



## DESCRIPTION

The ADLQM87HD features Intel's 4th generation Intel Core™ processors with Intel's latest HD Graphics 4600 engine with support for DirectX11.1, OpenGL 4.0 and OpenCL 1.2. The new Haswell architecture built on Intel's low-power 22nm tri-gate process incorporates a new AVX2 instruction set, more instructions per cycle, deeper idle states, more execution units, higher cache bandwidth and smarter power management with the end result being a significant performance increase with much lower power than the previous Sandy Bridge architecture.

The ADLQM87HD is ideal for mobile and embedded applications where high processor performance with low battery or power usage is critical. It brings unparalleled performance to applications such as radar and sonar processing, image signal processing, tactical command and control, surveillance and reconnaissance, medical imaging and lab analysis and industrial automation.

In addition to the wide range of applications in which the

## APPLICATIONS

- Radar and sonar processing
- Image signal processing
- Tactical command and control
- Surveillance and reconnaissance
- Medical imaging, Lab analysis
- Industrial automation

## FEATURES

- 4th Generation Intel® Core™ Quad/DC i5 / i7
- PCH Lynx Point QM87 Chipset
- Up to 16GB DDR3L-1600; 2x SO-DIMM 204, 1.35V
- PCIe 2.0 2x40 pin Bus Connector (1x PCIe x4 or 4x PCIe x1)
- 4x SATA, RAID 0/1/5/10 (2x SATA 6Gb/s, 2x SATA 3Gb/s)
- 2x 10/100/1000Mbit Ethernet LAN Port
- 8x USB 2.0: 2x Type A Receptacle, 6x 2mm Pin Header
- 3x USB 3.0: 2x Type A Receptacle, 1x on Custom I-PEX Connector
- Display Ports: 1x DVI-I Standard Connector, 1x HDMI / DP on Custom I-PEX Connector
- Mini PCI Type III Expansion Socket
- 3x COM; RS232 Only
- TPM (Trusted Platform Module) V1.2 (ATMEL AT97SC3205)
- Windows 7, Windows 8, Windows 10, Linux Compatible
- Discrete 8-bit GPIO Port
- 7.1 HD Audio with SPDIF In/Out
- 4" x 5.8" (102mm x 147mm) 3.5-inch Form Factor

ADLQM87HD can excel, it also supports a broad set of features It introduces TPM 1.2 and USB 3.0 functionality into our 3.5" SBC product line for the first time. Onboard connectors support both DVI/VGA as well as HDMI/DP. The ADLQM87HD also has 3x RS232 COM ports, 4x SATA 6Gb/s with RAID 0, 1, 5 and 10 support. It also includes 8x USB2.0, 3x USB 3.0, two bootable Gigabit Ethernet LAN ports, HDA 7.1, and a 2x40-pin PCIE expansion connector with four PCIe x1 lanes or one PCIe x4 lane for additional breakout or mezzanine board functionality.

### ADLSST System Sensor Technology Utility

The ADLSST System Sensor Technology v2.0 utility brings to the Linux environment the same type of CPU health monitor functions that have previously been readily available only in the Windows environment. Click [here](#) to download the drivers.

ADL Embedded Solutions offers highly effective active and passive thermal solutions designed for this product. Contact [sales](#) for more information.

\*Data subject to change without notice.



## TECHNICAL SPECIFICATIONS - ADLQM87HD

FEATURE	FUNCTION	REMARKS	OPTIONS
<b>CPU</b>			
CPU Class	4th Generation Intel Core i5 / i7	See ordering guide on page 4	
CPU Option / Performance (GHz) / L3 Cache		See ordering guide on page 4	
Max. No. of Cores	4	See ordering guide on page 4	
Soldered (or Socket Name)	BGA1364		
<b>Chipset</b>			
North Bridge (GMCH)	Intel QM87 PCH		
South Bridge (ICH)	Intel QM87 PCH		
Super IO1	SMSC SCH3114	Hardware monitoring	
<b>Memory</b>			
Type	SODIMM204-1.35V / DDR3L	DDR3L 1333/1600 MHz	
Size max (MB)	16GB	8GB x 2 (Dual Channel)	
<b>Graphic</b>			
Controller	CPU integrated	Memory max. up to 512MB DVMT	
CRT	Yes	2048 x 1536 max. res.	CRT or DVI-I is cabling option
DVI / HDMI / DisplayPort	DVI x2 /HDMI	Max res all digital video - 1920 x 1200	HDMI or DVI-D is cabling option
LCD LVDS 18/24/36/48	--	--	--
<b>BIOS</b>			
Power Management APM/ACPI	APM/ACPI	Power States : S0/S1/S4/S5	
Hardware Monitoring	ADL-SST API	BIOS Setup	
<b>Audio</b>			
Controller and Codec	Intel QM87 / Codec ALC889 (HDA)	2/6/8 channel support	
<b>LAN</b>			
LAN1 Controller	Intel QM87 / i218 Phy	10/100/1000 Mbit, RPL/PXE/WOL support	Jumbo Framing supported
LAN2 Controller	Intel i210 (MAC/Phy)	10/100/1000 Mbit, RPL/PXE/WOL support	Jumbo Framing supported
<b>Buses</b>			
PCIe x1 / x4	Configurable one x4 or four x1	Custom 2 x 40-pin header	
Specials/Options	Mini-PCI socket (mPCI)		
<b>SATA Interfaces</b>			
SATA Channels	4	2x SATA 3G, 2x SATA 6G	RAID 0/1/5/10
<b>USB Interfaces</b>			
USB-Channels	11	8x USB 2.0; 3x USB 3.0	Boot options: HD/FDD/ CDROM/FD/ZIP

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**ADL Corporate:** 4411 Morena Blvd. Suite 101 | San Diego, CA 92117-4345

**T:** 858.490.0597  
[sales@adl-usa.com](mailto:sales@adl-usa.com)

**F:** 858.490.0599  
[www.adl-usa.com](http://www.adl-usa.com)

**ADL Germany:** Eiserfelder Straße 316 | D-57080 Siegen, Germany

**T:** +49 (0) 271.250.810.0  
[sales@adl-europe.com](mailto:sales@adl-europe.com)

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**TECHNICAL SPECIFICATIONS - ADLQM87HD**

FEATURE	FUNCTION	REMARKS	OPTIONS
<b>Interfaces</b>			
Serial COM Ports	RS232	1x onboard D-sub, 2x cable header	
PS/2 Keyboard/Mouse	Yes		
Watchdog	Yes		
Specials/Options	8-Bit GPIO	Discrete port	
<b>Power Supply</b>			
Supply Voltage	5V/5VS req'd for CPU; 12V req'd for FAN		
Power Consumption (typical*)	--	Contact a <a href="#">Sales Engineer</a> for more information on "typical" configuration	
<b>Cooling</b>			
	Passive / Active		
Operating Temperature (ambient)	-25 to 70 °C	Requires ADLES Thermal Solution and proper installation	
Extended Temperature	-40 to 85° C	Requires ADL-ET and approved Thermal Solution	
Storage Temperature	-40 to 85 °C		
<b>Dimensions</b>			
Dimensions	102mm x 147mm (4" x 5.8")		

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[sales@adl-europe.com](mailto:sales@adl-europe.com)

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## ORDERING INFORMATION

ITEM CODE	PART #	DESCRIPTION
<b>3.5-inch Board</b>		
ADLQM87HD-i7-4700EQ	294756	4th Generation Intel Core i7 2.4GHz 4C, 6M, 47W
ADLQM87HD-i5-4400E	294758	4th Generation Intel Core i5 2.7GHz 2C, 3M, 37W
<b>Memory</b>		
DDR3L-DRAM4096-1600	997600	DDR3L-1600MHz 4GB Standard Temperature
DDR3L-DRAM8192-1600	997601	DDR3L-1600MHz 8GB Standard Temperature
DDR3L-DRAM4096-1600-EX	997602	DDR3L-1600MHz 4GB Extended Temperature
DDR3L-DRAM8192-1600-EX	997604	DDR3L-1600MHz 8GB Extended Temperature
<b>Other memory options available</b>		
<b>Options and Accessories</b>		
ADL-ET	290000	Extended Temp Screen (-40° to +85° C)
ADLQM87HD-CK	294875	Standard Cable kit for ADLQM87HD
ADLCOM-ISOL1	299941	Galvanically Isolated RS232 COM
ADLCOM-ISOL2	299942	Galvanically Isolated RS485 COM
<b>Thermal Solutions</b>		
ADLQM87HD-SPREADER	294863	Chassis / Bulkhead mount heat spreader for ADLQM87HD For Quad and Dual Core variants
ADL35-BBHS	294152	Large Heatsink for bench testing; requires ADL35-LFAN
ADL35-LFAN	294154	Large Fan for ADL35-BBHS
ADL35-SOSET	294156	Stand-Off Set for ADL35-BBHS, M3, 6mm, 37mm

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