

# PRODUCT FACTS

## SystemGuard

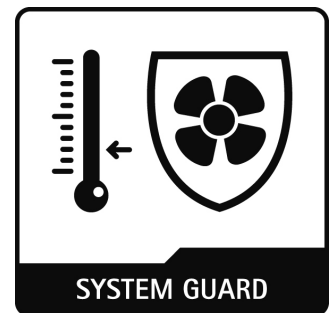
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Product SystemGuard

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### Brief Description

SystemGuard is an application software (published under freeware terms and conditions) from Fujitsu Technology Solutions which can be used to monitor temperatures, fans and sensors on supported Fujitsu Technology Solutions mainboards.

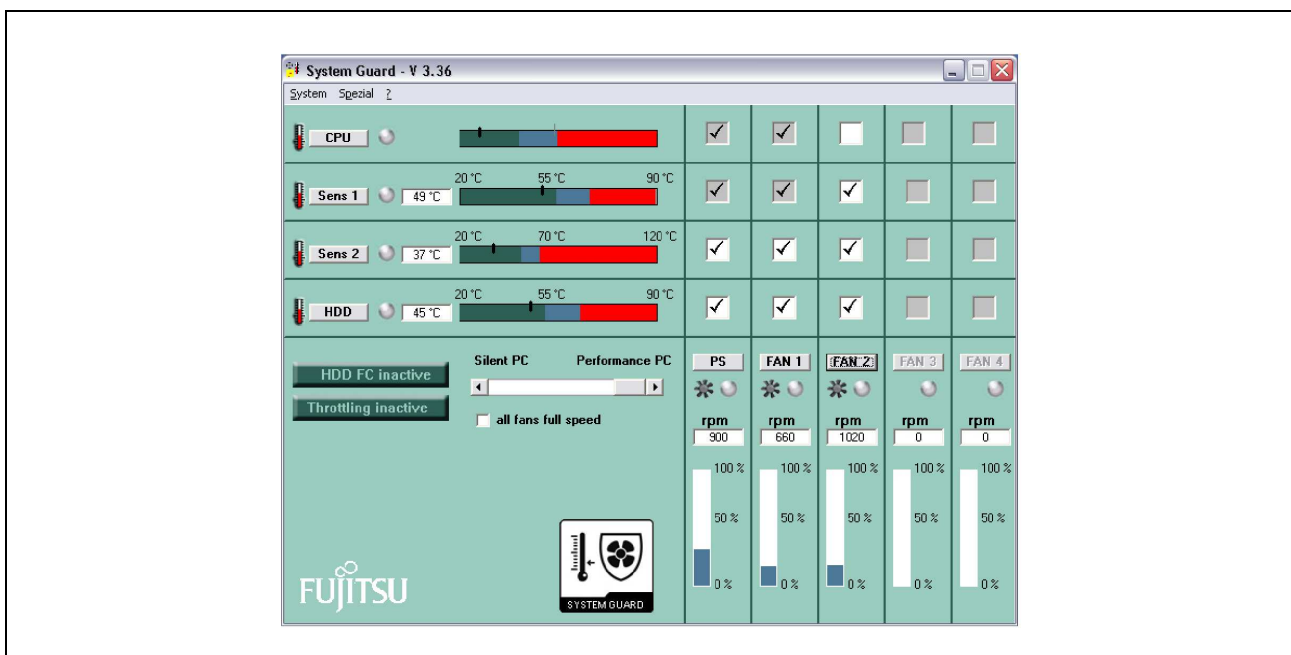
SystemGuard provides support only for Windows XP and Windows Vista. Integrators as well as end customers are target groups for this software.



### Benefits

- SystemGuard provides full control over Silent Fan and Silent Fan LT hardware
- Graphical representation and manageability of the hardware features
- Fan/sensor status check; event logs for keeping check on system status
- Check of fan ageing processes
- Configurable watchdog

### SystemGuard Main Window



## Functional Description

SystemGuard shows temperatures and fan speeds measured by the Silent Fan and Silent Fan LT microcontroller on Fujitsu Technology Solutions mainboards. The program offers a user-friendly graphical interface that provides detailed information of temperatures, sensors and fan status. Depending on the hardware of the mainboard, SystemGuard offers a different set of functions.

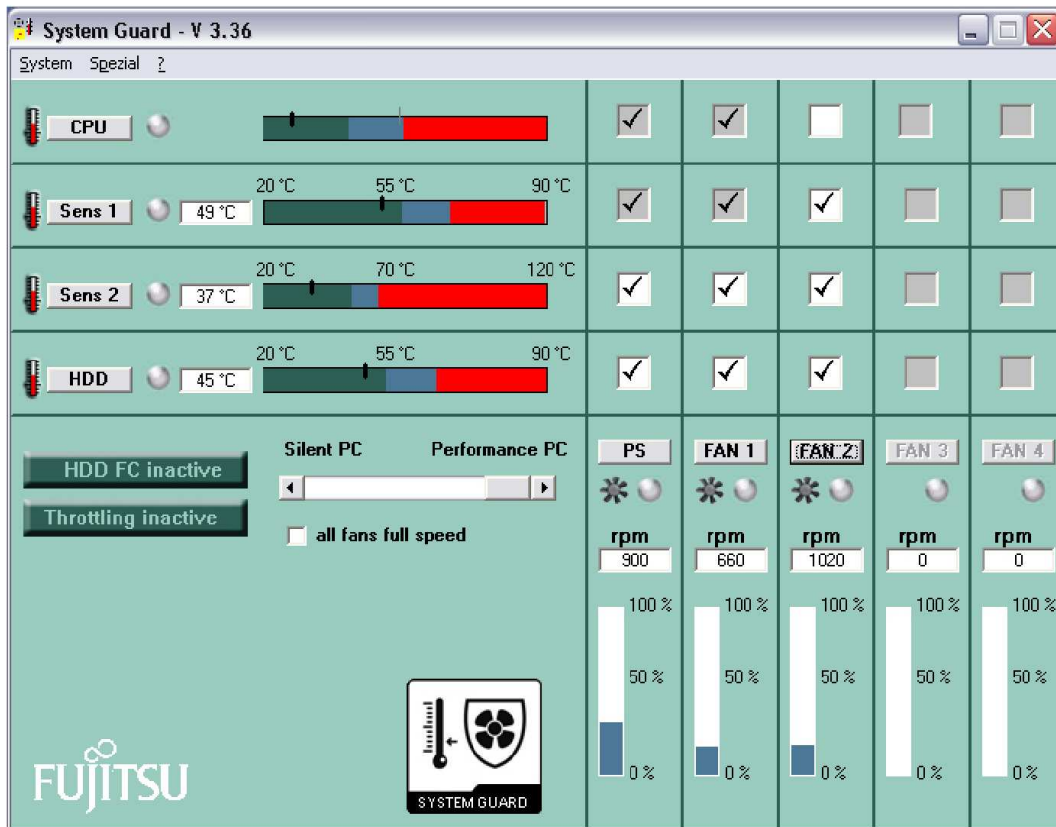
SystemGuard is provided by Fujitsu Technology Solutions under freeware terms and conditions. SystemGuard is available on the Internet and can be run only on mainboards from Fujitsu Technology Solutions. See download links at the bottom of the last page.

Please note: Due to the nature of freeware SystemGuard is provided “as is” and no technical support is offered! Please note the legal information issued during installation.

## Application Interface

The main window of SystemGuard shows up to four temperatures, five fans and their influence on each other. Depending on the mainboard’s component selection, the functionality of SystemGuard differs to make the best use of the hardware. Therefore, some of the options within System Guard may be grayed out. This either means that this particular motherboard does not support that feature or the piece of hardware referenced is not present in the system.

Figure SystemGuard Application Interface



## Temperatures

Depending on the mainboard used, the main window (left area) will show up to four temperature values numerically and graphically. The information displayed for each of these sensors indicates what temperature is measured and whether this temperature is below the critical threshold (Alert display). Usually the indicator is in the dark green range. In this case the connected fans rotate at their minimum speed. If the temperature moves into the blue range, the fans speed up. The fan speed increases continuously throughout the blue range, so that all the fans are operating at full speed before the red range is reached. Should the temperature nonetheless reach the limit of the red range (critical temperature), the Silent Fan controller reports a temperature alarm (not available on Silent Fan LT). If a sensor is not present or is defective, no sensor or temperature is displayed.

Please note:

- On some mainboards with Silent Fan LT hardware, the CPU temperature may not be correct due to possible offsets.
- The CPU temperature shown is not an absolute numeric value. The temperature read is specific for a CPU and relative to the thermal control circuit of that particular CPU.

## Fans

The lower right area of the main window shows up to five fans. As with the temperatures, this also indicates whether a fan is present and is operating properly. The fan speed (in revolutions per minute) is displayed underneath the heading "rpm". Additionally, the current fan speed is shown graphically (blue bar). If a fan fails, an alarm is triggered and the corresponding "warning LED" will blink in red color.

## Temperature/Fan Dependency

The upper right area in the main window shows the temperature/fan dependency matrix. If more than one sensor is linked to a fan, the actual speed is determined by the most critical temperature value in each case. It is not possible to write the settings into the BIOS permanently by SystemGuard. To change the dependency matrix and to override the BIOS settings additional tools must be used. These tools are not available for every mainboard.

By activating the checkbox "all fans full speed", all fans will be run at maximum speed. Thus, one could easily demonstrate, how loud a system could be without fan control. Alternatively, this option could be used for additional cooling in case of extremely hot environmental conditions.

## Silent PC or performance PC: Selection of throttling temperatures

As the Silent Fan controller is able to throttle the CPU, it is possible to avoid overheating without speeding up the fans. The temperature at which the CPU clock speed is reduced (throttling temperature) can be specified by the user within certain limits. The more the slider is moved towards "Silent PC", the earlier the CPU will be slowed down. This setting is useful when the CPU has only a small workload (e.g. office applications) and the user would like to minimize the noise. If it is less important to have a quiet PC than a powerful PC, then the slider should be moved more towards the direction of "Performance PC". In this case the clock speed is not reduced under all regular loads. This setting typically is useful when working with high end applications (e.g. 3D-rendering or games). In essence, SystemGuard will throttle the CPU only in Silent Mode (when higher loads occur); in Performance Mode, no throttling will occur as long as the thermal design of the system is appropriate and all fans are functional. In case of fan or heat sink failures or in systems that are inappropriately designed regarding thermals, the CPU is protected by its own thermal control system named "Thermal monitor 2" (TM2, only on selected Intel CPUs). TM2 will reduce supply voltage and clock of the CPU on its own, if excess temperatures should occur.

The throttling temperature for the Silent Fan controller will be shown as a light gray line in the bar of the CPU temperature. As soon as the CPU temperature exceeds this value, the CPU will be throttled by SystemGuard and the throttling display will show "active" (blue). After the temperature drops below the throttling temperature again, the CPU will return to "full speed" and the display will be "Throttling inactive" (dark green) again.

These settings can also be activated in a simplified way in the BIOS (see Product Facts Silent Fan); the options are restricted and less sophisticated there. Of course, SystemGuard stores its own settings internally and restores them after a system start, as soon as the tool has been activated again.

This feature is not dependant on or connected to Intel Enhanced Speedstep Technology or AMD Cool 'n' Quiet technology. Those functions will be controlled by the CPU itself and will additionally avoid any unnecessary heating-up of the system.

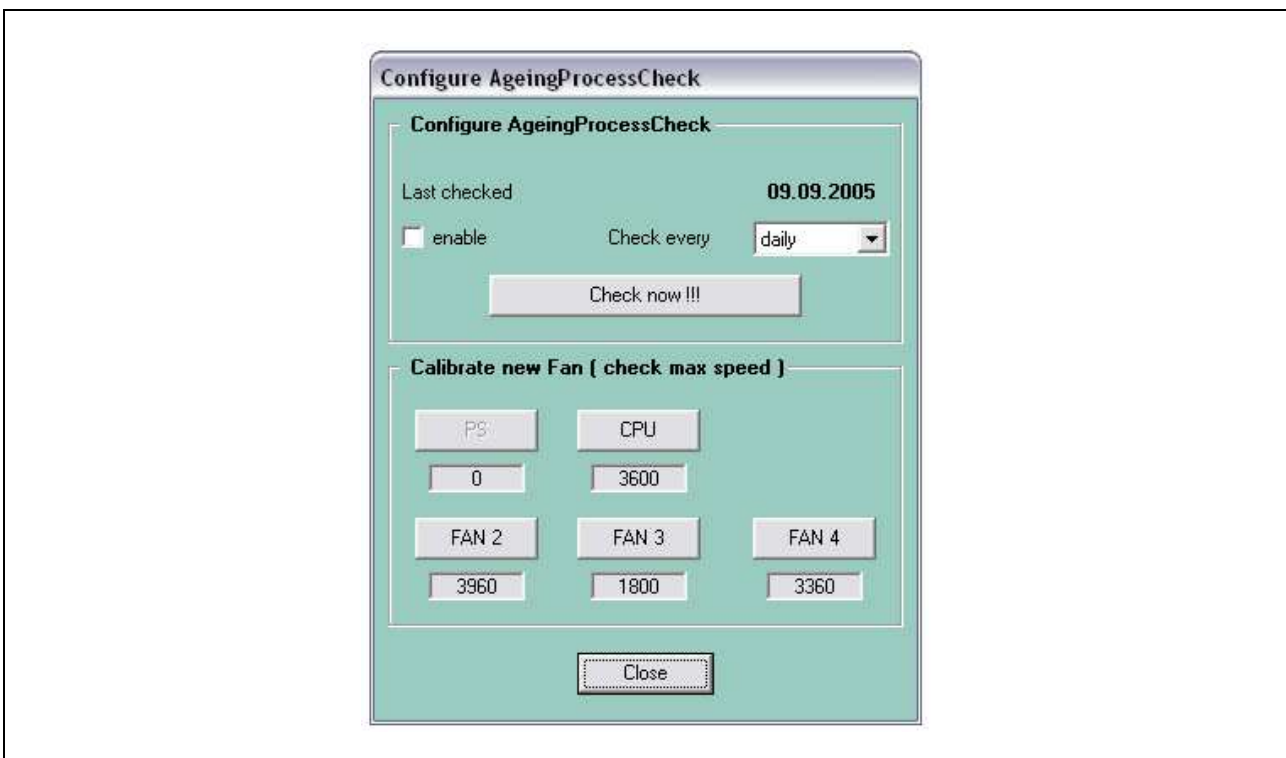
## Additional Features

### Fan Ageing Process Check

Since all moving parts are subject of mechanical wear out (e.g. by dust) and the fans are among the most stressed components in a PC, SystemGuard monitors the ageing of all fans. When the software is started for the first time, all the fans found in the system are brought to full speed; then, the achieved maximum speed is measured and stored. If the fan ageing process check is activated, SystemGuard checks at regular intervals whether the fans are still able to reach the maximum speed found at the first measurement. If the newly determined maximum speed is less than 80% of the initially measured value the user is prompted to replace the fan. The time interval between fan checks can be selected between one day and one year.

When a new fan is installed it will be calibrated automatically. Otherwise, this can be done by simply clicking on one of the "FAN" buttons in the "Configure Ageing Process Check" window. This option can be found in the "Special" menu.

Figure SystemGuard Configure Ageing Process Check



### WatchDog (supported only on select hardware)

The WatchDog is a function known from the server area. When this function is activated, the WatchDog has to be reset within a selectable time interval (1 to 8 minutes). If this does not happen in time, the Silent Fan controller automatically initiates a system reset. This is particularly relevant for print and file servers, as these should always be available but often are not easily user accessible.

SystemGuard can be used to activate and set the WatchDog and it also handles the reset procedure. As long as SystemGuard is working properly, no reset will be generated. In case that SystemGuard will be stuck or the operating system fails, no retriggering of the watchdog will occur. This also means that the WatchDog is no longer retriggered if, for example, the system is overloaded and there stuck. After the set time has elapsed, the Silent Fan controller restarts the system, and the server will be available again. If the user terminates SystemGuard, the WatchDog is also deactivated, as otherwise it would restart the system after the set time interval. After the system has been started up again, SystemGuard automatically detects that the WatchDog was responsible for the restart. It reports this to the user and makes a note in the event log. This option can be found in the "Special" menu of the SystemGuard utility.

**Figure SystemGuard Initialize Watchdog**

## Setting the language

With Version 2.4 and newer, SystemGuard has been available in a choice of three languages: German, English and French. The language can be selected on installation or in the menu "Special" (see figure below).

**Figure SystemGuard Language Selection**

## SystemGuard Alerts

A basic distinction is made between two different types of alerts: hardware alert and software alert.

### Hardware alert

Hardware alerts are alarms reported by the Silent Fan controller. This unit detects fan failures and temperature sensor failures, and triggers an alarm after attempting to restart the affected fan. SystemGuard regularly polls the controller to determine whether a hardware alert is present or not. If so, the info window of the affected object is opened and the corresponding fault message displayed. The alert can then be reset or ignored. In the latter case, the fault message is retained; otherwise it is replaced by the OK message. Faults detected by the controller include fan failure, overheating and failure of a sensor.

### Software alert

As the Silent Fan hardware controller does not detect or report all possible events, SystemGuard additionally monitors certain components. The presence monitoring which is explained below is one of these. In the same manner as with the hardware alerts, the info window of the affected object is opened when an error is detected.

### Presence monitoring

In addition to alert monitoring, SystemGuard offers "Presence Monitoring". This checks whether fans and sensors that were once present are still working or not. Suppose SystemGuard detects three fans and two sensors; then the program is terminated, the computer powered down and a fan (e.g. fan 2) removed. If SystemGuard is now restarted, the following message appears: "Fan 2 is not present – but it was when last running SystemGuard". The software therefore stores which components are present and compares this data with the current values each time the program is started. If an object is missing, a software alert is triggered.

## Alert LED and SysTray Icon

The Alert LED (connector on mainboard, see mainboard manual) will be flashing for each type of alert (excess temperature or fan failure). This is done to draw the user’s attention to a fault message even without a screen attached to the system. In addition to the Message LED, an alert is indicated by means of a red icon in the notification area (also referred to as SysTray) of the Windows taskbar. If the system is operating properly, a green icon (OK) is displayed in the notification area.

## Logging options

You have the option to have the events, alerts and messages either logged to a file, or have them saved to the Windows 2000/XP/Vista event log.

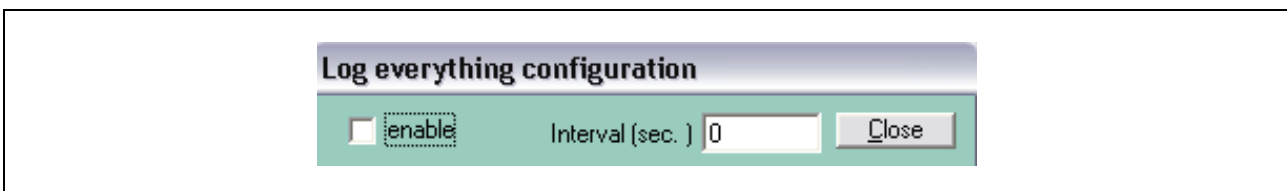
### Event.log (logfile)

- This logfile records all events and alerts as they happen; the data is written into the file *event.log*
- This log is automatically started as soon as System Guard is installed
- If you want to start a new *event.log*, delete the existing file *event.log* in the applications path \\AllUsers\ApplicationData\Systemguard. SystemGuard will then create a new *event.log*.
- If you have any problems with your system, this is the logfile that the FSC Helpdesk may ask to see

### All.log (logfile)

- This logfile records all measurable values at user-selected intervals (in seconds). This is particularly useful if you suspect a temperature or fan related problem.
- This log is not enabled by default, so if you want to start it, click “Log everything” in the Special menu; see figure below.
- If you already have an existing file *all.log* and want to start a new one, delete *all.log* in the applications path \\AllUsers\ApplicationData\Systemguard.

Figure SystemGuard Configuration “Log Everything”



## Viewing Logfiles

You will find the options to view the created log files in the “System” menu of the utility SystemGuard; see figure below.

Figure SystemGuard Configuration “Log Everything”

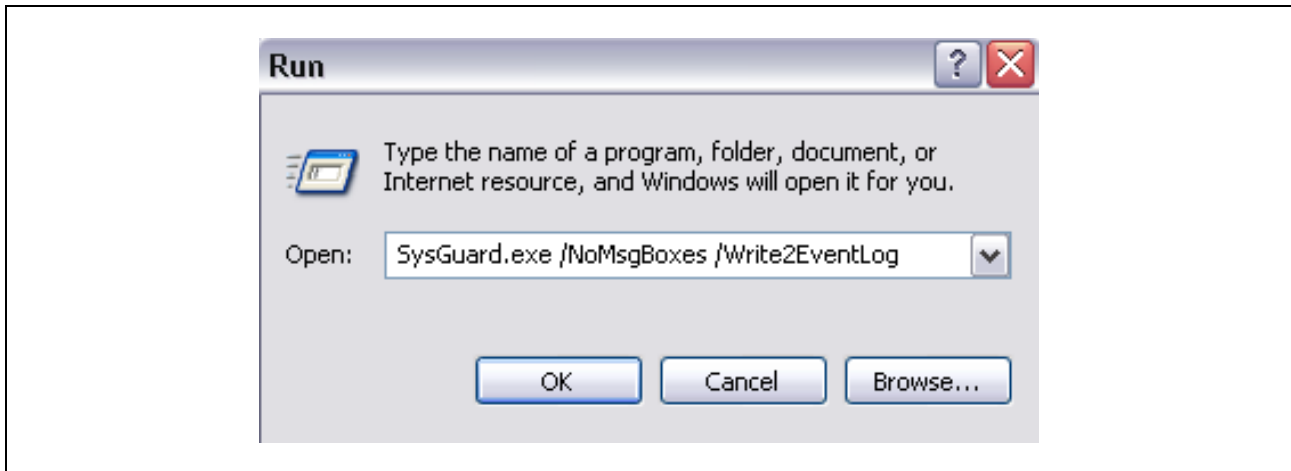


## Windows Eventlog

If you would prefer for all events, alerts and messages to be saved to the Windows W2000/XP/Vista Eventlog instead of being saved to a log file, you need to start SystemGuard from the run box using the following command line parameters:

```
SysGuard.exe /NoMsgBoxes /Write2EventLog
```

**Figure SystemGuard Windows-based Event Logging**



## SystemGuard Installation and Compatibility

The current versions of SystemGuard are designed to run under Windows XP and Windows Vista (for certain older mainboards there are also previous versions of SystemGuard that still support Windows 2000).

The software is provided by Fujitsu Technology Solutions under freeware terms and conditions. Due to its nature as freeware, SystemGuard is provided "as is" and no technical support is offered! Please read the legal information issued during installation. SystemGuard is available on the OEM FTP server and can be run only on mainboards from Fujitsu Technology Solutions. See download links below.

Please note: Do not run System Guard if you have any other programs running that use the SMBUS driver, as this could affect the reported values. Starting with the release of SystemGuard V2.3, however, it is possible to run SystemGuard in parallel with the DeskView software.

Before a new version of SystemGuard is installed, the previous version should be deinstalled completely from the system, as otherwise version conflicts could occur.

Starting with SystemGuard V3.0, also mainboards equipped with the Silent Fan LT hardware are supported. The features of SystemGuard may differ, depending on the version of mainboard and Silent Fan LT controller. The following functions are not supported by these mainboards in general: Alerts, Throttling, Message LED, WatchDog.

### Directory structure

The user related files are stored in following directory (SystemGuard V3.30 or newer):

- for Windows XP: *Documents and Settings\All Users\Application Data\System Guard*
- for Windows Vista: *Program Data\System Guard*

Please note that for standard OS installation these are hidden directories.

## Additional information and downloads

- General Information:  
[www.ts.fujitsu.com/mainboards](http://www.ts.fujitsu.com/mainboards)
- SystemGuard Download:  
<ftp://ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/Services/Software&Tools/Common-Mainboard-Tools/SystemGuard/>
- Documentation and downloads:  
<ftp.ts.fujitsu.com/pub/Mainboard-OEM-Sales/>

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