundant power supply monitoring checks that both power inputs are enabled and the power supply unit fan is operating.

With an uninterruptible power supply, monitoring checks whether the current input is active.

Note

Alarms

If the voltage falls below the indicated minimum value, the sensor status will indicate this. See Display of Alarms (Page 44)

6.56 "Hard disk" Group

The "Hard Disk" group indicates the status of the existing hard disks (device-dependent). The following hard disks are supported:

- SATA hard disks
- CompactFlash cards
- CFast cards
- SAS hard disks
- USB hard disks or USB sticks
- Hard disks for an INTEL RAID adapter or Adaptec RAID adapter

The properties for each drive indicate if the drive is S.M.A.R.T. capable and/or a RAID drive. If this is the case, then the drive symbol is displayed actively with a symbolic LED. The type, serial number, and firmware version of the drive is displayed in the respective text box.

Alarms

If a drive reports a SMART or RAID error, the status of the drive changes (see Display of Alarms (Page 44)).

SMART (Self-Monitoring, Analysis and Reporting Technology):

All hard disks of the Industrial PC support SMART technology.

SIMATIC IPC DiagMonitor requests a status report of the hard disk with special routines. The SMART hard disk keeps a list of errors that occurred during reading or writing of sectors. If the number of errors exceeds a certain threshold, this fact often indicates that the drive will become faulty soon.

This is the time when you should create a backup of the drive and replace the hard disk.

An example for this type of problem may be small particles in the disk housing that do not immediately result in a "Headcrash," but initially cause only scratches in the surface of the magnetic disk. This process results in more free particles. The number of errors increases and results in a "Headcrash".

SMART would register the increasing number of errors and trigger an alarm in this case.

SMART does, however, not detect problems that are caused by the electronics and result in an instant failure of the hard disk.

6.57 "LEDs" group

The "Displays" group indicates the status of the existing displays (device-dependent). The following displays are supported:

- LED
- Port 80 display

The latest value of the display is always shown. It is possible to display a specific value in case of an alarm (see Mapping an alarm to a display (Page 16)).

6.58 "Monitoring" Group

The following monitoring functions are available in the "Monitoring" group:

- Watchdog

You can register the applications of a station with the Watchdog. If an application then fails to report back to the Watchdog within the set time interval, the Watchdog will be triggered with the parameters set for the application in question.

You can find addition information on this under: [Configuring the watchdog \(Page 17\)](#).

If no applications have been registered, you can use the monitoring function Watchdog to check whether diagnostics management is still operational.

- Applications

You can use the "Applications" monitoring function to display the properties of an application. You can find addition information on this under: [Reading the properties of a registered application \(Page 18\)](#).

- Tasks

You can use the "Tasks" monitoring function to monitor tasks from Windows Task Scheduler.

See also

[Display of Alarms \(Page 44\)](#)

6.59 "Operating Hours" Group

The "Operating hours" group displays the elapsed operating hours of the device since the installation of the monitoring software. This value is not lost when you reinstall the monitoring software. This group is subordinate to the Revisions group (see [Revisions \(Page 29\)](#)).

6.60 "BIOS" Group

The subgroup is located in the "BIOS" group SMBIOS (Page 40).

6.60.1 SMBIOS

SMBIOS (System Management BIOS) specifies data structures, as well as their arrangement in the BIOS of the computer.

All configuration data on the motherboard of the SIMATIC IPC device, such as the serial number, order number, revision numbers of the hardware or BIOS, device names, processor information or system information; can be displayed in the "SMBIOS" group.

Only the group elements are shown in a tree under the "SMBIOS" group in the left section of the Management Explorer. Both group elements and single elements are shown in the right section of the window.

6.61 BIOS settings

You can save the BIOS Setup settings of a PC in a file. This step saves the basic settings of a device so that you can restore the basic status of the BIOS Setup settings after inadvertent or incorrect changes.

You can also transfer the BIOS settings from one computer to another if the hardware platform and the BIOS version match. This will give you the option to save the BIOS settings of a computer as a template.

Note

The following functions vary according to the device and are not available on all SIMATIC IPC models.

Saving the latest BIOS settings

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
3. Select the "Settings" tab.
4. Click the "Save" button.
5. Select the storage location and enter a suitable file name.
6. Confirm the selection.

Upload BIOS settings

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
3. Select the "Settings" tab.
4. Click the "Load" button.
5. Select the file you want to upload.
6. Confirm the selection.
7. Activate the newly loaded BIOS settings by restarting the PC.

Displaying current BIOS settings

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
The current BIOS settings are shown in the "Settings" tab.

6.62 BIOS version

Note

The following functions will not be available on all SIMATIC IPC models.

Assigning and changing inventory numbers

You can assign inventory numbers to your devices or change assigned inventory numbers for internal administrative purposes.

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
3. Select the "Update" tab.
4. Click the "Change" button in the "Inventory number" field.
5. Assign a new inventory number or change an existing inventory number and confirm your entry.
6. Restart the device.

Result

The inventory number is now permanently saved in the device SMBIOS.

The inventory number is located in SMBIOS under "System Enclosure" as entry "Asset Tag Number".

Performing a BIOS update

Note

Latest BIOS

Check whether a current BIOS is available for your SIMATIC IPC. Additional information can be found on the Internet at Industry Automation and Drive Technologies - Homepage (<http://www.siemens.com/automation/service&support>).

Note

Irreparable damages to the BIOS

An incorrectly performed BIOS update may cause irreparable damages to the BIOS. You may only start a BIOS update if it is absolutely necessary. The following applies:

- Never interrupt the power supply while an update is taking place.
 - The update process must be complete before you shut down the device.
-

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
3. Select the "Update" tab.
4. Click the "Load" button in the "BIOS Image" field.
5. Select the required binary file for the update.
6. A version comparison will be carried out.
7. Start the update.

6.63 Display of Alarms

Alarms are represented by the status for each element, each group and each station. The possible alarm states of a status are described in the following:

- Ok

No error has occurred. The objects with this status are displayed in the Management Explorer in the colors gray and blue.

This status cannot be acknowledged.

- Alarm

An error has occurred which is still present at this time, e.g. fan standstill. The objects with this status are displayed in the Management Explorer in the color red.

If this status is acknowledged, the status will change to "Acknowledged Alarm".

- Acknowledged Alarm

An error has occurred that is still present, such as a fan standstill, but that has been acknowledged in the meantime. The objects with this status are displayed in the Management Explorer in the color red.

This status cannot be acknowledged again. If the reason for the alarm has been removed, the status will automatically change to "Ok".

- Outgoing alarm

If an error has occurred that is not present currently, such as a fan that came to a standstill but is running now. The objects with this status are displayed in the Management Explorer in the color yellow.

If this status is acknowledged, the status will change to "Ok".

Diagnostics data via Windows Performance Counters

7

Windows Performance Counters is a system tool from Windows, which provides measured values for monitoring system performance. These measured values can be determined and visualized either via the Performance Counters API or with Performance Counters applications (e.g.: "Windows Performance Monitor").

SIMATIC IPC DiagMonitor makes the following Performance Counters available:

Counters	Description
SIMATIC DiagMonitor disks	
Alarm count	Number of hard disk alarms in the current session
SIMATIC DiagMonitor fans	
Alarm count	Number of fan alarms in the current session
Current value	Current fan speed in rpm
SIMATIC DiagMonitor temperatures	
Alarm count	Number of temperature alarms in the current session
Current value	Current temperatures in °C
SIMATIC DiagMonitor voltages	
Alarm count	Number of voltage alarms in the current session

The Windows Performance Counters can be monitored, for example, using the Windows application "Windows Performance Monitor".

Index

A

- Acknowledging alarms, 15, 20
- Adding a station, 23
- Addition of station, 23
- Alarm display, 19
 - Acknowledging alarms, 20
- Alarm Display, 7
- Alarm Manager, 7, 20
 - Acknowledging interrupts, 22
 - Add application, 21
 - Change settings, 21, 23
 - Changing an application, 22
 - Deleting an application, 22
 - Representations, 21
 - Start, 20
 - Starting, 19
- Alarm mapping, 16

B

- BIOS Group, 40
- BIOS settings
 - Displaying, 41
 - Downloading, 41
 - Saving, 40
- BIOS update, 43

C

- Changing MiniWeb network ports, 35
- Changing settings of the Alarm Manager, 23
- Changing the Links on the MiniWeb Site, 36
- Clearing the alarm, 15
- Configuring the watchdog, 17, 17
- Connection faults, 31

D

- Defining revision alarms, 29
- DiagMonitor Management Explorer, 13, 13
- Display events, 20
- Display of Alarms, 44
- Displaying events, 20

- Displays, 38
 - Properties, 16
- Displays group, 38
- DMAlarmManagerService, 7
- DMDDataEngine, 7
- DMMsgService, 7
- DMOPCService, 7
- DMSNMPDataEngine, 7

E

- Element properties, 14
- Email options, 25

F

- Fan, 37
- Fan group, 37
- Fan self-test, 34
- Functionality, 6

G

- Group properties, 14

H

- Hard disk group, 38
- Hard disks, 38
- Hardware requirements, 9

I

- Installation, 12
- Interrupt assignment, 16
- Introduction, 6
- Inventory number
 - Assigning and changing, 42
- IPCUniDrv, 7

M

- Management Explorer, 7
 - Starting, 13
 - Structure, 13

Memory image, 41
memory map, (See Memory image)
MiniWeb, 7
MiniWeb site
 Changing links, 36
Monitoring, 39
Monitoring Functions, 6
Monitoring group, 39

O

OPC, 32
 Displaying Variables, 33
 Saving or loading configurations, 32
 Tag assignment, 33
OPC server, 32, 33
Opening the MiniWeb Site, 36, 36
operating hours, 39
Operating Hours group, 39
Operating systems, (See Software requirements)

P

Properties
 of a station, 13
 of an element, 14
Properties of a group
 Displaying, 14
Property window, 16

Q

Quick-Start Guide, 8

R

Reading status information
 Acknowledged Alarm, 15
 Alarm, 15
 No alarm, 15
 Outgoing Alarm, 15
Removing a station, 23, 23

S

Scope of delivery, 7
Selecting the views, 14
Selecting view, 14
Self-test, 34

Sensors

 Properties, 16
Service mode, 31
Settings of the DiagMonitor Management Explorer, 19
Silent removal, 12
SIMATIC IPC DiagMonitor
 Installing, 8
SMBIOS, 40
SNMP options, 29
Software requirements, 10
Starting the Alarm Manager, 19
Station properties, 13
System Management BIOS, 40

T

Temperature sensors, 36
Temperatures group, 36
Thermometers
 Temperature monitoring, 36

U

Uninstall, 12

V

Voltages, 37
Voltages group, 37

W

Watchdog
 Properties, 16