cExpress-BW

COM Express Compact Size Type 6 Module with Intel® Pentium®, Celeron® N3000 Series and Atom™ X5-E8000 SoC

Features

- Dual, quad-core Intel® Pentium®, Celeron® N3000 Series and Atom™ X5-E8000 SoC
- Up to 8 GB Dual Channel DDR3L at 1600MHz
- Three DDI channels, one eDP, (shared with DDI3) 3 independent displays (build option) LVDS in place of eDP
- Three PCIe x1 (five PCIe x1 with bridge)
- GbE, two SATA 6 Gb/s (build option onboard SSD), four USB 3.0/2.0, four USB 2.0
- Smart Embedded Management Agent (SEMA*) functions

Specifications

- Core System
  - CPU
    - Dual or quad-core Intel® Pentium®, Celeron® N3000 Series and Atom™ SoC, 14nm process (formerly "Braswell")
    - Intel® Pentium® N3710, 1.6/2.56 (Burst) GHz, 400/700 (Turbo), 6W (4C)
    - Intel® Celeron® N3160, 1.6/2.24 (Burst) GHz, 320/640 (Turbo), 6W (4C)
    - Intel® Celeron® N3060, 1.6/2.48 (Burst) GHz, 320/600 (Turbo), 6W (2C)
    - Intel® Celeron® N3010, 1.04/2.24 (Burst) GHz, 320/600 (Turbo), 4W (2C)
    - Intel® Atom™ X5-E8000, 1.04/2.0 (Burst) GHz, 320 (no Turbo), 5W (4C)
  - Memory
    - Dual channel non-ECC 1600/1333 MHz DDR3L memory up to 8GB in dual SODIMM socket
  - Embedded BIOS
    - AMI EFI with CMOS backup in BMB SPI BIOS
  - Cache
    - 2MB for Pentium®, Celeron® and Atom™
  - Expansion Busses
    - 3x PCIe x1: Lanes 0/1/2 (build option 5x PCIe x1 with bridge)
    - LPC bus, SMBus (system), I2C (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 I2C, failsafe BIOS (dual BIOS), watchdog timer and fan control
  - Debug Headers
    - 40-pin multipurpose flat cable connector for DB-40 debug module providing BIOS POST code LEDs, BMC access, SPI BIOS flashing, power testpoints, debug LEDs
    - 60-pin XDP header for ICE debug of CPU

- Ethernet
  - MAC/PHY: Intel® Ethernet Controller i211AT
  - Interface: 10/100/1000 GbE connection

- Video
  - Supports
    - 3 independent and simultaneous display combinations of DisplayPort/HDMI/eDP monitors (optional LVDS in place of eDP)
    - GPU Feature Support
      - Encode/transcode of HD video content
      - Supports 3D rendering, media compositing and video encoding
      - Full hardware acceleration for decode of HEVC, H.264, SVC, VP8, VP9, MPEG4, AVS, H.263
      - Full hardware acceleration for encode of H.264, SVC, VP8, VP9, AVS, H.263
      - Supports content protection using PAVP2.0, HDCP 1.4/2.1 and Media Vault DRM
      - DirectX 11.1 support
      - OpenGL 4.2, ES 3.0 and OpenCL 1.2 support
      - Note: Availability of features dependent on operating system.
  - LVDS/eDP
    - eDP support (shared with DDI3)
    - Single/dual channel 18/24-bit LVDS (build option in place of eDP)

- Digital Display Interface
  - DDI1 supporting DisplayPort/HDMI
  - DDI2 supporting DisplayPort/HDMI
  - DDI3 supporting DisplayPort/HDMI (shared with LVDS/eDP)
  - Note: Only two simultaneous HDMI outputs supported.

- Audio
  - Chipset
    - Intel® HD Audio integrated in SoC
  - Audio Codec
    - On Express-BASE6 carrier (ALC886 standard support)

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 part numbers for SKUs with "build options" will need to be created and may cause production lead times.
Specifications

- **I/O Interfaces**
  USB: 4x USB 1.1/2.0/3.0 (USB 0,1,2,3) and 4x USB 1.1/2.0 (USB 4,5,6,7, port 4-7 from USB hub)
  SATA: 2x SATA 6Gb/s (SATA0, SATA1)
  Optional onboard SSD (8/16/32GB) in place of SATA1 port
  Serial: 2 UART ports COM 1/2 (COM 1 supports console redirection)
  GPIO/SD: 4 GPO and 4 GPI
  SD mixed with GPIO, switched by BIOS setting

- **Super I/O**
  Supported on carrier if needed (standard support for WB3627DHG-P)

- **TPM**
  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 5.0 compliant, Smart Battery support
  Power States: C1-C6, S0, S3, S4, SS , SS ECO mode (Wake on USB S3/S4, WOL S3/S4/SS)
  ECO mode: Supports deep SS mode for power saving

- **Mechanical and Environmental**
  Form Factor: PICMG COM.0 Rev 2.1 Type 6
  Dimension: Compact size: 95 mm x 95 mm
  Operating Temperature
  Standard: 0°C to 60°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 10/8.1 64-bit, Windows7 32/64-bit, Linux 32/64-bit
  **Extended Support (BSP)**
  WES7 32/64-bit, Linux 32/64-bit, VxWorks 32-bit

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Ordering Information

- **cExpress-BW-N3710**
  COM Express Compact size Type 6 module with Intel® Pentium® N3710 at 1.6/2.56 (Burst) GHz

- **cExpress-BW-N3160**
  COM Express Compact size Type 6 module with Intel® Celeron® N3160 at 1.6/2.24 (Burst) GHz

- **cExpress-BW-N3060**
  COM Express Compact size Type 6 module with Intel® Celeron® N3060 at 1.6/2.48 (Burst) GHz

- **cExpress-BW-N3010**
  COM Express Compact size Type 6 module with Intel® Celeron® N3010 at 1.04/2.24 (Burst) GHz

- **cExpress-BW-x5-E8000**
  COM Express Compact size Type 6 module with Intel® Atom™ x5-E8000 at 1.04/2.0 (Burst) GHz

Accessories

**Heat Spreaders**

- **HTS-cBW-B**
  Heatspreader for cExpress-BW with threaded standoffs for bottom mounting

- **HTS-cBW-BT**
  Heatspreader for cExpress-BW with through hole standoffs for top mounting

**Passive Heatsinks**

- **THS-cBW-B**
  Low profile heatsink for cExpress-BW with threaded standoffs for bottom mounting

- **THS-cBW-BT**
  Low profile heatsink for cExpress-BW with through hole standoffs for top mounting

- **THSH-cBW-B**
  High profile heatsink for cExpress-BW with threaded standoffs for bottom mounting

**Active Heatsink**

- **THSF-cBW-B**
  High profile heatsink with Fan for cExpress-BW with threaded standoffs for bottom mounting

**Starter Kit**

- **COM Express Type 6 Starter Kit Plus**
  COM Express formFactor starter kit with Express-BASE6 board, power supply, and accessory kit