Fanless Atom Z530P
BX300

BX300 is a small, palm-sized fanless embedded PC that can be installed in 35mm DIN rail.
This product uses Intel ® Atom ™ processor Z530P, US15WP and greatly improves it's energy efficiency over the existing microcontroller CPU-SB30 that has the same size chassis.
Furthermore it realizes the extended function as digital I/O by connecting an F&eIT Series device module.
As a new function, this product includes expansion chassis for PCI/PCI Express expansion board and external expansion connector that enables cable connection.

Intel, Intel Core and Celeron are registered trademarks of Intel Corporation. MS, Microsoft and Windows are trademarks of Microsoft Corporation. Other brand and product names are trademarks of their respective holder.

Model	CPU	Main Memory	OS(Storage)
BX-300-DC5000	Intel Atom Processor Z530P 1.60GHz	1GB	None
BX-300-DC5311			Windows Embedded Standard 2009 (Japanese ver.) (CF card 2GB)

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

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

Features

Contributing to reduction of running cost and promotion of energy efficiency
Parallel with succeeding the basic function of existing CPU-SB30 series, it adopts the low-power platform with Intel (R) Atom(TM) Processor Z530P, US15WP chipset that realizes lower power consumption and speeding-up while ensuring sufficient performance.

Contributing to compact device design.   Fits a PC with expansion capability into a small size (94.0(W) x 120.0(D) x 74.7(H)).
Encased in a compact cabinet (94.0(W) x 120.0(D) x 74.7(H)), this product has a range of interfaces such as VGA, USB2.0 x 4, RS-232C x 2, LAN x 2 (1000BASE-T, 100BASE-TX), audio and F&eIT I/F (for F&eIT Series device modules).   This product also has the PCIe Connector that can be connected to an external expansion chassis.   The external dimension is same as that of the existing CPU-SB30 series, so it can be replaced with the existing system.

Fanless design that reduces maintenance work
This product's spindleless design eliminates the CPU fan and adopts CF card for the storage.   The use of parts that degrade over time is minimized to facilitate maintenance.

Remote power management function to reduce operation tasks
Supports system startup by external device over network (Wake-on-LAN) and by modem reception (power on by ring). It encourages significant labor saving in operation.

Major types of peripherals are supported with rich interfaces including the two CF card slots
It has a variety of extended interface such as 1000BASE-T x 2, USB2.0 x 4, serial (RS-232C) x 2.   It has two CF card slots, providing the ability to separate data from the operating system, as well as the convenience of being able to use one slot for system startup and the other for maintenance or for taking home system logs or collected data.

Possibly used as a controller for a measurement/control/communication device from the F&eIT Series
This product can be used as a controller for a measurement/control/communication device from the F&eIT Series.
The measurement/control/communication devices which can be used include digital I/O, analog I/O and serial communication modules.

Up to eight F&eIT Series device modules can be connected to the F&eIT I/F
The F&eIT I/F can accommodate up to eight F&eIT Series device modules (maximum total current of each module is 3A or less).

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 PCI/PCI Express expansion board.

Possibly installed in 35mmDIN rail
A detachable metal installation part for attaching the main unit to a 35mm DIN rail is bundled by default, which can be used according to the installation conditions.   The system features a unique configuration for its connection to a module on the side in a stacking manner, which allows you to configure the system simply and elegantly without using backplanes and other connecting devices.

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. For Windows Embedded Standard installed model, it is possible to use the EWF*1 function of OS. It is designed for safety required for embedding purpose, for example, prohibiting unwanted writing to the CF card with EWF function will relieve the concern about the writing limits to the CF card and prevent an unintentional system alteration.
*1   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.

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.

Supported OS

・Windows Embedded Standard 2009

Specifications

Item		BX-300-DC5xxx
CPU		Intel® Atom™ Processor Z530P 1.60GHz (FSB533MHz)
Chip Set		Intel® US15WP
BIOS		BIOS (mfd. by Award)
Memory		1GB, 200pin SO-DIMM socket x 1, PC2-4300 (DDR2 533) DDR2 SDRAM support
Graphic		
	Controller	Built in Intel® US15WP
	Video RAM	Main memory shared
	Video BIOS	64KB (C0000H-CFFFFH)
	System resolution / Analog RGB	640 x 480, 800 x 600, 1,024 x 768, 1,280 x 768, 1,280 x 1,024, 1,360 x 768, 1,400 x 1,050, 1,920 x 1,200@60Hz (16,770,000 colors, ReduceBlanking)
Audio		HD Audio compliant, LINE OUT x 1, MIC IN x 1
LAN *2		Intel 82574L Controller 1000BASE-T/100BASE-TX/10BASE-T (Wake On LAN support)
USB		USB 2.0 compliant
Serial I/F		RS-232C (General purpose) : 2 ports, Baud rate : 50 - 115,200bps
Hardware monitoring		Monitoring CPU temperature, power voltage
RTC/CMOS		Lithium backup battery life: 10 years or more. The real-time clock is accurate within ±3 minutes (at 25°C) per month (US15WP integrated RTC).
Power Management		Power management setup via BIOS, Power On by Ring /Wake On LAN, Supports PC98/PC99 ACPI Power management
LED Display		Power, CompactFlash access, user programmable LED x 2
F&eIT I/F		It can be accommodated up to 8 F&eIT series device modules.
BUS EXPANDE(PCIe)		PCI Express 1.0a(x1) compliant, PCI Express cable port
Interface		
	Display	1 port (15 pin HD-SUB connector [Analog RGB] x 1
	Audio	LINE OUT: φ3.5 Stereo mini jack, Full-scale output level 1.2Vrms (Typ.), Dual 60mW Amplifier MIC IN: φ3.5 Stereo mini jack, Full-scale input level 1.6Vrms (Typ.)
	CF card slot	2 solt (CF1/CF2), CF CARD Type I x 2, bootable BX-300-DC5000 : -, BX-300-DC5311 : Built-in CF card slot contains a CF card. (2GB, 1 partition)*1
	LAN *2	2 port (RJ-45 connector)
	USB	4 port (host: TYPE-A connector x 4)
	RS-232C	2 port (9 pin D-SUB connector [male])
	F&eIT	1 port
	PCI Express cable	1 port (18 pin PCI Express cabling connector)
Power supply		
	Rated input voltage	12 - 24VDC *3
	Range of input voltage	10.8 - 31.2VDC
	Power consumption (Max.)	12V 1.8A, 24V 1.0A(USB I/F, F&eIT I/F, Power supply : none) 12V 4.3A, 24V 2.3A(USB I/F, F&eIT I/F, Power supply : have)
	External device power supply capacity	CF card slot : +3.3V 1A(500mA x 2), USB I/F : +5V 2A (500mA x 4), F&eIT I/F : +5V 3A
Physical dimensions (mm)		94 (W) x 120(D) x 74.7(H) (No protrusions)
Weight		About 1.1kg (Excluding attachment fittings)

*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: If you use the 1000BASE-T, be careful of the operating temperature. For more details on this, refer to chapter3, Installation Requirements.
*3: Use a power cable shorter than 3m.

Installation Environment

Model		BX-300-DC5xxx
Ambient specifications	Operating temperature *4	0 - 50°C (When using 1000BASE-T : 0 - 45°C)
	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)
	Line-noise resistance / 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 - 57Hz/semi-amplitude 0.15 mm 57 - 500Hz/2.0G, 40 min. each in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
	Impact resistance	15G, half-sine shock for 11 ms in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
	Grounding	Class D grounding, SG-FG / continuity

*4 : For more details on this, please refer to chapter 3, "Installation Requirements".
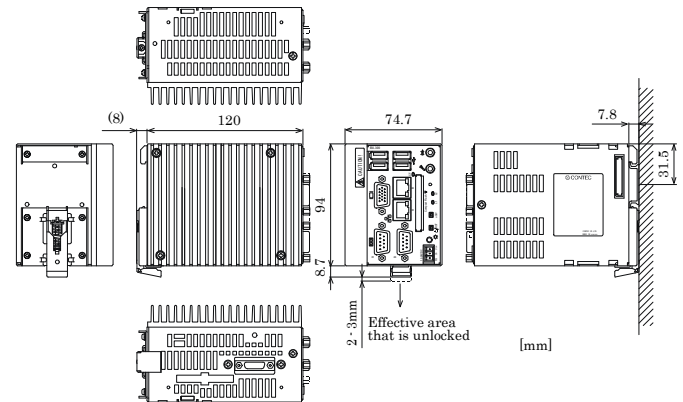*5 : When DLP75-24-1 mfd. by TDK ramda is used.

Physical Dimensions

Including screw hole dimensions
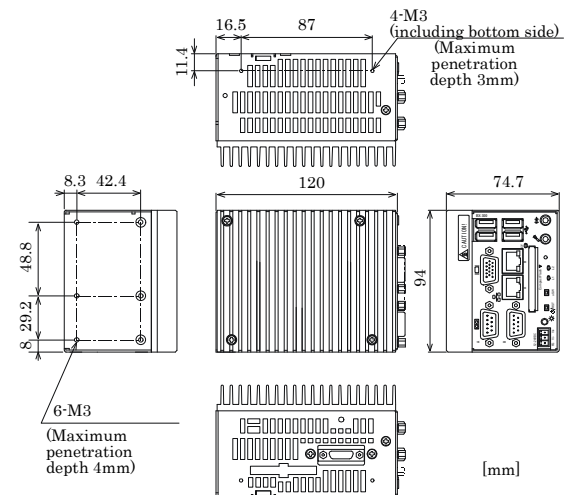
* The length (L) from the surface of the cabinet to the screw tip should be 3mm or less in case of the ceiling and bottom face, 4mm or less in case of the back face.

When mounting the DIN rail installation metal fittings

* When you fasten the bundled attachment fittings to be fixed to the body, you should use the attached screws (M3 x 6). Otherwise, the length (L) from the surface of the cabinet to the screw tip should be 4mm or less.

Packing List

Packing List	BX-300-DCxx00 [Base model]	BX-300-DCxx11 [OS Pre-install model]
Name	Pcs.	Pcs.
Module	1	1
First step guide	1	1
Power connector	1	1
F&eIT module fixing parts	2	2
DIN rail installation metal fittings	1 set	1 set
Rubber feet	4	4
CF Card Retaining Bracket	1	1
CF Card Retaining Bracket (bottom side)	1	1 *1
3-points built-in screw M3 x 7	6	6
3-points built-in screw M3 x 5	4	4
IPC Precaution List	1	1
Royalty consent contract(For OS)	None	1
Royalty consent contract (For Recovery Soft)	None	1
Recovery Procedure Document	None	1
OS Setup Procedure Document	None	1
Notes on using Windows Embedded Standard	None	1
Recovery Media	None	1

*1 It is attached to the main body.

* User's manual or driver library for using F&eIT Series device module is not attached to this product. Downloading them from the CONTEC Website is needed. If you use them in an environment other than pre-install OS, download IPC-SLIB-01 (driver & utility software set) from the CONTEC Website, as necessary.

Support Software

Driver library API-SBP(W32)
(Available for downloading (free of charge) from the CONTEC web site.)

It is the Windows version driver library software that provides stack-connected commands to F&eIT series measurement/control/ communication device module in the form of Win32 API functions (DLL).
Various programming languages such as Visual Basic and Visual C++ can be used to create high-speed application software which maximizes the features of the F&eIT module.
In addition, a diagnostic program, which is useful for operation verification, is also provided.
< Operating environment >
OS   Windows Embedded Standard 2009, Windows XP

Adaptation language   Visual C++, Visual Basic, etc.

You can download the updated version from the CONTEC's Web site (https://www.contec.com/contact/).   For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.
* API-SBP(W32) and API-PAC(98/PC) cannot be used at the same time.   Use the WDM driver of API-PAC.

Option List

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

TFT color liquid-crystal display

<Analog RGB types>

FPD-H21XT-AC	(15 inch 1024 x 768 dots, Panel mounted type)
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)

Touch-panel cable for an analog RGB display
IPC-CBL3-2	AT host Touch panel, COM cable (2m)
IPC-CBL3-5	AT host Touch panel, COM cable (5m)

PCI Bus Expansion Chassis
ECH-PCI-CE-H4D   Short size, 4-Slots, Silver

Component Locations

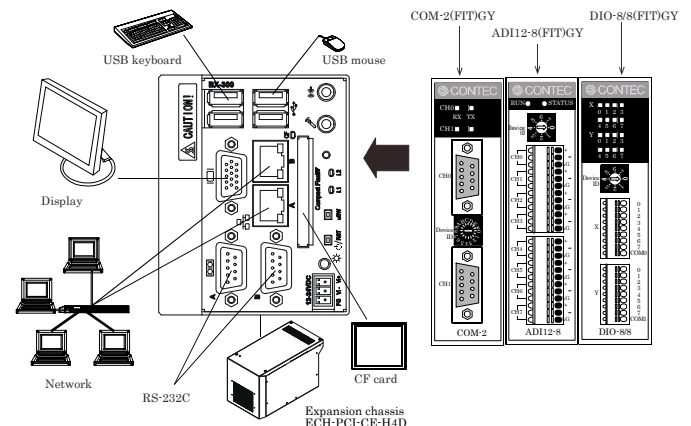| Name	Function
POWER LED	Power ON display LED
ACCESS LED	CF disk access display LED
L1, L2	User Programmable LED x 2
DC-IN	DC power input connector
POWER / RESET-SW	Power switch, Reset switch
uSW	User Programmable Switch
USB	USB port TYPE-A connector x 4
A-RGB	Display (15pin D-SUB/female)
LAN A	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
SERIAL A	Serial port 1 connector (9pin D-SUB/male)
SERIAL B	Serial port 2 connector (9pin D-SUB/male)
CF1	CF card slot (IDE connection slaving)
CF2	CF card slot (IDE connection mastering)
MIC	Microphone input (ϕ3.5 PHONE JACK)
LINE OUT	Line out (ϕ3.5 PHONE JACK)
BUS EXPANDER (PCIe)	PCI Express Cable connector (18pin PCI Express External Cabling/female)
F&eIT I/F	Max. 8 units of F&eIT series device module is connectable

Device Module Compatibility Table

Opto-isolated Digital Input/Output Module
DI-16(FIT)GY	12 - 24VDC 16 Inputs
DI-16H(FIT)GY	36 - 48VDC 16 Inputs
DI-32(FIT)GY	12 - 24VDC 32 Inputs
DIO-8/8(FIT)GY	12 - 24VDC 8 Inputs/8 Outputs
DIO-8/8H(FIT)GY	36 - 48VDC 8 Inputs/8 Outputs
DO-16(FIT)GY	12 - 48VDC 16 Outputs
DO-32(FIT)GY	12 - 48VDC 32 Outputs
DI-8(FIT)GY	12 - 24VDC 8 Inputs
DIO-16/16(FIT)GY	12 - 24VDC 16 Inputs 12 - 48VDC 16 Outputs
DIO-4/4(FIT)GY	12 - 24VDC 16 Inputs 12 - 48VDC 4 Outputs
DO-8(FIT)GY	12 - 48VDC 8 Outputs

Digital Input/Output Module
DIO-8D(FIT)GY	5VDC 8 Inputs/Outputs

Reed relay Contact Output Module
RRY-4(FIT)GY	125VAC/30VDC 2A, 4 Outputs

Opto-isolated Analog Input/Output Module
ADI12-8(FIT)GY	Input 12bit 8ch
ADI16-4(FIT)GY	Input 16bit 4ch
DAI12-4(FIT)GY	Output 12bit 4ch
DAI16-4(FIT)GY	Output 16it 4ch

Pt100 Temperature Sensor Input
PTI-4(FIT)GY	Pt100 temperature input, 4 channels

Opto-isolated Counter Module
CNT24-2(FIT)GY	24bit UP/DOWN,2 channels
CNT16-8(FIT)GY	16bitUP 8channels, 12 - 24VDC
CNT16-8L(FIT)GY	16bitUP 8channels, 5VDC

Serial Communication Module
COM-2(FIT)GY	RS-232C 2ch
COM-1PD(FIT)GY	RS-422A/RS-485 1ch

GPIB Communication Module
GP-IB(FIT)GY	GPIB 1ch

Motion Control Module
SMC-2DL-FIT	2ch

System Configuration

Installation Requirements

There are limits to the ambient temperature range depending on the installation orientation.

Be sure that the operating 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.
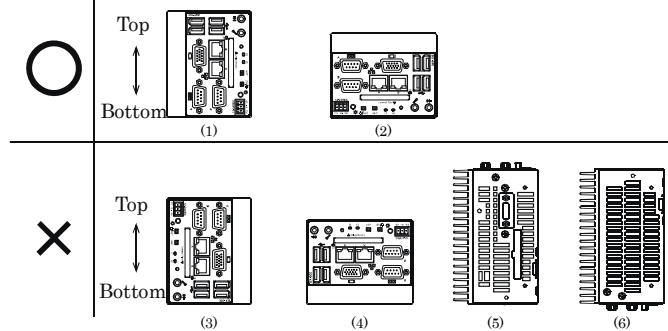
   Installable directions at operating temperature 0 - +50°C: (1)
   (When using 1000BASE-T: 0 - +45°C)
   Installable directions at operating temperature 0 - +35°C (2)
   (When using 1000BASE-T: 0 - +30°C)
   Installable directions that is unusable: (3), (4), (5), (6)

⚠ 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.   Use the attached rubber feet if Installable direction is (1) and there is a possibility of closing the ventilation hole in the bottom face.

Spacing between the system unit and any surrounding objects
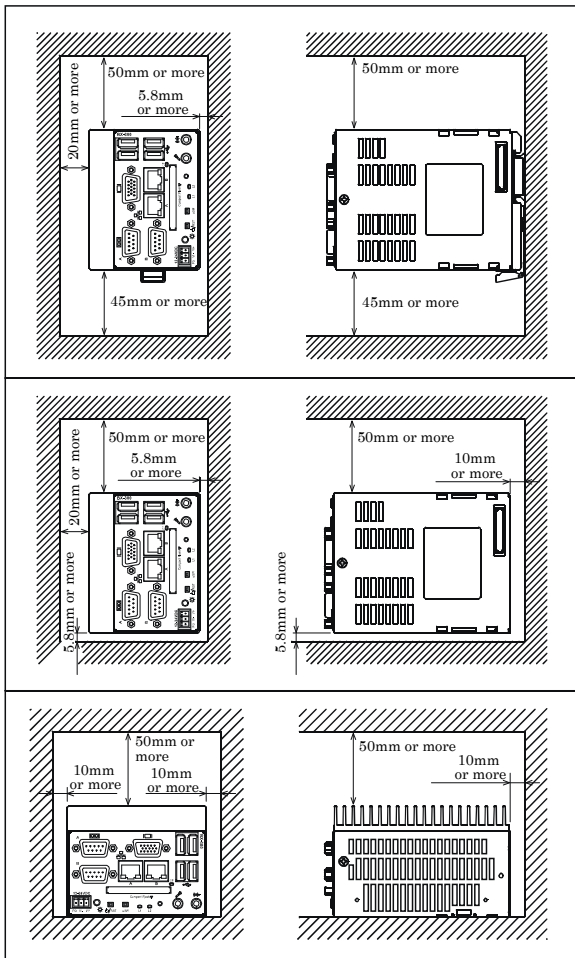
⚠ CAUTION

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.

Difference between BX300 and CPU-SB30

Difference between BX300 and the existing product CPU-SB30 Series is as follows :

	Microcontroller CPU-SB30	BX-PC BX300
CPU	Ultra Low Voltage Intel Celeron M Processor 1GHz (FSB400MHz)	Intel Atom Processor Z530P 1.60GHz (FSB533MHz)
Chipset	Intel 852GM + ICH4	Intel US15WP
Memory	512MB PC2100(DDR266) DDR SDRAM 200-pin SO-DIMM socket x 1	1GB PC2-4300(DDR2 533) DDR2 SDRAM 200-pin SO-DIMM socket x 1
Graphic controller	Built-in chipset	Built-in chipset (GMA500)
Interface		
Audio	LINE OUT(stereo) x 1, MIC IN(monaural) x 1 AC97 Audio	LINE OUT(stereo) x 1, MIC IN(stereo) x 1 HD Audio
CF card slot	1 slot (CF CARD Type I) OS boot-support, Primary IDE Master connection	2 slots (CF CARD Type I) OS boot-support, Primary IDE Master/Slave connection
LAN	2 ports 100BASE-TX(RJ-45) Chipset built-in controller 1000BASE-T(RJ-45) Intel 82541PI controller	2 ports (Wake On LAN-support) 1000BASE-T(RJ-45) Intel 82574L controller
External IDE	1 port For optical drive connection (40-pin), Bootable, Secondary IDE connection	None *
Bus Expander	None	1 port PCI Express Cable-enabled, Dedicated to the expansion chassis connection
Watch dog timer	1 - 255sec (255 level), Reset at the time of time-up	1 - 65535sec (65535 level), Reboot at the time of time-up
Hardware monitoring	CPU temperature, board temperature, Power- supply voltage	CPU temperature, Power supply voltage
Power supply	12 - 24VDC±5%	12 - 24VDC(10.8 - 31.2VDC)
Power consumption (Max.)	12V 2.4A, 24V 1.3A	<USB I/F, F&eIT I/F power supply none> 12V 1.8A, 24V 1.0A <USB I/F, F&eIT I/F power supply have> 12V 4.3A, 24V 2.3A
Operation checking OS	Windows XP Professional, Windows XP Embedded, Windows 2000 Professional, PC-DOS 2000 Ver.7.0J, TurboLinux 10 Server (2.6.8-1 kernel)	Windows Embedded Standard 2009 (01/2012)

*   Boot from the USB device is supported.   Prepare for the commercially available USB connection-type optical drive as necessary.