HM960-HM86

**Features**

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

**Mechanical Drawing**

**Block Diagram**
Specifications

PROCESSOR
• 4th generation Intel® Core™ processors
• 8GA 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

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 8 Enterprise x64 (64-bit)
• Windows 8 Enterprise x64 & SP1 (32-bit)
• Windows 7 Ultimate x64 & SP1 (64-bit)
• Windows 7 Ultimate x86 & SP1 (32-bit)
• Windows 8 Enterprise x86 (32-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

EXPANSION INTERFACES
• Supports 7 PCIe x16 Gen 3 interfaces
• Supports 8 PCIe x1 interfaces
• Supports 16 PCIe x1 connectors

TRUSTED PLATFORM MODULE (TPM) - optional
• Provides a Trusted PC for secure transactions
• Provides software license protection, enforcement and password protection

Ordering Information

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<th>Temperature</th>
<th>Memory</th>
<th>SSD</th>
<th>Processors</th>
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<tr>
<td>HM960</td>
<td>HM86</td>
<td>B</td>
<td>S</td>
<td>0</td>
<td>4700EQ</td>
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B: 0°C to 60°C; S: Socket

- None
2: 2GB
4: 4GB
8: 8GB
16: 16GB
32: 32GB
64: 64GB

Processors
4700EQ: Intel® Core™ i7-4700EQ, 6M Cache, up to 3.4 GHz, 47W
4400E: Intel® Core™ i5-4400E, 3M Cache, up to 3.3 GHz, 37W
4402E: Intel® Core™ i5-4402E, 3M Cache, up to 2.7 GHz, 25W
4100E: Intel® Core™ i3-4100E, 3M Cache, 2.4 GHz, 37W
4102E: Intel® Core™ i3-4102E, 3M Cache, 1.6 GHz, 25W
2000E: Intel® Celeron® 2000E, 2M Cache, 2.2 GHz, 37W
2002E: Intel® Celeron® 2002E, 2M Cache, 1.5 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

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DFI reserves the right to change the specifications at any time prior to the product’s release. Changes thereafter will be based on the product’s revision. Please contact your sales representative for the exact revision offered in your area. Refer to the website (www.dfi.com) for the most updated information.

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