

# CM3-BT4

## Extreme Rugged™ PCI-104 Single Board Computer with Intel® Atom™ Processor SoC

### Features

- Quad-core Intel® Atom™ Processor SoC
- Up to 4GB DDR3L at 1333MHz
- Supports VGA and LVDS
- 2x GbE
- 1x SATA 3Gb/s (optional 2x SATA), 3x 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

Quad-core Intel® Atom™ Processor SoC Atom™ E3845 (4C), 1.91 GHz, 542/792 (Turbo), 10W

Supports: single, dual or quad 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

PCI-104

##### SEMA Board Controller

Supports: Voltage/Current monitoring, Power Sequencing, Logistics and Forensic

Information, Flat Panel Control, I<sup>2</sup>C Bus Control, GPIO Control, User Flash, 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

#### • Audio

##### Chipset

Intel® HD Audio integrated in SoC

##### Audio Codec

ALC886

#### • Ethernet

##### Intel® MAC/PHY

2x Intel® i210 (MAC/PHY) Ethernet controller

##### Interface

10/100/1000 GbE connection

#### • LPC

##### LPC

LPC UART NCT5104D (Nuvoton)

#### • 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

## Specifications

- **I/O Interfaces**

**USB**

3x USB 2.0 (1x on mSATA)

**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)

- **Power**

**Standard Input**

ATX = 5V±5% / 5Vsb ±5% or 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 for power saving

- **Operation System**

**Standard Support**

Windows 7/8 32/64-bit, Linux 32/64-bit

**Extended Support (BSP)**

WES7/8, WEC7, Linux, QNX, VxWorks

- **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

- **Intelligent Middleware**

**SEMA<sup>®</sup>**

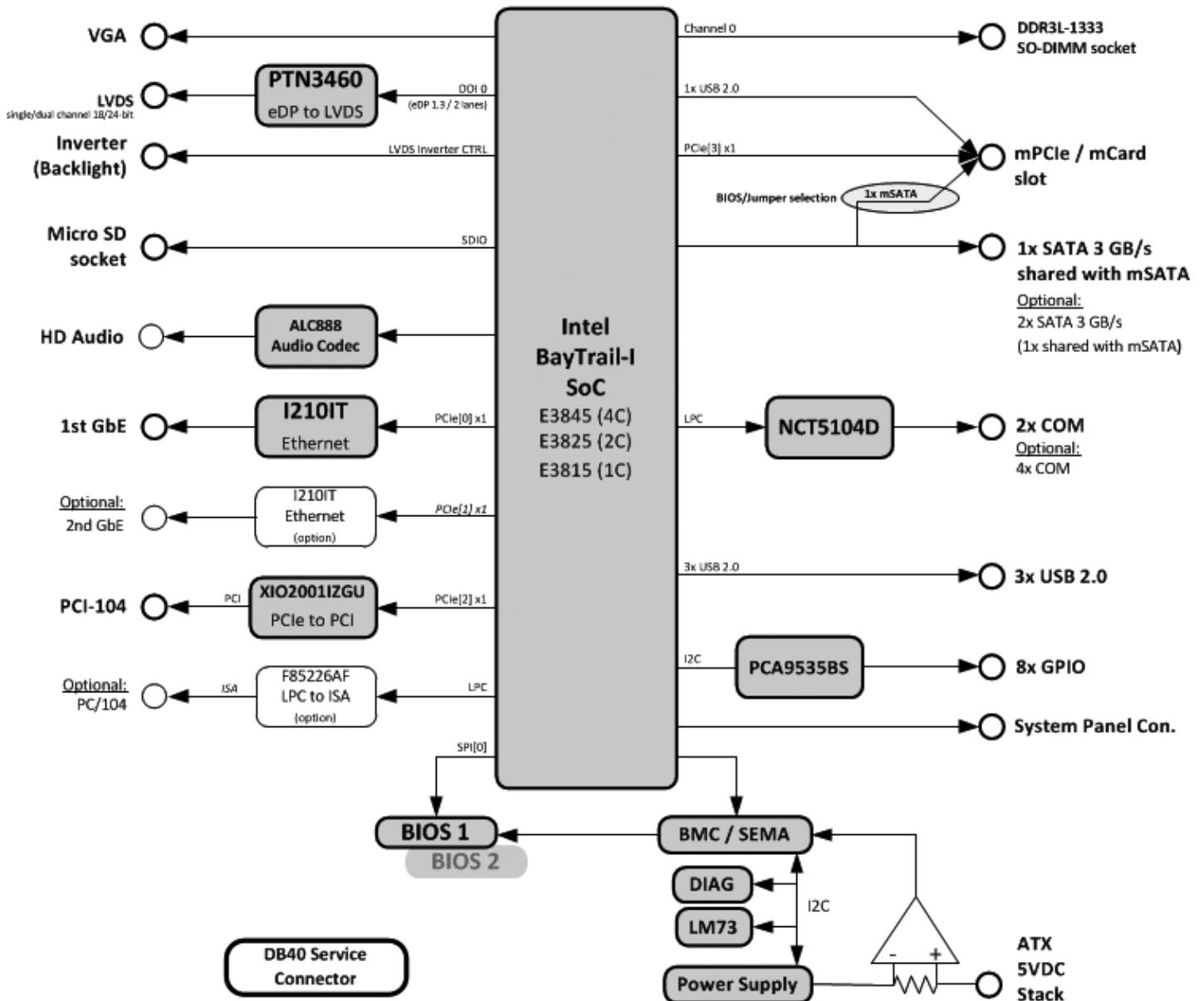
Local management, control of embedded computer systems

Extended EAPI for monitoring, controlling and analytics applications

Multiple OS support and across platforms (x86, ARM)

## Functional Diagram

### CMx-BTx



## Ordering Information

- CM1-BT1-E3815**  
 PC/104, Atom E3815 (1C), 1.46 GHz, Single Core, incl. heat spreader, Standard operating temperature: 0°C to +60°C
  - tbd**  
 ETT screening -40°C to +85°C
  - CMx-BTx-X-10**  
 CMx-BTx cable kit
  - CMx-BTx-TM-10**  
 Passive low profile heatsink for CMx-BTx
  - CMx-BTx-TM-20**  
 Active low profile heatsink for CMx-BTx (with fan)
  - DDR3L memory**  
 Verified 2GB, 4GB DDR3L SODIMM memory available
- \*other configurations by request

## CMx-BTx Standard Variant Comparison

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