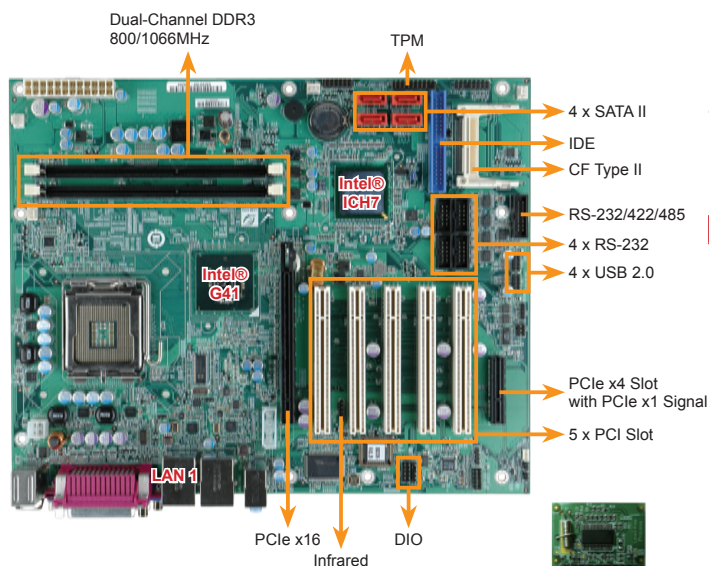# IMBA-G410

ATX Motherboard supports Intel® LGA775 Core 2 Duo/Quad with FSB 800/1066/1333MHz processor including VGA, PCIe x16, PCIe x4 (x1 signal), PCI, Dual PCIe GbE, USB 2.0, COM, CF, SATA II and Audio, RoHs
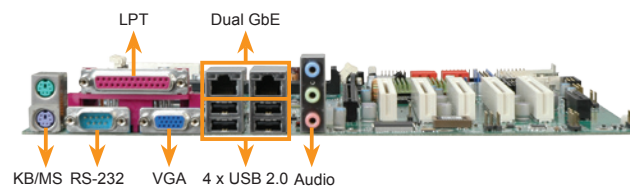
New

Dual-Channel DDR3 800/1066MHz
TPM
4 x SATA II
IDE
CF Type II
Intel® ICH7
RS-232/422/485
4 x RS-232
4 x USB 2.0
Intel® G41
PCIe x4 Slot with PCIe x1 Signal
5 x PCI Slot
LAN 1
PCIe x16
DIO
Infrared
TPM 1.2 Support

Support Quad Core CPU DDR3 Memory

Comparison Table for New Upgrade Model

IEI Solution	IMBA-G410	IMBA-9454
CPU Socket	LGA 775	
CPU Type	Intel® Core™2 Quad / Duo	Intel® Core™2 Duo
FSB	1333/1066/800MHz	1066/800/533MHz
Chipset	Intel® G41	Intel® 945G
Memory	2 x 240-pin dual-channel **DDR3** 800/1066MHz up to 8GB	4 x 240-pin dual-channel **DDR2** 667/533/400MHZ up to 4GB
Graphic Engine	Intel® GMA X4500	Intel® GMA 950

LPT
Dual GbE
KB/MS RS-232 VGA 4 x USB 2.0 Audio

F3 One Key Recovery IEI symantec.
DDR 3 1066
SERIAL ATA SATA II
USB USB 2.0
Gigabit Ethernet PCIe GbE

Specifications

◆ CPU
LGA775 45nm Intel® Core™2 Quad, Core™2 Duo, Pentium® D, Celeron® at FSB 800/1066/1333MHz processors
◆ System Chipset
Intel® G41+ICH7
◆ Memory
Two 240-pin 4GB (max.) 800/1066MHz dual-channel DDR3 SDRAM DIMM supported (System max. 8GB)
◆ BIOS
UEFI BIOS
◆ Ethernet
Dual Realtek RTL8111E PCIe GbE controllers,LAN 1 with ASF2.0 support
◆ Display Interface
Intel® GMA X4500
Supports DirectX 10 / OpenGL 1.5
VGA display supports analog CRT up to 2048x 1536 @ 75MHz
◆ Super I/O
Fintek F81865
◆ Audio
Realtek ALC888 HD audio codec
◆ I/O Interface
5 x RS-232   1 x RS-232/422/485 with Auto Flow control
8 x USB 2.0   1 x LPT
1 x IDE   2 x PS/2 KB/MS
4 x SATA II   1 x CF Type II slot
◆ TPM
2 x10-pin header
◆ Infrared Interface
1 x 5-pin header
◆ Expansion
1 x PCIe x16 slot (support PCIe x1/x16 PCIe add-on card and SDVO card)
1 x PCIex4 slot (with x1 signal)
5 x PCI Slot
◆ 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
3 x 3-pin system fan connector
◆ Power Supply
ATX power supply
◆ Power Consumption
12V@4.80A, -12V@0.06A, 5V@5.45A, 3.3V@0.16A
(Intel® Q9550 2.83GHz with 2GB 1333MHz DDR3 Memory)
◆ Temperature
Operation: -10°C ~ 60°C
◆ Humidity
Operation: 5% ~ 95%, non-condensing
◆ Dimensions
244mm x 305mm
◆ Weight
GW:1200g / NW: 650g

Features

1. Supporte Intel® Core™2 Quad/ Core™2 Duo/ Pentium®4/ Celeron® processor
2. Dual channel DDR3 1066MHz supports up to 8GB
3. Intel® GMA X4500 delivers an excellent blend of graphics performance
4. TPM V1.2 hardware security function supported by TPM module
5. IEI One Key Recovery solution allows you to create rapid OS backup and recovery

Packing List

1 x IMBA-G410 single board computer	
2 x Dual RS-232 cable (P/N: 19800-000113-RS)	
1 x I/O shielding (P/N: 45014-0017C0-00-RS)	
2 x SATA cable (P/N: 32000-062800-RS)	1 x Utility CD
1 x Mini jumper pack	1 x QIG

Ordering Information

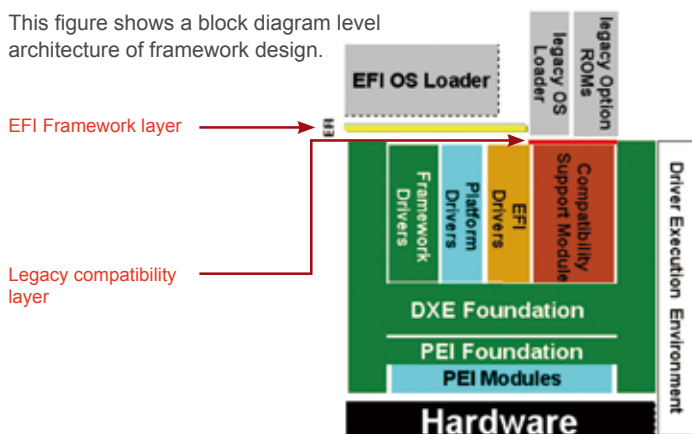| Part No.	Description
IMBA-G410-R10	ATX Motherboard supports Intel LGA775 Core 2 Duo/Quad with FSB 800/1066/1333MHz processor include VGA, PCIe x16, PCIe x4(x1 signal), PCI, Dual PCIe GbE, USB 2.0, COM, CF, SATA II and Audio, RoHs
32200-000052-RS	IDE cable
32102-000100-200-RS	SATA power cable
19800-000100-200-RS	Quad ports USB cable with bracket
CB-USB02-RS	Dual ports USB cable with bracket
19800-000058-RS	RS-232/422/485 cable
CF-775A-RS	CPU cooler for 130W
CF-520-RS-R11	CPU cooler for 115W
CF-775B-RS	1U CPU cooler for 90W
SDVO-100DVI-R10	PCIe x16 DVI Output SDVO card supports dual display (IEI CPU board only)
SDVO-100VGA-R10	PCIe x16 VGA Output SDVO card supports dual display (IEI CPU board only)
TPM-IN01-R11	20-pin INFINEON TPM Module, S/W management Tool, Firmware V3.17

UEFI Introduction

- **UEFI** (**U**nified **E**xtensible **F**irmware **I**nterface) 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.

EFI Framework layer →

Legacy compatibility layer →

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. 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 a better compatibility with the dual ranks x16 DRAM memory module for 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
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
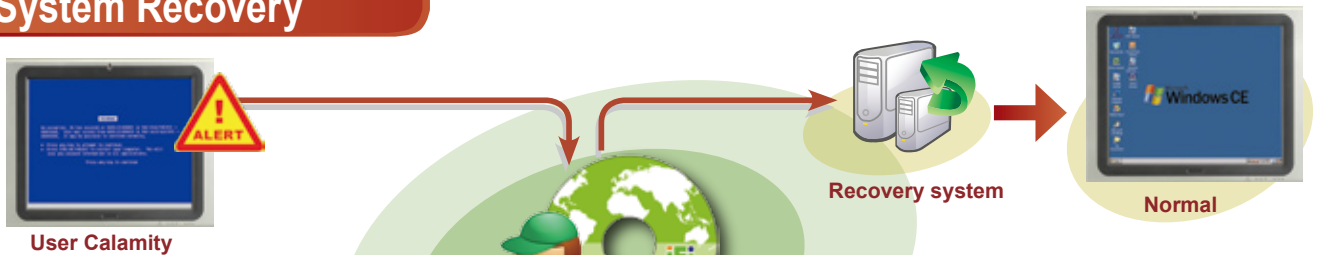
F3

One Key Recovery

iEi 🌀 symantec™

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.
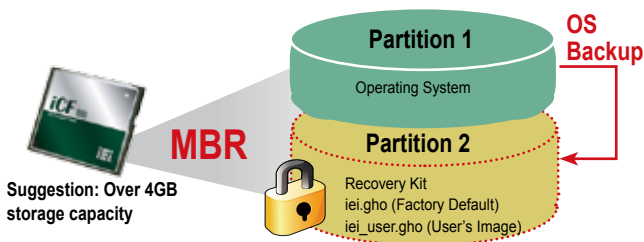
System Recovery

User Calamity

Recovery system

Normal

IEI Recovery Kit

System Backup

Normal

Backup system

New image

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.

Partition 1

Operating System

OS Backup

MBR

Partition 2

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

Suggestion: Over 4GB storage capacity
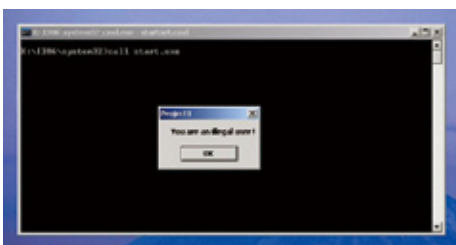
IEI Recovery Solution Advantages:

- 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

SYMC
GSS
OneKey Recovery

☑ **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

www.ieiworld.com

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

Press F3 to boot into recovery mode...

One Key Backup / Restore

F3
Auto-run

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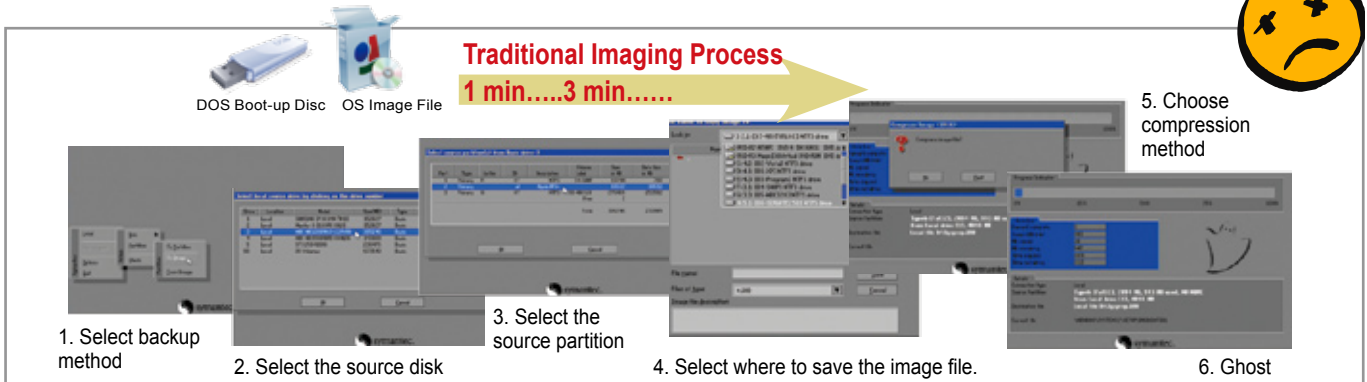- Restore your last backup: recover the last system configuration (iei_user.gho)

```
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.

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

DOS Boot-up Disc   OS Image File

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. It will save a lot of cost from reducing physical visits.

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

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

Alert

! ALERT

One Key Restore + Remote KVM

3

OK

F3 One Key Recovery
iEi symantec.

Intel® Q57/QM57 iAMT 6.0

Remote Troubleshooting

IEI Intelligent System Management Module

iSMM

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.

■ 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
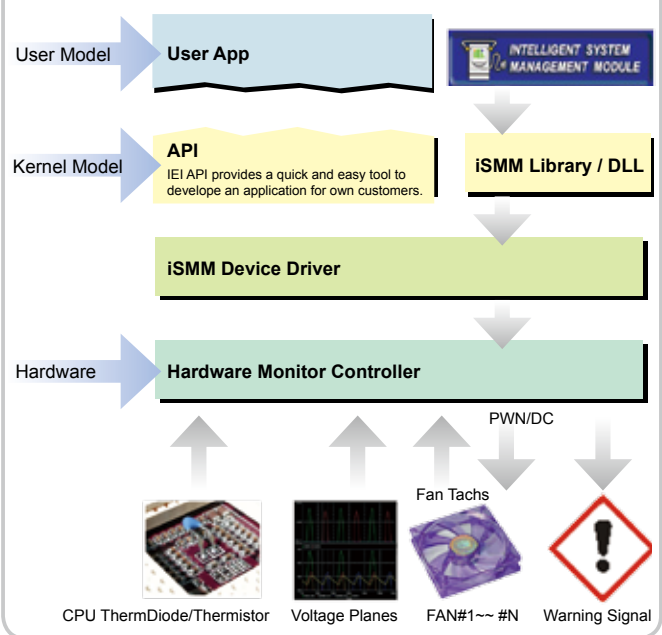6. Fintek F8186
7. SMSC SCH311x

■ Available Operation System

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

Note: Please disable 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

User Model	**User App** — INTELLIGENT SYSTEM MANAGEMENT MODULE
Kernel Model	**API** IEI API provides a quick and easy tool to develope an application for own 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

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