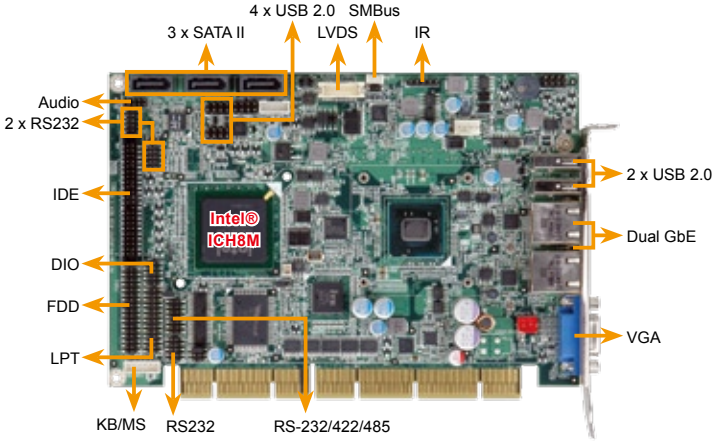
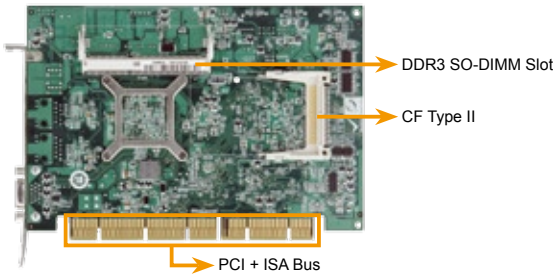
PCISA-PV-D4251 N4551 D5251

Half-size PCISA CPU card with Intel® Atom™ D425/N455/ D525, DDR3, VGA/LVDS, Dual PCIe GbE, USB 2.0, 4 COM, 3 SATA II and Audio, RoHS

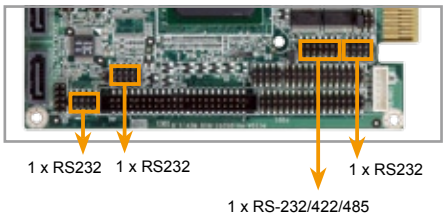


Solder Side



Four COM Ports Solution

(3 x RS-232, 1 x RS-232/422/485)



Specifications

- CPU
  Intel® Atom™ D525 dual-core processor 1.80GHz/1MB L2 cache
  Intel® Atom™ D425 single-core processor 1.80GHz/512KB L2 cache
  Intel® Atom™ N455 single-core processor 1.66GHz/512KB L2 cache
- Chipset
  Intel® ICH8M
- BIOS
  UEFI BIOS
- Memory
  One 204-pin 800MHz DDR3 SDRAM SO-DIMM supported
  (System max. 2GB)
- Graphics Engine
  GMA 3150
  Gen3.5 DX9, 400MHz for D525/D425
  Gen3.5 DX9, 200MHz for N455
- Display Interface
  Analog CRT up to 2048x1536 for D525/ D425, 1400x1050 for N455
  Support for CRT hot plug
  18-bit Single channel LVDS, resolution support up to WXGA 1366x768 or XGA 1024x768
- Ethernet
  Dual PCIe GbE by Realtek RT8111E supports ASF2.0
- I/O Interface

3 x RS-232	1 x RS232/422/485 with Auto Flow control
1 x FDD	1 x LPT
1 x KB/MS	1 x IrDA
1 x CF type II	3 x SATA II
1 x IDE	6 x USB 2.0 (4 by pin-header, 2 on rear side)

- Audio
  Realtek ALC888 HD Codec
- SMBus
  1 x 4-pin wafer connector
- TPM (Optional)
  On board INFINEON SLB9635TT1.2
- Expansion
  4 x PCI bus support
  ISA bus support by ITE IT8888G PCI to ISA bridge
- Digital I/O
  8-bit digital I/O, 4-bit input / 4-bit output
- Super IO
  Fintek F81865
- Watchdog Timer
  Software programmable supports 1~255 sec. system reset
- FAN connctor
  1 x 4-pin fan connector (smart fan)
- Power Supply
  5V/12V by PCISA bus, AT/ATX mode support
- Power Consumption
  12V@0.57A, 5V@3.36A (Intel® Atom™ D525 dual-core processor 1.80GHz with 1GB 1066 DDR3 memory)
- Temperature Operation
  -20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D525 processor
  -20°C ~ 65°C with free air, -20°C ~ 70°C with force air for D425 processor
  -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N455 processor
- Humidity
  Operation: 5% ~ 95% non-condensing
- Weight
  GW: 1000g / NW: 250g

EFI | Dual Display | DDR 3 800 | SERIAL ATA SATA II | USB | Gigabit Ethernet GbE

One Key Recovery

Features

1. PCISA CPU card support PCI and ISA bus expansion
2. Support Intel® Dual Core Atom™ D525 1.80GHz/1MB L2 cache
3. Support VGA and 18-bit single channel LVDS with dual display
4. Support 800MHz DDR3 SDRAM SO-DIMM up to 2GB
5. Support 4 x COM, 6 x USB 2.0, 3 x SATA II, IDE and CF type II
6. IEI One Key Recovery solution allows you to create rapid OS backup and recovery

Packing List

1 x PCISA-PV-D4251/N4551/D5251 Single Board Computer	
3 x SATA cable (P/N: 32000-062800-RS)	
1 x LPT/RS232 cable (P/N: 19800-000027-RS)	
1 x USB cable (P/N: CB-USB02-RS)	1 x Mini jumper pack
1 x QIG	1 x Utility CD

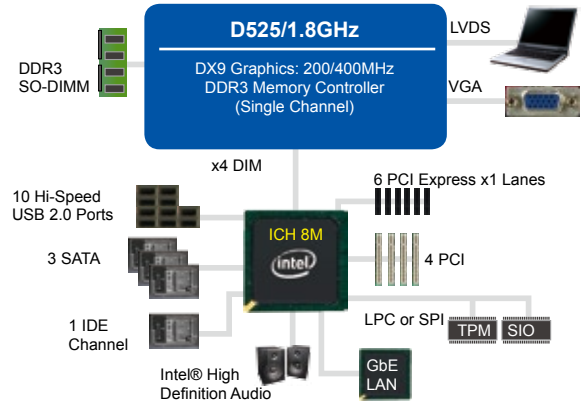
Ordering Information

Part No.	Description
PCISA-PV-D5251-R10	Half-size PCISA CPU card with Intel® Dual Core Atom™ D525 1.80GHz/1MB L2 cache, VGA/LVDS, Dual PCIe GbE, USB 2.0, 4 COM, 3 SATA II and Audio, RoHS
PCISA-PV-D4251-R10	Half-size PCISA CPU card with Intel® Single Core Atom™ D425 1.80GHz/512KB L2 cache, VGA/LVDS, Dual PCIe GbE, USB 2.0, 4 COM, 3 SATA II and Audio, RoHS
PCISA-PV-N4551-R10	Half-size PCISA CPU card with Intel® Single Core Atom™ N455 1.66GHz/512KB L2 cache, VGA/LVDS, Dual PCIe GbE, USB 2.0, 4 COM, 3 SATA II and Audio, RoHS
19800-000075-RS	KB/MS cable with bracket
32200-000058-RS	FDD cable
32102-000100-100-RS 32102-000100-200-RS 32102-000100-300-RS	SATA Power cable
32200-000052-RS	IDE cable
19800-000111-RS	Audio cable
19FTS00032100-000001-RS	CPU Fan

Intel® D525/D425/N455 Family

DDR3 Support for Low Power Embedded Platform

Intel® D525 Series DDR3 Block Diagram



Next Generation Atom Platforms Feature

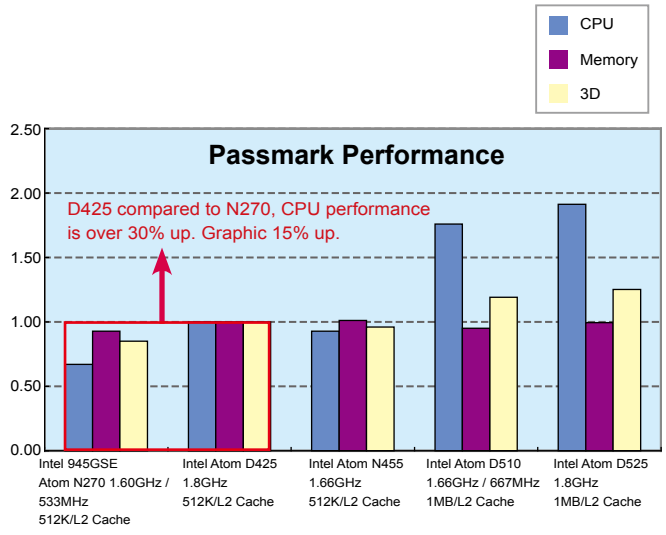
The GPU contains a refresh of the 3rd generation graphics core
- Directx* 9 compliant Pixel Shader* v2.0
- 2 display ports: LVDS and RGB
  - — Single LVDS channel supporting resolution up to 1366 * 768, 18bpp
  - — Analog RGB display output resolution up to 2048 * 1536@ 60 Hz
- Intel® Clear Video Technology
  - — MPEG2 Hardware Acceleration

Embedded higher performance with DDR3 Sku
Intel Atom D525 1.80GHz (Dual Core)
Intel Atom D425 1.80GHz (Single Core)
Intel Atom N455 1.66GHz (Single core)

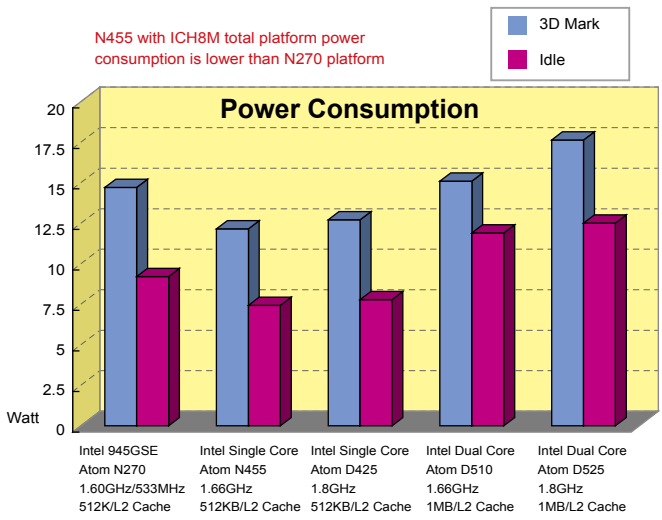
Embedded Intel® Atom™ solution specification comparison table

Platform	Atom N270	Atom D510	Atom D425	Atom D525	Atom N455
CPU/Chipset	Atom N270 1.6GHz/ Intel 945GSE	Atom 1.66GHz Dual Core/D510	Atom 1.8GHz Single Core/D425	Atom 1.8GHz Dual Core/D525	Atom 1.66GHz Single Core/N455
L2 Cache	512KB	1024KB	512KB	1024KB	512KB
Supported Memory	DDR2 (400/533MHz) up to 2GB	DDR2 (533/667MHz) up to 2GB	DDR3 (800MHz) up to 4GB	DDR3 (800MHz) up to 4GB	DDR3 (667MHz) up to 2GB
Graphic Output	VGA, HDTV Dual-channel 18-bit LVDS , SDVO	VGA (2048x1536) Single-channel 18-bit LVDS	VGA (2048x1536) Single-channel 18-bit LVDS	VGA (2048x1536) Single-channel 18-bit LVDS	VGA (1400x1050) Single-channel 18-bit LVDS
Graphics Cores	Gen3.5, 133MHz DirectX9c, OpenGL 1.5 GMA 950	Gen 3.5, 400MHz DirectX9c, OpenGL 1.5 GMA 3150	Gen 3.5, 400MHz DirectX9c, OpenGL 1.5 GMA 3150	Gen 3.5, 400MHz DirectX9c, OpenGL 1.5 GMA 3150	Gen 3.5, 200MHz DirectX9c, OpenGL 1.5 GMA 3150
South Bridge	ICH7M	ICH8M	ICH8M	ICH8M	ICH8M
PCI-Express	4 Lanes, PCI Express 1.1 PCI Rev 2.3 @ 33MHz up to 4 bus masters	6 Lanes (1x4+ 2x1) PCI Express 1.1 PCI Rev 2.3 @ 33MHz up to 2 bus masters	6 Lanes (1x4+ 2x1), PCI Express 1.1		
PCI			PCI Rev 2.3 @ 33MHz up to 2 bus masters		
I/O	8 x USB 2.0 2 x SATA, 1 x IDE AC'97, HD Audio	10 x USB 2.0 3 x SATA II, 1 x IDE HD Audio	10 x USB 2.0 3 x SATA II, 1 x IDE HD Audio		
TDP	1.7W	2.4W	2.4W		

Intel® Dual Core™ Atom™ Performance Chart



Power Consumption Comparison Chat



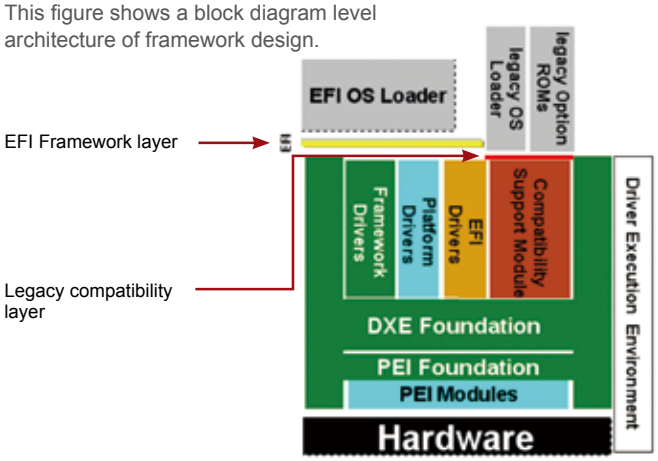
UEFI Introduction

- **UEFI (Unified Extensible Firmware Interface) BIOS is 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 framework design.



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	Bad for Support	Easy for Support and for 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 they're designed highly modularize on a unified framework.

iEi Products with UEFI BIOS

1.QM57/HM55 chipset family.

KINO-QM57A, KINO-HM551, AFLMB2-QM57, AFLMB2-HM55, NOVA-HM551, NANO-QM57A, NANO-HM551

2.G41 chipset family

IMBA-G410, IMBA-G412ISA, KINO-G410

3. D525/D425/ N455 family

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 –

Allowing 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)

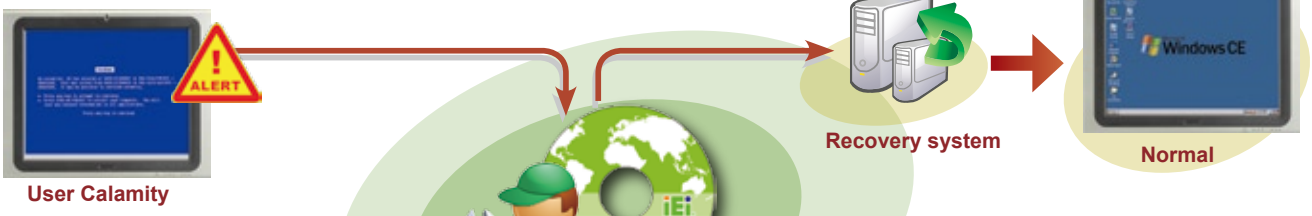
IEI One Key Recovery Solution

IEI unique one key recovery solution includes exclusive technology to recover and backup your operating system by just one click without any complicated settings. IEI freely bundled recovery CD is shipped with every IEI SBC, embedded system and all-in-one panel PC products.

Recovery Tool for IEI Products Only

The IEI recovery CD includes a system recovery software developed by IEI with the Windows PE 2.0. The recovery CD helps to create full system backup and restore from system failures. Users don't need to spend additional cost for other system backup and recovery tools.

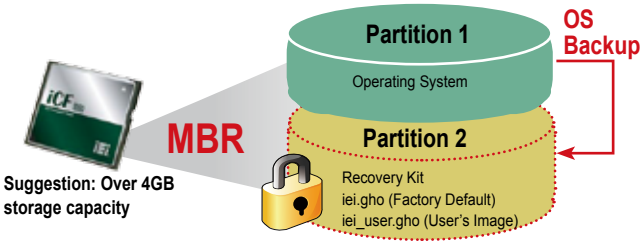
System Recovery



System Backup

Recovery Partition

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.



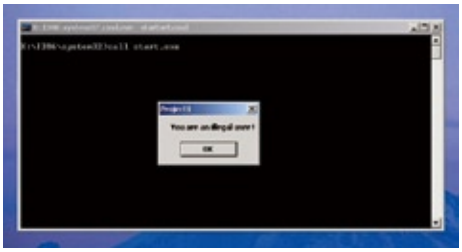
IEI Recovery Solution Advantages:

- No need to make recovery discs by yourself nor follow the trivial imaging procedures
- Simple steps to backup or restore the system. No IT personnel are required.
- Backup/Restore system easily through unique multi-menu
- One key to make recovery disc
- One key to restore system

IEI Products Only

☑ IEI Certified Sticker

The IEI recovery CD is only for IEI products. A message will show to warn "you are an illegal user" if using the CD for 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

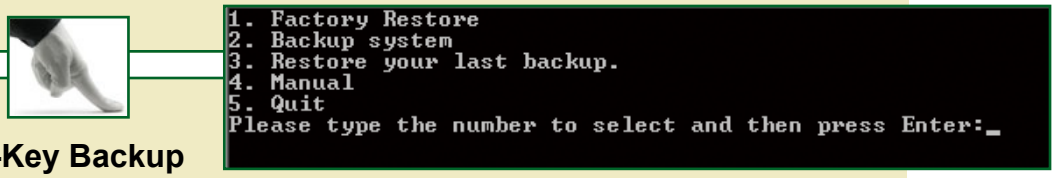
Rapid Imaging/ Migration through One Touch Hot Key

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 up and running quickly.

EASY WAY

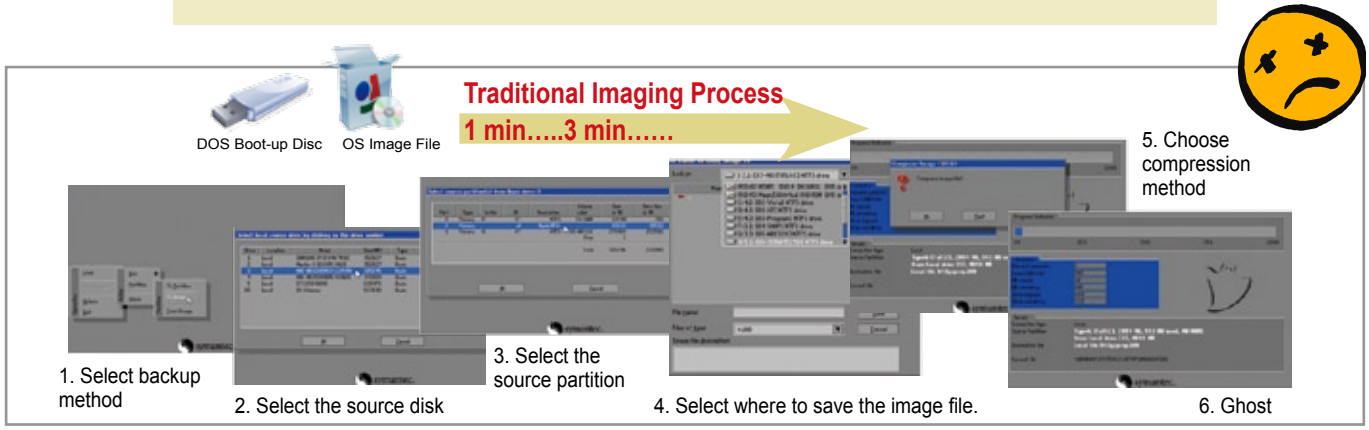
• One-Key Recovery

- Factory restore: restore your system to default setting (iei.gho)
- Restore your last backup: recover the last system configuration (iei_user.gho)



• One-Key Backup

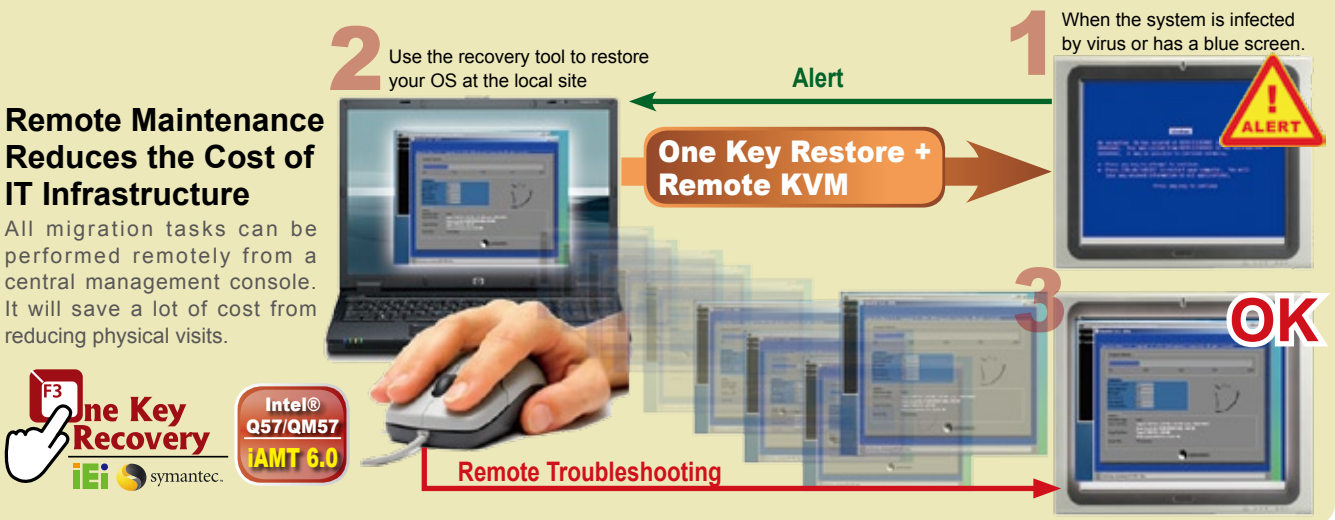
Backup your operating system to the secure hidden partition. You can create your own ghost image as "iei_user.gho" including your application programs set-ups.



Benefits

Remote Maintenance Reduces the Cost of IT Infrastructure

All migration tasks can be performed remotely from a central management console. It will save a lot of cost from reducing physical visits.



IEI Intelligent System Management Module

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

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.

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:

a. Winbond W83627
b. ITE IT8712
c. ITE IT8718
d. Fintek F81216D
e. Fintek F81865

Available Operation System

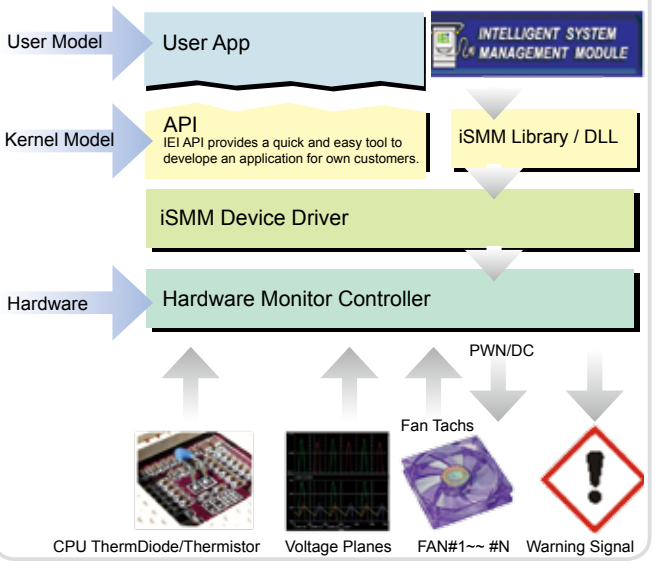
a. Windows XP
b. Windows Vista
c. Windows 7

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

Advantages

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

Architecture



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