

ADVANTECH SOFTWARE SERVICES



Hardware Control Functions Available Through SUSI

Boot Logger — provides board information, reboot times, OS run time, and a variety of CPU throttling features

Watchdog — specifies timeout values that start a countdown that then causes an action (such as a reboot)

Programmable GPIO — reads and writes pin status and also allows pin direction change

SMBus/I2C — select protocol, sets slave addresses and register offsets, and allows read/write operations

VGA Control — controls a variety of on/off and brightness settings

Hardware Monitor — retrieves voltage, temperature and fan sensor values

Hardware Control — provides Pulse Width Modulation (PWM) control over parameters such as fan speed, panel brightness, etc.

Software API (SUSI: Secure & Unified Smart Interface) Direct Hardware Access Made Easy

If you are a software developer or a system integrator you are all too familiar with the following problem: You are writing an application that requires direct hardware access. Unfortunately, that access is no longer available in modern operating systems. So you have to locate and study reams of specifications to write the appropriate drivers, and that is a complex and time-consuming job. To ease the burden, Advantech has created SUSI (Secure and Unified Smart Interface), a suite of application program interfaces that allows users to directly monitor and control digital I/O, I²C, CPU stepping speed, watchdog timers, smart fans and access hardware monitoring sensors.

The idea behind the SUSI unified interface is to not only provide the required drivers, but also a set of user-friendly interface tools that offer genuine value-added by enhancing security and reducing development time. And the building block APIs provided by SUSI make it simpler and easier to integrate Advantech embedded platforms with customer applications.

What Can SUSI Do For You?

SUSI offers a variety of control and monitoring functions as well as direct access to functions such as display backlight and brightness.

With SUSI, developers have direct access to GPIO functions that control buttons, switches, LED lights and similar digital I/O devices. SUSI APIs also provide programmable GPIO functionality to allow developers to dynamically set GPIO input and output status. The SUSI SMBus (System Management Bus) API makes it easy to interface a Windows XP or Windows CE device with embedded systems and enable multiple simultaneous device control via serial message transfer. A functionally similar SUSI API is available for systems using the bi-directional two-wire I²C bus.

SUSI provides a variety of monitoring functions. Real-time hardware monitoring provides two benefits. One is the generation of warnings or shutdowns if critical temperatures are reached. A second is real-time information on temperature, fans, voltage and other variables at all time. These systems may use watchdog timers (WDTs) that perform specific operations after a certain period of time if something goes wrong with the system. Watchdog timers may be programmed, for example, to restart the system after a predetermined time interval when an application or system hangs or otherwise fails to respond. SUSI therefore facilitates access to watchdog timers, includes hardware monitors, and even offers a direct hardware control API to set pulse width modulation values.

With display brightness playing an important role in embedded system functionality, security and power efficiency, SUSI also offers brightness control and backlight APIs that allow developers to easily control brightness, include auto-brightness, assign video control hotkeys, or turn displays on and off.





**ADVANTECH
SOFTWARE SERVICES**

SUSI Functions

- SusiCoreGetPlatformName
- SusiCoreGetBIOSVersion
- SusiCoreAccessBootCounter
- SusiCoreAccessRunTimer
- SusiCoreGetThrottlingSpeed
- SusiCoreSetThrottlingSpeed
- SusiCoreGetThrottlingDuty
- SusiCoreSetThrottlingDuty
- SusiCoreGetCpuMaxSpeed
- SusiCoreGetCpuVendor
- SusiWDGetRange
- SusiWDSsetConfig
- SusiWDTrigger
- SusiWDDisable
- SusiIOCountEx
- SusiIOQueryMask
- SusiIOSetDirection
- SusiIOSetDirectionMulti
- SusiIOReadEx
- SusiIOReadMultiEx
- SusiIOWriteEx
- SusiIOWriteMultiEx
- SusiSMBusReadQuick
- SusiSMBusWriteQuick
- SusiSMBusReceiveByte
- SusiSMBusSendByte
- SusiSMBusReadByte
- SusiSMBusWriteByte
- SusiSMBusReadWord
- SusiSMBusWriteWord
- SusiSMBusScanDevice
- SusiIICRead
- SusiIICWrite
- SusiIICWriteReadCombine
- SusiVCScreenOn
- SusiVCScreenOff
- SusiVCCGetBrightRange
- SusiVCCGetBright
- SusiVCSetBright
- SusiHWMAvailable
- SusiHWMGetFanSpeed
- SusiHWMGetTemperature
- SusiHWMGetVoltage
- SusiHWMSetFanSpeed



**Software API (SUSI: Secure & Unified Smart Interface)
Better Products, Faster Time-to-Market, More Reliable**

What tangible benefits does a set of APIs such as Advantech's SUSI offer to developers?

Time to market — Not having to delve into chipset hardware specs and develop drivers for each new board and application reduces the overall project effort and means quicker time to market and therefore profit.

Enhance hardware reliability — Use of SUSI APIs can help reduce heat and power consumption, resulting in increased reliability. It allows the setup of warning mechanisms, event triggers, display adjustments, and other critical settings and actions that enhance overall system reliability and lower maintenance requirements.

Flexible upgrades — New functions and settings can easily be implemented via SUSI and new versions of SUSI; no need to rewrite the entire application.

Bottom line is that with SUSI, Advantech is providing a set of secure and unified drivers and APIs so that application programmers can more easily access the hardware functions in different operating systems and on different Advantech embedded hardware platforms. This frees developers to concentrate on the project at hand, saves development time, increases security, and provides backward compatibility.

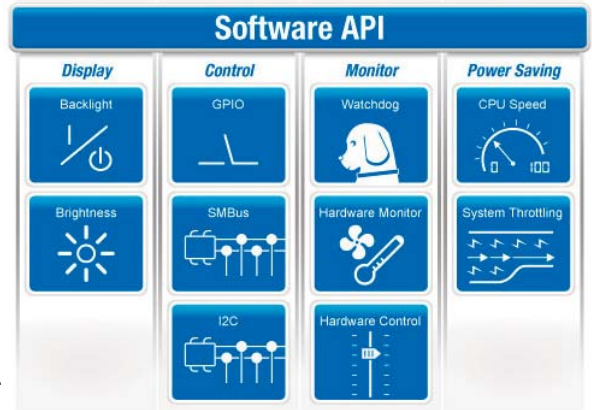
What Platforms Does SUSI Support?

SUSI currently supports Windows XP Embedded, Windows XP Pro and Home on a large variety of Advantech industrial motherboards, single board computers based on different standards, CPU modules, System on Modules, Panel PCs, embedded box computers, and medical computing platforms. For a complete list of supported platforms and the SUSI functions available on them, check www.advantech.com.tw/ess/Support-List-XPe.asp.

What Does The SUSI Package Include?

All SUSI packages include a setup.exe file for installation, a detailed user manual in PDF form, SUSI .lib and .dll library files, SUSI include header files, and a SUSI demo application including source code. Depending on the platform, the package may also include additional programs such as the SUSIHotkey.exe VGA control hotkey utility that starts automatically and provides users with easy access to display functions.

The SUSI demo application introduces programmers to the functions that are available on a particular hardware platform, as well as the configurable parameters for each function. The SUSIDemo.exe file comes with complete C# source code and can run on Windows XP as well as Windows CE.



For more information:

www.advantech.com
ECGInfo@advantech.com
 1-800-866-6008