

# SIEMENS

## SIMATIC

### Industrial PC SIMATIC IPC DiagBase




#### Operating Manual

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## Legal information

### Warning notice system

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.

 <b>DANGER</b>
indicates that death or severe personal injury <b>will</b> result if proper precautions are not taken.
 <b>WARNING</b>
indicates that death or severe personal injury <b>may</b> result if proper precautions are not taken.
 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.
<b>NOTICE</b>
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.

### Qualified Personnel

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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### 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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# 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 SMART functionality even in RAID systems
- Watchdog (hardware or software reset of the computer)
- Operating hours meter (information on the cumulative run time)
- BIOS Management
  - Saving and restoring BIOS Setup settings.
  - Performing a BIOS update or changing the device inventory number in BIOS.

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

This documentation describes the functionality of SIMATIC IPC DiagBase software.



## DiagBase software components

The following components are included in the scope of delivery:

Software components	Explanations
DMDDataEngine	This service supplies status information on the monitored device components (such as temperature or fan) of DiagBase.
DMMsgService	This service is responsible for notification of alarms.
DMAAlarmManagerService	This service is responsible for advanced processing of alarms.
IPCUniDrv	Driver for hardware access
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 their status in an overview.

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





## Quick-Start Guide

The following steps must be completed before using DiagBase monitoring:

1. Make sure that all hardware and software requirements are met for operation of DiagBase. See section Hardware and software requirements (Page 11).
2. Install DiagBase on the SIMATIC IPC. See section Installation (Page 13).
3. Now start the DiagBase Alarm Manager to obtain information on any malfunctions of the monitored device components. If you have made the appropriate settings, the icon of the Alarm Manager appears in the system tray.



# Hardware and software requirements

## 4.1 Hardware requirements

Only the following SIEMENS products are supported:

- SIMATIC IPC427C
- SIMATIC IPC627C
- SIMATIC IPC827C
- SIMATIC IPC647C
- SIMATIC IPC847C
- SIMATIC HMI IPC477C
- SIMATIC HMI IPC477C PRO
- SIMATIC HMI IPC577C
- SIMATIC HMI IPC677C
- SIMATIC IPC547D
- SIMATIC IPC227D
- SIMATIC IPC277D
- SIMATIC IPC427D
- SIMATIC IPC477D
- SIMATIC IPC547E
- SIMATIC IPC627D
- SIMATIC IPC677D
- SIMATIC IPC647D
- SIMATIC IPC827D
- SIMATIC IPC847D

Depending on the device configuration, you will need an additional USB CD/DVD drive and a USB data carrier with the unzipped files of the download.

## **4.2 Software Requirements**

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

- Microsoft Windows XP Professional, 32-bit
- Microsoft Windows Server 2003 R2, 32-bit
- Microsoft Windows Server 2008, 32-bit
- Microsoft Windows Server 2008 R2, 64-bit
- Microsoft Windows Embedded Standard 2009 (SIMATIC IPC configuration)
- 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

# Installing and removing the software

## 5.1 Installation

---

**Note****Administrator rights are required for installation**

As entries are made in the Windows registry and the system directory during installation, 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.

## 5.2 Removal

---

**Note****Administrator rights are required for removal**

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

---

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

SIMATIC IPC DiagBase

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



# Description of the Management Explorer

## 6.1 Starting Management Explorer

### Start Management Explorer

The DiagBase 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 "Settings..." in the "Tools" menu.
2. Select the "Start with Windows session" field.
3. Click "OK" to confirm the selection.

DiagBase Management Explorer now starts automatically from the next time the system starts up. This approach actively prevents multiple starts.

---

**Note****Setting the start delay**

There are a few system configurations in which the Management Explorer does not have full access to all services at startup. The Management Explorer will not receive any data in this case. We recommend setting the start delay in this case (in seconds).

By setting this waiting period, the application will be forced to wait until all required services are available or until the waiting period has expired.

---

### Program window

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

## 6.2 The Management Explorer

The DiagBase 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. They can be displayed in different views (see Selecting the view (Page 17)).

As default, two toolbars are shown in the program window. The toolbars can be hidden using the "View" menu command.

- Standard:
  - Alarms can be acknowledged with the green check mark.
  - You can change the view with the double arrow.
  - 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.
  - The arrow up button is used to select the higher-level station.
- Address bar:
  - Using the address box next to the arrow buttons, you can go directly to a function group.

### 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. A shortcut menu opens in which you select the "Properties..." menu command.
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. A shortcut menu opens in which you select the "Properties..." menu command.
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. A shortcut menu opens in which you select the "Properties..." menu command.
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 DiagBase 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 (green):** No maintenance whatsoever is necessary. In the overview, the station is represented by a green computer icon. All monitored device components are working normally.
- **Alarm (red):** Maintenance is required on the computer involved. 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 (orange):** Maintenance is required on the computer involved. An alarm was reported earlier on a device, but it is now reported as working normally. The icon color of the device has changed from red to orange. If there is no other device with an alarm state, the color of the station icon changes to orange. 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 is required on the computer involved. The alarm of a device was acknowledged, but the problem persists. 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 device 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 device in the Management Explorer, change to the relevant function group. Now right-click on the device involved in the right-hand 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 19).
- **Watchdog:** You can set a timeout value and options for watchdog operation. See Configuring the watchdog (Page 20).

## 6.10 Mapping an alarm to a display

The DiagBase 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.

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### **Note**

Alarm assignment is possible only for devices that are equipped with a 7-segment display or LEDs.

---

To map an alarm, follow these steps:

1. Select the "Displays" group in the tree view of the Management Explorer.
2. In the list view in the right-hand 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, 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 option "Enable reset" 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).

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### Note

#### Alarms

An alarm will be triggered, if the watchdog could not be triggered within the specified interval. See: Display of Alarms (Page 32).

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### 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. Select the "Operation: on" box to enable the watchdog.
5. 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.

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## **6.12 Changing the settings of the Management Explorer**

To change general settings of the DiagBase 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.
- **Minimize to...:** The program window can be minimized to the taskbar or to the system tray.

## **6.13 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.

## **6.14 The Alarm Display**

The DiagBase alarm display lists all current 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.

## **6.15 Acknowledging an alarm 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. Then select "Alarm display". Put a check mark in the box in front of the name of the alarm. Confirm with the "Acknowledge" button.

## **6.16 Changing the message text of the Alarm Display**

You can make settings in the DiagBase 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.

## 6.17 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 24).

1. Right-click in the tree view (left pane of the DiagBase 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. DiagBase 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.

## 6.18 The Alarm Manager

The DiagBase 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® Matrix Storage Manager program can be assigned to this fault (assuming it is installed).

In other words, if a hard disk fault occurs, the Intel® Matrix Storage Manager will open.

## 6.19 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. By selecting "Settings..." in the shortcut menu, you can deselect the functions under Autostart in the "Options" tab.
3. The application can also be started manually from the Start menu.

The application prevents itself from being started more than once.

## 6.20 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 device components. 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 the DiagBase icon .
- Connection not established : The Alarm Manager cannot establish a connection to the monitored device components. In this status, no alarms can be signaled. Make sure that the station meets the requirements of the DiagBase software. Right-click the icon "Connect" in the system tray to try to establish a connection once again.

## 6.21 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 23) , Changing an application in the Alarm Manager (Page 24) , Removing an application in the Alarm Manager (Page 24).
- Options: Makes it possible to change general settings, see Changing settings of the Alarm Manager (Page 24).

## 6.22 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. 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.
7. You save the new application with the "Add" button.

## 6.23 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 23), items 2 to 6.
3. You can save the changes with the "Change" button.

## 6.24 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".

## 6.25 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".

## 6.26 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 either via the system speaker or the sound card. This function must be supported by the hardware of the IPC. As of Windows 7, the system speaker cannot be selected, as this function is no longer supported.

- 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 22).

- Autostart:

Specifies whether or not the Alarm Manager opens automatically when you start Windows.



## 6.27 MiniWeb Server

The MiniWeb server provides information on the system via HTTP/HTTPS. You select the ports for HTTP/HTTPS and the start mode during setup. Make sure that these ports have been enabled in the firewall of your operating system.

Make sure that these ports have been enabled in the firewall of your operating system. For additional information on later changes, see [Changing the MiniWeb Network Port \(Page 25\)](#).

Following installation, you can start and stop the MiniWeb server via Management Explorer. For additional details, see [Starting and stopping the MiniWeb server \(Page 25\)](#).

## 6.28 Starting and stopping the MiniWeb server

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

## 6.29 Changing the MiniWeb Network Port

The default values for the network ports are 5009 for HTTP and 5449 for HTTPS. To change this setting, proceed as follows:

1. Start the link "Start > Programs > Siemens Automation > DiagBase > 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 \(Page 25\)](#)).

## 6.30 Opening the MiniWeb Site

If the MiniWeb service has been started (see [Starting and stopping the MiniWeb server \(Page 25\)](#)), 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:

**https://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.

## 6.31 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 > DiagBase > WebServer > Links".
2. If you want to add a new link, 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.

## 6.32 "Temperatures" Group

The "Temperatures" group shows the temperatures at different hardware-dependent measuring points of the SIMATIC IPC.

The temperature will be displayed in a thermometer symbol, depending on the view. You can select Celsius or Fahrenheit as unit of temperature.

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.

---

### Note

### Alarms

If the temperature falls below or rises above the indicated maximum or minimum values, such a reaction will be displayed in the sensor status. See Display of Alarms (Page 32).

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## 6.33 "Fan" Group

The "fan" group indicates the states and speeds of the existing fans (device-dependent). The speeds are given in revolutions per minute (U/min).

The speed of the fans will be displayed in a fan symbol, depending on the view.

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.

---

### Note

#### 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 32).

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## 6.34 "Voltages" Group

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

The voltage of the backup battery (CMOS) or a redundant power supply (device-specific) 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.

---

### Note

#### Alarms

If the voltage falls below the indicated minimum value, such a reaction will be displayed in the sensor status. See Display of Alarms (Page 32).

---

## 6.35 "Hard disk" Group

### Hard disks

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

- ATA hard disks, incl. solid-state drive
- Diagnosable SIMATIC IPC CompactFlash cards
- SCSI 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 SMART 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.

---

#### Note

#### Alarms

If a drive reports a SMART or RAID error, the status of the drive will change. See Display of Alarms (Page 32).

---

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

All hard disks of the SIMATIC IPC support SMART technology.

The application uses special routines to request a status report of the hard disk. 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.

## 6.36 "Displays" 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 19).

## 6.37 "Monitoring" Group

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

- Watchdog

The monitoring function "Watchdog" (device-specific) allows you to check whether a station is still operational. Additional information is available under: Configuring the watchdog (Page 20).

### See also

Display of Alarms (Page 32)

## 6.38 "Operating Hours" Group

The group "Operating Hours" displays the total operating hours of the device since installation of the monitoring software. This value is not lost when you reinstall the monitoring software.

## 6.39 "BIOS" Group

The group "BIOS" contains the subgroup SMBIOS (Page 29).

### 6.39.1 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.

### See also

"BIOS" Group (Page 29)

## 6.40 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. Depending on the BIOS or device version, the settings will be displayed either in text format or as a memory image (memory map).

## 6.41 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".

### Loading and saving the BIOS Image

1. Start the Management Explorer.
2. In the menu bar, select "Tools > Local BIOS...".
3. Select the "Update" tab.
4. Click the "Load" or "Save..." button in the "BIOS Image" field.

### Performing a BIOS update

---

### Note

#### Latest BIOS

Check to see that the latest BIOS is available for your SIMATIC IPC (as of C device generation). Additional information can be found on the Internet at Industry Automation and Drive Technologies - Homepage (<http://www.siemens.com/automation/service&support>).

---

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**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.

## 6.42 Display of Alarms

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

- Ok

No error has occurred. Objects with this status are displayed in green in the ManagementExplorer.

This status cannot be acknowledged.

- Alarm

An error has occurred that is still pending, such as a fan standstill. Objects with this status are displayed in red in the ManagementExplorer.

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. Objects with this status are displayed in red with a green check mark in the ManagementExplorer.

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. Objects with this status are displayed in orange in the ManagementExplorer.

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



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