

# Express-BD7

## COM Express Basic Size Type 7 Module with Intel® Xeon® D and Pentium® D SoC

### Features

- Intel® Xeon® D and Pentium® D SoC (up to 16 cores)
- Up to 32GB dual channel DDR4 at 1866/2133/2400MHz ECC (dependent on SoC SKU)
- Two 10G Ethernet and NC-SI support
- Up to 32 PCIe lanes (24x Gen3, 8x Gen2)
- GbE, two SATA 6 Gb/s, four USB 3.0/2.0
- Supports Smart Embedded Management Agent (SEMA®) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option with selected SoC SKU)



### Specifications

#### • Core System

##### CPU

Intel® Xeon® D and Pentium® D SoC, 14nm process (formerly "Broadwell-DE")

Xeon® D1559 1.6/2.1GHz 18MB, 45W (12C) (eTEMP)  
 Xeon® D1539 1.6/2.2GHz 12MB, 35W (8C) (eTEMP)  
 Xeon® D1577 1.3/2.1GHz 24MB, 45W (16C)  
 Xeon® D1548 2.0/2.6GHz 12MB, 45W (8C)  
 Xeon® D1527 2.2/2.7GHz 6MB, 35W (4C)  
 Pentium® D1508 2.2/2.6GHz 3MB, 25W (2C)  
 Pentium® D1519 1.5/2.1GHz 6MB, 25W (4C) (eTEMP)

Note: SKUs not listed above and D1577/D1559 may be supported on a project basis. please contact your ADLINK representative.

Supports: Intel® VT (including VT-x, VT-d, VT-x with Extended Page Tables), Intel® HT Technology, Intel® SSE4.2, Intel® 64 Architecture, Intel® Turbo Boost Technology 2.0, Intel® AVX2, Intel® TSX-NI, Intel® Platform Protection Technology with Intel® TXT, Execute Disable Bit, Intel® Data Protection Technology with Intel® Secure Key, Intel® AES-NI

Note: Availability of features may vary between processor SKUs.

##### Memory

Dual channel 1867/2133/2400 MHz DDR4 ECC memory up to 32GB in dual SODIMM sockets (dependent on SoC SKU)

Note: Only D1548 support up to 2400 MHz  
 Only D1548 support up to 1866 MHz

##### Embedded BIOS

AMI EFI with CMOS backup in 16MB SPI BIOS

##### Cache

24MB for D1577  
 18MB for D1559  
 12MB for D1548/D1539  
 6MB for D1527/D1519  
 3MB for D1508

##### Expansion Busses

PCIe x16 or 2 PCIe x8 or 4 PCIe x4 (Gen3)  
 8 PCIe lanes (Gen3): AB connector, Lanes 8-15  
 6 PCIe lanes (Gen2): AB connector, Lanes 0/1/2/3/4/5  
 Up 2 PCIe lanes (Gen2): CD connector, Lanes 6/7  
 LPC bus, SMBus (system), I<sup>2</sup>C (user)

Note: PCI Express lane 7 support in place of GbE

##### 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

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product.

Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

##### Debug Headers

40-pin multipurpose flat cable connector for use with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, power testpoints, debug LEDs

60-pin XDP header for ICE debug of CPU/chipset

#### • 10G Ethernet

##### Intel® MAC/Controller

Intel® 10G Ethernet Controller integrated in SoC

##### 10G Interface

2x 10GBASE-KR

##### 10G Sideband Signals

10G\_INT  
 10G\_PHY\_MDIO/MDC & SDA/SCL  
 10G\_PHY\_CAP  
 10G\_PHY\_RST  
 10G\_LED\_I2C  
 10G\_SFP\_I2C  
 10G\_SDP

##### NC-SI

NC-SI supported on AB connector, connect to GbE controller

#### • Ethernet

Intel® MAC/PHY: Intel® Ethernet Connection i210-LM with Intel® AMT 10.0 support

Interface: 10/100/1000 GbE connection

#### • Multi I/O and Storage

USB: 4x USB 3.0/2.0 (USB 0, 1, 2, 3)

SATA: 2x SATA 6Gb/s (SATA0,1,2,3)

Serial: 2 UART ports with console redirection

GPIO: 4 GPO and 4 GPI

#### • Super I/O

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

## Specifications

### • TPM

Chipset: Infineon  
Type: TPM 2.0

### • Power

Standard Input: ATX: 12V±5%, 5Vsb ±5%; AT: 12V±5%  
Wide Input: ATX: 8.5-20V, 5Vsb ±5%; AT: 8.5-20V  
Management: ACPI 5.0 compliant, Smart Battery support  
Power States: C1-C6, S0, S1, S3, S4, S5, S5 ECO mode (Wake-on-USB S3/S4, WOL S3/S4/S5)  
ECO mode: Supports deep S5 mode for power saving

### • Operating Systems

#### Standard Support

Windows Server 2012 (64-bit)  
Windows 7 (64-bit)  
Linux (64-bit)

#### Extended Support (BSP)

Linux (64-bit)

### • Mechanical and Environmental

Form Factor: PICMG COM.0 Rev 3.0, Type 7  
Dimension: Basic size: 125 mm x 95 mm

#### Operating Temperature

Standard: 0°C to 60°C  
Extreme Rugged: -45°C to +85°C (build option, standard voltage only)  
Note: Extreme Rugged availability dependent on SoC SKU

#### Humidity

5-90% RH operating, non-condensing  
5-95% RH storage (and operating with conformal coating)

#### Shock and Vibration

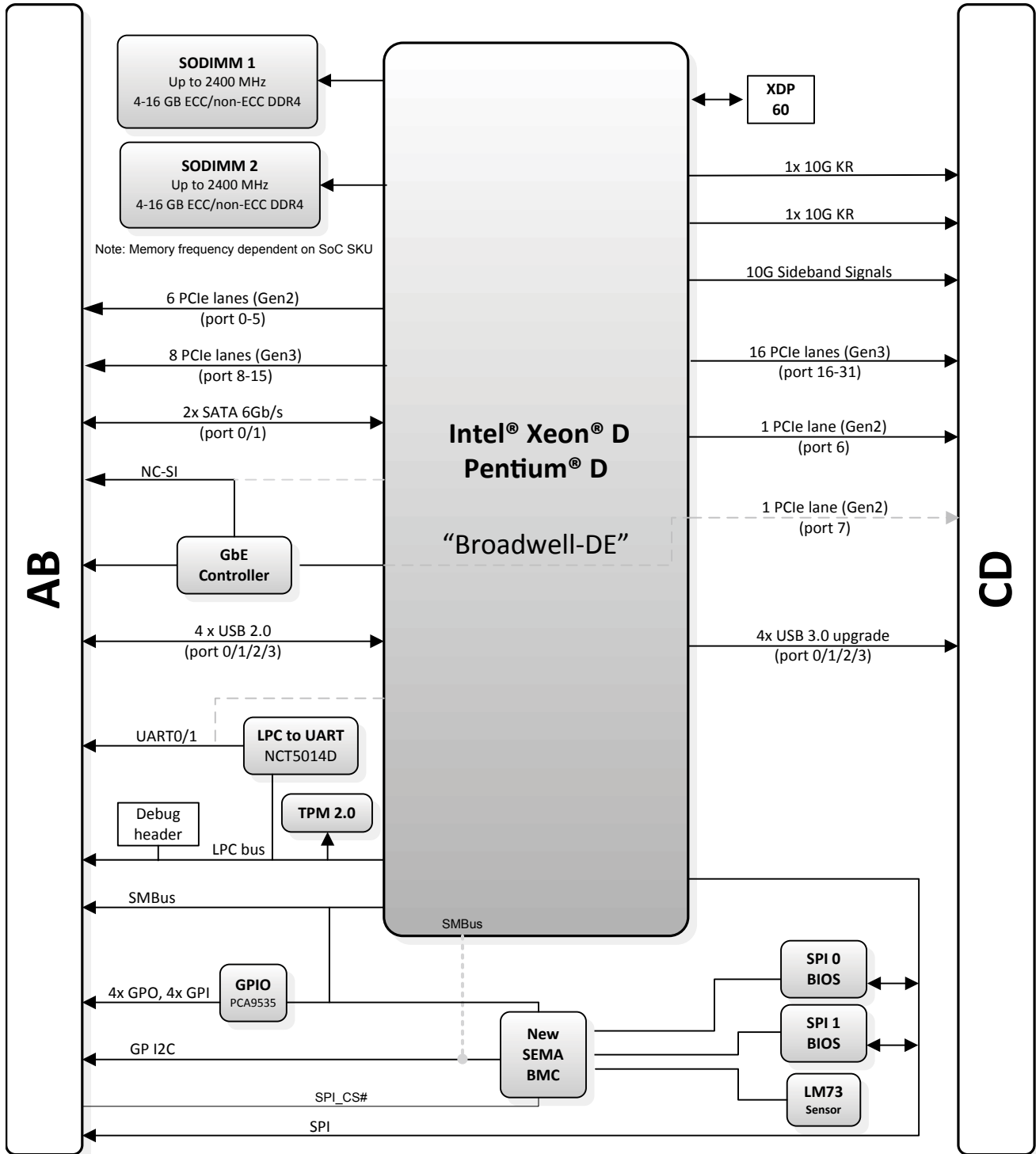
IEC 60068-2-64 and IEC-60068-2-27  
MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D

#### HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product.  
Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.

## Functional Diagram



## Ordering Information

- **Express-BD7-D1559**  
Basic COM Express Type7 module with Intel Broadwell-DE D1559, 12C (eTEMP)
- **Express-BD7-D1539**  
Basic COM Express Type7 module with Intel Broadwell-DE D1539, 8C (eTEMP)
- **Express-BD7-D1519**  
Basic COM Express Type7 module with Intel Broadwell-DE D1519, 4C (eTEMP)
- **Express-BD7-D1577**  
Basic COM Express Type7 module with Intel Broadwell-DE D1577, 16C
- **Express-BD7-D1548**  
Basic COM Express Type7 module with Intel Broadwell-DE D1548, 8C
- **Express-BD7-D1527**  
Basic COM Express Type7 module with Intel Broadwell-DE D1527, 4C
- **Express-BD7-D1508**  
Basic COM Express Type7 module with Intel Broadwell-DE D1508, 2C

Note: All modules above support SFP+ 10GbE. Supports for 10GBASE-T (Copper) is by project basis.

## Starter Kit

- **COM Express Type 7 Starter Kit Plus**  
Starter kit for COM Express Type 7

Note: Two starter kits are available: one supporting SFP+ and one supporting 10GBASE-T.

## Accessories

### Heat Spreaders

- **HTS-BD7-BL**  
Heatspreader for Express-BD7 with threaded standoffs for bottom mounting
- **HTS-BD7-BTL**  
Heatspreader for Express-BD7 with through hole standoffs for top mounting

### Passive Heatsinks

- **THS-BD7-BL**  
Low profile heatsink for Express-BD7 with threaded standoffs for bottom mounting
- **THS-BD7-BTL**  
Low profile heatsink for Express-BD7 with through hole standoffs for top mounting
- **THSH-BD7-BL**  
High profile heatsink for Express-BD7 with threaded standoffs for bottom mounting

### Active Heatsink

- **THSF-BD7-BL**  
High profile heatsink with fan for Express-BD7 with threaded standoffs for bottom mounting