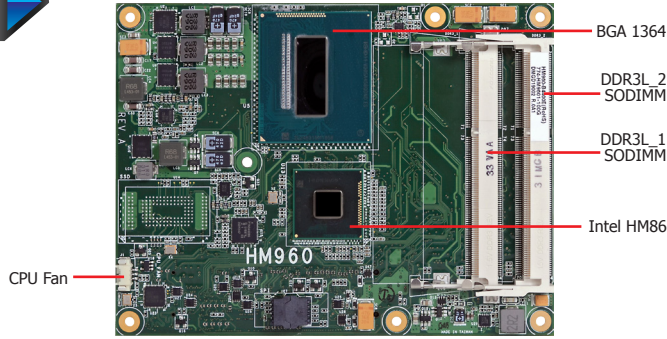




# HM960-HM86

HM86

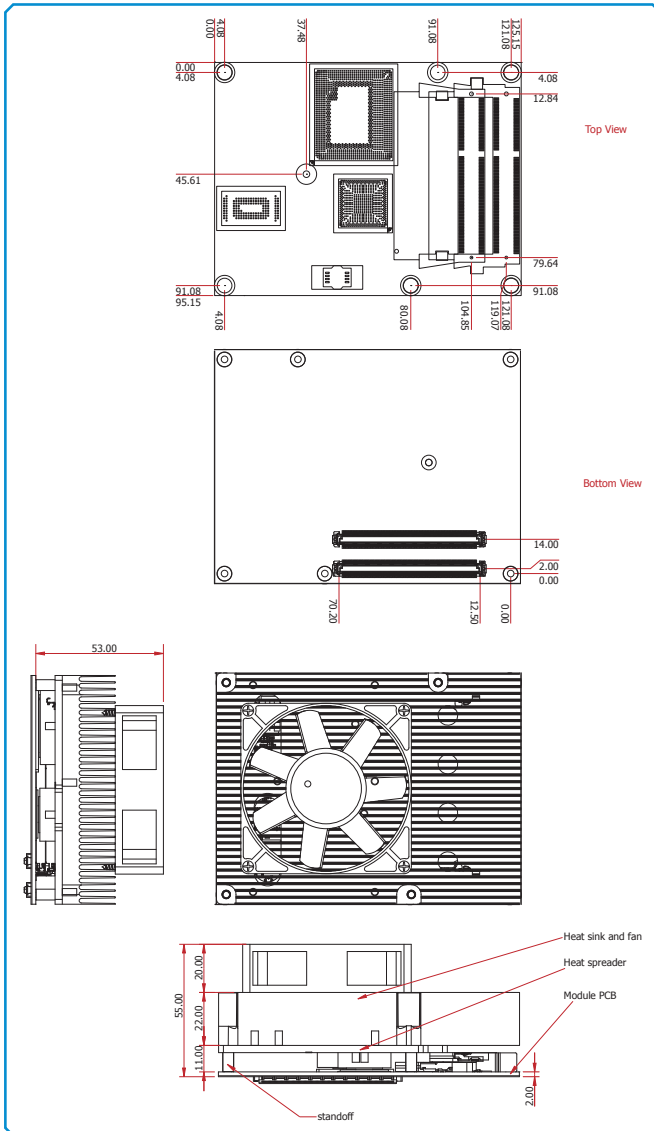


## Features

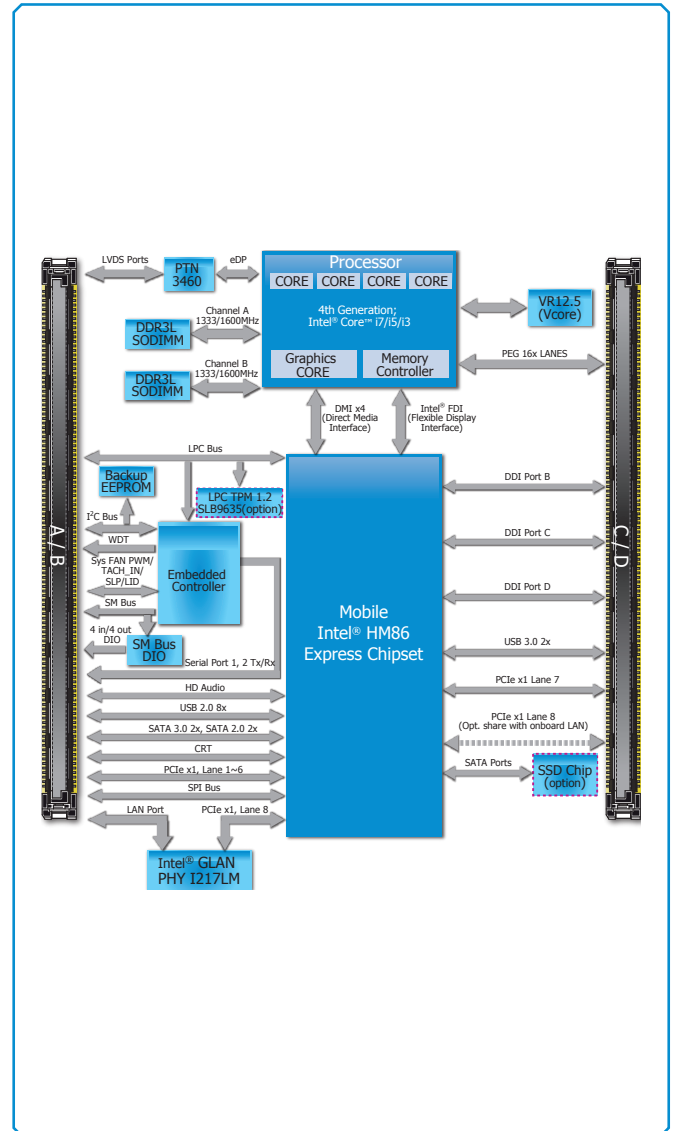
MEMORY	2 DDR3L SODIMM up to 16GB
EXPANSION	1 PCIe x16, 7 PCIe x1 1 LPC, 1 SMBus, 1 I <sup>2</sup> C, 2 serial 1 VGA, 1 LVDS, 3 DDI (HDMI/DVI/DP) 2 USB 3.0, 8 USB 2.0 4 SATA: 2 SATA 3.0, 2 SATA 2.0 SSD (optional) 4-bit input and 4-bit output GPIO
LAN	1 LAN
DIMENSIONS	COM Express® R2.1 Basic, Type 6 95mm x 125mm (3.74" x 4.9")



## Mechanical Drawing



## Block Diagram



# HM960-HM86

## ► Specifications \* Optional and is not supported in standard model. Please contact your sales representative for more information.

### PROCESSOR

- 4th generation Intel® Core™ processors
  - BGA 1364 packaging technology
  - 22nm process technology
- Please refer to the Ordering Information below*

### CHIPSET

- Intel® HM86 Express Chipset

### SYSTEM MEMORY

- Two 204-pin DDR3L SODIMM sockets
- Supports DDR3L 1333/1600MHz SODIMM
- Supports up to 16GB system memory
- DRAM device technologies: 1Gb, 2Gb and 4Gb DDR3L DRAM technologies are supported for x8 and x16 devices, unbuffered, non-ECC

### ONBOARD GRAPHICS FEATURES

- Intel® HD Graphics 4600
- Supports 1 VGA, 1 LVDS and 3 DDI
- VGA: resolution up to 2048x1536 @ 75Hz
- LVDS: NXP PTN3460, 24-bit, dual channel, resolution up to 1920x1200 @ 60Hz
- Digital Display Interface: HDMI, DVI and DP
- HDMI: resolution up to 4096x2304 @ 24Hz or 2560x1600 @ 60Hz
- DVI: resolution up to 1920x1200 @ 60Hz
- DP: resolution up to 3840x2160 @ 60Hz
- Intel® Clear Video Technology
- Intel® Advanced Vector Extensions (Intel® AVX) Instructions
- Supports DirectX 11.1, OpenGL 4.0, OpenCL 1.2

### ONBOARD AUDIO FEATURES

- Supports High Definition Audio interface

### ONBOARD LAN FEATURES

- Intel® I217LM Gigabit Ethernet Phy
- Integrated 10/100/1000 transceiver
- Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab

### SERIAL ATA (SATA) INTERFACE

- Supports 2 SATA 3.0, and 2 SATA 2.0
- Supports 2 SATA 3.0, 1 SATA 2.0, and 1 SSD\*
- Integrated Advanced Host Controller Interface (AHCI) controller

### USB INTERFACE

- XHCI Host Controller supports up to 2 super speed USB 3.0 ports

### EXPANSION INTERFACES

- Supports 2 USB 3.0 interfaces
- Supports 8 USB 2.0 interfaces
- Supports 1 PCIe x16 Gen 3 interface
- Supports 7 PCIe x1 interfaces
- Supports LPC interface
- Supports SMBus interface
- Supports I<sup>2</sup>C interface
- Supports 2 serial interfaces (TX/RX)
- Supports 4-bit input and 4-bit output GPIO

### SSD\*

- 2GB/4GB/8GB/16GB/32GB/64GB
- Write: 30MB/sec (max), Read: 70MB/sec (max)
- SATA to SSD onboard

### TRUSTED PLATFORM MODULE (TPM)\*

- Provides a Trusted PC for secure transactions
- Provides software license protection, enforcement and password protection

### DAMAGE FREE INTELLIGENCE

- Monitors CPU temperature and overheat alarm
- Monitors CPU fan speed and failure alarm
- Monitors Vcore/1.05V/DDR voltages and failure alarm

### BIOS

- AMI BIOS
- 64Mbit SPI BIOS

### WATCHDOG TIMER

- Software programmable from 1 to 255 seconds

### POWER

- 12V, 5VSB, VCC\_RTC (ATX mode)
- 12V, VCC\_RTC (AT mode)

### POWER CONSUMPTION

- HM960-HM86BS0-4400E: 41.57W with i5-4400E at 2.7GHz and 1x 8GB DDR3 SODIMM

### OS SUPPORT

- Windows XP Professional x86 & SP3 (32-bit) (limited function)
- Windows 7 Ultimate x86 & SP1 (32-bit)
- Windows 7 Ultimate x64 & SP1 (64-bit)
- Windows 8 Enterprise x86 (32-bit)
- Windows 8 Enterprise x64 (64-bit)

### TEMPERATURE

- Operating: 0°C to 60°C
- Storage: -20°C to 85°C

### HUMIDITY

- 5% to 90%

### MTBF

- 689,464 hrs @ 25°C; 397,813 hrs @ 45°C
- Calculation model: Telcordia Issue 2, Method I Case 3
- Environment: GB, GC – Ground Benign, Controlled

### PCB

- Dimensions
  - COM Express® Basic
  - 95mm (3.74") x 125mm (4.9")
- Compliance
  - PICMG COM Express® R2.1, Type 6

### CERTIFICATION

- CE, FCC Class B, RoHS

## ► Ordering Information

Model Name	Processor	Memory	SSD	Power	Thermal	Temperature
HM960-HM86BS0-4400E	Intel® Core™ i5-4400E, 3M Cache, 2.7GHz (3.3GHz), 37W	2 SODIMM	None	ATX/AT	Cooler	0°C to 60°C
HM960-HM86BS0-4402E	Intel® Core™ i5-4402E, 3M Cache, 1.6GHz (2.7GHz), 25W	2 SODIMM	None	ATX/AT	Cooler	0°C to 60°C
HM960-HM86BS0-4102E	Intel® Core™ i3-4102E, 3M Cache, 1.6GHz, 25W	2 SODIMM	None	ATX/AT	Cooler	0°C to 60°C

## ► Packing List

- 1 HM960 board
- 1 DVD
- Heat spreader with heat sink and fan: 761-HSWMBL-000G

## ► Optional Items

- COM331-B carrier board kit: 770-COM331-000G
- Heat spreader: A71-011029-000G