

CEQM87 ComE - Haswell Intel Core processor

Type 6, 95x95mm COM, 4th Gen Intel Core i7 Processor

The CEQM87 Type 6 Compact COM Express module from Radisys features the quad core performance of the 4th Generation Intel® Core™ processor (formerly codename Haswell). This 95mm x 95mm module is ideal for compute intensive applications such as medical imaging, communications, military–aerospace and test and measurement applications that require high levels of processing performance in a small space.



The COM Express R2.1 compliant Type 6 pin-out enables customers to take advantage of modern interface technology such as DisplayPort, PCI Express Gen2 & Gen3, USB 3.0, and SATA 6G storage. Rich media content can be delivered via up to 3 independent displays. The Intel CPU, built on 22nm 3D transistor technology, provides breakthrough compute and graphics performance to keep up with the demanding workloads of modern embedded systems.

The CEQM87 supports Intel vPro™ Technology, including Intel AMT for remote manageability, VT for virtualization, and TXT for trusted boot, ensuring a solid platform for securely managed systems.

The Radisys CE family of COM Express products enable customers to start designing at the same time as processor release, saving months of development time and resources. OEM focus can remain on core competencies such as software and application development rather than high speed circuit design. Planned feature changes, demand fluctuations and performance upgrades can be handled without product re–designs using the CE family. CE modules can reduce service repair inventories, and simplify upgrades, contributing to the success of the product over its lifetime.



PROCESSORS

Module Specs	Description	Compare Modules
CEQM87-4700-0	Intel Core i7 4700EQ / 2.4GHz / 4 Core / 6MG Cache	Add to Comparison
		
CEQM87-4400-0	Intel Core i5 4400E / 2.7GHz / 2 Core / 3MG Cache	Add to Comparison
		



COM EXPERT DESIGN SERVICES

OEMs can depend on the Radisys COM Expert team to support their design at every stage, from schematic checks to the handling of entire custom carrier and system designs. Radisys COM Expert services include options for software utilities, custom BIOS, mechanical models, debug assistance and more to customers using Radisys CE processor modules. Design consulting and debug services are also available to support OEM product development at any stage. Ask your Radisys Sales Manager for more information.

FEATURES

- 4th generation Intel® Core™ Processor options
 - Intel Core i7 4700EQ Quad Core, 2.4 GHz
 - Intel Core i5 4400E Dual Core, 2.7 GHz
 - Intel Core i5 4402E Dual Core, 1.6 GHz
- Mobile Intel® QM87 Express chipset
- Dual-channel DDR3L, up to 16GB with PC3-12800 MB/s transfer rate
- Type 6 COM Express Revision 2.1
- Compact 95mm x 95mm size
- Seven PCI Express x1 ports (Gen2)
- One PCI Express x16 PEG port (Gen3)
- Three Digital Display Interfaces (DDI) plus one eDP port
- Single Gigabit Ethernet
- AMT 9.0 support and option TPM support
- Four USB3.0 ports compliant with USB3.0 standard, Eight USB 2.0 ports

SPECIFICATIONS

Feature	Function	Description
Pin-Out	Type	Type 6, 95mm x 95mm
	Compliance	PICMG COM Express R2.1 Basic Form Factor
Processor	Intel Core i7™ 4700EQ	Core™ i7 2.4 GHz / 4 Core / 6MB cache / 47W / GT2
	Intel Core i5™ 4400E	Core™ i5 2.7 GHz / 2 Core / 3MB cache / 37W / GT2
	Intel Core i5™ 4402E	Core™ i5 1.6 GHz / 2 Core / 3MB cache / 25W / GT2
Chipset	Mobile Intel® QM87 Express chipset	

Memory	Type	Two 204-pin right-angle DDR3L SO-DIMM sockets 1600 MT/s, 1333MT/s
	Capacity	16GB maximum, up to 8GB per channel
Flash	16MB system flash for BIOS storage	
Video	Intel® Gen 7.5 integrated graphics engine	<p>Embedded DisplayPort (eDP) with resolutions up to 3840×2160 pixels at 60Hz</p> <p>VGA with resolutions up to 1920×1200 pixels at 60Hz</p> <p>Up to 3 Digital Display Interfaces</p> <ul style="list-style-type: none"> • DDI 1 (PCH Port B) supports DisplayPort, HDMI or DVI • DDI 2 (PCH Port C) supports DisplayPort or HDMI or DVI • DDI 3 (PCH Port D) supports DisplayPort, HDMI or DVI <p>The resolutions of DisplayPort can support up to 3840×2160 pixels at 60Hz, or 4096×2304 at 24Hz in HDMI mode</p>
	External	One x16 PCI Express interface for external PCIe x16 graphics device,
Networking	Single LAN	Intel® 217LM 1000Base-T Ethernet
Audio	High Definition Audio	
	Speaker Out	
Storage	SSD	Greenliant NANDrive 85LS Option, up to 32GB MLC
Storage	SATA	4 SATA ports supporting both 3.0 and 6.0 Gbps operation Supports RAID 0, 1, 5 and 10
PCI Express	PCI Express x1	<p>Seven PCI Express x1 Ports:</p> <ul style="list-style-type: none"> • Ports 0–3 configurable as one x4, or two x2; or one x2 and two x1; or four x1 ports. • Ports 4-6 can be configured as three x1 or one x2 and one x1 ports
	PCI Express x16	One PCI Express x16 Graphics Expansion Port – Configurable as two x8 or one x8 and two x4 ports
USB	<p>Four USB3.0 expansion ports with transfer rate up to 5Gb/s</p> <p>Eight USB 2.0 expansion ports (first four ports combine with USB3.0 ports)</p>	
LPC	One LPC interface	
TPM	ATMEL AT97SC3204 compliant with TPM1.2	
Power	+12 power rail, primary input Supports 9.0V–16.8V power supply	
Power Management	<p>ACPI 4.0 supporting states 50, 53, 54, 55 63 and C0, C1, C3, C6, C7</p> <p>AMT support Intel ME Power States M0, M3, Moff</p>	

Miscellaneous	One 100KHz SMBus from PCH	
	One 400KHz I2C bus from MCU	
	Eight GPIO (four GPI and four GPO)	
	Watchdog timer	
BIOS	AMI Aptio EFI Firmware	
OS	Windows 8	64 bit
	Windows 7	64 bit
	Windows Server 2 008 R2	64 bit
	Red Hat Enterprise Linux	64bit

Physical Specifications

Physical	Dimensions	95mm x 95mm	
	Compliance	PICMG COM Express R2.1 Basic Form Factor, Type 6	
Environment	Cooling	Forced air	Class EAC1 as defined in the ANSI/VITA 47-2005
		Conduction	Class ECC1 as defined in the ANSI/VITA 47-2005
	Temperature	Operating	Up to 2300m (7500 ft), 0 to 60C Derated -1.1 C per 305 m (1000 ft) above 2300 m (7500 ft)
		Non-operating	-40°C to +85°C
	Shock	Operating	30G, half sine shock pulse, 11ms duration, 3 times per face
		Non-Operating/Unpacked	40G, half sine shock pulse, 11ms duration, 3 times per face (unpackaged)
Transportation/Packaged		Fixtured assembly: 50G, 17.4 ms trapezoidal pulseDrop test, 10-up bulk packaging, 30in free-fall, one drop on each of six faces	
Vibration (random)	Operating	Random 5Hz to 2KHz, 7.7 grms, 10min in each of 3 axes 5Hz – 20Hz: 0.004g2/Hz ramping up to 0.04g2/Hz 20Hz to 1000Hz: 0.04g2/Hz 1000Hz to 2000Hz: 0.04g2/Hz ramping down to 0.01g2/Hz	
		Non-Operating/Storage	Random 5Hz to 2KHz, 9.7 grms, 10min in each of 3 axes 5Hz – 20Hz: 0.006g2/Hz ramping up to 0.06g2/Hz 20Hz to 1000Hz: 0.06g2/Hz 1000Hz to 2000Hz: 0.06g2/Hz ramping down to 0.02g2/Hz

	Humidity	Operating	5% to 95% non-condensing. 95%RH@30C, linear derating to 25%RH@60C
		Non-Operating/Storage	5% to 95% non-condensing
	Altitude	Operating	To 15,000ft (4570m)
		Non-Operating/Storage	To 40,000ft (12000m)
Regulatory	Safety	UL60950-1, EN60950-1, IEC60950-1	
		RoHS compliant	
	EMC	EN55024, EN55022, and FCC Part 15, Subpart B, Class B	

MORE DETAILS

Order Codes:

- CEQM87-4700-0 Type 6 COM E, i7 2.4GHz 4700EQ, 4C,6M, 47W, GT2
- CEQM87-4400-0 Type 6 COM E i5 2.7GHz 4400E, 2C, 3M, 37W, GT2
- CEQM87-4402-0 Type 6 COM E i5 1.6GHz 4402E, 2C, 3M, 25W, GT2

Supporting Products:

- CE-DDR3L-2G: 2GB DDR3L 1.35v SODIMM Memory
- CE-DDR3L-4G: 4GB DDR3L 1.35v SODIMM Memory
- CE-DDR3L-8G: 8GB DDR3L 1.35v SODIMM Memory
- CEQM87-AHS: Active Heat Sink
- CEQM87-PHS: Passive Heat Sink
- CR300-1: Type 6 COM Express Development Carrier