

### Features

- 4th Generation Intel® i7/i5/i3 Processor with Mobile Intel® QM87 Express Chipset
- Up to 32GB Dual Channel DDR3L at 1600MHz
- Three DDI ports supporting 3 independent displays
- Six PCIe x1, one PCIe x16 and 32-bit PCI-bus
- GbE LAN, four SATA 6 Gb/s, four USB 3.0 and four USB 2.0"

### Specifications

#### Core System

**CPU**  
4th Generation Intel® Core™ i7 Processors (Mobile) - 22nm also known as Haswell Platform  
i7-4860EQ 2.4 GHz (3.2 GHz Turbo), 47W (4C/GT3)  
i7-4700EQ 2.4/1.7 GHz (3.4 GHz Turbo), 47/37W (4C/GT2)  
i5-4400E 2.7 GHz (3.3 GHz Turbo), 37W (2C/GT2)  
i5-4402E 1.6 GHz (2.7 GHz Turbo), 25W (2C/GT2)  
i3-4100E 2.4 GHz (no Turbo) 3MB, 37W (2C/GT2)  
i5-4102E 1.6 GHz (no Turbo) 3MB, 25W (2C/GT2) and Celeron

Supporting : Intel® VT, Intel® TXT, Intel® SSE4.2, Intel® HT Technology, Intel® 64 Architecture, Execute Disable Bit, Intel® Turbo Boost Technology 2.0, Intel® AVX2, Intel® AES-NI, PCLMULQDQ Instruction, Intel® Secure Key and Intel® TSX.  
Note : the availability of the features may vary between processor SKUs.

**Memory**  
Dual channel non-ECC 1600/1333 MHz DDR3L memory up to 32GB in dual SODIMM socket

**Embedded BIOS**  
AMI EFI with CMOS backup in 8MB SPI BIOS with Intel® AMT 9.0 support

**L3 Cache**  
6MB for i7-4650U, 3MB for i5-4400E, i5-4402E, i3-4100E and i3-4102E

**Expansion Buses**  
PCI Express x16 (Gen3) or PCI Express (2 x8 or 1 x8 with 2 x4)  
6 PCI Express x1 (AB): Lanes 0/1/2/3/4/5  
1 PCI Express x1 (CD): Lane 6  
LPC bus, SMBus (system) , I<sup>2</sup>C (user)

**SEMA Board Controller**  
Supports : Voltage/Current monitoring, Power sequence debug support, AT/ATX mode control, Logistics and Forensic information, Flat Panel Control, General Purpose I<sup>2</sup>C, Failsafe BIOS (dual BIOS ), Watchdog Timer and Fan Control

**Debug Headers**  
40-pin multipurpose flat cable connector  
Use in combination with DB-40 debug module  
Providing BIOS POSTCODE LED, BMC access, SPI BIOS flashing, Power Testpoints, Debug LEDs  
60-pin XDP header for ICE debug of CPU/Chipset

#### Video

**GPU Feature Support**  
Generation 7.5 graphics core architecture, supporting 3 independent and simultaneous display combinations of DisplayPort /HDMI / LVDS monitors  
Encode/transcode HD content  
Playback of high definition content including Blu-ray Disc\*  
Superior image quality with sharper, more colorful images  
Playback of Blu-ray\* disc S3D content using HDMI (1.4a spec compliant with 3D)  
DirectX\* Video Acceleration (DXVA) support for accelerating video processing  
Full AVC/VC1/MPEG2 HW Decode  
Advanced Scheduler 2.0, 1.0, XPDM support  
Windows\* 8, Windows\* 7, OSX, Linux\* OS support  
DirectX\* 11, DirectX\* 10.1, DirectX\* 10, DirectX\* 9 support  
OpenGL\* 3.0 support

**Digital Display Interface**  
DDI1 supporting DisplayPort / HDMI / DVI  
DDI2 supporting DisplayPort / HDMI / DVI  
DDI3 supporting DisplayPort / HDMI / DVI

**VGA**  
LVDS Single/dual channel 18/24-bit LVDS from eDP (two lane)

#### Audio

**Chipset** Intel® HD Audio integrated in U-Series SOC  
**Audio Codec** located on carrier Express-BASE6 (ALC886 standard supported)

#### Ethernet

**Intel MAC/PHY Interface** I217LM (Enterprise SKU) with AMT 9.0 support  
10/100/1000 GbE connection

#### Multi I/O and Storage

**USB** 4x USB v. 1.1/2.0/3.0 (USB 0,1,2,3) and 4x USB 1.1/2.0 (USB 4,5,6,7)  
**SATA** Four ports SATA 6Gb/s (SATA0, SATA1, SATA2, SATA3)  
**Serial** 2 UART ports COM1/2 with console redirection  
**GPIO** 4 GPO and 4 GPI with interrupt

#### Super I/O

supported on carrier if needed (standard support for W83627DHG-P)

#### TPM (optional)

**Chipset** ATMEL AT97SC3204  
**Type** TPM 1.2

#### Power

**Standard Input** ATX = 12V±5% / 5Vsb ±5% or AT = 12V ±5%  
**Wide Input** ATX = 5-20 V / 5Vsb ±5% or AT = 5 -20V  
**Management** ACPI 4.0 compliant, Smart battery support  
**Power States** C1-C6, S0, S1, S4, S3, S5 , S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5)  
**Power Consumption** TBD  
**ECO mode** support deep S5 mode for power saving

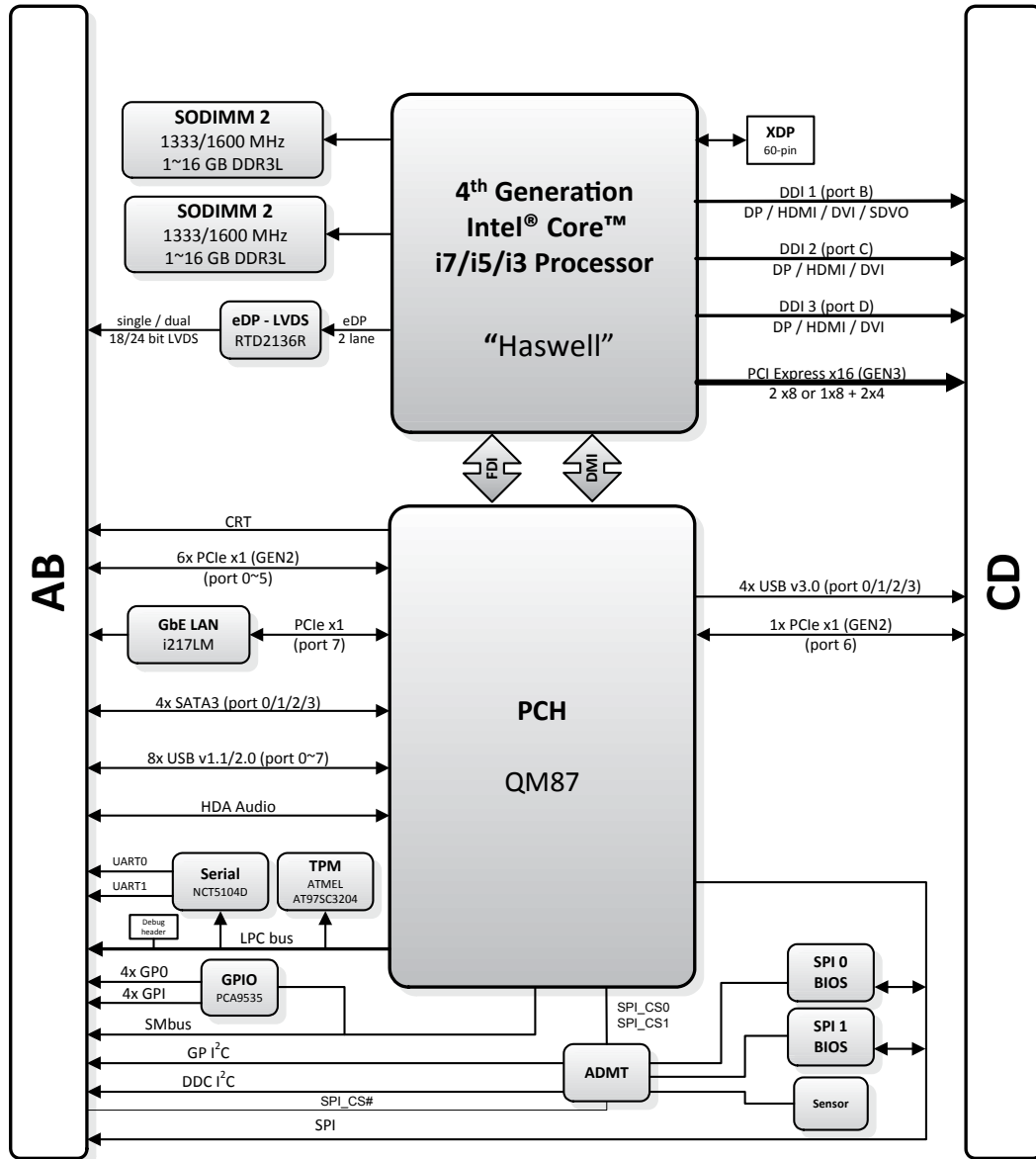
#### Mechanical and Environmental

**Form Factor** PICMG COM.0: Rev 2.1 Type 6  
**Dimension** Basic size: 125 mm x 95 mm  
**Operating Temperature** Standard Operating Temperature: 0°C to 60°C  
Industrial Operating Temperature: -20°C to +70°C  
Extreme Rugged Operating Temperature: -40°C to +85°C  
**Humidity** 5-90% RH operating, non-condensing  
5-95% RH storage (and operating with conformal coating)  
**Shock and Vibration** IEC 60068-2-64 and IEC-60068-2-27  
MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D  
**HALT** Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

#### Operating Systems

**Standard Support** Windows 7/8 32/64-bit, Linux 32/64-bit  
**Extended Support (BSP)** WES7/8, Linux , VxWorks

## Functional Diagram



## Ordering Information

### Modules

Model Number	Description/Configuration
<b>Express-HL- i7-4860EQ</b>	Basic COM Express® Type 6 module with Intel® Core™ i7-4860EQ at 2.4 GHz with GT3 level graphics
<b>Express-HL-i7-4700EQ</b>	Basic COM Express® Type 6 module with Intel® Core™ i7-4700EQ at 2.4/1.7 GHz with GT2 level graphics
<b>Express-HL-i5-4400E</b>	Basic COM Express® Type 6 module with Intel® Core™ i5-4400E at 2.7 GHz with GT2 level graphics
<b>Express-HL-i5-4402E</b>	Basic COM Express® Type 6 module with Intel® Core™ i5-4402E at 1.6 GHz with GT2 level graphics
<b>Express-HL-i3-4400E</b>	Basic COM Express® Type 6 module with Intel® Core™ i3-4400E at 2.4 GHz with GT2 level graphics
<b>Express-HL-i3-4402E</b>	Basic COM Express® Type 6 module with Intel® Core™ i3-4402E at 1.6 GHz with GT2 level graphics

### Accessories

Model Number	Description/Configuration
HTS-HL-B	Heatspreader for Express-HL with threaded standoffs for bottom mounting
HTS-HL-BT	Heatspreader for Express-HL with thoroughole standoffs for top mounting
THS-HL-B	Low profile heatsink for Express-HL with threaded standoffs for bottom mounting
THS-HL-BT	Low profile heatsink for Express-HL with thoroughole standoffs for top mounting
THSH-HL-B	High profile heatsink for Express-HL with threaded standoffs for bottom mounting
THSH-HL-B	High profile heatsink with Fan for Express-HL with threaded standoffs for bottom mounting

Quad Core CPU at 47W cannot use above heatsinks !