Intel Fanless, Atom HDD Model

BX-110n Series

RoHS Compliant

Model	CPU	Memory	Pre-installed OS (storage device)
BX-110n-DC6000-C01	Intel Atom Processor D510 1.66GHz	2GB	None
BX-110n-DC6121-C01			Windows XP Professional (Japanese version), (100GB SATA HDD)
BX-110n-DC6311-C01			Windows Embedded Standard 2009 (Japanese version) (CF 2GB)

Please contact us for using OS in English or other languages.
https://www.contec.com/contact/

* Specifications, color and design of the products are subject to change without notice.

This product is a fanless PC for embedded use based on a dual-core Atom processor D510 1.66GHz. It has small footprint of about A4-size and low height which allows installation in a space of 50mm thick*1. Dual-core CPU and DDR2 SDRAM 2GB memory contribute to high-performance computing with high-reliable design, such as fan-less, spindle-less and slit-less.

The speedy dual-core processor introduces the fastest computing in compact BOX-PC series. When applications should be processed parallel, they will be computed very efficiently by 2-cores and 4-threads processing.

Embedded-type CPU and chip set have been adopted. The use of readily available parts ensures the ease of the use of the product. In addition, the use of Contec-customized BIOS allows support to be provided at the BIOS level.

The model can incorporate up to two 2.5-inch SATA HDDs, which enhances RAS feature. Windows XP Professional installed model that adopts HDD supporting wider temperature range is most suitable as a unit embedded into bulk data server.

*1 installed vertically

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Features

Dual core energy saving processor with HyperThreading Technology
Dual-core CPU and DDR2 SDRAM 2GB memory make it possible to process heavy applications.
It supports HyperThreading (2-cores and 4-threads) and contributes to stable multi-processing, such as parallel communications, controlling and HMI.
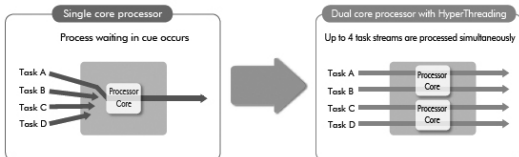
Able to contain HDD that can handle large amounts of data
It can incorporate up to two 2.5-inch SATA HDDs that make it most suitable as a unit embedded into bulk data server.

Major types of peripherals are supported with rich interfaces including the two CF card slots
In addition to extended interfaces such as 1000BASE-T x 2, USB2.0 x 4, serial (RS-232C x 5, RS-485/422 x 1), it also includes RAS and three units of general-purpose I/O. Two slots available for CF cards.

Serving the downsizing of equipment, a small footprint design for A4-sized or smaller installation area
The product adopts space-saving design for A4-sized or smaller installation area 182(W) x 270(D) x 35(H), permitting placement with opening of only 50mm*1. It largely serves downsizing of your equipment, fits any area with the aestheticness kept. It is also possible to attach to the VESA standard 75 x 75, 100 x 100mm using the optional fittings.

Adoption of dual-core CPU
It adopts a dual-core CPU Intel (R) Atom(TM) Processor D510 1.66GHz. It realizes high-performance computing in spite of its small size.

Slitless/fanless design that reduces maintenance work
It employs slitless/fanless designing achieved by the elimination of radiating slit and CPU fan. It is free from dusts and foreign objects, and the use the parts that degrades over the years is avoided in most case, resulting in drastic

alleviation of the maintenance burden.

Remote power management function to reduce operation tasks
This product supports timed/automated system start-up (Resume By Alarm). For example, it enables unattended operation, such as starting to show information of an establishment in unison at opening time. Also, it supports system start-up externally via network (Wake On LAN) and modem (Power On by Ring). It encourages significant labor saving in operation.

Falling-off prevention tools and fixing clamps provided to avoid trouble caused by disconnected cable
This product stays trouble-free, being equipped with USB removal prevention fitting and cable clamp for connectors with no locking mechanism, such as USB cable, and with hardware to properly mount and avoid falling out of CF card.

Expandable with PCI boards and/or PCI Express boards
By connecting a PCI Express Cable-based expansion chassis using one cable at extra cost, it can be expanded with up to thirteen expansion board.

A wide range of power supplies (10.8 - 31.2VDC) supported
As the product supports a wide range of power (10.8 - 31.2VDC), it can be used in a variety of power environments.

Safety design required for embedded applications
Retention of CMOS data by EEPROM allows the system to start up even when the battery has run out. Additionally, Windows Embedded Standard installed model realizes totally spindleless design with CF card adopted for the storage. It can utilize EWF feature of OS*2 that protects CF card from unnecessary write, i.e. relieves concern about the limitation of number of writes to CF card, and that prevents system from unintentional modification, as a result of consideration for

reassurance in designing necessary for the purpose of embedding.

*1   installed vertically
*2   EWF (Enhanced Write Filter) is a function specific to Windows Embedded Standard that protects the disk from being actually written by redirecting the writing to RAM.

Supported OS

Windows XP Professional (BX-110n-DC6021-C01)

Windows Embedded Standard 2009 (BX-110n-DC6311-C01)

Functional Specification

Model		BX-110n-DCxxxx-C01
CPU		Intel(R) Atom(TM) Processor D510 1.66GHz
Chip set		Intel(R) ICH8M
BIOS		BIOS (mfd. by Award)
Memory		2GB, 200pin SO-DIMM socket x 1, PC2-6400 (DDR2 800) DDR2 SDRAM support
Video	Controller	Built in Intel ICH8M
	Video RAM	Main memory shared
	Video BIOS	64KB (C0000H-CFFFFH)
	Display I/F	Analog-RGB I/F x 1 (15 pin HD-SUB connector x 1)
	System resolution	640 x 480, 800 x 600, 1,024 x 768, 1,152 x 864, 1,280 x 600, 1,280 x 720, 1,280 x 768, 1,280 x 960, 1,280 x 1,024, 1,400 x 1,050, 1,440 x 900, 1,600 x 900, 1,680 x 1,050, 1,920 x 1,080 (16,770,000 colors)
Audio		HD Audio compliant LINE OUT: φ3.5 Stereo mini jack 　　　　　Full-scale output level 1.5Vrms (Typ.), Dual 50mW Amplifier MIC IN :　φ3.5 Stereo mini jack 　　　　　Full-scale input level 1.3Vrms (Typ.)
Serial ATA I/F		2.5 inch SATA hard disk. slot-in system x 2, Corresponding to serial ATA 2.0 standard port.
		BX-110n-DCxx21-C01: HDD1 is finished mounting SATA HDD.　(100GB, 1 partition)
CF card slot		CF CARD Type I x 2 bootable
		BX-110n-DCxx11-C01: CF1 is finished mounting CF (2GB, 1 partition) *1
Serial I/F		RS-232C (general-purpose) : 5 channels (SERIAL PORT A, B, C, D, E) 9pin D-SUB connector (male) Baud rate : 50 - 115,200bps RS-485/422 (general-purpose) : 1 channel [Inside the RAS Connector]
LAN	I/F	1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector x 2 (Wake On LAN support)
	Controller	LAN-A: ICH8M built-in Controller　LAN-B: Intel 82574L Controller
USB I/F		4 channels (USB 2.0-compliant)
Keyboard/mouse I/F		None *2
General-purpose I/O		Inside the 15-pin D-SUB connector (female) [RAS connector] Optocoupler isolated I/O 3 channels for each (However, when using, you need to switch between the output 1 channel and WDT external device, and between the input 1 channel and remote reset.)
RAS function		Inside the 15-pin D-SUB connector (female) [RAS connector] WDT: 1sec - 255sec (Reset, interrupt, and external output enabled by time up) Remote reset : Input signal from external part.
PCI Express cable		PCI Express 1.0a(x1) standard port (18-pin PCI Express External Cabling connector x 1)
Model		BX-110n-DCxxxx-C01
Hardware monitoring		Monitoring CPU temperature, board temperature, power voltage
Watch dog timer		Software programmable, 255 level (1sec - 255 sec) Causes a reset upon time-out.
RTC/CMOS		Lithium backup battery life : 10 years or more The real-time clock is accurate within ±3 minutes (at 25°C) per month (ICH7 integrated RTC).
Power Management		Power management setup via BIOS Power On by Ring / Wake On LAN Supports PC98/PC99 ACPI Power management
Power supply	Rated input voltage	12 - 24VDC *3
	Range of input voltage	10.8 - 31.2VDC
	Power consumption	12V 3.9A (Max.), 24V 2.1A (Max.)
	External device power supply capacity	- CF card slot　+3.3V : 1A (500mA x 2) - USB I/F　+5V : 2A (500mA x 4)
Physical dimensions (mm)		182 (W) x 270 (D) x 35(H) (No protrusions)
Weight		Without HDD : About 2.4kg With one slot of HDD : About 2.5kg With two slots of HDD : About 2.6kg

*1:   The capacity of CF is a value when 1GB is calculated by 1 billion bytes. The capacity that can be recognized from OS might be displayed fewer than an actual value.

*2:   Use USB I/F for the keyboard / mouse.

*3:   Use a power cable shorter than 3m.

Model			BX-110n-DCxxxx-C01
Ambient specifications	Operating temperature *4		0 - 45°C *6
	Storage temperature		-10 - 60°C
	Humidity		10 - 90%RH (No condensation)
	Floating dust particles		Not to be excessive
	Corrosive gases		None
	Line-noise resistance	Line noise	AC line / ±2kV *5, Signal line / ±1kV (IEC61000-4-4 Level 3,EN61000-4-4 Level 3)
		Static electricity resistance	Contact discharge / ±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2) Atmospheric discharge / ±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)
	Vibration resistance	Sweep resistance	10 - 50Hz / 0.5G 25 min. each in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
			10 - 57Hz / semi-amplitude 0.15 mm 57 - 150Hz/2.0G 40 min. each in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
	Impact resistance		10G, half-sine shock for 11 ms in x, y, and z directions (JIS C60068-2-27-compliant, IEC60068-2-27-compliant)
	Grounding		Class D grounding (previous class 3 grounding), SG-FG / continuity
	Standard		VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A)

(Vibration resistance sub-rows labeled: "When HDD is on" and "When HDD is off")

*4:   For more details on this, please refer to page 4, "Installation Requirements".

*5:   When AC/DC power unit "LDA100W-24-SN, LDA100W-12-SN" (by Cosel) is used.

*6:   To use 1000BASE-T, you should keep its ambient temperature between 0 - 40°C.

List of Options

AC adapter　< Common >

- IPC-ACAP12-04A[*1]　AC adapter (Input: 100-240VAC, Output: 12VDC 4A)

*1　The AC adaptor can not be fixed to a BX-110n body using the attached bracket.

Bracket

- BX-BKT-VESA02　Bracket for VESA ("75 x 75", "100 x 100")

CF Card

- CF-1GB-B　　　　　1GB CompactFlash for Fix Disk
- CF-2GB-B　　　　　2GB CompactFlash for Fix Disk
- CF-4GB-B　　　　　4GB CompactFlash for Fix Disk
- CF-8GB-B　　　　　8GB CompactFlash for Fix Disk

Hard Disk

- PC-HDD100S　　　SATA HDD 100GB

Silicon Disk

- PC-SSD2000S　　　SATA SSD 2GB
- PC-SSD4000S　　　SATA SSD 4GB
- PC-SSD8000S　　　SATA SSD 8GB

TFT color liquid-crystal display

< Analog RGB types >

- FPD-L21ST-AC　　(12.1 inch 800 x 600 dots, Panel mounted type)
- FPD-M21VT-AC　　(10.4 inch 640 x 480 dots, Panel mounted type)

PCI Bus Expansion Chassis

- ECH-PCI-CE-H2C Short-type two PCI bus boards can be connected.

*2　A CB-CE-1 or CB-CE-3 PCI express cable is required separately.

Cable for Cable Express[*3]

- CB-CE-1　　　　　Cable Express Cable (1m)
- CB-CE-3　　　　　Cable Express Cable (3m)

*3　This cable is for connecting to the CONTEC's expansion chassis of PCI Express Cable modes.
The following enhancing chassis can be connected.
ECH-PCI-CE-H2B, ECH-PCI-CE-H2C, ECH-PCI-CE-F2B, ECH-PCI-CE-H4B, ECH-PCI-CE-F4B, ECH-PCI-CE-H4A, ECH-PCI-CE-H7A, ECH-PCI-CE-H13A, ECH-PE-CE-H2B, ECH-PE-CE-F2B

Packing List

Name	BX-110n-DCx000-C01 Pcs.	BX-110n-DCx121-C01 Pcs.	BX-110n-DCx311-C01 Pcs.
BOX-PC	1	1	1
The attachment fittings	2	2	2
CF card removal prevention fitting	1	1	1 *1
USB removal prevention fitting (base)	1	1	1
USB removal prevention fitting (angle)	4	4	4
Washer assembled screw (M3 x 6)	4	4	4
Washer assembled screw (M3 x 8, black)	6	6	6
Washer assembled and cross recessed hexagonal bolt (M4 x 10, black)	4	4	4
Power supply connector complete set			
Power connector	1	1	1
Contact	4	4	4
Cable clamp	2	2	2
Product guide (this sheet)	1	1	1
IPC Precaution List	1	1	1
Royalty consent contract	None	1	1
Setup Procedure Document	None	1	1
Notes on using Windows Embedded Standard	None	None	1
Recovery Media	None	1	1
HDD/SDD exchange seal	2	1	2
HDD/SDD protection seal	4	2	4

*1   It is attached to the main body.

*   The latest user's manual is available from the CONTEC homepage.

Component Life

(1) Battery
The internal calendar clock and CMOS RAM are backed by a Lithium primary battery.
The backup time at a temperature of 25°C with the power disconnected is 10 years or more.

(2) CF
WES2009-installed model (BX-110n-DCxx11-C01) uses a CF card in the OS storage area. Estimated failure rates: 100,000 rewrite cycles, 500,000 hours MTBF.

(3) HDD
XPpro-installed model (BX-100n-DCxx21-C01) uses HDD for the OS storage area. Service life of the drive is apporiximately 5 years or 30,000 power on hours, whichever comes first. MTBF is 300,000h. They are referential values under the following assumptions:

- Seeking/Writing/Reading operation is less than 20% of power on hours

*   Replacement of expendables is handled as a repair (there will be a charge).
*   Component life is not guaranteed value but only referential value.
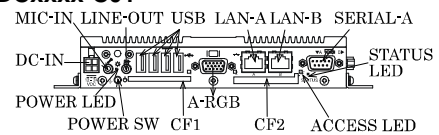
Physical Dimensions
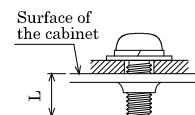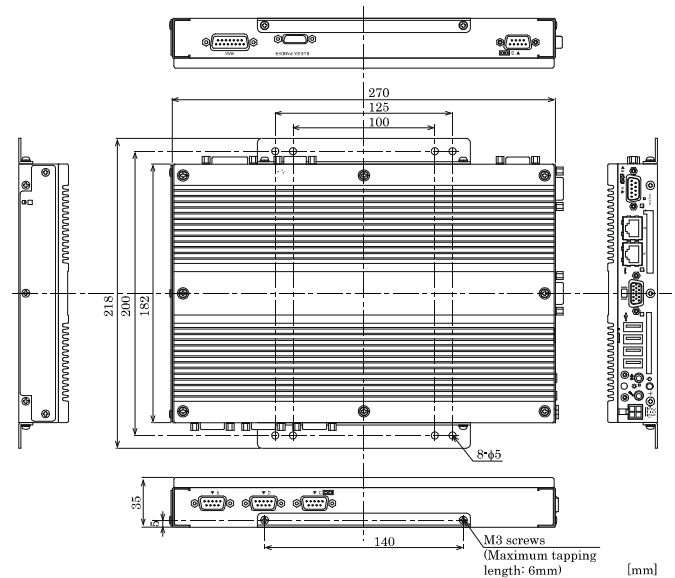
*1: When you fasten the bundled attachment fittings to be fixed to the body, you should use the attached screws (M3 x 8).
Otherwise, the length (L) from the surface of the cabinet to the screw tip should be 6mm or less.

*2: The length (L) from the surface of the cabinet to the screw tip should be 6mm or less.
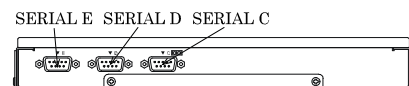
Component Locations
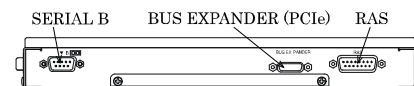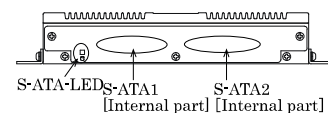
Front View
BX-110n-DCxxxx-C01

Front View
Left side

Right side

Back View

Name	Function
POWER-SW	Power switch
POWER LED	Power ON display LED
ACCESS LED	IDE disk access display LED
STATUS LED	Status LED
S-ATA LED	S-ATA disk access display LED
DC-IN	DC power input connector
LINE OUT	Line out (φ3.5 PHONE JACK)
MIC IN	Mic. in (φ3.5 PHONE JACK)
LAN A	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
USB	USB port connector x 4
SERIAL A	Serial port 1 connector (9pin D-SUB/male)
SERIAL B	Serial port 2 connector (9pin D-SUB/male)
SERIAL C	Serial port 3 connector (9pin D-SUB/male)
SERIAL D	Serial port 4 connector (9pin D-SUB/male)
SERIAL E	Serial port 5 connector (9pin D-SUB/male)
A-RGB	Display (15pin D-SUB/female)
CF1	CF card slot (IDE connection mastering)
CF2	CF card slot (IDE connection slaving)
S-ATA1	HDD slot (Serial-ATA)
S-ATA2	HDD slot (Serial-ATA)
RAS	RAS function or RS-485 connector (15pin D-SUB/female)
BUS EXPANDER (PCIe)	PCI Express Cable connector (18pin PCI Express External Cabling/female)

System Configuration
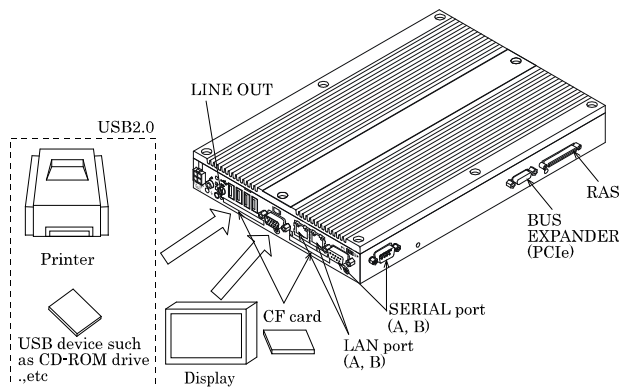
Installation Requirements

Be sure that the ambient temperature is within the range specified in the installation environment requirement by making space between the product and device that generates heat or exhaust air.

BX-110n-DCxxxx-C01

Installable directions at operating temperature 0 - +45°C
: (1) Horizontal installation, (2), (3), (4), (5) Vertical installation

Installable directions at operating temperature 0 - +40°C
: All type of installation other than above (including diagonal installation)

When using 1000BASE-T

Installable directions at operating temperature 0 - +40°C
: All type of installation (including diagonal installation)
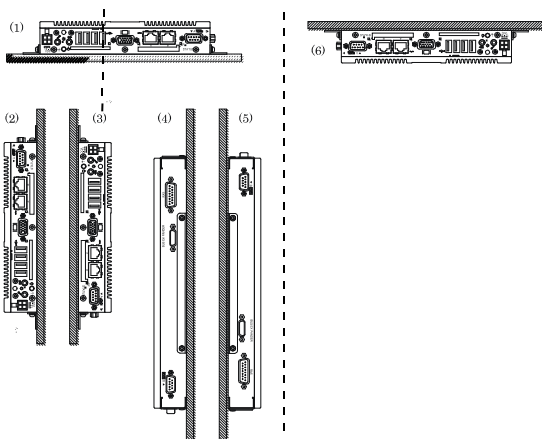
⚠ CAUTION

Note that even though the ambient temperature is within the specified range, an operational malfunction may occur if there is other device generating high heat; the radiation will influence the product to increase its temperature.

Distances between this product and its vicinity

・Vertical installation

・Horizontal installation
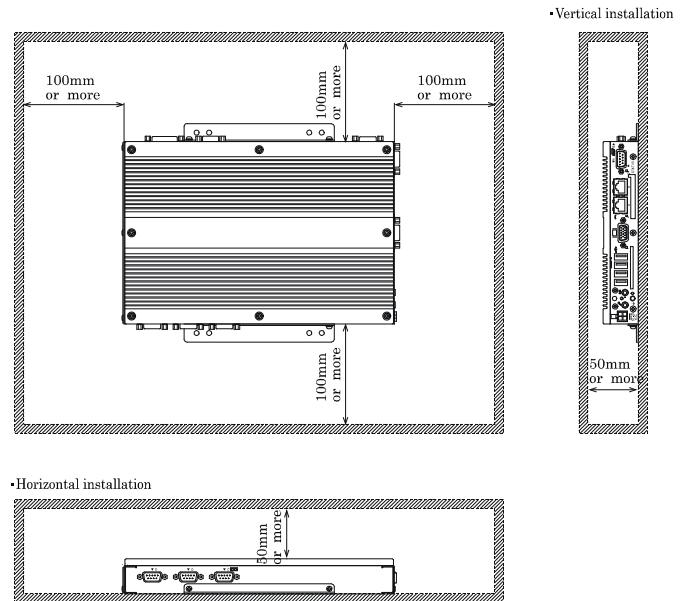
⚠ CAUTION

Do not install this product into the fully-sealed space except the case in which the internal temperature is adjustable by equipment such as air conditioner. Troubles such as operational malfunctions could be occurred by the temperature increase caused by long-term usage.

Ambient temperature

In this product, the ambient temperature is decided from the multiple measurement points as shown below. When making use of the product, the air current should be adjusted to prevent that all the temperatures measured at the measurement points exceed the specified temperature.

・Vertical installation

・Horizontal installation

[mm]