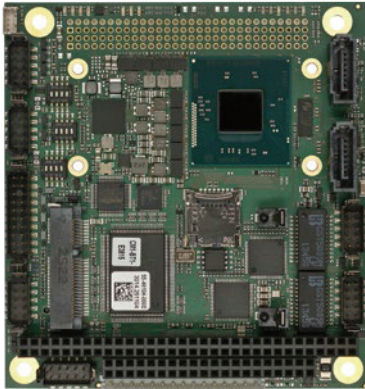


# CM1-BT1

Extreme Rugged™ PC/104 Single Board Computer  
with Intel® Atom™ Processor System-on-Chip

NEW



## Features

- Single-core Intel® Atom™ Processor System-on-Chip
- Up to 4GB DDR3L at 1333MHz
- Supports VGA and LVDS
- 2x GbE
- 1x SATA 3Gb/s (optional 2x SATA), 1x USB 3.0 + 2x USB 2.0, 8x GPIO
- Extreme Rugged™ operating temperature: -40°C to +85°C
- Supports Smart Embedded Management Agent (SEMA) functions

## Specifications

### Core System

CPU	Single-core Intel® Atom™ Processor System-on-Chip Atom™ E3815 (1C), 1.46 GHz, 400/- (No Turbo), 5W Supports: single, Out-of-Order Execution (OOE) processor cores, Intel® VT-x, Intel® SSE4.1 and SSE4.2, Intel® 64 architecture, IA 32-bit, PCLMULQDQ Instruction DRNG, Intel® Thermal Monitor (TM1 & TM2)  Note: Availability of features may vary between processor SKUs.
Memory	Up to 4GB DDR3L-1066/1333 MHz DDR3L SO-DIMM
Embedded BIOS	AMI EFI with CMOS backup in 8MB SPI BIOS
Cache	Primary 32 KiB, 8-way L1 instruction cache and 24 KiB, 6-way L1 write-back data cache
Expansion Busses	PC/104 (ISA)
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
Debug Headers	40-pin multipurpose flat cable connector  Note: Use in combination with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, Power Testpoints, Debug LEDs

### Video

GPU Feature Support	7th generation Intel® graphics core architecture with four execution units Supports two independent displays 3D graphics hardware acceleration Supports for DirectX 11, OCL 1.1, OGL ES Halt/2.0/1.1, OGL 3.2 Video decode hardware acceleration including support for H.264, MPEG2, MVC, VC-1, WMV9 and VP8 formats Video encode hardware acceleration including support for H.264, MPEG2 and MVC formats
LVDS	Single/dual channel 18/24-bit LVDS from eDP
VGA	Yes

### Audio

Chipset	Intel® HD Audio integrated in SoC
Audio Codec	ALC886

### Ethernet

Intel® MAC/PHY Interface	2x Intel® i210 (MAC/PHY) Ethernet controller 10/100/1000 GbE connection
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### I/O Interfaces

USB	3x USB 2.0 (1x on mSATA) + 1x USB 3.0
SATA	1x SATA 3Gb/s shared with mSATA (optional 2nd SATA 3GB/s port w/o mSATA support)
GPIO	8x
Serial	2x RS-232/485 (with full handshake) + 2x RS-232/485 (TX,RX,CTS,RTS only)

### LPC

LPC UART NCT5104D (Nuvoton)

### Power

Standard Input	ATX = 5V±5% / 5Vsb ±5% AT = 5V±5%
Management	ACPI 5.0 compliant
Power States	C1-C6, S0, S3, S4, S5 (Wake on USB S3/S4, Wake on LAN S3/S4/S5)
ECO mode	Supports deep S5 (ECO mode) for power saving

### Mechanical and Environmental

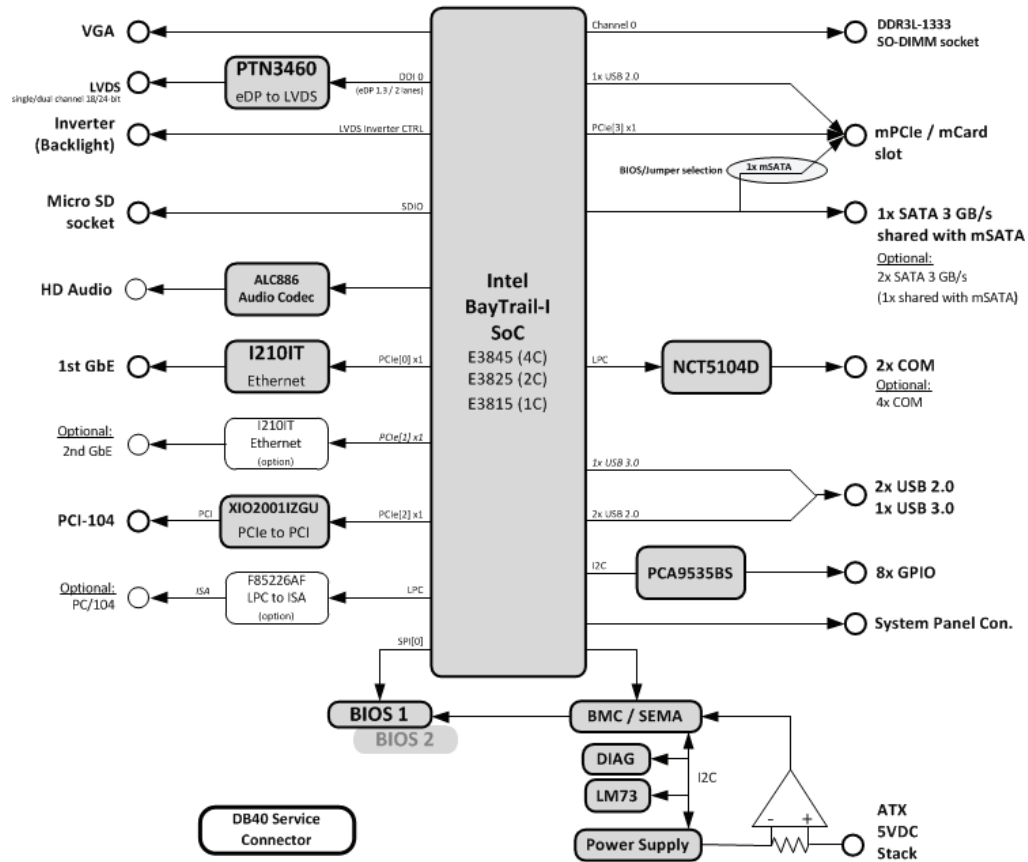
Form Factor	PC/104 Version 2.6
Dimension	90 mm x 96 mm
Operating Temperature	Standard: 0°C to +60°C Extreme Rugged™: -40°C to +85°C
Humidity	5-90% RH operating, non-condensing 5-95% RH storage (and operating with conformal coating)
Shock and Vibration	IEC 60068-2-64 and IEC-60068-2-27 MIL-STD-202F, Method 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 7/8 32/64-bit, Linux 32/64-bit
Extended Support (BSP)	WEST/8, WEC7, Linux, QNX, VxWorks

## Functional Diagram

### CMx-BTx



## Ordering Information

### Modules

Model Number	Description/Configuration
<b>CM1-BT1-E3815</b>	PC/104, Atom E3815 (1C), 1.46 GHz, Single Core, incl. heat spreader, Standard operating temperature: 0°C to +60°C

### Accessories

Model Number	Description/Configuration
<b>tbd</b>	ETT screening -40°C to +85°C
<b>CMx-BTx-X-10</b>	CMx-BTx cable kit
<b>CMx-BTx-TM-10</b>	Passive low profile heatsink for CMx-BTx
<b>CMx-BTx-TM-20</b>	Active low profile heatsink for CMx-BTx (with fan)
<b>DDR3L memory</b>	Verified 2GB, 4GB DDR3L SODIMM memory available

## CMx-BTx Standard Variant Comparison

Model Number	CM1-BT1-E3815	CM2-BT2-E3825	CM3-BT4-E3845	CM3-BT1-E3815
<b>Form factor</b>	PC/104	PC/104-Plus	PCI-104	PCI-104
<b>PCI Bus (PCI-104)</b>	No	Yes	Yes	Yes
<b>ISA Bus (PC/104)</b>	Yes	Yes	No	No
<b>CPU</b>	E3815	E3825	E3845	E3815
<b>CPU cores</b>	1	2	4	1
<b>VGA</b>	1x	1x	1x	1x
<b>LVDS</b>	1x	1x	1x	1x
<b>SATA</b>	config 1: 2, config 2: 1	config 1: 2, config 2: 1	config 1: 2, config 2: 1	config 1: 1, config 2: 0
<b>mSATA</b>	0, 1	0, 1	0, 1	0, 1
<b>mPCIe</b>	1, 0	1, 0	1, 0	1, 0
<b>MicroSD card slot</b>	1x	1x	1x	0x
<b>GbE</b>	2x	2x	2x	1x
<b>COM</b>	4x	4x	4x	2x
<b>GPIO</b>	8x	8x	8x	8x
<b>HD Audio</b>	1x	1x	1x	1x
<b>USB 2.0</b>	3x	3x	3x	3x
<b>USB 3.0</b>	1x	1x	1x	1x