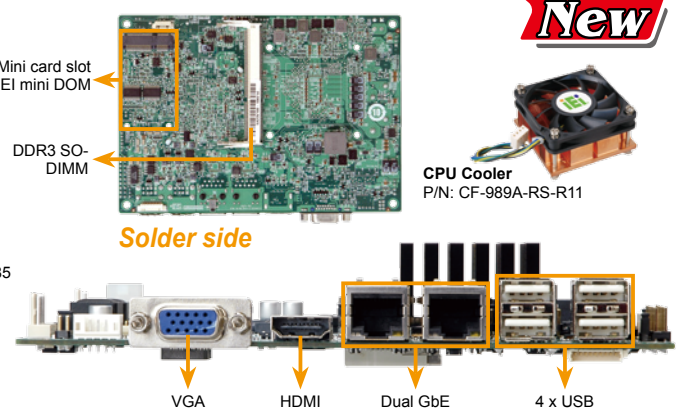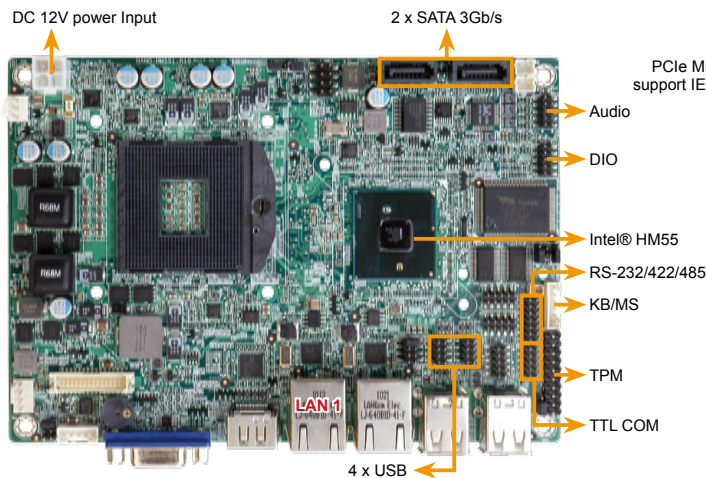epic **NANO-HM551**

EPIC SBC supports Socket G1 for Intel® Core™ i7/ i5/ i3/ Celeron® CPU, VGA/HDMI, Dual PCIe GbE, USB 2.0, PCIe Mini, SATA 3Gb/s and Audio, RoHS
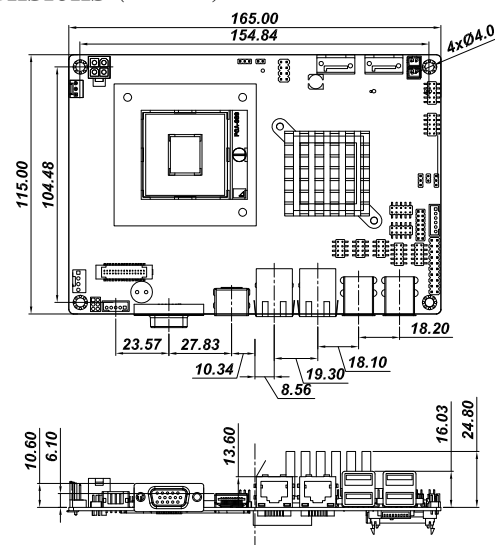
DC 12V power Input

2 x SATA 3Gb/s

Audio

DIO

Intel® HM55

RS-232/422/485

KB/MS

TPM

TTL COM

4 x USB

LAN 1

PCIe Mini card slot support IEI mini DOM

DDR3 SO-DIMM

Solder side

New

CPU Cooler P/N: CF-989A-RS-R11

VGA   HDMI   Dual GbE   4 x USB

TPM module

SATA Mini DOM

DDR3 800/1066

SERIAL ATA SATA 3Gb/s

USB 2.0

Gigabit Ethernet PCIe GbE

Dual Display

One Key Recovery | iEi | symantec.

HDMI

12V only

Features

1. EPIC SBC with Socket G1 for Intel® Core™ i7 /i5 /i3 and Celeron® processor
2. VGA /24-bit dual channel LVDS/ HDMI for dual display support
3. DDR3 800/1066HMz SDRAM supported (system max. 4 GB)
4. Support five COM, eight USB 2.0, two SATA, audio
5. IEI One Key Recovery solution allows you to create rapid OS backup and recovery

Dimensions *(Unit: mm)*

165.00
154.84
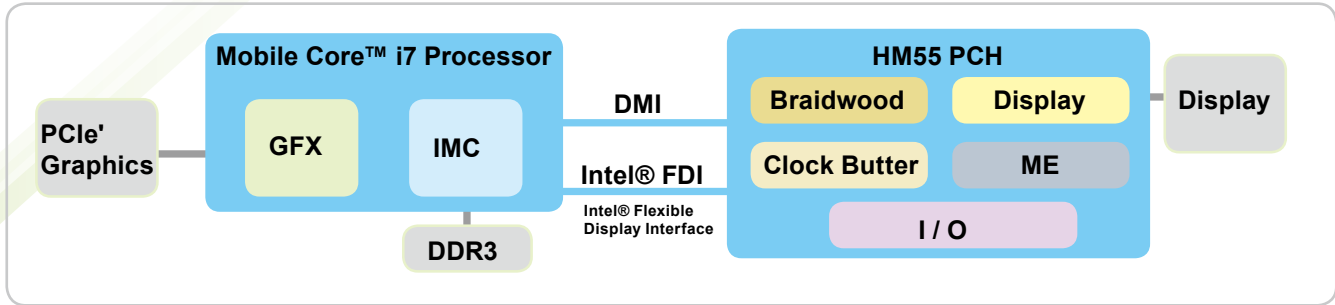115.00
104.48
4xØ4.0
23.57   27.83
10.34
8.56
19.30   18.10
18.20
10.60   6.10
13.60
16.03   24.80

Specifications

◆ CPU
Socket G1 for Intel® mobile Core™ i7/ i5/ i3 and Celeron® processor (Socket 988)
◆ PCH
Intel® HM55
◆ BIOS
UEFI BIOS
◆ Memory
One 204-pin 800/1066MHz DDR3 SDRAM SO-DIMM up to 4GB
◆ Graphic
Gen 5.75 with 12 Execution Units DirectX* 10, OpenGL* 2.1
◆ Display Interface
Analog CRT by VGA connector (2048x1536)
18/24-bit dual-channel LVDS (1600x1200)
HDMI supports up to 1080p resolution (1920x1080)
◆ LAN
Dual PCIe LAN controller by Realtek RTL8111E, LAN1 with ASF 2.0 support
◆ Super I/O
Fintek F81865
◆ I/O Interface
8 x USB2.0   1 x 6-pin pin header for KB/MS
3 x RS-232   1 x RS-232/422/485 (COM3) with Auto Flow control
1 x TTL COM (COM5)   2 x SATA 3Gb/s with SATA power connector
◆ Audio
Realtek ALC888 HD codec
◆ Expansion
1 x Mini PCIe card slot (PCIe + USB + SATA signal) support IEI mini DOM
◆ TPM
2 x 10-pin header
◆ Watchdog Timer
Software programmable support 1~255 sec. system reset
◆ Digital I/O
8-bit digital I/O, 4-bit input / 4-bit output
◆ Fan Connector
1 x 4-pin CPU fan connector
1 x 3-pin system fan connector
◆ Power supply
12V only, AT/ATX support
◆ Power Consumption
12V@3.8A (Intel® Core™ i3 330M 2.13GHz CPU with DDR3 1066MHz 1GB)
◆ Temperature
Operation: -10°C ~ 60°C
◆ Humidity
Operation: 5% ~ 95%, non-condensing
◆ Dimensions
115mm x 165mm
◆ Weight
GW:850g / NW:350g

Packing List

1 x NANO-HM551 single board computer
1 x Power cable (P/N: 32100-087100-RS)
2 x RS-232 cable (P/N: 32200-000049-RS)
1 x SATA with power cable kit (P/N: 32801-000201-100-RS)

1 x Audio cable (P/N: 32000-072100-RS)	1 x Mini jumper pack
1 x QIG	1 x Utility CD

Ordering Information

Part No.	Description
NANO-HM551-R10	EPIC SBC supports Socket G1 for Intel® Core™ i7 CPU, VGA/ HDMI, Dual PCIe GbE, USB 2.0, Mini PCIe, SATA 3Gb/s and Audio, RoHS
32000-070301-RS	Dual port USB cable
32100-043403-RS	ATX power cable
CF-989A-RS-R11	CPU cooler for mobile socket-G (PGA988) up to 55W processor, Copper, 60x60x27.6mm ,RoHS
CF-989B-RS	CPU cooler for mobile socket-G (PGA988) 50W processor, Aluminum, 60x60x27.6mm, RoHS
32000-023800-RS	KB/MS cable
TPM-IN01-R11	20-Pin Infineon TPM module, software management tool, firmware V3.17

Intel® HM55/QM57 Chipset

Best Graphic Performance Solution for Mobile Core™ i7/ i5/ i3/ Celeron® Platform
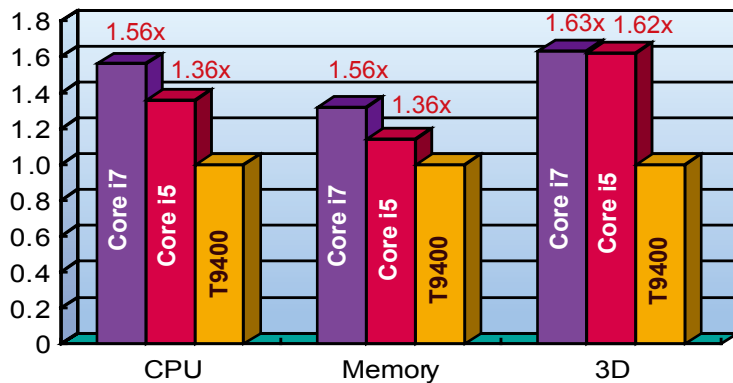

Mobile Core™ i7 Embedded CPU List for QM57/ HM55

🟨 Yellow means long term support

Package Type	Brand Name	Code Name	CPU No.	Clock Speed	L2 Cache	TDP	iAMT6.0	Integrated Graphic
Socket G1 988-pin PGA	Core™ i7 Extreme Edition	Arrandale	i7-940XM	2.13G	8M	55W		
			i7-920XM	2.0G	8M	55W		
	Core™ i7		i7-840QM	1.86G	8M	45W		
			i7-820QM	1.73G	8M	45W		
			i7-740QM	1.73G	6M	45W		
			i7-720QM	1.6G	6M	45W		
			i7-620M	2.66G	4M	35W	V (For QM57 only)	V
	Core™ i5		i5-540M	2.53G	3M	35W		V
			i5-520M	2.4G	3M	35W	V (For QM57 only)	V
			i5-450M	2.4G	3M	35W		V
			i5-430M	2.26G	3M	35W		V
	Core™ i3		i3-370M	2.4G	3M	35W		V
			i3-350M	2.26G	3M	35W		V
			i3-330M	2.13G	3M	35W		V
	Celeron®		P4500	1.86G	2M	35W		V

CPU Performance Comparison

Intel® Core™ i7 processor is 1.56 and 1.6 time faster on CPU and graphic performance compared with the T9400 CPU plus GM45 chipset.

Note: Intel® Core™ i7 Quad Core CPU does not support internal graphic, please use add-on graphic card for graphic support.

- 🟪 i7-620M 2.66G
- 🟥 i5-520M 2.4G
- 🟧 T9400 2.53G

Valued Mobile Core™ i7 Choice

Specification differences between QM57 and HM55

Ibex Peak-M Feature	QM57	HM55
PCI-Express	8 ports	6 ports
SATA	6 ports	4 ports
TDP	3.2~3.5W	3.2~3.5W
Intel Active Management Technology (Intel AMT)	6.0 (integrated KVM)	No
USB 2.0 Ports	14 ports	12 ports

HM55 total solution coming soon!!

KINO-HM551

Mini-ITX SBC, 12V, 6COM, HDMI/LVDS/VGA/DVI Dual GbE, PCIe x16, Dual PCIe Mini

NOVA-HM551

5.25" SBC,12V, 6COM, Dual HDMI/LVDS/VGA, Dual GbE, PCIe x16, PCI-104, Dual PCIe Mini

NANO-HM551

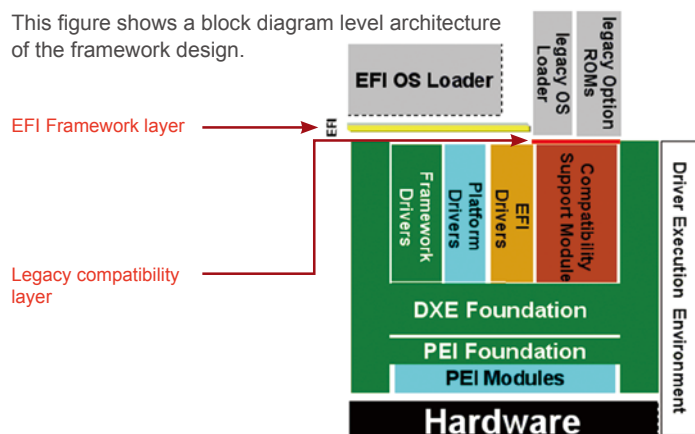EPCI SBC, 12V, 5COM, HDMI/LVDS/VGA Dual GbE

18

UEFI Introduction

- **UEFI** (**U**nified **E**xtensible **F**irmware **I**nterface) BIOS is a next-generation BIOS firmware based on UEFI specifications and the Intel® Platform Innovation Framework for EFI.

- UEFI BIOS can be expanded by using a variety of drivers, development tools, support utilities and pre-boot application (PBA) solutions.

UEFI Architecture

This figure shows a block diagram level architecture of the framework design.

EFI Framework layer →

Legacy compatibility layer →

EFI OS Loader

legacy OS Loader

legacy Option ROMs

EFI

Framework Drivers

Platform Drivers

EFI Drivers

Compatibility Support Module

Driver Execution Environment

DXE Foundation

PEI Foundation

PEI Modules

Hardware

Legacy BIOS V.S. UEFI

	Legacy BIOS	**UEFI**
Language	Assembly	C (99%)
Resource	Interrupt Hardcode Memory Access Hardcode I/O Access	Driver \ Protocols
Processor	x86 16-bits	CPU Protected Mode (Flat Mode)
Target	Binary Code	Removable Binary Drivers
Expand	Hook Interrupt	Load Driver
OS Bridge	ACPI (SMI, INT Service)	RunTime Driver Service AED (ACPI EFI Protocol Driver) (ACPI, SMI)
3rd Party ISV & IHV	Not Fully Supported	Easily Supports Multi Platforms

The architecture represents a structured implementation composed primarily of the following:

• Foundation code that binds the pieces together
• Modular elements of code that perform the functional job of enumerating and initializing the platform

UEFI Benefits

■ Expansibility

ODM/OEM and customers can add their own PBA easily. PBA can be integrated in BIOS flash or placed in external mass storage devices.

■ Migration ability

Drivers, PBA can be migrated easily from one platform to another because of the highly modularized design on a unified framework.

IEI Products with UEFI BIOS

1. C206/Q67/B65, QM67/HM65, QM57/HM55 chipsets

SPCIE-C2060, PCIE-Q670, IMBA-C2060, IMBA-Q670, IMB-C2060, IMB-Q670, KINO-QM670, KINO-QM57A, KINO-HM551, NOVA-HM551, NANO-QM57A, NANO-HM551

2. G41 chipset family

IMBA-G410, IMBA-G412ISA, KINO-G410

3. D525/D425/N455 family

UEFI BIOS has better compatibility with the dual ranks x16 DRAM memory module of the D425/D525/N455 series

IEI UEFI BIOS Features

1. Familiarity

Providing advanced UEFI functionality with a familiar BIOS setup interface.

2. Compatibility

Designed to extend BIOS compatibility into UEFI solutions. Supporting legacy Option Rom binaries and operating systems requiring a legacy BIOS runtime interface.

3. Functionality

(1) Compliant with iSMM H/W monitor utility

(2) Dynamic LOGO

(3) Fast boot

(4) ICP Standard Feature – AT/ATX, WDT, DIO

(5) BIOS setup with touch device support

(6) HDD/Storage support over 2.2TB with 64-bit operation system

4. Extensibility

The option to add and execute pre-boot applications (PBA) in a protected hidden partition

(1) HDD Security

(2) Shell Environment

(3) Pre-boot Messenger (Third Party)

(4) Pre-boot Network Browser (Third Party)

(5) Pre-boot Antivirus (Third Party)

IEI One Key Recovery Solution

One Key Recovery

IEI's unique One Key Recovery solution includes exclusive technology to recover and backup your operating system by just one click without any complicated settings. One Key Recovery software comes is shipped with every IEI SBC, embedded system and all-in-one panel PC product.

iEi **Symantec**

Recovery Tool for IEI Products Only

The IEI recovery CD includes system recovery software developed by IEI using Windows PE 2.0. The recovery CD helps create full system backup and restore from system failures. Users don't need to buy additional system backup and recovery tools.

System Recovery

User Calamity

IEI Recovery Kit

Recovery system

Normal
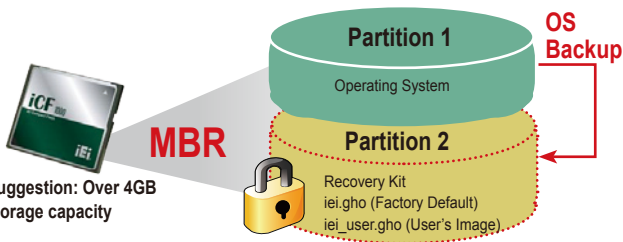
System Backup

Normal

Backup system

New image

Recovery Partition

A hidden partition is a logical section of a disk which is not accessible to the operating system. You can use a partition tool such as SPFDISK to create a hidden partition first. It may be used to protect confidential data or store backup of the system.

MBR

Suggestion: Over 4GB storage capacity

OS Backup

Partition 1
Operating System

Partition 2
Recovery Kit
iei.gho (Factory Default)
iei_user.gho (User's Image)

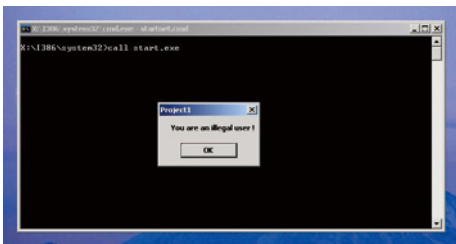### IEI Recovery Solution Advantages:

- No need to make recovery discs or follow trivial imaging procedures
- Simple steps to backup or restore the system. No IT personnel required.
- Backup/Restore system easily through unique multi-menu
- One key to make recovery disc
- One key to restore system

IEI Products Only

SYMC GSS OneKey Recovery

☑ **IEI Certified Sticker**

The IEI recovery CD is only for IEI products. A message warns, "you are an illegal user" when using the CD on non-IEI products. This protection is detected through the BIOS of the IEI boards.

Support OS List	
Windows® XP	Windows® Vista
Windows® 7	Windows® CE 5.0
Windows® CE 6.0	Windows® XP Embedded

Linux OS
  1.Red Hat RHEL- 5.4
  2.Fedora Core 7, **8, 10, 11, 12**
  3.Ubuntu 6.10, **7.10 , 8.10**
  4.Debien 4.0, **5.0**
  5. SuSe 11.2

Rapid Imaging/ Migration Through One Touch Hot Key

Neither specialized IT staff nor consultants are required in order to implement the system imaging and data migration. Just press the F3 key to get access to the recovery menu. The one key operation simplifies the imaging or migration process to help IT staff get the system up and running quickly.

EASY WAY

Press F3 to boot into recovery mode...

F3 Auto-run

One Key Backup / Restore

■ One-Key Recovery

● Factory restore: restore your system to default setting (iei.gho)

● Restore your last backup: recover the last system configuration (iei_user.gho)
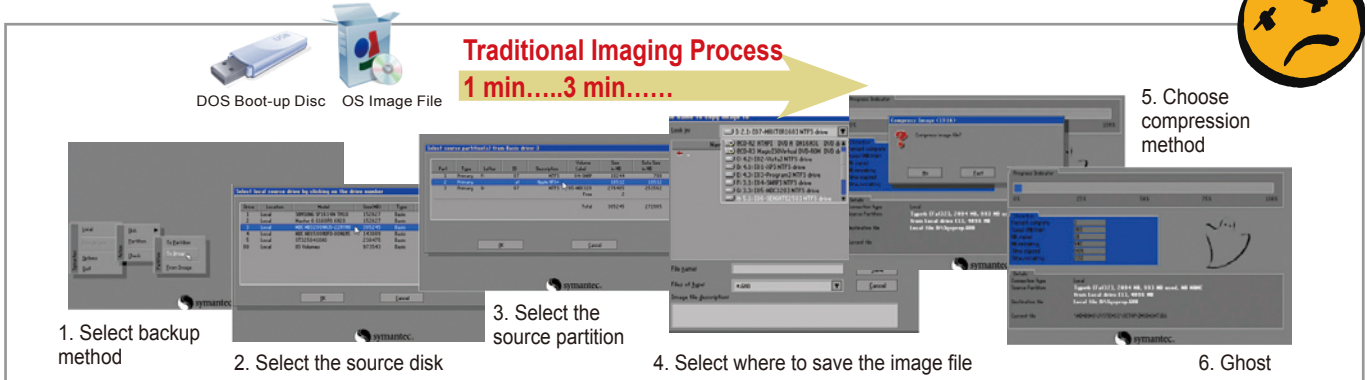
```
1. Factory Restore
2. Backup system
3. Restore your last backup.
4. Manual
5. Quit
Please type the number to select and then press Enter:_
```

■ One-Key Backup

Backup your operating system to the secure hidden partition. You can create your own ghost image as "iei_user.gho" including your application programs set-ups.

DOS Boot-up Disc   OS Image File

Traditional Imaging Process
1 min.....3 min......

5. Choose compression method

1. Select backup method

2. Select the source disk

3. Select the source partition

4. Select where to save the image file

6. Ghost

Benefits

Remote Maintenance Reduces the Cost of IT Infrastructure

All migration tasks can be performed remotely from a central management console. This reduces the need for physical visits which saves time and money.

2 Use the recovery tool to restore your OS at the local site

Alert

One Key Restore + Remote KVM

1 When the system is infected by virus or a blue screen appears

ALERT !

3 **OK**

F3 One Key Recovery iEi symantec.

Intel® Q57/QM57 iAMT 6.0

Remote Troubleshooting

www.ieiworld.com

IEI Intelligent System Management Module

What is the IEI Intelligent System Management Module (iSMM) ?

IEI iSMM is a system health supervision API which utilizes sensor chips on IEI motherboards to track system and CPU temperatures, voltages, cooling fan speed., WDT and Digital I/O set up status. By quickly capturing and reporting system health data, users can prevent disasters such as system instability or damage.

iSMM

■ Features

- External and on-chip voltages data feedback
- CPU and system temperature data feedback
- Cooling fan speed data feedback
- Cooling fan speed controlled by PWM/On-Off/Automatic Mode
- Warning signals by beeper and sound effect
- WDT Test
- Programmable Digital I/O
- System health configurations save and load

■ Available models

iSMM support below super I/O:

1. Winbond W83627
2. Winbond W83697
3. ITE IT8712
4. ITE IT8718
5. Fintek F81216D
6. Fintek F8186
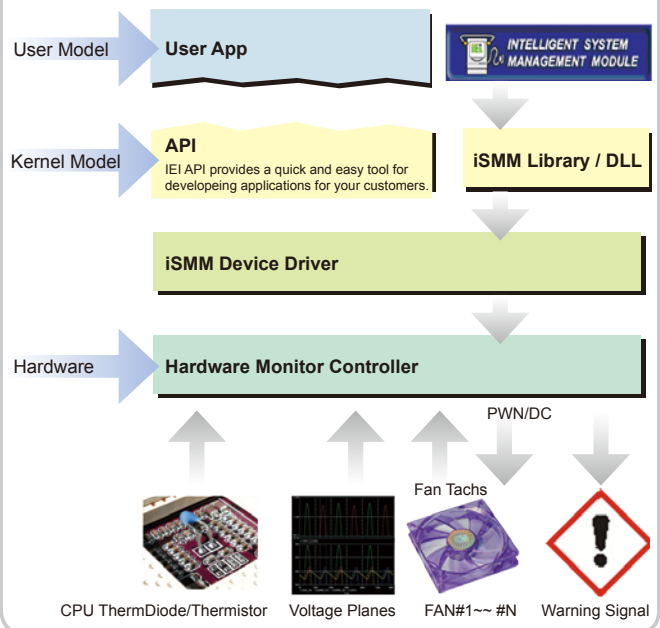7. SMSC SCH311x

■ Available operation system

a. Windows XP
b. Windows Vista
c. Windows 7

Note: Please disable the UAC function before installing iSMM software under Windows Vista and Windows 7.

Advantages

Know that your system is running within safe limits
Prevent disasters such as sysem instability or damage.

Architecture

| | User Model | User App | INTELLIGENT SYSTEM MANAGEMENT MODULE |

Kernel Model — API: IEI API provides a quick and easy tool for developeing applications for your customers. — iSMM Library / DLL

iSMM Device Driver

Hardware — Hardware Monitor Controller

PWN/DC

Fan Tachs

CPU ThermDiode/Thermistor — Voltage Planes — FAN#1~~ #N — Warning Signal

IEI Exclusive Diagnosis Software

Full Graphic Interface, Real-time, 6 in 1 Modules !!

INTELLIGENT SYSTEM MANAGEMENT MODULE

IEI Solutions Compliance Only

Functions

Temp.
CPU + System temperature monitoring

Fan
Dynamic fan speed controlling

Voltage.
Real time voltage alarm

DIO
Easy Digital I/O configuriation

WDT
Trouble free watch dog timer testing

Save/Load
Flexibility user profile recover

Cash drawer
Cash drawer status monitoring