Fanless, Ultra Low Voltage Celeron M 1.06GHz

BOX-PC 710 series

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

Model	Expansion Slot	OS (storage device)
BX-710-AC5000	—	
BX-710P2-AC5000	PCI slot x 2	—
BX-710P4-AC5000	PCI/ISA slot x 4	

This product is an industrial personal computer (box computer®) that has a Ultra Low Voltage version of Celeron M Processor 1.06GHz that enables completely natural-air-cooling (fanless) operation.
The BX-710 series has a Ultra Low Voltage version of Celeron M Processor, a 945GME chipset, and 1GB of DDR2 SDRAM.
The BX-710P2 series has a Ultra Low Voltage version of Celeron M Processor, a 945GME chipset, and 1GB of DDR2 SDRAM as well as two slots of PCI buses.
The BX-710P4 series has a Ultra Low Voltage version of Celeron M Processor, a 945GME chipset, and 1GB of DDR2 SDRAM as well as four slots of PCI buses.
Various interfaces such as dual LAN / USB2.0 / CF card slot / RS-232C and the slot-in 2.5 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.

Features

Adoption of ultra-low voltage Celeron M Processor 1.06GHz, 945GME chip set, and 1GB of memory

A power-thrifty Ultra Low Voltage version Celeron M Processor 1.06GHz/FSB533MHz, an Intel® 945GME chipset, and 1GB of memory as standard specifications.   The adoption of an embedded-type CPU and chipset enables a stable power supply.

Adoption of slot-in 2.5 inches SATA hard disk bay unit

Slot-in method is adopted allowing easy install / removal.

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.   Plus, it has two CF card slots (Type I, bootable) that are very useful in enabling separate handling of OS and data, allowing an operation style in which maintenance data, system log, and/or collected data can be taken out for further work at other locations.

Expansion slots to hold PCI bus boards (Model with Expansion Slot).

BX-710P2-AC5 has two PCI slots.
BX-710P4-AC5 has four PCI slots.
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.

Structure free from mechanical moving parts (Windows Embedded Standard-installed model)

The use of a CF card or a SSD for the storage device has eliminated any moving parts, improving the levels of the environment resistance (ambient temperature, impact, vibration), reliability and quietness.   It is possible to use the EWF function of OS.   It is designed for safety required for embedding purpose, for example, prohibiting unwanted writing to the CF card or the SSD with EWF function will relieve the concern about the writing limits to the CF card or the SSD and prevent an unintentional system alteration.

* **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.**

Installation-compatible with conventional products in the IPC-BX 900/701/700/630/620/600 series

For the installation-compatible with conventional products in the IPC-BX 900/701/700/630/620/600 series, it is easy to migrate from the existing system.

Supported OS

Windows XP Professional
Windows Embedded Standard 2009

Features

Functional Specifications

Model		BX-710-AC5	BX-710P2-AC5	BX-710P4-AC5
CPU		Ultra Low Voltage Intel® Celeron® M Processor 1.06GHz (FSB533MHz)		
Chip set		Intel® 945GME + ICH7M-DH		
BIOS		BIOS (mfd. by Award)		
Memory		1GB, 200pin SO-DIMM socket, PC2-4300 (DDR2 533) DDR2 SDRAM support		
Graphic				
	Controller	Built in Intel 945GME		
	Video RAM	Main memory shared		
	Video BIOS	64KB(C0000H-CFFFFH)		
System resolution	Analog RGB	640 x 480, 800 x 600, 1,024 x 768, 1,152 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 1,536 (16,770,000 colors)		
	LVDS	640 x 480, 800 x 600, 1,024 x 768 (26,000,000 colors)		
Audio		AC97 compliant, LINE OUT x 1, MIC IN x 1		
Storage	SATA	Serial ATA 1.0 compliant support： 1 port		
LAN		Intel® 82573L Controller 1000BASE-T/100BASE-TX/10BASE-T x 2 (Wake On LAN support only A side of the main body silk.)		
USB		USB 2.0-compliant 6 port		
Serial I/F		RS-232C (general-purpose)：2 port, Baud rate：50 - 115,200bps RS-232C (for touch panel communication)：1 port, RS-422/485 (general-purpose): 1 port, Baud rate：50 - 115,200bps		
RAS	Watch dog timer	1sec - 255sec (RESET, interrupt or external output is allowed at time expiration)		
	Remote reset	External input signal		
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.)		
Hardware monitoring		Monitoring CPU temperature, board temperature, power voltage		
RTC/CMOS		ICH7M-DH built in. The real-time clock is accurate within 3 minutes (at 25 C) per month. Lithium backup battery life: 10 years or more		
Power Management		Power management setup via BIOS. Modem Ring On/Wake One LAN. Supports PC98/PC99 ACPI Power management.		
Interface				
	Display	2 port (15pin HD-SUB connector [Analog RGB] x 1, 26 pin half pitch connector [LVDS] x 1)		
	Audio	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 1.6Vrms (Typ.)		
	CF card slot	2 slots (CF1/CF2), CF CARD Type I, bootable Windows Embedded Standard pre-install CF model：CF (2GB) is finished mounting (one partition)		
	HDD	2 slots , Slot-in method, 2.5 inches SATA hard disk Windows XP Professional pre-install model：SATA HDD (80GB) is finished mounting (one partition) Windows Embedded Standard pre-install SSD model：SATA SSD (2GB) is finished mounting (one partition) The other model：It is not mounted.		
	LAN*2	2 port (RJ-45 connector)		
	USB	6 port (A-TYPE connector)		
	RS-232C	2 port (9 pin D-SUB connector [male])		
	RS-422/485/ General-purpose I/O/RAS	1 port (15 pin D-SUB connector [female])		
	Expansion board slot	None	PCI slot x 2, Usable board dimension：240mm (Max.)	PCI slot x 4, Usable board dimension：240mm (Max.)
Power supply	Power supply connector	100-240VAC(50/60Hz) input automatic operation switch		
	Input power supply voltage	85 - 264VAC (47 - 63Hz)		
	Current consumption	90VA (Max.)	115VA (Max.)	130VA (Max.)
	Expansion board power supply capacity	None	+12V 0.5A, +5V 1A, +3.3V 1A, -12V 80mA, -5V Not supplied	+12V 0.5A, +5V 2A, +3.3V 2A, -12V 80mA, -5V Not supplied
	External device power supply capacity	CF card slot ：+5V 500mA *1 USB I/F ：+5V 3A (500mA×6) *1	CF card slot ：+5V 500mA *1 USB I/F ：+5V 3A (500mA×6) *1 Expansion board slot (total 2 slot) ：+12V 0.5A, +5V 1A *1, +3.3V 1A, -12V 80mA, -5V Not supplied	CF card slot +5V 500mA *1 USB I/F ：+5V 3A (500mA×6) *1 Expansion board slot (total 4 slot) ：+12V 0.5A, +5V 2A *1, +3.3V 2A, -12V 80mA, -5V Not supplied
Physical dimensions (mm)		262(W) x 262(D) x 55(H) (No protrusion)	262(W) x 262(D) x 115(H) (No protrusion)	262(W) x 262(D) x 155(H) (No protrusion)
Weight		約 3.1kg (At the time of the HDD(SSD) uninstalling)	約 3.9kg (At the time of the HDD(SSD) uninstalling)	約 4.3kg (At the time of the HDD(SSD) uninstalling)

*1 The total of the external device power supply load for +5V should be 3A or lower.　　* The PCI bus slot is for 32 bit specification. No operational tests are done for the 32/64 bit boards.

Installation Environment Requirements

	Parameter		Requirement description
Power supply specifications	Allowable instantaneous power outage		Less than 20ms
			One minute each for AC2.0kV (input - FG) 20mA
	Dielectric strength		50MΩ (500VDC)
Ambient specifications	Operating temperature		0 - 50°C (SSD in use), 0 - 45°C (HDD in use)
	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, Signal line/±1kV (IEC61000-4-4Level 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 *1	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 *1		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)

*1   When the HDD is not in use.

List of Options

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
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	(15inch 1024 x 768 dots, Panel mounted type)
FPD-L21ST-AC	(12.1inch 800 x 600 dots, Panel mounted type)
FPD-M21VT-AC	(10.4inch 640 x 480 dots, Panel mounted type)

< LVDS&DVI input type >

FPD-H71XT-DC1 *1	(15inch 1024 x 768 dots, Panel mounted type)
FPD-L71ST-DC1 *1	(12.1inch 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	(15inch 1024 x 768 dots, Embedded type)
FPD-L75ST-DC1 *1	(12.1inch 800 x 600 dots, Embedded type)
FPD-M75VT-DC1 *1	(10.4 inch 640 x 480 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

⚠ CAUTION
Precautions when using products other than our options
- If a product other than our option is used, the normal operation may be impaired or the functions may be limited.

Packing List

Name	BX-710-AC5xxx Pcs.	BX-710P2-AC5xxx Pcs.	BX-710P4-AC5xxx Pcs.
BOX-PC	1	1	1
The attachment fittings	2	2	2
Slot cover	0	2	4
CF attachment fittings	2 *4	2 *4	2 *4
AC cable	1	1	1
Screws for attachment fittings Three-point sems screw (M4 x 8)	4	4	4
Screws for 2.5" drive, slot cover, CF attachment fittings Three-point sems screw (M3 x 6)	6	8	10
AC cable clamp	1	1	1
USB/ sound cable clamp	2	2	2
Product guide (this sheet)	1	1	1
IPC Precaution List	1	1	1
Royalty consent contract	1 *3	1 *3	1 *3
Setup Procedure Document	1 *3	1 *3	1 *3
Notes on using Windows Embedded Standard	1 *2 *3	1 *2 *3	1 *2 *3
Recovery Media*1	1 *3	1 *3	1 *3

*1   Please confirm latest information on the CONTEC homepage though the user's manual is stored in Recovery Media.   The installation method is described in this document as well as the UsersManual. [File storing place: ¥Manual]
*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 1pcs in CF 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) HDD   --- The OS-installed model with Windows XP Profettional uses a HDD for the OS storage area. Estimated service life: 5 years or 15,000 power on hours, whichever comes first.

(3) CF, SSD   --- The OS-installed model with Windows Embedded Standard 2009 uses a CF card or a SSD for the OS storage area. Estimated failure rates: 100,000 rewrite cycles, 500,000 hours MTBF

*   Replacement of expendables is handled as a repair (there will be a charge).
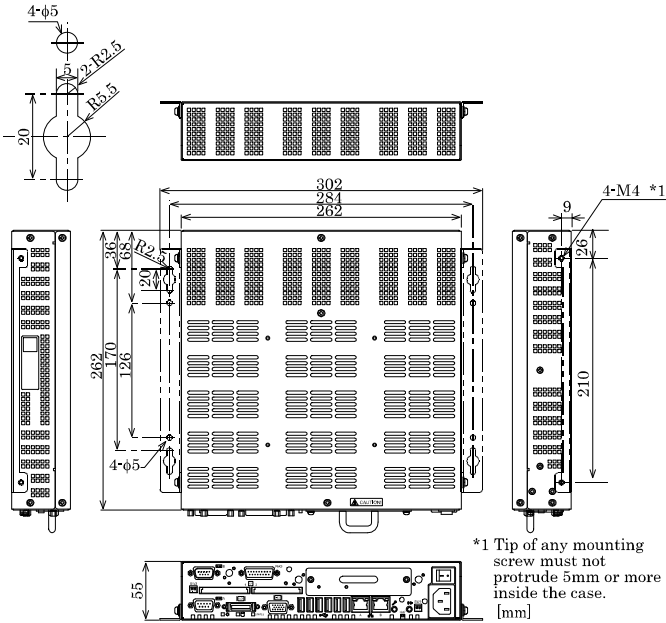
Difference from IPC-BX700 series

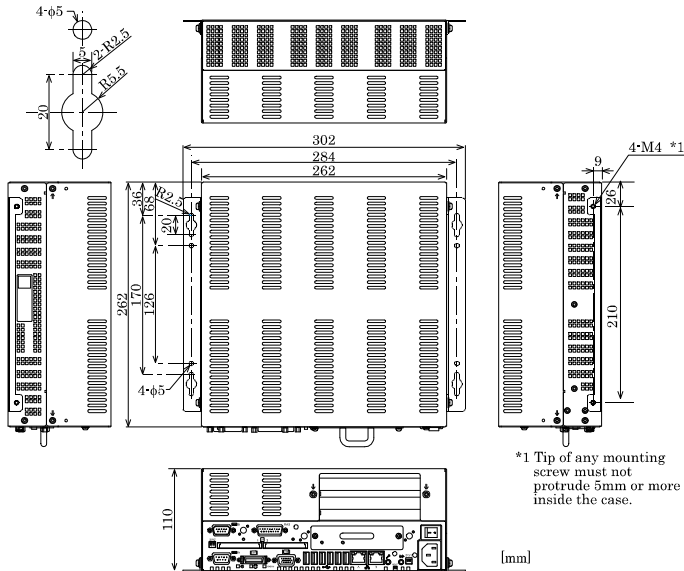The difference point with the IPC-BX700 series is shown in the following.

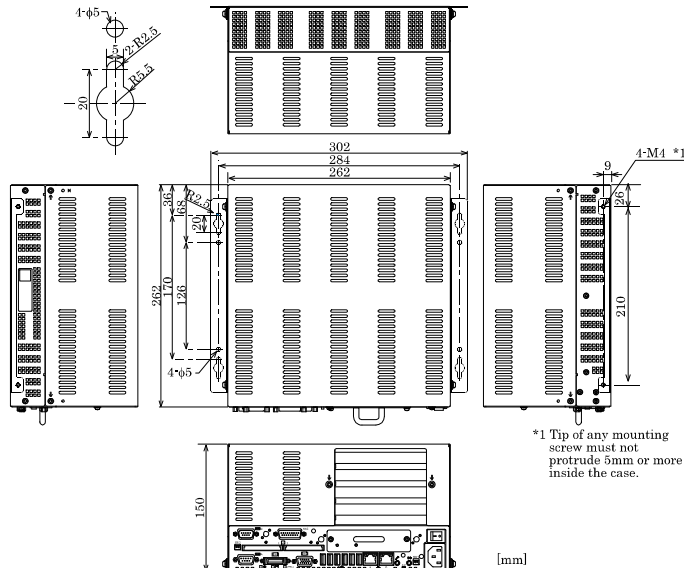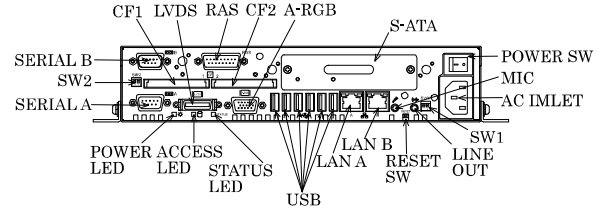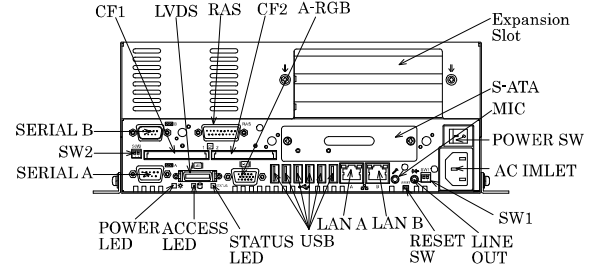|	IPC-BX700 series	IPC-BX701 series	BX-710 series
CPU	Ultra Low Voltage Intel® Celeron® M Processor 1.0GHz(FSB400MHz)	Ultra Low Voltage Intel® Celeron® M Processor 1.0GHz(FSB400MHz)	Ultra Low Voltage Intel® Celeron® M Processor 1.06GHz(FSB533MHz)
Chip set	Intel® 855GME	Intel® 855GME	Intel® 945GME + ICH7M-DH
Memory	512MB	1 GB	1 GB
System resolution (Max.)	1,600 x 1,200 (16,770,000 colors)	1,600 x 1,200 (16,770,000 colors)	2,048 x 1,536 (16,770,000 colors)
LVDS I/F	None	LVDS I/F x 1	LVDS I/F x 1
LAN	100BASE-TX/10BASE-T x 1	1000BASE-T x 1, 100BASE-TX/10BASE-T x 1	1000BASE-T × 2
Storage	2.5 inch IDE HDD or silicon disk drive	2.5 inch IDE HDD or silicon disk drive	2.5 inch SATA HDD
PS/2 I/F	1	1	None

Physical Dimensions

BX-710-AC5

4-φ5
2-R2.5
R5.5
20
302
284
262
4-M4 *1
9
126
36
68
20
262
170
126
210
4-φ5
55

*1 Tip of any mounting screw must not protrude 5mm or more inside the case.
[mm]

BX-710P2-AC5

4-φ5
2-R2.5
R5.5
20
302
284
262
4-M4 *1
9
126
36
68
20
262
170
126
210
4-φ5
110

*1 Tip of any mounting screw must not protrude 5mm or more inside the case.
[mm]

BX-710P4-AC5

4-φ5
2-R2.5
R5.5
20
302
284
262
4-M4 *1
9
126
36
68
20
262
170
126
210
4-φ5
150

*1 Tip of any mounting screw must not protrude 5mm or more inside the case.
[mm]

Component Name

BX-710-AC5

CF1 LVDS RAS CF2 A-RGB S-ATA
SERIAL B POWER SW
SW2 MIC
SERIAL A AC IMLET
POWER ACCESS STATUS LAN B RESET SW1
LED LED LED LAN A SW LINE OUT
USB

BX-710P2-AC5

CF1 LVDS RAS CF2 A-RGB Expansion Slot
S-ATA
MIC
SERIAL B POWER SW
SW2 AC IMLET
SERIAL A SW1
POWER ACCESS STATUS LAN A LAN B RESET LINE OUT
LED LED LED USB SW

BX-710P4-AC5

CF1 LVDS RAS CF2 A-RGB Expansion Slot
S-ATA
POWER SW
SERIAL B MIC
SW2 AC IMLET
SERIAL A
POWER ACCESS STATUS LAN A LAN B RESET SW1
LED LED LED USB SW LINE OUT

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 (f3.5 PHONE JACK)
MIC	Mike in (f3.5 PHONE JACK)
S-ATA	HDD slot (Serial-ATA)
CF1	CF card slot (IDE connection mastering)
CF2	CF card slot (IDE connection slaving)
LAN A	Ethernet 1000BASE-TX/100BASE-T/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-TX/100BASE-T/10BASE-T RJ-45 connector
USB	USB port connector x 6
SERIAL A	Serial port A connector (9pin D-SUB/male)
SERIAL B	Serial port B 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 x 2 < P2 model >, PCI x 4 < P4 model >

System Configuration

MIC
LINE OUT
CF card
SERIAL port
(A, B)
USB2.0
LAN port
(A, B)
Display
USB device
such as
CD-ROM drive
プリンタ

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

○
Floor
×
Ceiling
Wall   Wall   Wall   Wall

⚠ 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

50mm or more   50mm or more   50mm or more
50mm or more
150mm or more   150mm or more
50mm or more   50mm or more   50mm or more

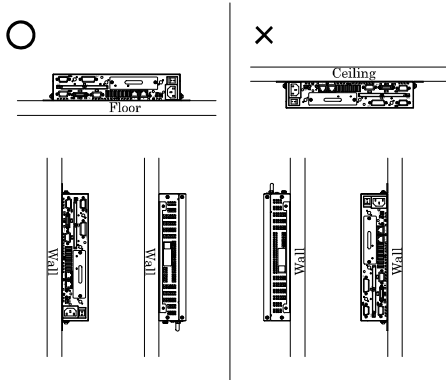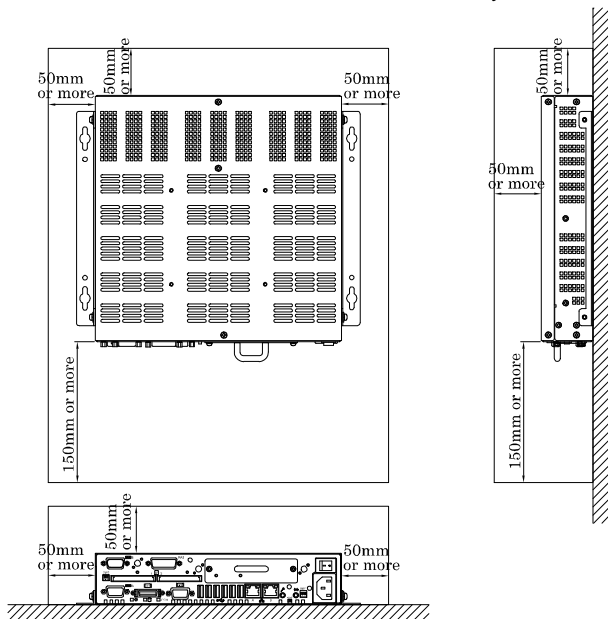Minimum distance for installing / removing drive

150mm or more
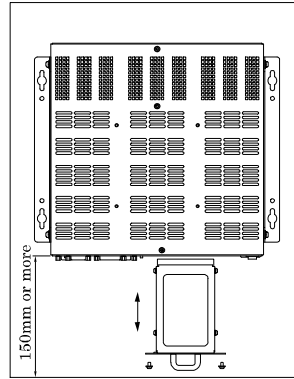
⚠ CAUTION
- The wall temperature must be under the product assurance temperature.
- Please adjust the air current to prevent the reject heat from the product staying around the product.
- Do not install this product into the fully-sealed space except the case in which the internal temperature is adjustable by equipment such as air conditioner. Troubles such as operational malfunctions could be occurred by the temperature increase caused by long-term usage.

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