Intel(R) Fanless, Atom Multi-signal I/O Model

BX-100n Series

Model	CPU	Memory	Pre-installed OS (storage device)
BX-100n-DC5000-C02	Intel Atom Processor N270 (1.60GHz)	1GB	None
BX-100n-DC5311-C02			Windows Embedded Standard (Japanese version), (2GB CF)

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

This product is a fanless PC for embedded use based on an Atom processor N270 and a 945GSE (GMA950 incorporated) chipset. Operates in less power while ensuring sufficient performance, and permits installation in an A4-sized or smaller footprint with about 50mm in height*1. The "resource-saving PC" contributes downsizing and power-saving of equipment to reduce your running cost and to promote energy efficiency.
It has analog I/O, digital I/O, and counter input features equivalent to three of CONTEC's measurement control boards (AIO-163202F-PE, DIO-1616L-PE, CNT-3204MT-LPE). Best for data collection and control employing various sensors/devices.
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 a Contec-customized BIOS allows support to be provided at the BIOS level.

*1 installed vertically

Features

Immediate measurement control enabled by internal analog I/O, digital I/O, and counter input features
It contains analog I/O, digital I/O, and counter input features equivalent to CONTEC's measurement control boards (AIO-163202F-PE, DIO-1616L-PE, CNT-3204MT-LPE). A set of this product features measurement control that can measure voltage, detect location, etc.

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 2 CF card slots that can use for OS and data. 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.

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.

Contributing to reduction of running cost and promotion of energy efficiency
It adopts the low-power platform with Intel (R) Atom(TM) Processor N270 1.60GHz (FSB 533MHz), 945GSE and ICH7M-DH chipset that realizes lower power consumption while ensuring sufficient performance.

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.

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.

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.

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 Embedded Standard (BX-100n-DC5311-C02)

Functional Specification

Model		Specification
CPU		Intel(R) Atom(TM) Processor N270 1.60GHz (FSB533MHz)
Chip set		Intel(R) 945GSE + ICH7M-DH
BIOS		BIOS (mfd. by Award)
Memory		1GB, 200pin SO-DIMM socket x 1, PC2-4300 (DDR2 533) DDR2 SDRAM support
Video	Controller	Built in Intel 945 GSE
	Video RAM	Main memory shared
	Video BIOS	64KB(C0000H-CFFFFH)
	Display I/F	DVI-I I/F x 1(29 pin connector x 1)
System resolution	DVI	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 (16,770,000 colors)
	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 (16,770,000 colors)
Audio		AC97 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.)
CF card slot		CF CARD Type I x 2 bootable
		BX-100n-DC5311-C02 : CF1 is finished mounting CF (2GB, 1 partition) *1
Serial I/F		RS-232C (general-purpose) : 2 channels (SERIAL PORT1, 2) 9pin D-SUB connector (male) Baud rate : 50 - 115,200bps
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		4 channels (USB 2.0-compliant)
Keyboard/mouse I/F		None *2
PCI Express cable		PCI Express 1.0a(x1) standard port (18-pin PCI Express External Cabling connector x 1)
Analog I/O equivalent to AIO-163202F-PE *3		Analog input : Single-end input 32channels, 16bit, 2μsec/ch(Max.) Analog output : 2channels, 16 bit, 10μsec(Max.) Digital I/O : 8channels for each, LVTTL Counter : 2channels, 32bit up count, 10MHz(Max.)
Digital I/O equivalent to DIO-1616L-PE *4		Digital input : 16channels Optocoupler isolated input 12 - 24VDC, corresponding to current sink output Digital output : 16channels Optocoupler isolated open collector output, current sink output
Counter input equivalent to CNT-3204MT-LPE *5		4channels, LVTTL, 32bit up down counter, 10MHz (Max.) 2-phase / single-phase / single-phase input with gate control
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 *6
	Range of input voltage	10.8 - 31.2VDC
	Power consumption	12V 4.0A (Max.), 24V 2.0A (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		About 2.1kg

*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 : For more details on this, refer to the manual for CONTEC's analog I/O board AIO-163202F-PE.
*4 : For more details on this, refer to the manual for CONTEC's digital I/O board DIO-1616L-PE.
*5 : For more details on this, refer to the manual for CONTEC's up down counter board CNT-3204MT-LPE.
*6 : Use a power cable shorter than 3m.

Installation Environment Requirements

Model			Specification
Ambient specifications	Operating temperature *7		0 - 50°C *9
	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 *8, 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 - 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

*7 For more details on page 4, please refer to "Installation Requirements".
*8 When AC/DC power unit "LDA100W-24-SN, LDA100W-12-SN" (by Cosel) is used.
*9 To use 1000BASE-T, you should keep its ambient temperature between 0 - 45°C.

List of Options

AC adapter

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

*1 The model whom can be installed in the main body by using a fixed bracket of the AC adaptor attachment is only a model equipped with multi signal I/O.

Bracket

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

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

< LVDS&DVI input type >

FPD-H71XT-DC1 *2 (15inch 1024 x 768 dots, Panel mounted type)
FPD-L71ST-DC1 *2 (12.1inch 800 x 600 dots, Panel mounted type)
FPD-S71VT-DC1 *2 (6.4 inch 640 x 480 dots, Panel mounted type)
FPD-H75XT-DC1 *2 (15inch 1024 x 768 dots, Embedded type)
FPD-L75ST-DC1 *2 (12.1inch 800 x 600 dots, Embedded type)
FPD-M75VT-DC1 *2 (10.4inch 640 x 480 dots, Embedded type)

*2 Please purchase the optional connection cable [IPC-DVI/D-020, IPC-DVI/D-050].

<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)

Display cable only for DVI input

IPC-DVI/D-020 DVI-D Cable (2m)
IPC-DVI/D-050 DVI-D Cable (5m)

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-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

Cable for Analog I/O

Shield Cable with 96-Pin D-SUB Connector at One End
: PCA96PS-0.5P (0.5m)
: PCA96PS-1.5P (1.5m)
Shield Cable with 96-Pin Half-Pitch Connectors at Both Ends
: PCB96PS-0.5P (0.5m)
: PCB96PS-1.5P (1.5m)
Flat Cable with 96-Pin Half-Pitch Connectors at One End
: PCA96P-1.5 (1.5m)
Flat Cable with 96-Pin Half-Pitch Connectors at Both Ends
: PCB96P-1.5 (1.5m)
Half Pitch 96P Female Connector Set(5 Pieces)
: CN5-H96F

Cable for Digital I/O

Flat Cable with 37-Pin D-SUB Connectors at either Ends
: PCB37P-1.5 (1.5m)
: PCB37P-3 (3m)
: PCB37P-5 (5m)
Shield Cable with 37-pin D-SUB connectors at either ends
: PCB37PS-0.5P (0.5m)
: PCB37PS-1.5P (1.5m)
: PCB37PS-3P (3m)
: PCB37PS-5P (5m)
Flat Cable with 37-Pin D-SUB Connector at One End
: PCA37P-1.5 (1.5m)
: PCA37P-3 (3m)
: PCA37P-5 (5m)
Shield Cable with 37-Pin D-SUB Connector at One End
: PCA37PS-0.5P (0.5m)
: PCA37PS-1.5P (1.5m)
: PCA37PS-3P (3m)
: PCA37PS-5P (5m)
37-pin D-SUB (Male) Connector Set (5 Pieces)
: CN5-D37M

Cable for Counter Input

Shield Cable for CardBus Counter Input Card
: CNT-68M/50M (0.5m)
Shield Cable with Two 68-Pin Connector
: PCB68PS-0.5P (0.5m)
: PCB68PS-1.5P (1.5m)
Shield Cable with One 68-Pin Connector
: PCA68PS-0.5P (0.5m)
: PCA68PS-1.5P (1.5m)

Accessory for Analog I/O

Buffer Amplifier Box for Analog Input Boards (32ch type)
: ATBA-32F *1*2
Terminal Unit for Cables (M2.5 x 96P) : DTP-64(PC) *1
Screw Terminal Unit (M3 x 96P) : EPD-96A *1 *3
Screw Terminal Unit (M3.5 x 96P) : EPD-96 *1
BNC Terminal Unit (for analog input 32ch)
: ATP-32F *1

1 PCB96PS - optional cable is required separately (recommended length = 0.5m).
*2 External power supply is required (optional AC adapter POA200-20 is available.)
*3 "Spring-up" type terminal is used to prevent terminal screws from falling off.

Accessory for Digital I/O

Screw Terminal Unit (M3 x 37P) : EPD-37A *1 *2
Screw Terminal Unit (M3.5 x 37P) : EPD-37 *1
General Purpose Terminal (M3 x 37P) : DTP-3A *1
Screw Terminal (M2.6 x 37P) : DTP-4A *1
Signal Monitor / Output Accessory for Digital I/O (32P)
: CM-32(PC)E *1

*1 PCB37P or PCB37PS optional cable is required separately.
*2 "Spring-up" type terminal is used to prevent terminal screws from falling off.

Accessory for Counter Input

Differential/TTL input conversion terminal for counter input
: CTP-4D *1
Screw Terminal Unit (M3 x 50P) : EPD-50A *1 *3
Screw Terminal Unit (M3 x 68P) : EPD-68A *2 *3

*1 CNT-68M/50M optional cable is required separately.
*2 PCB68PS-0.5P or PCB68PS-1.5P optional cable is required separately.
*3 "Spring-up" type terminal is used to prevent terminal screws from falling off.

Packing List

Name	BX-100n-DC5121-C01 Pcs.	BX-100n-DC5311-C02 Pcs.
BOX-PC	1	1
The attachment fittings	2	2
CF card removal prevention fitting	1	1 *1
USB removal prevention fitting (base)	1	1
USB removal prevention fitting (angle)	4	4
Washer assembled screw (M3 x 6)	4	4
Washer assembled screw (M3 x 8, black)	6	6
Washer assembled and cross recessed hexagonal bolt (M4 x 10, black)	4	4
Power supply connector complete set		
Power connector	1	1
Contact	4	4
Cable clamp	2	2
DVI-analog RGB conversion adapter	1	1
Product guide	1	1
IPC Precaution List	1	1
Royalty consent contract	None	1
Setup Procedure Document	None	1
Notes on using Windows Embedded Standard	None	1
Recovery Media *2	None	1

*1 It is attached to the main body.
*2 Please confirm latest information on the CONTEC homepage though the manual is stored in Recovery Media (¥MANUAL).

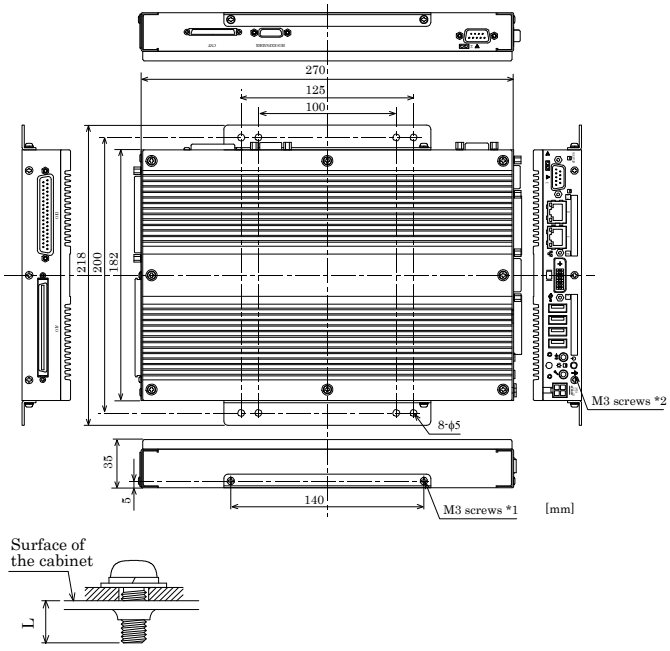
Component Life

(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
OS-installed model (BX-100n-DC5311-C02) 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

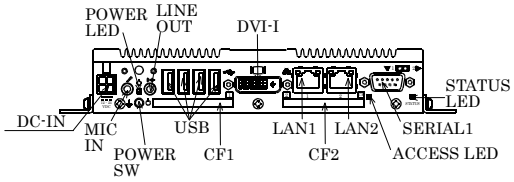


*1 : When you fasten the bundled attachment fittings to be fixed to the body, you should use the attached screws (M3 x 8).
Otherwise, the length (L) from the surface of the cabinet to the screw tip should be 6mm or less.

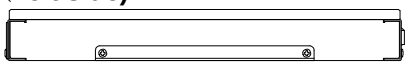
*2 : The length (L) from the surface of the cabinet to the screw tip should be 6mm or less.

Component Locations

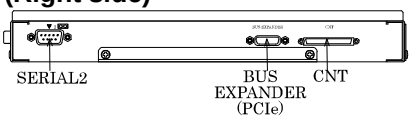
Front View



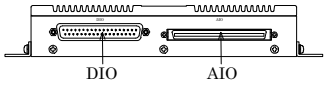
Side View (Left side)



Side View (Right side)

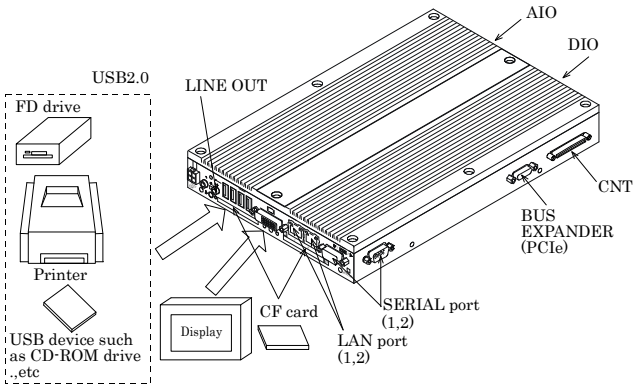


Back View



Name	Function
POWER-SW	Power switch
POWER LED	Power ON display LED
ACCESS LED	IDE disk access display LED
STATUS LED	Status LED
DC-IN	DC power input connector
LINE OUT	Line out (ϕ3.5 PHONE JACK)
MIC IN	Mike in (ϕ3.5 PHONE JACK)
LAN1	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN2	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
USB	USB port connector x 4
SERIAL1	Serial port 1 connector (9pin D-SUB/male)
SERIAL2	Serial port 2 connector (9pin D-SUB/male)
DVI-I	Display (29pin female)
CF1	CF card slot (IDE connection mastering)
CF2	CF card slot (IDE connection slaving)
BUS EXPANDER (PCIe)	PCI Express Cable connector (18pin PCI Express External Cabling/female)
AIO	Analog I/O connector (96pin half pitch connector/female)
DIO	Digital I/O connector (37pin D-SUB/male)
CNT	Counter connector (68pin 0.8mm pitch connector)

System Configuration



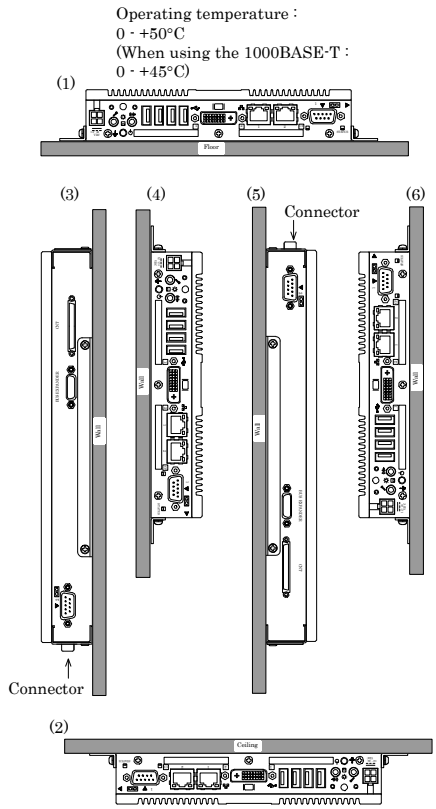
Installation Requirements

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.

Installable directions at operating temperature 0 - +50°C
: All type of installation (including diagonal installation)

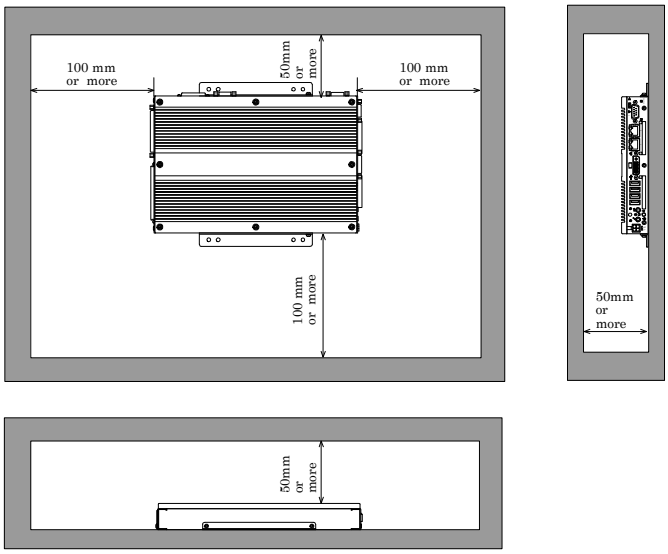
⚠ CAUTION
To use 1000BASE-T, you should keep its ambient temperature between 0 - 45°C

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 this product and its vicinity



⚠ 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.