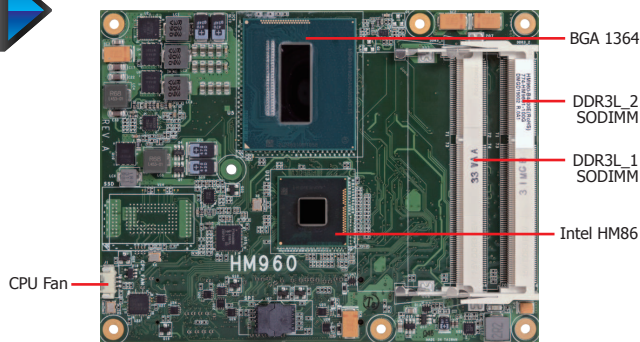




4th Gen Intel® Core™  
COM Express® Basic

# HM960-HM86

HM86

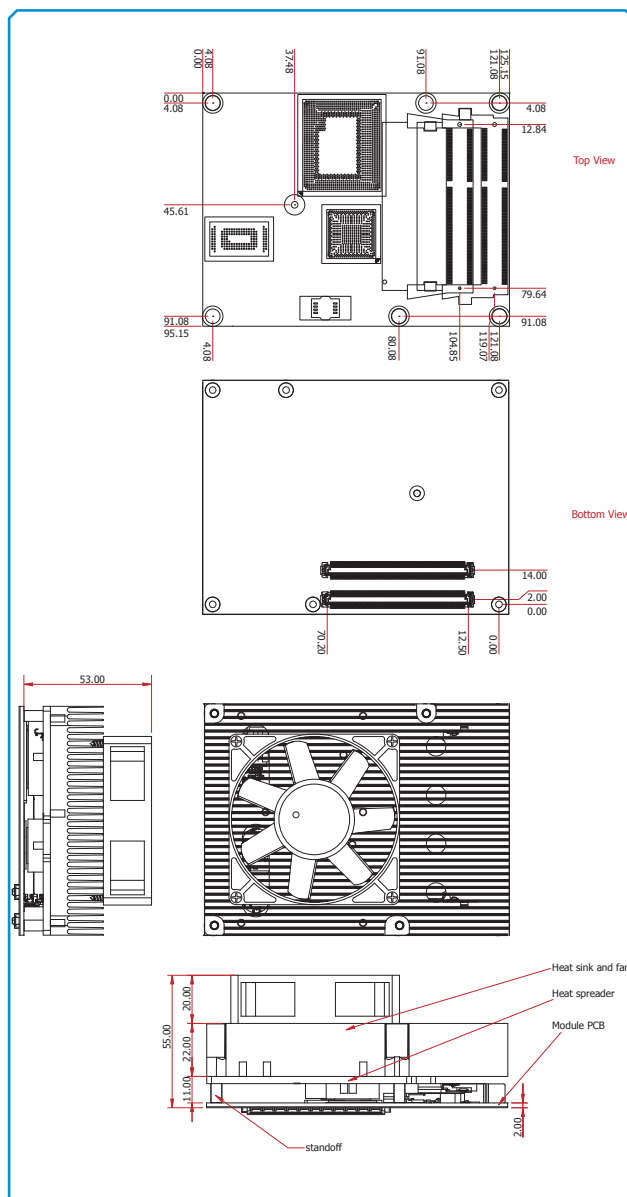


## Features

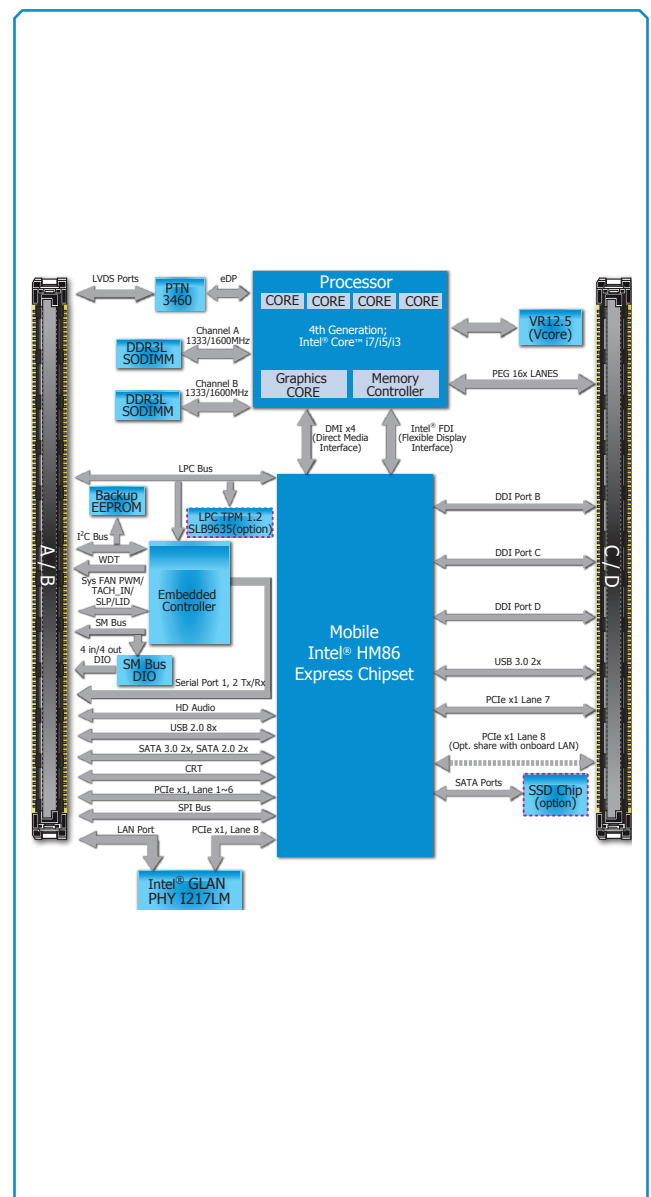
|            |                                                                                                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------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



## Mechanical Drawing



## Block Diagram



## HM960-HM86

## ► Specifications

## 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 3.2, 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 (optional)
- Integrated Advanced Host Controller Interface (AHCI) controller

## USB INTERFACE

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

## SSD - optional

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

## TRUSTED PLATFORM MODULE (TPM) - optional

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

## 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 I²C interface
- Supports 2 serial interfaces (TX/RX)
- Supports 4-bit input and 4-bit output GPIO

## 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

- Input: 12V, VCC\_RTC, 5VSB (option)

## POWER CONSUMPTION

- TBD

## OS SUPPORT

- Windows XP Professional x86 & SP3 (32-bit)
- Windows XP Professional x64 & SP2 (64-bit)
- 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%

## PCB

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

## ► Ordering Information

| Model Name | Chipset | Temperature    | Memory    | SSD                                                                    | Processors                                                                                                                                                                                                                                                                                                           |
|------------|---------|----------------|-----------|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HM960      | - HM86  | B              | S         | 0                                                                      | - 4700EQ                                                                                                                                                                                                                                                                                                             |
|            |         | B: 0°C to 60°C | S: Socket | 0: None<br>2: 2GB<br>4: 4GB<br>8: 8GB<br>1: 16GB<br>3: 32GB<br>6: 64GB | 4700EQ: Intel® Core™ i7-4700EQ, 6M Cache, up to 3.4 GHz, 47W<br>4400E: Intel® Core™ i5-4400E, 3M Cache, up to 3.3 GHz, 37W<br>4402E: Intel® Core™ i5-4402E, 3M Cache, up to 2.7 GHz, 25W<br>4100E: Intel® Core™ i3-4100E, 3M Cache, up to 2.4 GHz, 37W<br>4102E: Intel® Core™ i3-4102E, 3M Cache, up to 1.6 GHz, 25W |

## ► Packing List

- 1 HM960 board
- 1 QR (Quick Reference)
- 1 DVD

## ► Optional Items

- COM331-B carrier board kit
- COM101-BAT carrier board kit
- Heat spreader with heat sink and fan: 761-HSWMBL-000G