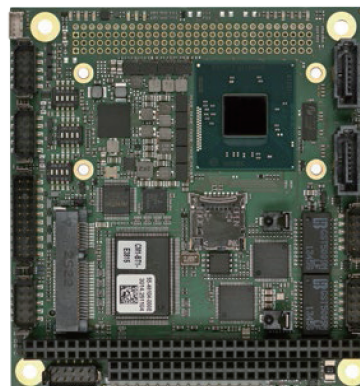


# CM3-BT4

## 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	PC/104 (ISA)
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

#### Ethernet

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

Chipset	Intel® HD Audio integrated in SoC
Audio Codec	ALC886

#### LPC

LPC	LPC UART NCT5104D (Nuvoton)
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#### 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 Single/dual channel 18/24-bit LVDS from eDP
LVDS	Yes
VGA	Yes

#### 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)

## Mechanical and Environmental

Form Factor	PCI-104 Version 2.3
Dimensions	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
Standard Support	WES7/8, WEC7, Linux, QNX, VxWorks

## 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

## Intelligent Middleware



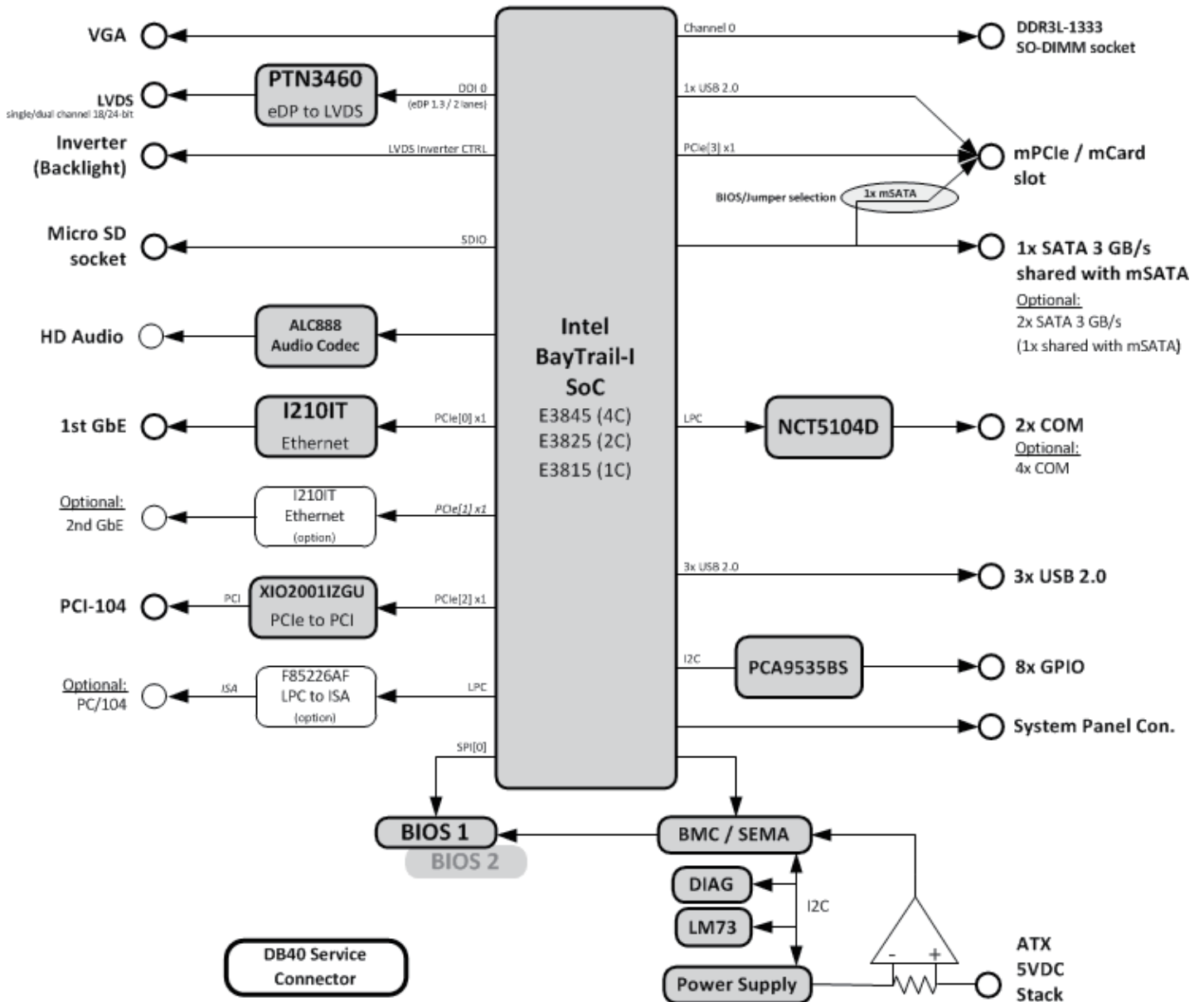
Middleware Name	SEMA®
Description	Local management, control of embedded computer systems Extended EAPI for monitoring, controlling and analytics applications Multiple OS support and across platforms (x86, ARM)

## Intelligent IOT Platform



Platform Name	SEMA®
Description	Application ready comprehensive industrial grade IoT Platform Connecting Devices to a Cloud Platform and to Web Applications Remote monitoring and controlling managing of connected devices Enabling integration of operational device data into business processes Cloud based Platform as a Service (PaaS)

# 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	
SATA	config 1	config 2	config 1	config 2	config 1	config 2	config 1	config 2
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	