

CM3-BT1

Extreme Rugged™ PCI-104 Single Board Computer with Intel® Atom™ Processor E3800 Series SOC

Features

- Single-core Intel® Atom™ Processor System-on-Chip
- Up to 4GB DDR3L at 1333MHz
- Supports VGA and LVDS
- GbE, 1x SATA 3Gb/s
- 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

Single-core Intel® Atom™ or Celeron® Processor System-on-Chip Atom™ E3815 (1C), 1.46 GHz, 400 MHz Gfx, 5W

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, I²C 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 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**

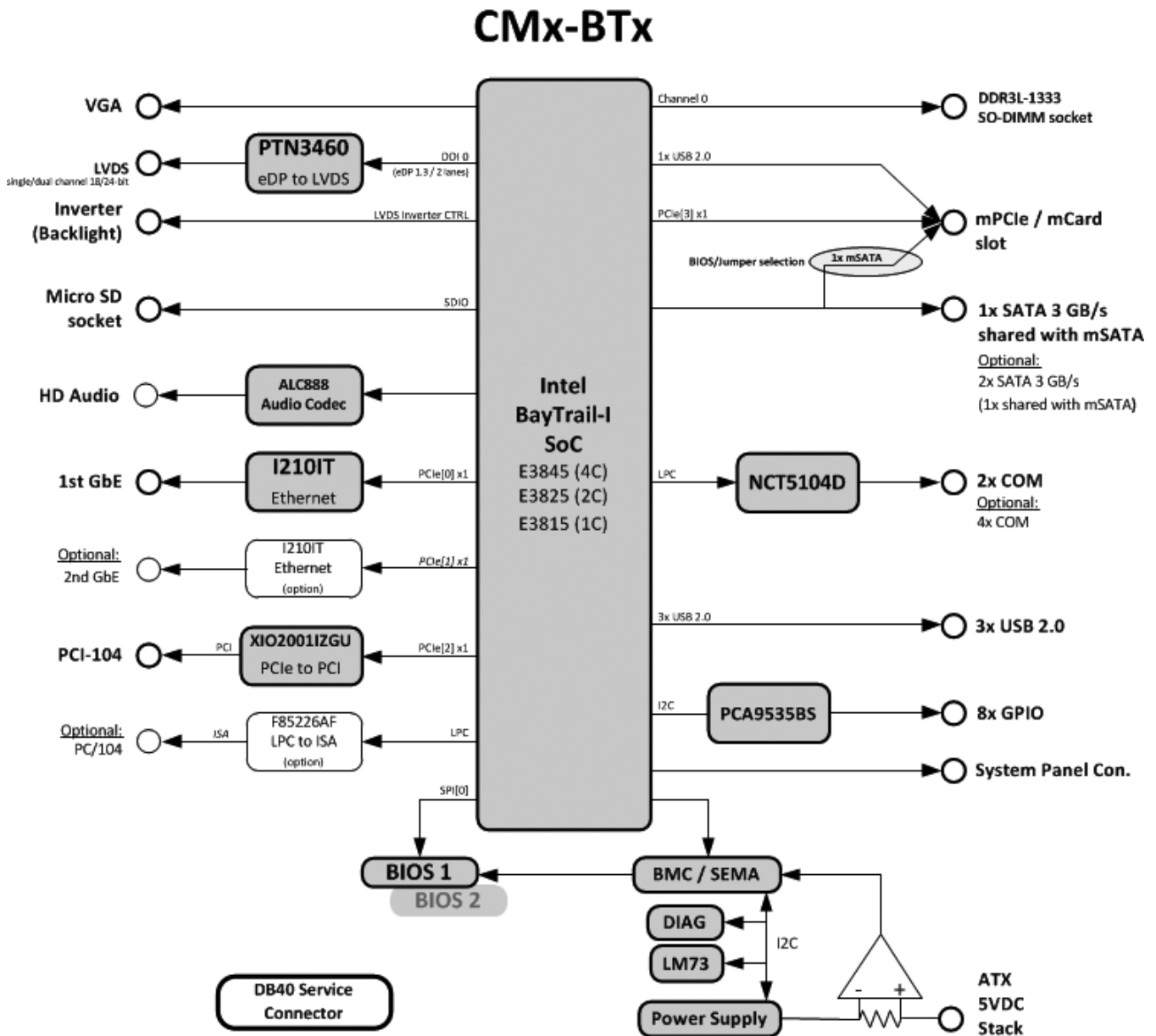
SEMA[®]

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



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	