

Fanless, Low Voltage Core Duo L2400(1.66GHz)

**BX900 series**



The upper row is IPC-BX900P2, and the the lower is IPC-BX900

Model	Expansion Slot	OS (storage device)
IPC-BX900-AC500	None	-
IPC-BX900P2-AC500	PCI-Express (x1) slot x 1, PCI slot x 1	-

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

This product is an IBM PC/AT compatible, box computer designed for industrial use based on a low-power-consumption CPU of the Ultra Low Voltage Intel(R) Core(TM) Duo Processor L2400(1.66GHz), to operate as a completely nature-cooled (fanless) system.

IPC-BX900 series, which have a power-saving high-performance Core Duo processor, 945GME chip set, and 1GB DDR2 SDRAM memory, achieve a high-level computing and drawing ability. Moreover, IPC-BX900P2-AC5 series have one PCI-Express bus slot and one PCI bus slot. Various interfaces such as dual LAN / USB2.0 / CF card slot / RS-232C and the slot-in 3.5 inches SATA hard disk bay unit being installed, this product is widely usable as a platform based on the OS for the general-purpose PC.

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.

Other than this, the following one model is available.

Model with 4 expansion slots :

For more details on this, contact your retailer.

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.

**Features**

**Adoption of ultra-low voltage Core(TM) Duo Processor L2400 (1.66GHz), 945GME chip set, and 1GB of memory**

These products has the Intel's (R) power-saving high-performance, ultra-low-voltage Core Duo processor L2400(1.66GHz) FSB667MHz, Intel's (R) 945GME chip set, and 1GB DDR2 SDRAM memory, achieve a high-level computing and drawing ability. The adoption of an embedded-type CPU and chipset enables a stable power supply.

**Adoption of slot-in 3.5 inches SATA hard disk bay unit**

Slot-in method is adopted allowing easy install / removal. The operation in ambient temperature 40°C is realized by adopting aluminum-made hard disk bay for the enhanced heat radiation. Compared to former 2.5 inches IDE hard disk used for our IPC, larger capacity and faster speed are realized.

**Fan-less operation achieved by natural air-cooling**

The use of a power-saving CPU and naturally-cooled cabinet structure allows fanless operation.

**Dual LAN, USB2.0 x 6, CF card slots x 2, etc. located at the front for easier maintenance**

Extended interfaces such as 1000BASE-T x 2, USB2.0 x 6, serial (RS-232C) x 2 are all placed at the front, providing excellent maintenance advantages. In addition to a general-purpose analog RGB interface, the product has an LVDS interface, which enables dual screen display. Moreover, it has two CF card slots (Type I, bootable) that can use for OS and data. For Windows XP Embedded installed model, they are very useful because you can use one slot for system start-up and the other for maintenance, system log, or taking away the collected data.

**Expansion slots to hold PCI Express / PCI bus boards. (Only the model equipped with the extended slot)**

This product has one PCI-Express(x1) slot and one PCI slot. Board size that can be attached is 240(L) x 107(H)[mm].

**Safety design with an anti-disconnection mechanism and BIOS setting retention function**

Unnecessary trouble can be avoided by the use of clamps for prevention of cable disconnection and the use of metal fittings for prevention of CF card disconnection. Retention of CMOS data by EEPROM allows the system to start up even when the battery has run out. In addition, the use of a CONTEC-customized BIOS (mfd. by Award) allows support to be provided at the BIOS level.

**Installation-compatible with conventional products in the BX700(701/700),BX600(630/620/600) series**

For the installation-compatible with conventional products in the BX700(701/700),BX600(630/620/600) series, it is easy to migrate from the existing system.

**Supported OS**

- Windows XP Professional
- Windows XP Embedded

## Functional Specification

Model	IPC-BX900-AC5	IPC-BX900P2-AC5
CPU	Low Voltage Intel(R) Core(TM) Duo Processor L2400(1.66GHz), FSB667MHz	
Chip set	Intel(R) 945GME + ICH7M-DH	
BIOS	BIOS (mfd. by Award)	
Memory	1GB, 200pin SO-DIMM socket, PC2-4300 (DDR2 533) DDR2 SDRAM support	
Video	Controller	Built in Intel 945GME
	Video RAM	Main memory shared
	Video BIOS	64KB(C0000H-CFFFFH)
	Display I/F	Analog RGB I/F x 1 (15pin HD-SUB connector x 1) LVDS I/F x 1(26pin half pitch connector x 1)
System resolution	RGB	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, 1,360 x 768, 1,400 x 1,050, 1,600 x 900, 1,600 x 1,200, 1,856 x 1,392, 1,920 x 1,080, 1,920 x 1,200, 1,920 x 1,400, 2,048 x 1,539 (16,770,000 colors)
	LVDS	640 x 480, 800 x 600, 1,024 x 768(260,000 colors)
Audio	AC97 compliant LINE OUT: φ3.5 Stereo mini jack Full-scale output level 1.5Vrms (Typ.), Dual 50mW Amplifier MIKE IN: φ3.5 mono mini jack Full-scale input level 1.6Vrms (Typ.)	
Serial ATA I/F	Slot-in 3.5 inches SATA hard disk x 1 Serial ATA 1.0 compliant support	
	Windows XP Professional pre-install model : SATA HDD is finished mounting (one partition) The other model : It is not mounted.	
CF card slot	CF CARD Type 1 x 2 bootable	
	Windows XP Embedded pre-install model : CF1 is finished mounting CF (2GB, one partition) *1 The other model : It is not mounted.	
Serial I/F	RS-232C (general-purpose) : 2ch (SERIAL PORT1, 2) 9pin D-SUB connector (male) Baud rate : 50 - 115,200bps For touch panel communication : 1ch (SERIAL PORT3) in LVDS connector RS-422/485 (general-purpose): 1ch (SERIAL PORT5) in RAS connector	
LAN	I/F	1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector x 2 (Wake On LAN support)
	Controller	Intel 82573L Controller
USB I/F	6ch (USB 2.0-compliant)	
Keyboard/mouse I/F	None *2	
General-purpose I/O	3 opto-isolated inputs and outputs (However, one output also serves as an external WDT output and one input also serves as remote reset. They become available when switched.)	
RAS function	WDT: 1sec - 255sec (RESET, interrupt or external output is allowed at time expiration) Remote reset: External input signal	
Hardware monitoring	Monitoring CPU temperature, board temperature, power voltage	
Expansion board slot	None	PCI-Express (x1) slot x 1, PCI slot x 1, Usable board dimension : 240mm (Max.)
	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 built in RTC)		
Power Management	Power management setup via BIOS Modem Ring On/Wake One LAN Supports PC98/PC99 ACPI Power management	
	Power supply	Input supply voltage Raiting : 100 - 240VAC (50/60Hz) input automatic operation switch Tolerance : 85-264VAC (47 - 63Hz)
Expansion board power supply capacity	Current consumption	105VA (Max.)
	Expansion board power supply capacity	None
	External device power supply capacity	- CF card slot +5V: 500mA *3 - USB I/F +5V: 3A (500mA x 6) *3
	External device power supply capacity	- CF card slot +5V: 500mA *3 - USB I/F +5V: 3A (500mA x 6) *3 - Expansion board slot +12V : 0.5A, +5V: 1A *3, +3.3V: 1A, -12V : 80mA, -5V : Not supplied
Physical dimensions (mm)	262(W) x 262(D) x 65(H) (No protrusion)	262(W) x 262(D) x 120(H) (No protrusion)
	Weight	About 3.2kg (At the time of the HDD(SDD) uninstalling)
	About 3.9kg (At the time of the HDD(SDD) uninstalling)	

- \*1 The capacity of CF is a value when 1GB is calculated by one 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 The total capacity for power supply to external devices at +5 V must fall within 3 A.
- \* The PCI bus slots are 32-bit type, not verified for operation of boards for both 32-bit and 64-bit bus slots.

## Installation Environment Requirements

Item	Specification		
Power supply specifications	Allowable instantaneous	Less than 20ms	
	power outage	One minute each for 2.0kV AC (input - FG) 20mA	
	Dielectric strength	50MΩ (500VDC)	
	Operating temperature	0 - 50°C (Using the CF), 5 - 40°C (Using the HDD)	
Ambient specifications	Storage temperature	-10 - 60°C	
	Operating humidity	10 - 90%RH(No condensation)	
	Floating dust particles	Not to be excessive	
	Corrosive gases	None	
	Line-noise resistance	Line noise	AC line/±2kV, Signal line/±1kV (IEC61000-4-4Level 3, N61000-4-4Level 3)
		Static electricity resistance	Contact discharge/±4kV (IEC61000-4-2Level 2, EN61000-4-2Level 2) Atmospheric discharge/±8kV (IEC61000-4-2Level 3, EN61000-4-2 Level 3)
	Vibration resistance *5	Sweep resistance	10 - 57Hz/semi-amplitude 0.15mm 57 - 150Hz/2.0G 40 min. each in x, y, and z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
		Impact resistance *5	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)	

\*4 When the HDD is not in use.

## List of Options

### CF Card

CF-1GB-A	1GB CompactFlash for Fix Disk
CF-2GB-A	2GB CompactFlash for Fix Disk
CF-4GB-A	4GB CompactFlash for Fix Disk
CF-8GB-A	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)

<LVDS types>

FPD-H71XT-DC1 *1	(15 inch 1024 x 768 dots, Panel mounted type)
FPD-L71ST-DC1 *1	(12.1 inch 800 x 600 dots Panel mounted type)
FPD-S71VT-DC1 *1	(6.4 inch 640 x 480 dots Panel mounted type)
FPD-H75XT-DC1 *1	(15 inch 1024 x 768 dots, Embedded type)
FPD-L75ST-DC1 *1	(12.1 inch 800 x 600 dots, Embedded type)

\*1 Please Purchase an optional cable for connection [ FPD-26M26M-005, FPD-26M26M-020, FPD-26M26M-050 ].

### Display cable only for LVDS

FPD-26M26M-005	LVDS cable (0.5m)
FPD-26M26M-020	LVDS cable (2m)
FPD-26M26M-050	LVDS cable (5m)

### 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)

### Terminal block for connecting the RAS connector

IPC-PSD-20	Terminal block for connecting the RAS connector
------------	---

## Packing List

Name	IPC-BX900-AC5xx	IPC-BX900P2-AC5xx
BOX-PC	1	1
The attachment fittings	2	2
Slot cover	0	2
CF attachment fittings *4	1	1
AC cable	1	1
Screws for 3.5" drive (#6-32UNC x 5)	4	4
Screws for attachment fittings	4	4
Three-point sems screw (M4 x 8)	1	3
Screws for slot cover, CF attachment fittings	1	3
Three-point sems screw (M3 x 6)	1	1
AC cable clamp	1	1
USB/ sound cable clamp	2	2
Product guide (this sheet)	1	1
IPC Precaution List	1	1
Royalty consent contract	1 *3	1 *3
Setup Procedure Document	1 *3	1 *3
Notes on using Windows XP Embedded	1 *2 *3	1 *2 *3
IPC-SLIB-01 *1 (User's manual, Driver & Utility Soft Set)	1	1
Recovery Media	1 *3	1 *3

\*1 Please confirm latest information on the CONTEC homepage though the user's manual is stored in IPC-SLIB-01.

\*2 It is not packed to the Windows XP Professional pre-install model.

\*3 It is not packed to the OS uninstall model.

\*4 It is attached in advance to the main body in Windows XP Embedded pre-install model.

## 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

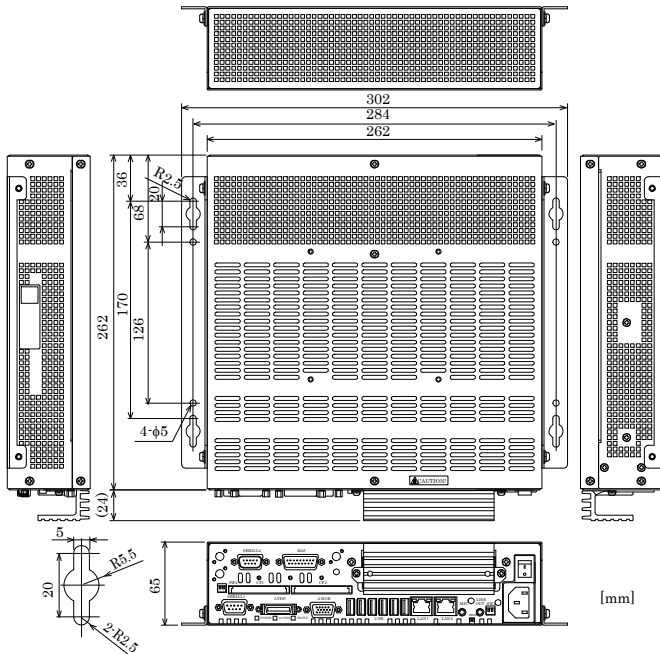
The OS-installed model uses a CF card in the OS storage area.

Estimated failure rates: 100,000 rewrite cycles, 1,000,000 hours MTBF

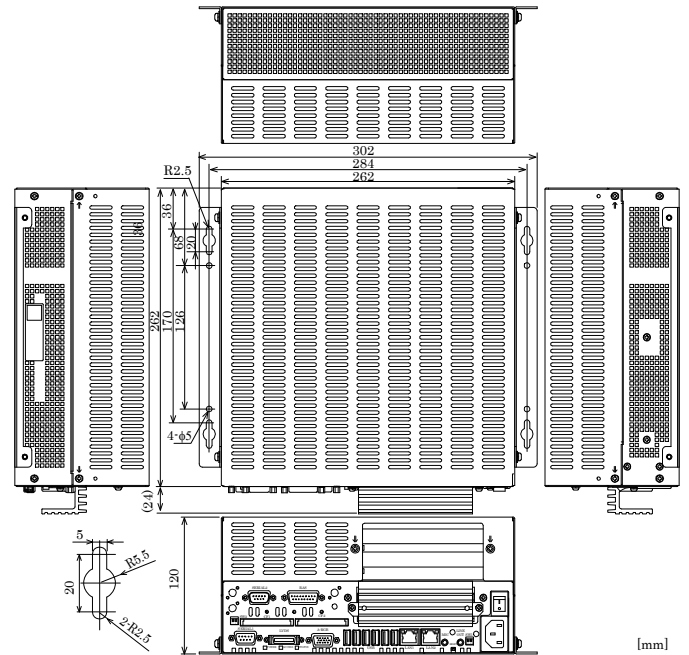
\* Replacement of expendables is handled as a repair (there will be a charge).

## Physical Dimensions

### IPC-BX900-AC5



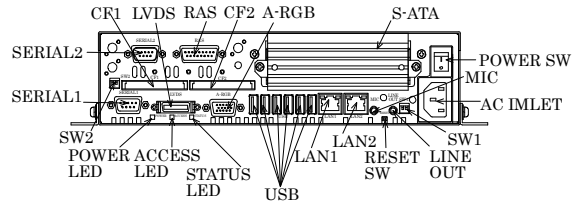
### IPC-BX900P2-AC5



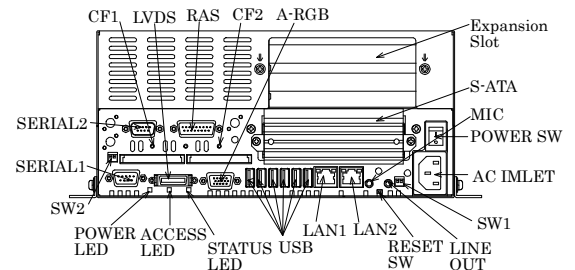
## Component Locations

### Front View

#### <IPC-BX900-AC5>

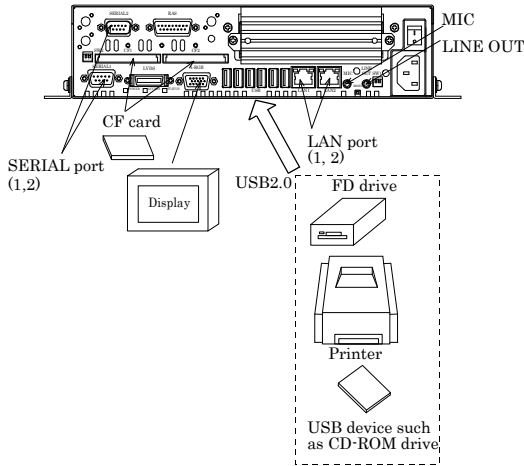


#### <IPC-BX900P2-AC5>



Name	Function
POWER SW	Power switch
AC INLET	AC power input connector
SW1	CMOS, RTC clear SW
SW2	General-purpose SW
POWER LED	Power ON display LED
ACCESS LED	IDE disk access display LED
STATUS LED	Status LED
RESET	Hardware reset switch
LINE OUT	Line out (φ3.5 PHONE JACK)
MIC	Mike in (φ3.5 PHONE JACK)
S-ATA	HDD slot (Serial-ATA)
CF1	CF card slot (IDE connection mastering)
CF2	CF card slot (IDE connection slaving)
LAN1	Ethernet 1000BASE-TX/100BASE-T/10BASE-T RJ-45 connector
LAN2	Ethernet 1000BASE-TX/100BASE-T/10BASE-T RJ-45 connector
USB	USB port connector x 6
SERIAL1	Serial port 1 connector (9pin D-SUB/male)
SERIAL2	Serial port 2 connector (9pin D-SUB/male)
RAS	RAS function and RS-485 connector (15pin D-SUB/female )
A-RGB	Display (15pin D-SUB/female)
LVDS	LVDS (26pin half pitch connector)
Expansion Slot	PCI-Express x 1 + PCI x 1 < P2 model >.

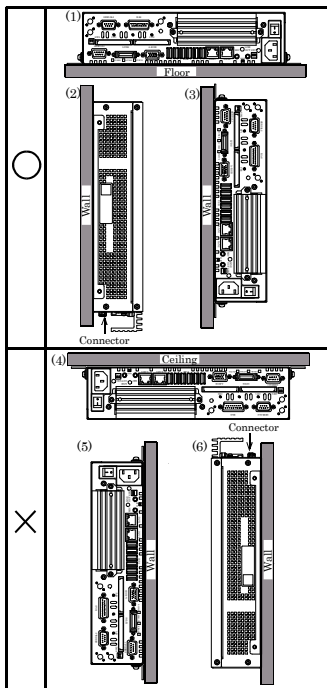
## System Configuration



## Installation Requirements

The BOX-PC can be installed in any orientation (1) through (3). Avoid orientation (4) through (6) since it might not adequately dissipate heat. In addition, take appropriate measures so that the ambient temperature falls within the range of installation environment conditions, such as keeping the system unit well-ventilated and sufficiently spaced its surroundings.

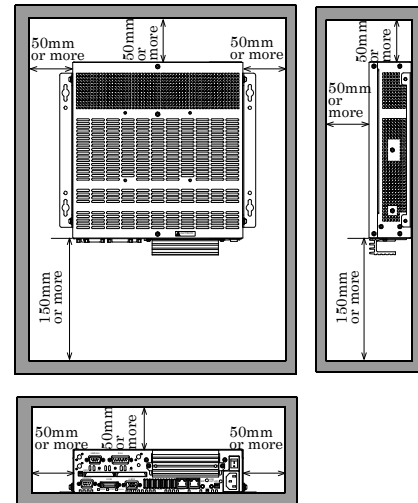
### Installation Orientation



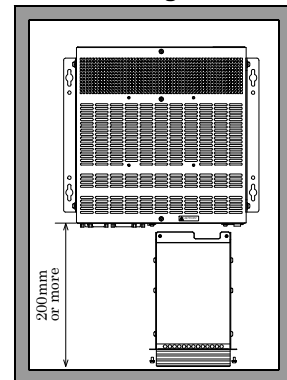
### CAUTION

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 the BOX-PC and Its Vicinity



### Minimum distance for installing / removing drive



### CAUTION

The wall temperature must be under the product assurance temperature.

Please adjust the air current to prevent the reject heat from the product staying around the product.

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.

