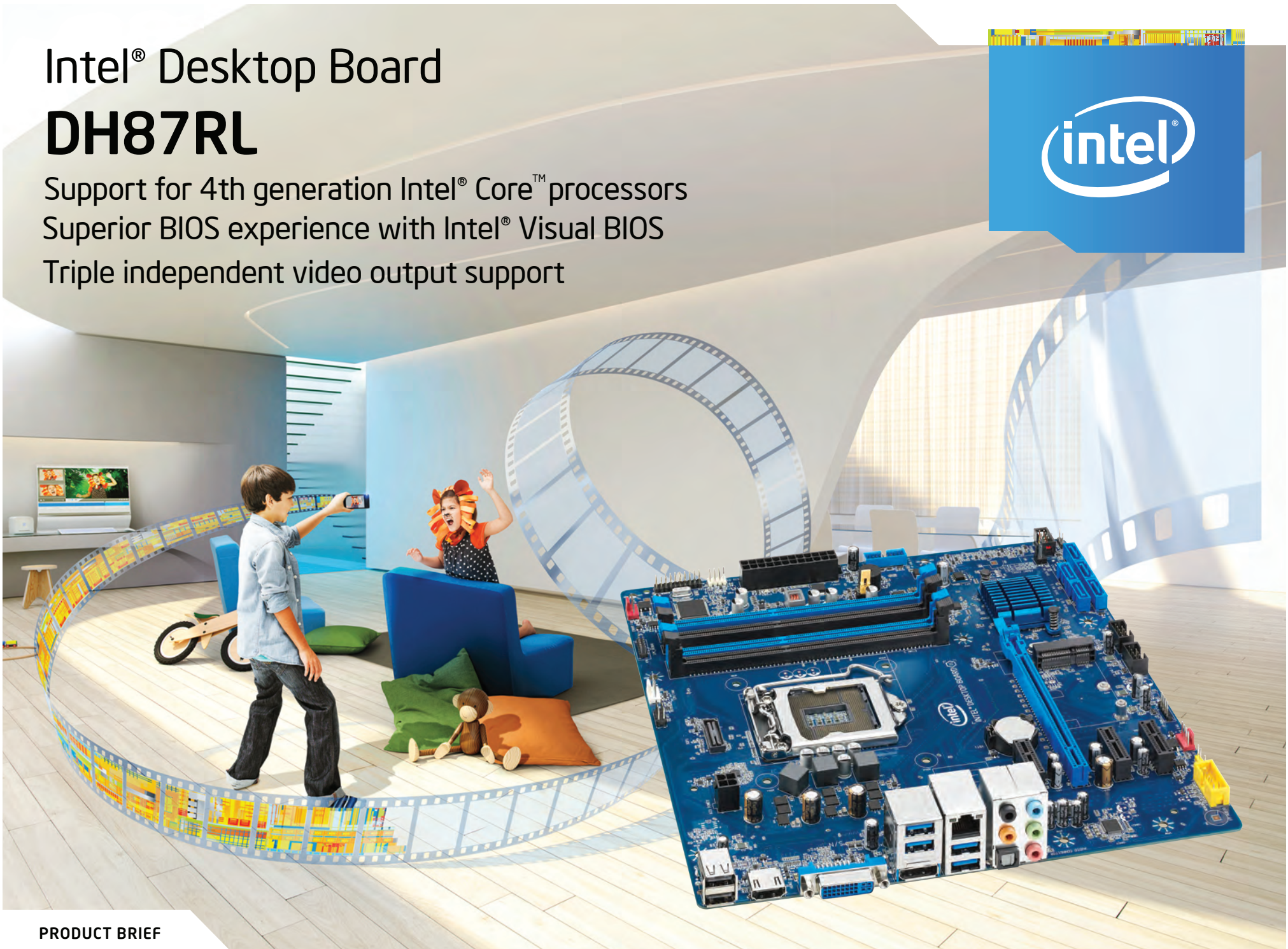
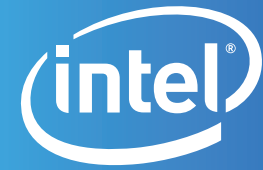


# Intel® Desktop Board DH87RL

Support for 4th generation Intel® Core™ processors  
Superior BIOS experience with Intel® Visual BIOS  
Triple independent video output support



## PERFORMANCE FLEXIBILITY

Delivering the same performance as DH87MC, Intel® Desktop Board DH87RL provides open socket flexibility to increase processing performance to meet your need.

DH87RL supports 4th generation Intel® Core™ i7/i5/i3/Celeron® processors in an LGA1150 socket. The board features PCI Express\* Mini Card connector, PCI Express\* 3.0, and Dual-channel DDR3 1600 with 4 DIMMs (32 GB3 max), with 1.2V to 1.8V memory voltage control for maximum DIMM compatibility, supports Intel® Extreme Memory Profile (XMP).

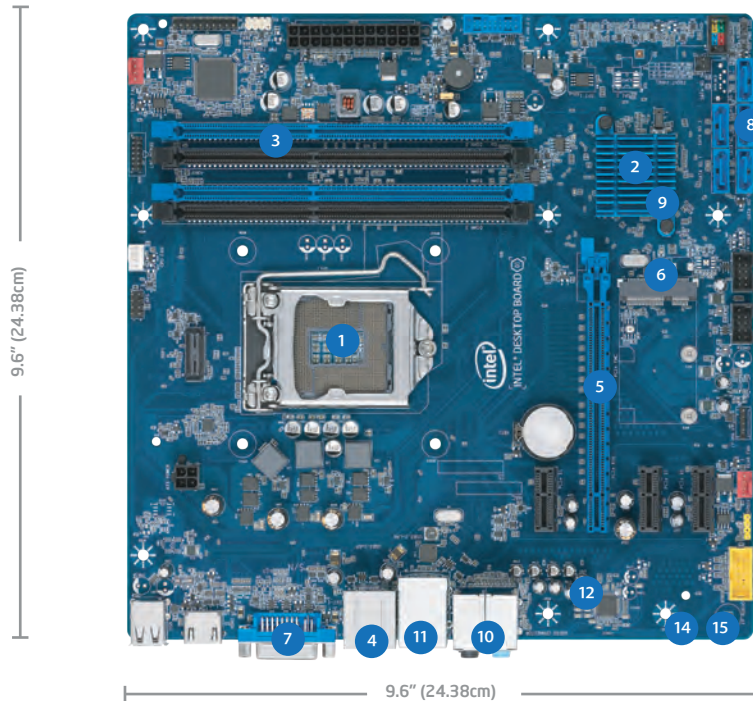
## COMPLETE CONTROL = COMPLETE POWER

Control is all about the BIOS and only genuine Intel(r) Desktop Boards have the most advanced BIOS interface available today: Intel(r) Visual BIOS. Easily configure your system with a completely graphical interface to meet your specific computing needs. With new features like intelligent search, file explorer, profile management and favorites option, Intel Visual BIOS makes configuring your BIOS fast and simple.



# Intel® Desktop Board DH87RL

## Features and Benefits



**HDMI**  
HIGH-DEFINITION MULTIMEDIA INTERFACE

## Media Series

- 1 Support for the Intel® 4th Generation Core™ i7, Intel Core i5, Intel Core i3 processor in the LGA 1150 package:** Features Intel® Turbo Boost Technology, Intel® Hyper-Threading Technology for exceptional performance and scalability, and 8 MB Shared Intel® Smart Cache, enabling dynamic and efficient allocation of cache.
- 2 Intel® H87 Express Chipset:** Features Intel Rapid Storage Technology and Intel Smart Connect Technology.
- 3 Four DIMM slots:** Support DDR3 1600/1333/1066 MHz memory, delivering up to 32 GB/s memory bandwidth. 1.2V to 1.8V memory voltage control for maximum DIMM compatibility.
- 4 Six Super-Speed USB 3.0 ports:** (4 external, 2 via internal header), and Eight Hi-Speed USB 2.0 ports (2 external, 5 via internal headers, 1 via internal Mini PCIe slot).
- 5 One PCI Express 3.0\* x16 connector and Three PCI Express 2.0\* x1 slots.**
- 6 One full length PCI Mini Card slot supporting mSATA Solid-State Drive capability**
- 7 One DisplayPort\* connector ,One DVI-I connector and One HDMI connector:** Supports triple independent display
- 8 Six SATA 6.0Gb/s ports (1 port via mSATA connector)**
- 9 Intel® Smart Response and Intel® Rapid Start<sup>7</sup> Technologies:** Provides SSD like performance with HDD capacity. Dramatically improves response time when a small capacity SSD is used in conjunction with a large HDD.
- 10 (8+2) 10-channel Intel® High Definition Audio<sup>6</sup> (7.1):** Enables high-quality integrated audio that rivals the performance of high-end discrete solutions
- 11 Intel® Gigabit Ethernet LAN:** Features onboard 10 /100 /1000 Mb /s Ethernet LAN connectivity.
- 12 100% Solid state capacitors**
- 13 Intel® Express BIOS update support, Fast Boot BIOS - Optimized POST for almost instant-on access to PC from power on**
- 14 uATX (9.6" x 9.6" (24.38 cm x 24.38 cm) Form Factor**
- 15 Lead-free:** Meets all worldwide regulatory requirements for lead-free manufacturing.

# Intel® Desktop Board DH87RL

## Technical Specifications

### PROCESSOR

#### Processor Support

- Supports the 4th generation Intel® Core™ i7, Intel® Core™ i5 and other Intel® processors in the LGA1150 package
- Intel® Turbo Boost Technology<sup>3</sup>
- Intel® Hyper-Threading Technology<sup>4</sup>
- Support Intel® 64 architecture<sup>2</sup>

### CHIPSET

- Intel® H87 Express Chipset
- Intel® Rapid Storage Technology (RAID 0, 1, 5, 10)
- Intel® Smart Response Technology
- Intel® Rapid Start Technology<sup>7</sup>
- Intel® Smart Connect Technology

### INTEL® PRO 10/100/1000 NETWORK CONNECTION

- Intel® Pro 10/100/1000 LAN on the back panel
- New low-power design can meet Energy Star\* 5.0 specifications

### USB PORTS

- Four Super-Speed USB 3.0 ports (blue) via back panel
- Two Super-Speed USB 3.0 ports via one internal header
- Two Hi-Speed USB 2.0 ports (black) via back panel
- Five Hi-Speed USB 2.0 ports via three internal headers
- One Hi-Speed USB 2.0 ports via internal Mini PCIe slot

### EXPANSION CAPABILITIES

- Three PCI Express\* 2.0 x1 slots
- One full length PCIe Mini Card slot supporting mSATA Solid-State Drive capability
- Six SATA 6.0Gb/s ports (1 port via mSATA connector)

### GRAPHICS

- One PCI Express\* 3.0 x16 connector
- One DisplayPort\* connector via back panel
- One DVI-I connector via back panel
- One HDMI connector via back panel
- Supports triple independent display

### AUDIO

- 10-channel Intel® High Definition Audio<sup>6</sup> codec
- 8-channel audio via back panel
- 2-channel audio via front panel
- Back panel support for output via optical cable
- Front panel mic/headphone via internal header
- One internal header for S/PDIF output

### SYSTEM BIOS

- Intel® Visual Bios
- 64 Mb Flash EEPROM with Intel® Platform Innovation Framework for EFI Plug and Play, IDE drive auto-configure
- Advanced configuration and power interface V3.0b, SMBIOS2.5
- Intel® Express BIOS update support
- Fast Boot BIOS – Optimized POST for almost instant-on access to PC from power on

### HARDWARE MANAGEMENT FEATURES

- Processor fan speed control
- System chassis fan speed control
- Voltage and temperature sensing
- Fan sensor inputs used to monitor fan activity
- Power management support for ACPI 3.0b

### SYSTEM MEMORY Memory Capacity

- Four 240-pin DIMM connectors supporting dual-channel memory. Two double-sided DIMMs per channel. Maximum system memory up to 32GB<sup>1</sup> using 8 GB double-sided DIMMS

### Memory Types

- DDR3 1600/1333/1066 SDRAM memory support
- Non-ECC memory

### Memory Voltage

- 1.2V to 1.8V memory voltage control
- Support for Intel® Extreme Memory Profile (Intel® XMP)

### JUMPERS AND FRONT PANEL CONNECTORS

#### Jumpers

- Single configuration jumper design
- Jumper access for BIOS maintenance mode

#### Front Panel Connectors

- Reset, HDD LED, Power LED, Power on/off
- One front-panel Super-Speed USB 3.0 header (2 ports)
- Three front-panel High-Speed USB 2.0 headers (5 ports)
- Front-panel audio header

### MECHANICAL Board Style

- uATX

### Board Size

- 9.6" x 9.6" (24.38 cm x 24.38 cm)

### Baseboard Power Requirements

- ATX 12 V

### ENVIRONMENT

#### Operating Temperature

- 0°C to +55°C

#### Storage Temperature

- -20°C to +70°C

### COMPLIANCE WITH REGULATIONS AND STANDARDS

#### Safety Regulations

UL/CSA 60950-1  
EN 60950-1  
IEC 60950-1

#### EMC Class B Regulations

CISPR 22  
CISPR 24  
FCC 47 CFR Part 15, Subpart B  
ICES-003  
EN 55022  
EN 55024  
EN 61000-3-2  
EN 61000-3-3  
IEC/EN 61000-4 Series  
VCCI-3  
KN-22  
KN-24  
CNS 13438

#### Environmental Compliance

Europe RoHS  
China RoHS

1 System resources and hardware (such as PCI and PCI Express\*) require physical memory address locations that can reduce available addressable system memory. This could result in a reduction of as much as 1 GB or more of physical addressable memory being available to the operating system and applications, depending on the system configuration and operating system.

2 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. See <http://developer.intel.com/technology/intel64/index.htm> for more information.

3 Intel® Turbo Boost Technology requires a PC with a processor with Intel Turbo Boost Technology capability. Intel Turbo Boost Technology performance varies depending on hardware, software, and overall system configuration. Check with your PC manufacturer on whether your system delivers Intel Turbo Boost Technology. See [www.intel.com/technology/turboboost](http://www.intel.com/technology/turboboost) for more information.

4 Intel® Hyper-Threading Technology requires a computer system with a processor supporting HT Technology and an HT Technology-enabled chipset, BIOS, and operating system. Performance will vary depending on the specific hardware and software you use. For more information including details on which processors support HT Technology, see [www.intel.com/info/hyperthreading](http://www.intel.com/info/hyperthreading).

5 Maximum peak memory bandwidth requires four DDR 3 modules to be populated in each of the blue memory slots. DDR 3 2400 memory support on this motherboard requires advanced knowledge of BIOS and memory tuning; individual results may vary. For specific supported memory for this motherboard, please visit [www.intel.com/products/motherboard/](http://www.intel.com/products/motherboard/) for more details.

6 Intel® High Definition Audio requires a system with an appropriate Intel® chipset and a motherboard with an appropriate codec and the necessary drivers installed. System sound quality will vary depending on actual implementation, controller, codec, drivers, and speakers. For more information about Intel® HD Audio, refer to [www.intel.com/design/chipsets/ndaudio.htm](http://www.intel.com/design/chipsets/ndaudio.htm).

7 BIOS update may be required to support Rapid Start Technology features. This feature may not be available at initial launch of product.

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