⊚ CONTEC
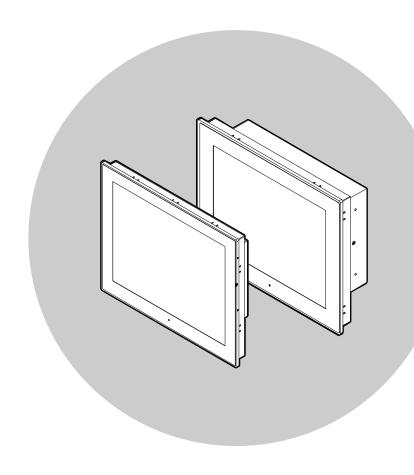
Reference Manual

PANEL computer with the high-performance 7th-generation Intel® CPU processor

XPT-T1000 Series

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CONTEC CO., LTD.

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Introduction

This section provides necessary information of the product such as the outline, bundled items and manuals before actual use.

1.Related Manuals

The manuals related to the product are listed below.

Read them as necessary along with this document.

◆ Must Read the Followings.

Name	Purpose	Contents	How to get
Product Guide	Must read this after opening the package.	This lists the product configuration and describes the precautions.	Included in the package (Printed matter)
Reference Manual (This document)	Read this when operating the product.	This describes the hardware aspects such as functions and settings.	Download from the Contec website (PDF)
IPC Precaution List	Read this before operating the product.	This describes the precautions when using the product.	Download from the Contec website (PDF)
MICROSOFT SOFTWARE LICENSE TERMS *1	Must read this after opening the package.	This describes the rights and conditions of user when using Windows software.	Download from the Contec website (PDF)
Manual for OS Pre-installed Type *1	Must read this after opening the package.	This describes the basic information of OS, and the procedures of setup and recovery.	Download from the Contec website (PDF)
AC Adapter User's Guide *2	Read this before operating the product.	Explains the specifications and precautions for the AC adapter.	Download from the Contec website (PDF)

*1 Reference for pre-installed type only.

*2 Refer to the AC adapter attached type only.

◆ Download MICROSOFT SOFTWARE LICENSE TERMS

Download it from the following URL.

| Download | https://www.contec.com/support/useterms/ |

◆ Download Manuals

Download the manuals accordingly from the following URL.

| Download | https://www.contec.com/download/ |

2.About the Product

This product is a fan-less, high-performance, industrial-use PANEL computer that is equipped with the 7th-generation Intel® Core™ i7-7600U/Core i5 7300U CPU processor. Along with its power-saving and high-performance features, this product has a rich variety of interfaces and achieves fan-less operation by way of natural air-cooling.

The size of LCD is selectable from 12.1-inch or 15-inch to suit the user's needs.

Various interfaces such as dual LAN / USB3.0 / DisplayPort / DVI-D / RS-232C, and the slot-in 2.5 inches SATA disk bay unit being installed. Additionally, the product employs 5-wire resistive touch to maintain the durability.
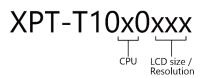
Embedded-type CPU has been adopted. The use of readily available parts ensures the product to be applied easily. In addition, Contec-customized BIOS allows support to be provided at the BIOS level.

Replaceable with our earlier products of the PT-956S series, this PANEL computer can be easily replaced into the existing system.

3.Product Lineup

This product is offered as a BTO model with customizable LCD size, OS, storage devices, and RAID configuration according to your needs, or as a pre-configured standard model.
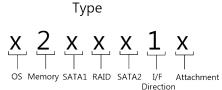
1. BTO Model

Base model

XPT-T10x0xxx

CPU   LCD size / Resolution

Base

Model	CPU	LCD size / Resolution
XPT-T1000LX	Core i7 7600U　processor	12.1inch / XGA (1024 x 768)
XPT-T1000HX		15inch / XGA (1024 x 768)
XPT-T1010LXC	Core i5 7300U　processor	12.1inch / XGA (1024 x 768) (PT-955LXC compatible)

Type

x 2 x x x 1 x

OS　Memory　SATA1　RAID　SATA2　I/F Direction　Attachment

The list of BTO model configuration

Base Model		Type												
		OS		Memory	SATA1 *1		RAID		SATA2 *2		I/F Direction		Attachment	
XPT-T1000LX	+	0	None	2	8GB	0	None	0	None	0	None	1	Vertical	0	None
						1	SSD(MLC) 256GB			1	SSD(MLC) 256GB				
XPT-T1000HX		1	Windows 10 IoT Enterprise 2019 LTSC			2	HDD 100GB	2	Software RAID	2	HDD 100GB			1	AC adapter *3
						3	SSD(TLC) 256GB			3	SSD(TLC) 256GB				

*1　OS is already installed.
　　　The capacity of the disk in the OS pre-installed type is a value when 1GB is calculated
　　　by 1 billion bytes.
　　　The capacity that can be recognized from OS might be displayed less than the actual value.

*2　The disk is equipped in SATA2 slot when selecting RAID.
　　　The same type of disks are equipped in SATA1 and SATA2 slots.

*3　The attachable AC adapter is the "PWA-90AWD1 (Input :100-240VAC, Output:12VDC 7.5A).

2. Standard Model

12.1" XGA (1024 x 768) with Core i7 7600U processor model

Model	OS	Memory	SATA1	RAID	SATA2	Attachment
XPT-T1000LX-0230010	None	8GB	None	None	None	None
XPT-T1000LX-0230011						AC adapter *1
XPT-T1000LX-0230310					SSD (TLC) 256GB	None
XPT-T1000LX-0230311						AC adapter *1
XPT-T1000LX-1230010	Windows 10 IoT Enterprise 2019 LTSC		SSD (TLC) 256GB		None	None
XPT-T1000LX-1230011						AC adapter *1
XPT-T1000LX-1230310					SSD (TLC) 256GB	None
XPT-T1000LX-1230311						AC adapter *1
XPT-T1000LX-1232310				Software RAID	SSD (TLC) 256GB	None
XPT-T1000LX-1232311						AC adapter *1

*1 The attachable AC adapter is the "PWA-90AWD1 (Input :100-240VAC, Output:12VDC 7.5A).

15" XGA (1024 x 768) with Core i7 7600U processor model

Model	OS	Memory	SATA1	RAID	SATA2	Attachment
XPT-T1000HX-0230010	None	8GB	None	None	None	None
XPT-T1000HX-0230011						AC adapter *1
XPT-T1000HX-0230310					SSD (TLC) 256GB	None
XPT-T1000HX-0230311						AC adapter *1
XPT-T1000HX-1230010	Windows 10 IoT Enterprise 2019 LTSC		SSD (TLC) 256GB		None	None
XPT-T1000HX-1230011						AC adapter *1
XPT-T1000HX-1230310					SSD (TLC) 256GB	None
XPT-T1000HX-1230311						AC adapter *1
XPT-T1000HX-1232310				Software RAID	SSD (TLC) 256GB	None
XPT-T1000HX-1232311						AC adapter *1

*1 The attachable AC adapter is the "PWA-90AWD1 (Input :100-240VAC, Output:12VDC 7.5A).

12.1" (PT-955LXC compatible) XGA (1024 x 768), with Core i7 7600U processor model

Model	OS	Memory	SATA1	RAID	SATA2	Attachment
XPT-T1010LXC-1230010	Windows 10 IoT Enterprise 2019 LTSC	8GB	SSD (TLC) 256GB	None	None	None

4.Features

■ Seventh-generation Core i7 / Core i5 processor adopted

This product adopts the CPU that saves power consumption and also provides high computing and graphic performances. Embedded-type CPU makes the stable supply possible.

■ Fan-less design reduces maintenance work

The product is fan-less to ensure a totally spindle-less design that simplifies maintenance, relieving the concern about dust or foreign matter to get into the product. Moreover, along with minimized use of degrading parts greatly reduce maintenance work.

■ "Power failure protection system" features power-off without OS shutdown

Equipped with the "Power failure protection system" function that protects data and prohibits writing to storage in the event of power failure *1. Along with the lockdown (disk writing suppression) function of Windows IoT Enterprise, power can be safely turned off without a shutdown process. Moreover, file system damage or data damage caused by sudden power failure can be avoided.

*1 Only the SSD 256GB (TLC) model are compatible with the " Power failure protection system ".

■ 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. The separately available AC adapter adds support for 100- 240VAC power.

■ Major types of peripherals are supported with rich interfaces

It has a variety of extended interface such as DVI-D x 1, DisplayPort×1, 1000BASE-T x 2, USB3.0 x 4, USB2.0 x 2, serial (RS-232C) x 2.
It has two slot-in type of 2.5-inch SATA disk 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.

■ Adopting a 5-wire resistive film touch-screen holds high durability

It has a 5-wire resistive film touch-screen that maintains high durability. The operating life is long-lasting of 36 million times. *2

■ The attachment fitting and cable ties prevent problems caused by cable disconnections

For connectors with no locking mechanism such as USB cable, unnecessary trouble can be avoided by the use of cable ties for prevention of cable disconnection.

■ Safety design required for embedded applications

For Windows 10 IoT Enterprise 2019 LTSC pre-installed type, it is possible to use the Write Filter *3 function of OS.

It is designed for safety required for embedding purpose, for example, prohibiting unwanted writing to the HDD or SSD with Write Filter function will relieve the concern about the writing limits to the HDD or SSD and prevent an unintentional system alteration.

*2 with Load 300g, Speed twice/second, by machine keying

*3 Windows 10 IoT Enterprise 2019 LTSC contains UWF (Unified Write Filter) function. It protects the disk from being actually written by redirecting data into such as RAM.

5.Supported OS

- Windows 10 IoT Enterprise 2019 LTSC 64bit (Japanese / English / Chinese / Korean)

6.Product Configuration List

The product consists of the items listed below.

Check, with the following list, that your package is complete.

If you discover damaged or missing items, contact your retailer.
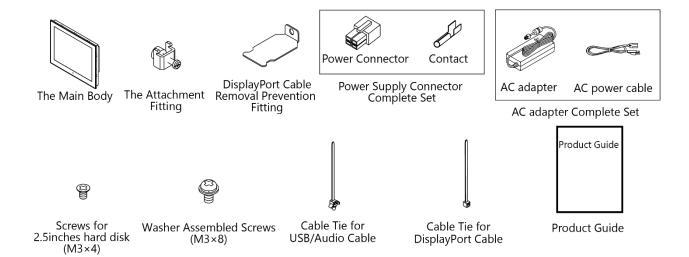
Name	XPT-T1000LX / XPT-T1010LXC [12.1" model] Pcs.	XPT-T1000HX [15" model] Pcs.
The Main Body	1	1
The Attachment Fittings	8	10
DisplayPort Cable Removal Prevention Fitting	1	1
Screws For 2.5 inches Hard Disk (M3 x 4)	8 *1	8 *1
Washer Assembled Screws (M3 x 8 Black)	1	1
Power Supply Connector Complete Set		
Power Connector	1	1
Contact	4	4
Cable Tie for USB/Audio Cable	1	1
Cable Tie for DisplayPort Cable	1	1
Product Guide	1	1
AC adapter Complete Set		
AC adapter	1 *2	1 *2
AC power cable	1 *2	1 *2

*1   The number of items packed in the OS pre-installed type is different since some of them are already equipped to the Mail Body.
With 1 disk : 4pcs, With 2 disks : 0pcs

*2   Only packed in the product type with the AC adapter.

Production Configuration Drawings

The Main Body

The Attachment Fitting

DisplayPort Cable Removal Prevention Fitting

Power Connector   Contact
Power Supply Connector Complete Set

AC adapter   AC power cable
AC adapter Complete Set

Screws for 2.5inches hard disk (M3×4)

Washer Assembled Screws (M3×8)

Cable Tie for USB/Audio Cable

Cable Tie for DisplayPort Cable

Product Guide

Product Guide

Safety Precautions

Understand the following definitions and precautions to use the product safely.
Never fail to read them before using the product.

1. Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources.

Understand the meanings of these labels to operate the equipment safely.

⚠ **DANGER**	Signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ **CAUTION**	Signal word used to indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

2.Handling Precautions

⚠ WARNING

- Always check that the power supply is turned off before connecting or disconnecting AC power cable.
- Do not modify the product.
- Always turn off the power before inserting or removing the boards or cables.
- Do not attempt to replace the battery as inappropriate battery replacement poses a risk of explosion.
- For battery replacement, contact your retailer as it must be performed as a process of repair.
- When disposing of a used battery, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.
  For details on replacing the battery, refer to the Appendix.
- This product is not intended for use in aerospace, space, nuclear power, medical equipment, or other applications that require a very high level of reliability. Do not use the product in such applications.
- If using this product in applications where safety is critical such as in railways, automotive, or disaster prevention or security systems, please contact your retailer.

⚠ CAUTION

- Do not use or store this product in a location exposed to high or low temperature that exceeds range of specification or susceptible to rapid temperature changes.
  e.g. - Exposure to direct sun   - In the vicinity of a heat source
- Strong sunlight on the screen could cause the deterioration of the touch-screen as well as the liquid crystal screen and may lead to damages.
  Avoid exposing the screen to strong ultraviolet light for extended periods of time.
- Do not use this product in extremely humid or dusty locations. It is extremely dangerous to use this product with its interior penetrated by water or any other fluid or conductive dust. If this product must be used in such an environment, install it on a dust-proof control panel, for example.
- Avoid using or storing this product in locations subject to shock or vibration that exceeds range of specification.
- Do not use this product in the vicinity of devices that generate strong magnetic force or noise. Such products will cause this product to malfunction.
- Do not use or store this product in the presence of chemicals.
- To clean this product, wipe it gently with a soft cloth dampened with either water or mild detergent. Do not use chemicals or a volatile solvent, such as benzene or thinner, to prevent pealing or discoloration of the paint. If this product must be used in such an environment, install it on a dust-proof control panel, for example.

- This product's case may become hot. To avoid being burned, do not touch that section while this product is in operation or immediately after turning off the power. Avoid installation in a location where people may come into contact with that section.
- CONTEC does not provide any guarantee for the integrity of data on SSD/HDD.
- Always remove the power cable from the power outlet before mounting or removing an expansion board and before connecting or disconnecting a connector.
- To prevent corruption of files, always shutdown the OS before turning off this product.
- CONTEC reserves the right to refuse to service a product modified by the user.
- In the event of failure or abnormality (foul smells or excessive heat generation), unplug the power cord immediately and contact your retailer.
- To connect with peripherals, use a grounded, shielded cable.
- Do not use any sharp-pointed object such as a mechanical pencil to touch the touch-screen. Doing so may scratch the touch-screen, resulting in malfunctions.
- Do not subject the touch-screen to shock as doing so may break it.
- It is a characteristic of analog touch-screens that their resistance may vary with changes to the ambient environment (temperature and humidity) and with their own aging, resulting in the deviation of the detection point. If this is the case, calibrate the touch-screen again to reset calibration data.
- Burn-in on TFT Display

  "Burn-in" may occur if the same display is retained for a long time. Avoid this by periodically switching the display so that the same display is not maintained for a long time.

  * Burn-In : Phenomenon characterized by a TFT display as a result of long-time display of the same screen where a shadow-like trace persists because electric charge remains in the LCD element even after the patterns are changed.
- SATA disk slot is not hot-swappable. Do not insert or remove the SATA disk while the product power is on. It may result in malfunctions or system damages.
- 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 longer.

  (2) SSD   --- SSD is used for the OS storage area with the SSD type.
  The estimated failure rate is 1 every 3,000 rewrites.
  For details, refer to the Appendix.

  (3) HDD   --- HDD is used for the OS storage area with the HDD type.
  The estimated failure rate is, with the conditions described below,
  20,000 hours (Power on hours / at 25°C ambient temperature) or 5 years, whichever comes first.

  Power on hours: Less than 333 hours/month

  Operating: Less than 20% of power on hour

  (4) Touch panel--- The operating lifetime of the touch panel is at least 36 million touches (as tested by mechanical touching under 250g of force at a rate of two presses per second).

(5) LCD backlight--- Display brightness decreases over time with use. The operating lifetime of the backlight is 50,000 hours (the time until the brightness is lowered to 50% of the initial value).

* Replacement of expendables is handled as a repair (there will be a charge).
* The service life for consumable parts are reference values and are not guaranteed values.

1. FCC PART 15 Class A Notice

NOTE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. EN55032 Class A Notice

Warning:

Operation of this equipment in a residential environment could cause radio interference.

3.Security Warning

When connecting to the network, be aware of security-related problems. See the examples of Security measures below and set up the product properly along with the network devices.

1. Information security risks

- Unauthorized access from the outside through a network could cause the system halt, data damage, or exposure to malware. *1
- Invaded and used as a stepping stone, a device might attack the others through networks. (a victim becomes an assailant)
- Information might leak without realizing due to the connection to the network.
- Secondary damages such as harmful rumors, liability in damages, social credibility fall, and opportunity loss are expected led by the troubles described above.

*1: Malware (Malicious Software) is software that brings harm to a computer system and performs unintended operations.

2. Security measures – e.g.

- Do not keep using the default password. (Refer to the product manual for the password setting).
- Set a strong password.

> Combined with upper and lowercase letters, and numbers so that it cannot be easily analogized by others.

- Change the password periodically.
- Disable unnecessary network services and functions.
- Restrict access to the network with network devices. *2
- Restrict ports to be released on the network with network devices. *2
- Create a closed network connection using such as dedicated network or VPN*3

*2: Inquire for setting procedure to manufacturers.

*3: VPN (Virtual Private Network) a secured network that wards off unauthorized access by protecting the communication path with authentication and encryption.

> Unfortunately, there are no perfect ways to avert unauthorized access or close a security hole that are endlessly found day and night.
>
> Please understand that risks are always involved with the Internet connection, and we strongly recommend a user should constantly update information security measures.
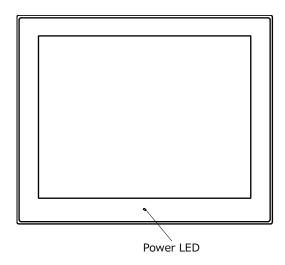
Product Nomenclature and Function

This section describes product component names and their functions, pin assignment of each connector.
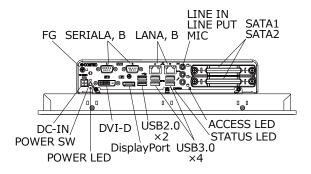
1.Nomenclature of Product Components

Component names of the product are shown in the figure below.

Front

Power LED

Display Screen Bottom

Name	Function
Front	
POWER LED	Power ON display LED
Display Screen Bottom	
POWER SW	PC Power switch
POWER LED	Power ON display LED
ACCESS LED	SATA disk access display LED
STATUS LED	Status LED
DC-IN	DC power input connector
LINE IN	Line in (3.5φ PHONE JACK)
LINE OUT	Line out (3.5φ PHONE JACK)
MIC IN	Mic in (3.5φ 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

Name	Function
USB 3.0	USB 3.0 port connector x4
USB 2.0	USB 2.0 port connector x2
SERIAL A	Serial port A connector (9-pin D-SUB male)
SERIAL B	Serial port B connector (9-pin D-SUB male)
DVI-D	Display (25-pin female)
DisplayPort	Display (20-pin female)
SATA1	2.5-inch HDD/SSD slot
SATA2	2.5-inch HDD/SSD slot

2.Description of Product Components

Components such as connectors, switches are described.

1. LED: POWER, ACCESS, STATUS

There are 3 LEDs on the front of this product.

LED name	State (Display color)	Description
POWER LED	OFF	Indicate that this product is switched off.
	ON (Green)	Indicate that this product is switched on.
ACCESS LED	ON (Orange)	Indicate that SATA disk is being accessed.
STATUS LED	OFF	You can control the behavior of LED from the user application. *1
	FLASHING, ON (Red)	You can control the behavior of LED from the user application. *1 This LED flashes upon time-up when the watchdog timer is enabled

*1 API that controls STATUS LED is available. Contact your retailer for more information.

2. DC Power Input Connector: DC-IN

The DC power input connector is provided. To supply the power, always use the power supply listed below.

- Rated input voltage : 12 - 24VDC
- Input voltage range: 10.8 - 31.2VDC
- Power capacity XPT-T10x0LXx : 12V 4.9A or more, 24V 2.6A or more
              XPT-T1000HX : 12V 4.6A or more, 24V 2.3A or more

DC Power Connector
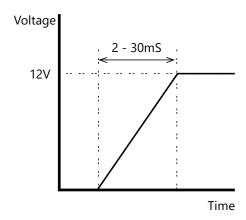
Connector type	9360-04P (mfd. by ALEX)	
	Pin No.	Signal name
	1	GND
	2	GND
	3	12 - 24V
	4	12 - 24V

Applicable connector on the connector side

Housing : 9357-04(mfd. by ALEX) or 5557-04R(mfd. by MOLEX)

Contact : 4256T2-LF(AWG18-24)(mfg. by ALEX) or 5556(AWG18-24)(mfg. by MOLEX)

Rise time for power supply

Voltage

2 - 30mS

12V

Time

3. Power Switch: POWER SW

The power switch is provided.

4. LINE IN Interface: LINE IN

The product is equipped with a connector for line input. You can connect a CD player or other audio output device to the product, and then record audio to the system or play back audio from LINE OUT.

5. LINE OUT Interface: LINE OUT

The product is equipped with a connector for line output. As such, headphones or an amplified speaker can be connected.
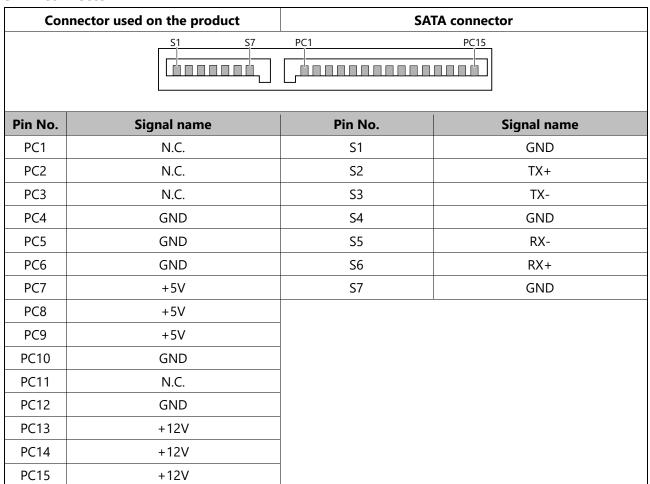
6. MIC IN Interface: MIC IN

The product is equipped with a connector for microphone input. As such, a microphone can be connected for voice input.

7. Serial-ATA: SATA 1, SATA 2

The product has 2 ports of serial ATA 3.0 compliant controllers.

SATA connector

Connector used on the product		SATA connector	
S1 S7 PC1 PC15			
Pin No.	**Signal name**	**Pin No.**	**Signal name**
PC1	N.C.	S1	GND
PC2	N.C.	S2	TX+
PC3	N.C.	S3	TX-
PC4	GND	S4	GND
PC5	GND	S5	RX-
PC6	GND	S6	RX+
PC7	+5V	S7	GND
PC8	+5V		
PC9	+5V		
PC10	GND		
PC11	N.C.		
PC12	GND		
PC13	+12V		
PC14	+12V		
PC15	+12V		

⚠ CAUTION

SATA disk slot is not hot-pluggable. Do not touch SATA disk, or insert /remove the disk while the product power is on. Doing so may lead to malfunctions or system damages.

8. Giga bit-Ethernet: LAN A, B

This product is equipped with 2 ports for giga bit-Ethernet.

- Network type   :   1000BASE-T/100BASE-TX/10BASE-T
- Transmission speed *   :   1000M/100M/10M bps
- Max. network path length :   100m/segment
- Controller   :   Intel® Ethernet Controller I210

* Operation at 1000Mbps requires a category 5e or greater cable.

Giga bit-Ethernet Connector

Pin No.	Signal Name	
	100BASE-TX	**1000BASE-T**
1	TX+	TRD+(0)
2	TX-	TRD-(0)
3	RX+	TRD+(1)
4	N.C.	TRD+(2)
5	N.C.	TRD-(2)
6	RX-	TRD-(1)
7	N.C.	TRD+(3)
8	N.C.	TRD-(3)

(Connector diagram: Transmit / Link, pins 8 ... 1)

LEDs for display of network statuses

LED	Description

Right LED	Link LED
	  Normal connection : Green ON
	  Operation : Green Flashing

Left LED	Operation LED
	  10Mbps: OFF
	  100Mbps: Green ON
	  1000Mbps : Orange ON

⚠ CAUTION

If you are using an operating system other than the operating system of the pre-installed model, the display order of the network adapter for the silkscreen-printed "LAN-A" and "LAN-B" might be changed since the recognition order of operating system is undefined.

9. USB 3.0 Ports: USB3.0

This product is equipped with 4 ports for USB 3.0 TYPE-A interface.
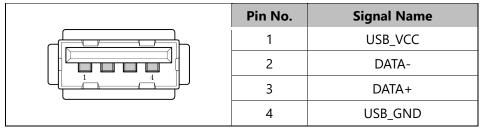
USB3.0 Connector

Pin No.	Signal Name
1	USB_VCC
2	DATA-
3	DATA+
4	USB_GND
5	SSRX-
6	SSRX+
7	USB_GND
8	SSTX-
9	SSTX+

10. USB 2.0 Ports: USB2.0

This product is equipped with 2 ports for USB 2.0 TYPE-A interface.

USB2.0 Connector

Pin No.	Signal Name
1	USB_VCC
2	DATA-
3	DATA+
4	USB_GND

11. Serial Port Interface: SERIAL A, B, D

This product has 3 ports of RS-232C compliant serial ports supporting up to a baud rate of 115,200bps with a 16-byte transmission-dedicated data buffer and a 16-byte reception-dedicated data buffer.

You can use **"BIOS Setup(page47)"** to configure I/O addresses, interrupts, and unused state for each of the ports independently.

For details of I/O address and register function, see **"SERIAL I/O Address and Register Function** in appendix **(page105)"**.

SERIAL I/O Addresses and Interrupts

SERIAL	I/O address	Interrupt
A	3F8h – 3FFh	IRQ 4
B	2F8h – 2FFh	IRQ 3
D (Touch-screen)	2E8h – 2EFh	IRQ 7
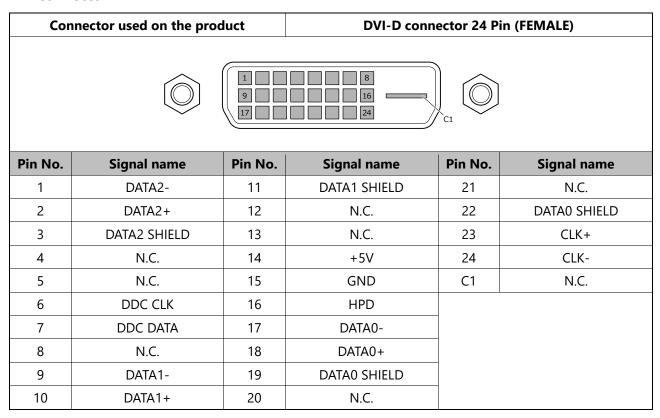
Serial port connector

Connector used on the product	9-pin D-SUB (MALE)

No.4-40UNC inch nut

Pin No.	Signal Name	Description	Direction
1	DCD	Carrier detect	Input
2	RD	Received data	Input
3	TD	Transmitted data	Output
4	DTR	Data terminal ready	Output
5	GND	Signal ground	-----
6	DSR	Data set ready	Input
7	RTS	Request to send	Output
8	CTS	Clear to send	Input
9	RI	Ring indicator	Input

12. DVI-D Interface: DVI-D

This product is equipped with a connector for a DVI interface. A display of DVI-D interface can be connected.

DVI connector
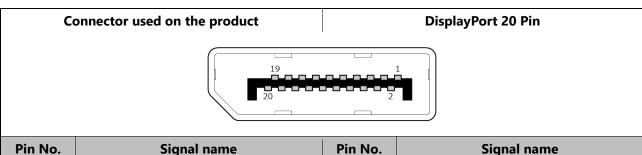
Connector used on the product	DVI-D connector 24 Pin (FEMALE)

Pin No.	Signal name	Pin No.	Signal name	Pin No.	Signal name
1	DATA2-	11	DATA1 SHIELD	21	N.C.
2	DATA2+	12	N.C.	22	DATA0 SHIELD
3	DATA2 SHIELD	13	N.C.	23	CLK+
4	N.C.	14	+5V	24	CLK-
5	N.C.	15	GND	C1	N.C.
6	DDC CLK	16	HPD		
7	DDC DATA	17	DATA0-		
8	N.C.	18	DATA0+		
9	DATA1-	19	DATA0 SHIELD		
10	DATA1+	20	N.C.		

⚠CAUTION

The display may not be viewed if you start the BIOS setup menu without connecting the display cable to the DVI interface, then connect the display cable after booting.

13. DisplayPort Interface: DisplayPort

The product is equipped with a connector for DisplayPort interface.

DisplayPort connector

Connector used on the product		DisplayPort 20 Pin	

Pin No.	Signal name	Pin No.	Signal name
1	Lane0+	2	GND
3	Lane0-	4	Lane1+
5	GND	6	Lane1-
7	Lane2+	8	GND
9	Lane2-	10	Lane3+
11	GND	12	Lane3-
13	GND	14	GND
15	Aux+	16	GND
17	Aux-	18	HotPlug
19	GND	20	3.3V

⚠ CAUTION

The display may not be viewed if you start the BIOS setup menu without connecting the display cable to the DisplayPort interface, then connect the display cable after booting.

Hardware Setup

This section describes how to install, connect, and set up the product.

1.Before Using the Product for the First Time

Follow the next steps to set up this product:

STEP1   By referring to the information in this section, install, connect and set up this product.

STEP2   Connect cables.

Connect the cable of necessary external devices, such as keyboard and a display, to this product using appropriate cables.

STEP3   Turn on the power.

After verifying that you have correctly followed steps 1 and 2, turn on the power.

If you find any abnormality after turning on the power, turn it off and check to see if the setup has been performed properly.
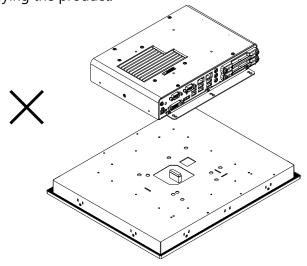
STEP4   Set up BIOS.

By referring to **"BIOS Setup (page47)"**, set up BIOS. This setup requires a keyboard and a display.

⚠ CAUTION

- Be sure to connect the keyboard and mouse to it before turning the power on for the first time.
- Be sure to connect the display before turning the power on. Connecting the display after turning the power on may prevent it from being displayed properly.
- Before using this product, be sure to execute "Restore Defaults" to initialize the BIOS settings to their default values. (See "**Save & Exit" (page77)** in BIOS Setup)
- Do not detach the monitor screen from the PC. It may cause malfunction or damage to the product. Bear in mind that detaching the screen without a permission from CONTEC is considered as modifying the product.
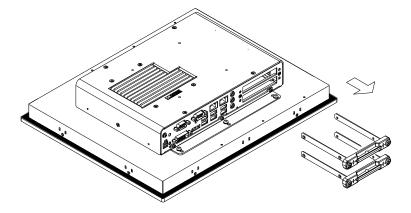
2.Hardware Setup
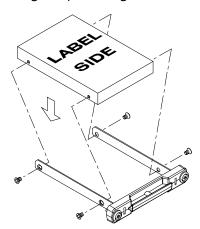
- Before you start, be sure that the power is turned off.
- Remove only those screws that are explained. Do not move any other screws.
- Only 2.5 inches SATA HDD / SSD can be installed to this drive bay.

1. Installing SATA disk
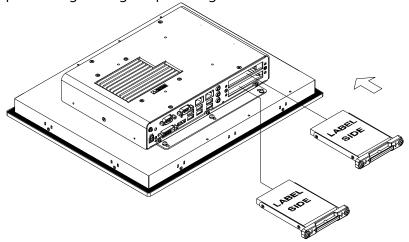
1 Remove the disk bracket from the product.

2 Install the HDD/SSD into the hard disk bracket, and then fix it in place with screws in four locations. The specified tightening torque is 5kgf·cm.

3 Install the disk bracket equipped with the HDD/SSD into the product, and then fix it with screws. The specified tightening torque is 5kgf·cm.

⚠ CAUTION
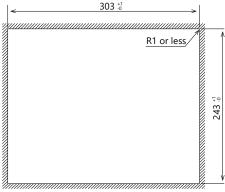
- When tightening the screws to fasten the HDD / SSD to the bracket or the HDD mounted bracket to the product, do not use any tool such as an electric screwdriver, which vibrates the HDD / SSD.　Not doing so will damage the HDD / SSD.
- If you use the HDD/SSD other than the optional product, we cannot guarantee the specifications of this product. If you want to use the product within its specifications, be sure to use the optional HDD.
- To prevent potential damage caused by static electricity, take appropriate anti-static measures (for example, wearing an anti-static wristband) when inserting or removing the HDD/SSD.
- Do not touch the terminals on the HDD/SSD. Doing so may damage the card.
- Do not insert the HDD/SSD with the incorrect orientation. Also, do not apply excessive force when inserting the HDD/SSD. Doing so may damage the connectors.
- Before inserting the HDD/SSD, do not drop it or otherwise subject it to strong impacts. Doing so may lead to malfunctions.
- Do not cover BREATING HOLE. Doing so may lead to malfunctions.

2. Hardware Setup

◆ When using an installation screen with round mounting holes
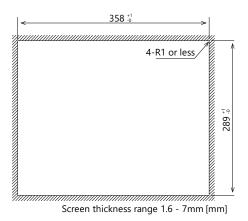
1 Cut out a screen according to the following dimensions to mount the main body.

XPT-T1000LX

303 $^{+1}_{-0}$

R1 or less

243 $^{+1}_{-0}$

Screen thickness range 1.6 - 7mm [mm]

XPT-T1000HX

358 $^{+1}_{-0}$

4-R1 or less

289 $^{+1}_{-0}$

Screen thickness range 1.6 - 7mm [mm]

XPT-T1000LXC

331 $^{+0.5}_{-0}$

4-R1 or less

272 $^{+0.5}_{-0}$

Screen thickness range 1.6 - 7mm   [mm]
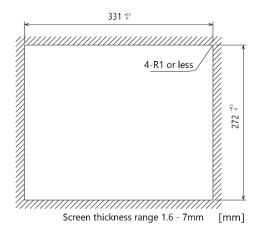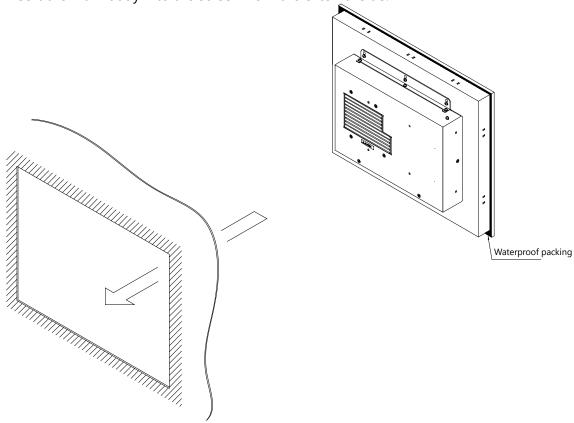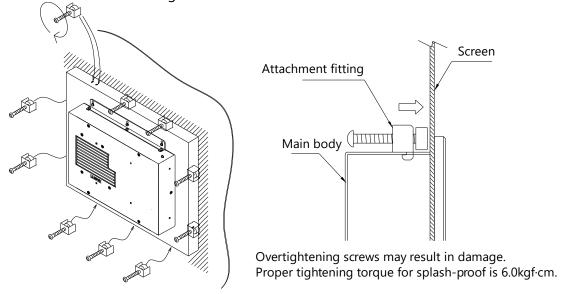
2 Insert the main body into the screen from the external side.

Waterproof packing

3 Hold the attachment fittings from the inside of the screen and fixed them with screws.

Screen

Attachment fitting

Main body

Overtightening screws may result in damage.
Proper tightening torque for splash-proof is 6.0kgf·cm.

⚠ CAUTION

Overtightening screws may result in damage.
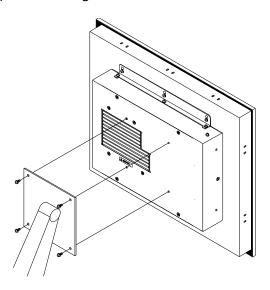
Appropriate tightening torque for splash proof is 6.0kgf·cm

◆ When using VESA standard 100mm mounting holes

The main body has mounting holes according to VESA standard 100mm.
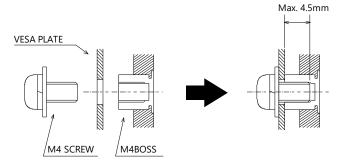
When using a VESA standard 100mm stand or the like, attach it as shown the following figure.

Appropriate tightening torque is 8 - 10kgf·cm.
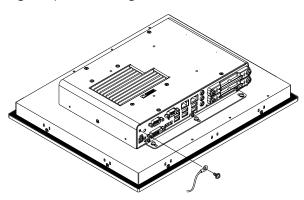
⚠ CAUTION

- Screw holes may be damaged if screws are tightened with a torque greater than the specified torque.
- Neither waterproofing nor dust-proofing is supported when mounting VESA.
- The screw length for VESA installation should be less than (VESA PLATE thickness +4.5mm). With longer screws, the product cannot be placed securely.

3. Attaching the FG

1 Use screws to attach the FG.
The specified tightening torque is 5 - 6kgf·cm.

⚠ CAUTION

The FG pin of this product is connected to the GND signal of the DC power connector (DC-IN).

Note that the connection cannot be cut off.

Screw holes may be damaged if screws are tightened with a torque greater than the specified torque.

4. Fastening the Cable

This product comes with the DisplayPort Removal Prevention Fitting and the Cable Tie for Cables.
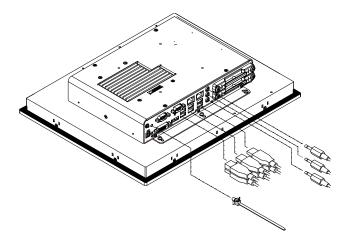
Using the fitting and the cable ties for a connector that has no lock mechanism, such as the Audio cable, USB cable, and DisplayPort cable prevents the connector from being unplugged.

Use the fitting and the cable ties appropriately according to the connecting states and wiring directions of cables.
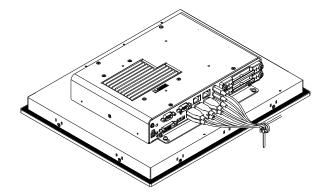
Fastening the Audio cable, USB cable

1 Attach each cable to the product.
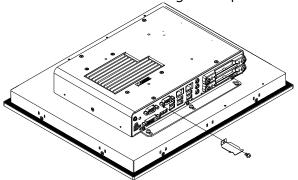
2 Tie the cables with the cable tie, and attach the tie to the product.

Fastening the DisplayPort cable

1 Attach the DisplayPort Removal Prevention Fitting to the product.
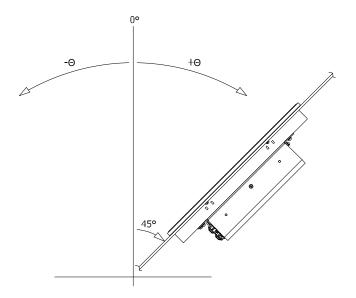
2 Plug the DisplayPort cable, and tie the cable with the Cable Tie for DisplayPort (bundled) to the fitting.

5. 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.

Installed angle which is recommended
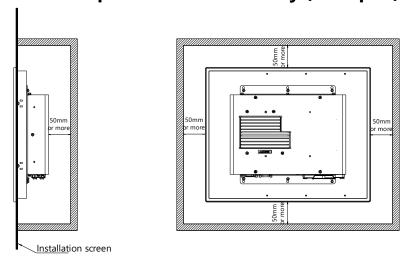
Installed angle of this product which is recommended is -45°- 45°. Except for that, the temperature specification of this product might not be filled.
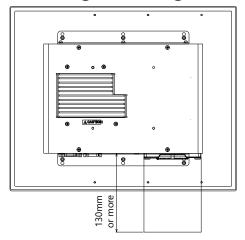
⚠ CAUTION

Even if the ambient temperature is within the usage range, if the product is installed near devices that generate high temperatures, the product may experience the effects of radiation which will cause its temperature to rise and may lead to product malfunctions.

Distances between the product and its vicinity (Exemplar)

50mm or more

50mm or more

50mm or more

50mm or more

50mm or more

Installation screen

Minimum distance for installing/removing the drive

130mm or more
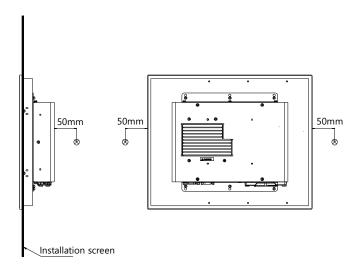
⚠ CAUTION

- 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.

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.

50mm 50mm 50mm

Installation screen

BIOS Setup

This section describes AMI's Setup program built into the FLASH ROM BIOS.

1.Introduction

The Setup program allows users to modify the basic system configuration. This special information is then stored in FLASH ROM so that it retains the Setup information when the power is turned off.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

1. Starting Setup

The BIOS is immediately activated when you first power on the computer. The AMI BIOS reads the system information contained in the CMOS ROM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

● By pressing <Del> or <ESC> immediately after turning on the pc.
● By pressing the <Del> or <ESC> key when the following message appears on the screen during the POST (Power On Self-Test).

Press <DEL> or <ESC> to enter setup.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

2. Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the "+" and "-" keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
ESC	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
+	Increase the numeric value or make changes
-	Decrease the numeric value or make changes
F1	General help on Setup navigation keys
F2	Load the previous number from CMOS.
F3	Load the optimized defaults from BIOS default table
F4	Save all settings changes to the FLASH ROM and exit

3. Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> key.

4. In Case of Problems

If it is not possible to boot the computer after system settings have been changed and saved during setup, this product will need to be repaired.
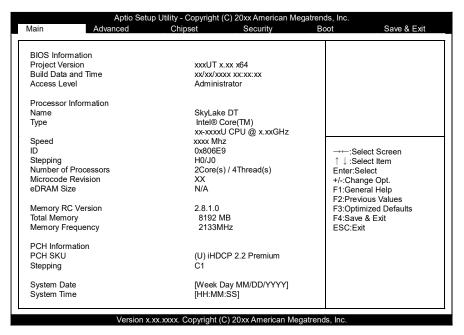
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to CPU and the chipset defaults. These defaults have been carefully chosen by both AMI and your systems manufacturer to provide the absolute maximum performance and reliability. If these settings are changed even slightly, it may become necessary to repair the unit.

5. A Final Note About Setup

The information in this section is subject to change without notice.

2.Main Menu

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen.   By pressing the left or right arrow keys, you will be able to move the tab of each item.

```
                    Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
   Main            Advanced        Chipset         Security        Boot            Save & Exit

   BIOS Information
   Project Version                      xxxUT x.xx x64
   Build Data and Time                  xx/xx/xxxx xx:xx:xx
   Access Level                         Administrator

   Processor Information
   Name                                 SkyLake DT
   Type                                 Intel® Core(TM)
                                        xx-xxxxU CPU @ x.xxGHz
   Speed                                xxxx Mhz
   ID                                   0x806E9                     →←:Select Screen
   Stepping                             H0/J0                       ↑↓ :Select Item
   Number of Processors                 2Core(s) / 4Thread(s)       Enter:Select
   Microcode Revision                   XX                          +/-:Change Opt.
   eDRAM Size                           N/A                         F1:General Help
                                                                    F2:Previous Values
   Memory RC Version                    2.8.1.0                     F3:Optimized Defaults
   Total Memory                          8192 MB                    F4:Save & Exit
   Memory Frequency                      2133MHz                    ESC:Exit

   PCH Information
   PCH SKU                              (U) iHDCP 2.2 Premium
   Stepping                             C1

   System Date                          [Week Day MM/DD/YYYY]
   System Time                          [HH:MM:SS]

                    Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

(Actual display may differ)

1. Setup Items

You can choose the following tabs.

Main

Use this menu to confirm the system basic configuration and set the language and time at the same time.

Advanced

Use this menu to set the detailed function that can setting to your system.

Chipset

Use this menu to specify the setting about your chipset.

Security

Use this menu to set the password so that the system security can be protected.

Boot

Use this menu to specify the setting about the system boot.

Save & Exit

Use this menu to load or save the setup item and to exit the setup menu.

3.Main

Use this menu to check basic system configuration. The following items are displayed.

Display item in the main menu

Item	Options	Description
Project Version	xxxUT x.xx x64	This item displays the BIOS version.
Build Data and Time	xx/xx/xxxx xx:xx:xx	This item displays the BIOS creation date and time.

You can configure the following settings.
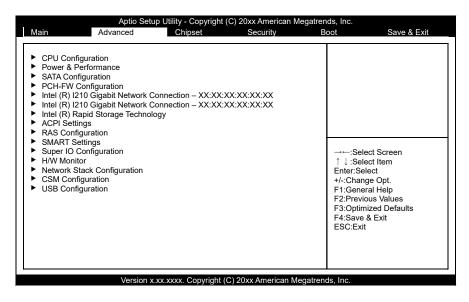
Main Menu Selections

Item	Options	Description
System Date	Week Day Month / Day / Year	Set the system date. Note that the 'Day' automatically changes when you set the date.
System Time	Hour : Minute : Second	Set the system time.

4.Advanced

Use this menu to set the detailed function that can setting to your system.

The following items are available:

```
                    Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Main           Advanced          Chipset          Security          Boot          Save & Exit

       ▶ CPU Configuration
       ▶ Power & Performance
       ▶ SATA Configuration
       ▶ PCH-FW Configuration
       ▶ Intel (R) I210 Gigabit Network Connection – XX:XX:XX:XX:XX:XX
       ▶ Intel (R) I210 Gigabit Network Connection – XX:XX:XX:XX:XX:XX
       ▶ Intel (R) Rapid Storage Technology
       ▶ ACPI Settings
       ▶ RAS Configuration
       ▶ SMART Settings                              →←:Select Screen
       ▶ Super IO Configuration                      ↑↓:Select Item
       ▶ H/W Monitor                                 Enter:Select
       ▶ Network Stack Configuration                 +/-:Change Opt.
       ▶ CSM Configuration                           F1:General Help
       ▶ USB Configuration                           F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit



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```

(Actual display may differ)

CPU Configuration

Use this menu to check the CPU configuration.

Power & Performance

Use this menu to check the power and performance settings.

SATA Configuration

Use this menu to configure the SATA settings.

PCH-FW Configuration

Use this menu to check the Intel ME firmware version.

Intel (R) I210 Gigabit Network Connection

Configure the LAN UEFI driver settings.

Intel (R) Rapid Storage Technology

Use this menu to configure the RAID settings. This is displayed when the RAID configuration is enabled.

ACPI Settings

Use this menu to configure the ACPI settings.

RAS Configuration

Use this menu to configure the RAS settings.

SMART Settings

Use this menu to check the SMART settings.

Super IO Configuration

Use this menu to configure the operation settings for Super IO.

H/W Monitor

Use this menu to check hardware monitors such as the CPU temperature.

Network Stack Configuration

Configure the UEFI network function settings.

CSM Configuration

Use this menu to check the Intel AMT configuration.

USB Configuration
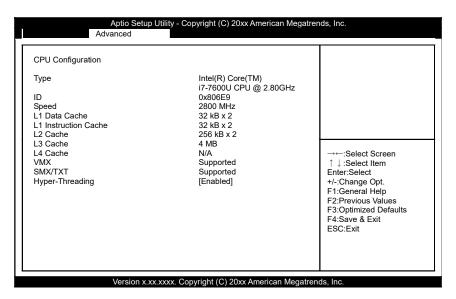
Use this menu to specify USB controller settings.

⚠ CAUTION

If SATA Mode Selection is not set to Intel RST(RAID), Intel (R) Rapid Storage Technology cannot be viewed. Refer to **"Software RAID Setup (page84)"** for the configuration".

---

1. CPU Configuration

Use this menu to check the information of CPU.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Advanced

   CPU Configuration

   Type                        Intel(R) Core(TM)
                               i7-7600U CPU @ 2.80GHz
   ID                          0x806E9
   Speed                       2800 MHz
   L1 Data Cache               32 kB x 2
   L1 Instruction Cache        32 kB x 2
   L2 Cache                    256 kB x 2
   L3 Cache                    4 MB
   L4 Cache                    N/A              →←:Select Screen
   VMX                         Supported        ↑↓:Select Item
   SMX/TXT                     Supported        Enter:Select
   Hyper-Threading             [Enabled]        +/-:Change Opt.
                                                F1:General Help
                                                F2:Previous Values
                                                F3:Optimized Defaults
                                                F4:Save & Exit
                                                ESC:Exit


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```

(Display items differ depending on the installed CPU.)

CPU Configuration   (The i7 model and the i5 model only)
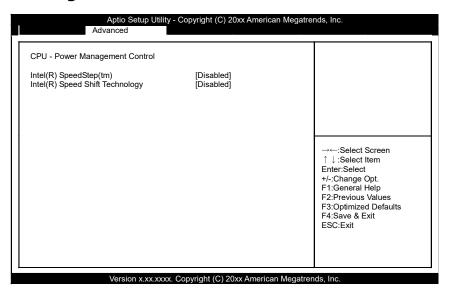
Item	Options	Description
Hyper-Threading	Disabled / Enabled	Configure the Hyper-threading settings.

2. Power & Performance

Use this menu to check the power and performance settings.

```
                 Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
      Advanced

         Power & Performance

    ▶  CPU - Power Management Control


                                                                  →←:Select Screen
                                                                  ↑ ↓ :Select Item
                                                                  Enter:Select
                                                                  +/-:Change Opt.
                                                                  F1:General Help
                                                                  F2:Previous Values
                                                                  F3:Optimized Defaults
                                                                  F4:Save & Exit
                                                                  ESC:Exit

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```

CPU - Power Management Control

```
                 Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
      Advanced

         CPU - Power Management Control

    Intel(R) SpeedStep(tm)                 [Disabled]
    Intel(R) Speed Shift Technology        [Disabled]



                                                                  →←:Select Screen
                                                                  ↑ ↓ :Select Item
                                                                  Enter:Select
                                                                  +/-:Change Opt.
                                                                  F1:General Help
                                                                  F2:Previous Values
                                                                  F3:Optimized Defaults
                                                                  F4:Save & Exit
                                                                  ESC:Exit

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```

CPU - Power Management Control

Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled / Enabled	Do not change this setting.
Intel(R) Speed Shift Technology	Disabled / Enabled	Do not change this setting.

CPU - Power Management Control

(Only available when "Intel(R) SpeedStep(tm)" is selecting Enabled)

Item	Options	Description
Turbo Mode	Disabled / Enabled	Do not change this setting.

View/Configure Turbo Options
(Only available when "Intel(R) SpeedStep(tm)" is selecting Enabled)

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
   Advanced

   Current Turbo Setting

   Max Turbo Power Limit            4095.875
   Min Turbo Power Limit            0.0
   Package TDP Limit                15.0
   Power Limit 1                    25.0
   Power Limit 2                    18.750
   1-core Turbo Ratio               22
   2-core Turbo Ratio               22

   Energy Efficient P-state         [Enabled]        →←:Select Screen
   Package Power Limit MSR Lock     [Disabled]       ↑↓:Select Item
   Energy Efficient Turbo           [Enabled]        Enter:Select
                                                     +/-:Change Opt.
                                                     F1:General Help
                                                     F2:Previous Values
                                                     F3:Optimized Defaults
                                                     F4:Save & Exit
                                                     ESC:Exit

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```

(Display items differ depending on the installed CPU.)

Current Turbo Setting

Item	Options	Description
Energy Efficient P-state	Disabled / Enabled	Do not change this setting.
Package Power Limit MSR Lock	Disabled / Enabled	Do not change this setting.
Energy Efficient Turbo	Disabled / Enabled	Do not change this setting.

3. SATA Configuration

Use this menu to specify the SATA controller settings.

```
           Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
                Advanced

      SATA Configuration

      SATA Controller(s)              [Enabled]
      SATA Mode Selection             [AHCI]
      SATA Test Mode                  [Disabled]
      RAID Device ID                  [Client]


      Disk Slot1                      TS256GSSD420K (256.0GB)
        Software Preserve             SUPPORTED
      Disk Slot2                      Empty            →←:Select Screen
        Software Preserve             Unknown          ↑↓:Select Item
                                                       Enter:Select
                                                       +/-:Change Opt.
                                                       F1:General Help
                                                       F2:Previous Values
                                                       F3:Optimized Defaults
                                                       F4:Save & Exit
                                                       ESC:Exit




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```

(Actual display may differ)

SATA Configuration
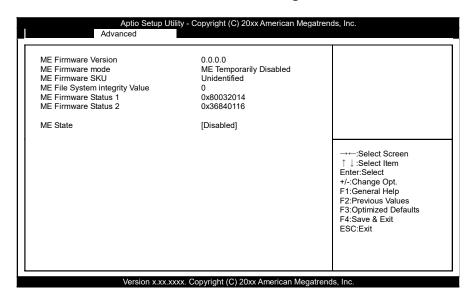
Item	Options	Description
SATA Controller(S)	Disabled / Enabled	Configure the SATA controller operation settings. If this setting is changed, the OS will have to be reinstalled.
SATA Mode	Intel RST (RAID) AHCI Mode	Configure SATA disk mode. Do not change this if RAID configuration is not set. If this setting is changed, the OS will have to be reinstalled.
SATA Test Mode	Disabled / Enabled	Do not change this setting.
Disk Slot1	-	Display the information of the SATA device connected to Disk Slot 1.
Disk Slot2	-	Display the information of the SATA device connected to Disk Slot 2.

SATA Configuration (Only available when "SATA Mode" is selecting Intel RST (RAID))

Item	Options	Description
RAID Device ID	Client / Alternate	Do not change this setting.

4. PCH-FW Configuration

Use this menu to check the version of PCH-FW and configure the TPM.

```
                Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
         Advanced

    ME Firmware Version              0.0.0.0
    ME Firmware mode                 ME Temporarily Disabled
    ME Firmware SKU                  Unidentified
    ME File System integrity Value   0
    ME Firmware Status 1             0x80032014
    ME Firmware Status 2             0x36840116

    ME State                         [Disabled]

                                                      →←:Select Screen
                                                      ↑↓:Select Item
                                                      Enter:Select
                                                      +/-:Change Opt.
                                                      F1:General Help
                                                      F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit




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```

(Actual display may differ)

PCH-FW Configuration

Item	Options	Description
ME State	Disabled / Enabled	Set to Enabled when using TPM. When TPM is not used, set to Disabled.

PCH-FW Configuration (Only available when "ME State" is selecting Enabled)

Item	Options	Description
ME State	Disabled / Enabled	Do not change this setting.
Comms Hub Support	Disabled / Enabled	Do not change this setting.
JHI Support	Disabled / Enabled	Do not change this setting.
Core Bios Done Message	Disabled / Enabled	Do not change this setting.

Firmware Update Configuration (Only available when "ME State" is selecting Enabled)
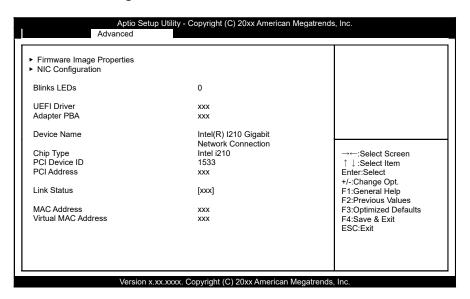
Item	Options	Description
Me FW Image Re-Flash	Disabled / Enabled	Do not change this setting.

PTT Configuration (Only available when "ME State" is selecting Enabled)

Item	Options	Description
TPM Device Selection	dTPM / PTT	Do not change this setting.
PTP aware OS	PTP Aware / Not PTP Aware	Do not change this setting.

5. Intel (R) I210 Gigabit Network Connection

Configure the UEFI driver settings for LAN NIC I210.

```
                    Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
            Advanced

         ▶ Firmware Image Properties
         ▶ NIC Configuration

           Blinks LEDs                    0

           UEFI Driver                    xxx
           Adapter PBA                    xxx

           Device Name                    Intel(R) I210 Gigabit
                                          Network Connection
           Chip Type                      Intel i210               →←:Select Screen
           PCI Device ID                  1533                     ↑↓:Select Item
           PCI Address                    xxx                      Enter:Select
                                                                   +/-:Change Opt.
           Link Status                    [xxx]                    F1:General Help
                                                                   F2:Previous Values
           MAC Address                    xxx                      F3:Optimized Defaults
           Virtual MAC Address            xxx                      F4:Save & Exit
                                                                   ESC:Exit



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```

NIC Configuration

Item	Options	Description
Link Speed	10 Mbps Half / 10 Mbps Full / 100 Mbps Half / 100 Mbps Full / Auto Negotiated	Do not change this setting.
Wake on LAN	Disabled / Enabled	Do not change this setting.

6. Intel(R) Rapid Storage Technology

> ⚠ **CAUTION**
>
> If SATA Mode Selection is not set to Intel RST(RAID), Intel(R) Rapid Storage Technology will not be displayed.   Refer to **"Software RAID Setup (page84)"** for the setting procedure.
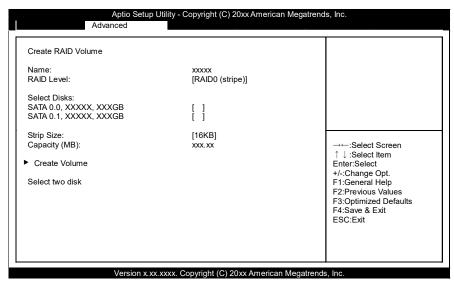
Use this menu to configure the RAID settings.   The following items are available:

```
            Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
     Advanced

     Intel (R) RST 15.9.0.3194 RAID Driver

     ▶  Create RAID Volume



     Non-RAID Physical Disks:
     ▶  SATA 0.0, XXXXX, XXXGB
     ▶  SATA 0.1, XXXXX, XXXGB
                                                         →←:Select Screen
                                                         ↑↓:Select Item
                                                         Enter:Select
                                                         +/-:Change Opt.
                                                         F1:General Help
                                                         F2:Previous Values
                                                         F3:Optimized Defaults
                                                         F4:Save & Exit
                                                         ESC:Exit




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```

*Refer to "**When RAID volume has already been created (page88)**" for a display screen of the created RAID volume

Create RAID Volume

Use this menu to create RAID volume.

```
            Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
     Advanced

     Create RAID Volume

     Name:                             xxxxx
     RAID Level:                       [RAID0 (stripe)]

     Select Disks:
     SATA 0.0, XXXXX, XXXGB            [  ]
     SATA 0.1, XXXXX, XXXGB            [  ]

     Strip Size:                       [16KB]
     Capacity (MB):                    xxx.xx              →←:Select Screen
                                                           ↑↓:Select Item
     ▶  Create Volume                                      Enter:Select
                                                           +/-:Change Opt.
     Select two disk                                       F1:General Help
                                                           F2:Previous Values
                                                           F3:Optimized Defaults
                                                           F4:Save & Exit
                                                           ESC:Exit



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```

Create RAID Volume

Item	Options	Description
Name	Volume1	Set the volume name of RAID volume.
RAID Level	RAID0 (Stripe) RAID1 (Mirror) Recovery	Set the type of RAID volume. Do not set other than RAID1 (Mirror).
Select Disks	☐ / X	Set SATA disk that configures RAID volume. SATA disk can be specified with [X].
Stripe Size	4KB 8KB 16GB 32KB 64KB 128KB	Set the stripe size. This is not used with this product.
Capacity (MB)	xxx.xx	Set the capacity of RAID volume.
Synchronization	On Request Continuous	This is displayed when Recovery is selected. *This is not used with this product.
▶ Create Volume	-	Create RAID volume.

Non-RAID Physical Disks
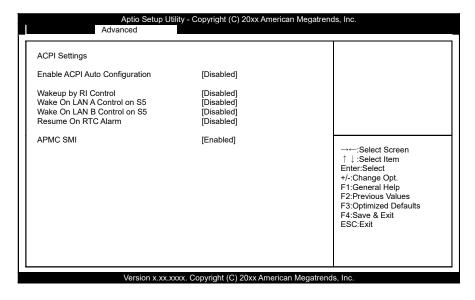
Item	Options	Description
SATA 0.0, XXXXX, XXXGB	-	The model, the serial number, capacity, and state of SATA disk without RAID setting are displayed.
SATA 0.1, XXXXX, XXXGB	-	The model, the serial number, capacity, and state of SATA disk without RAID setting are displayed.

⚠ CAUTION

● Always refer to **"Software RAID Setup (page84)"** when creating RAID volume.

● The CONTEC only supports mirroring. If you intend to create RAID volume other than mirroring, we leave it as user's option.

7. ACPI Settings

Use this menu to configure ACPI power management settings.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Advanced

  ACPI Settings

  Enable ACPI Auto Configuration       [Disabled]

  Wakeup by RI Control                 [Disabled]
  Wake On LAN A Control on S5          [Disabled]
  Wake On LAN B Control on S5          [Disabled]
  Resume On RTC Alarm                  [Disabled]

  APMC SMI                             [Enabled]
                                                        →←:Select Screen
                                                        ↑↓:Select Item
                                                        Enter:Select
                                                        +/-:Change Opt.
                                                        F1:General Help
                                                        F2:Previous Values
                                                        F3:Optimized Defaults
                                                        F4:Save & Exit
                                                        ESC:Exit

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```

ACPI Settings

Item	Options	Description
Enable ACPI Auto Configuration	Disabled / Enabled	Do not change this setting.
Wakeup by RI Control	Disabled / Enabled	Configure the Resume on Ring function settings.
Wake on LAN A Control on S5	Disabled / Enabled	Configure the Wake on LAN settings for LAN A port.
Wake on LAN B Control on S5	Disabled / Enabled	Configure the Wake on LAN settings for LAN B port.
Resume on RTC Alarm	Disabled / Enabled	Enable or disable the function for automatically turning on the system at the specified date and time. When enabled, use the following items to set the date and time for the system to be automatically turned on.
APMC SMI	Disabled / Enabled	Do not change this setting.

Resume On RTC Alarm (Only Available When "Enabled" Is Selected)

Item	Options	Description
RTC Wake up Day	0 - 31	Set the day at which the system will automatically turn on. When this is set to "0," the system will turn on each day.
RTC Wake up Hour	0 - 23	Set the hour at which the system will automatically turn on.
RTC Wake up Minute	0 - 59	Set the minute at which the system will automatically turn on.
RTC Wake up Second	0 - 59	Set the second at which the system will automatically turn on.

8. RAS Configuration

Use this menu to configure the RAS settings

```
                Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
         Advanced


  RAS Configuration

  Firmware Version                    xx.xx

  System Uptime                       XD XXH XXM XXS
  System AC Power-on Time             XD XXH XXM XXS

  WDT during POST                     [Disabled]
  WDT during Boot of the OS           [Disabled]

  Win10 2019 Boot WDT                 [Disabled]        →←:Select Screen
                                                        ↑ ↓ :Select Item
                                                        Enter:Select
                                                        +/-:Change Opt.
                                                        F1:General Help
                                                        F2:Previous Values
                                                        F3:Optimized Defaults
                                                        F4:Save & Exit
                                                        ESC:Exit




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```

(Actual display may differ)

RAS Configuration
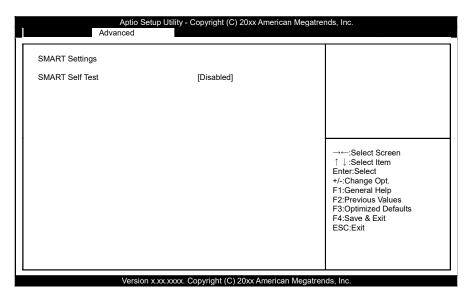
Item	Options	Description
Firmware Version	-	Check the firmware version of the sub controller.
System Uptime	-	Check the total operation time of the system.
System AC Power-on Time	-	Check the total time of the power supplied to the system.
WDT during POST	Disabled / Enabled	Configure WDT function upon booting of BIOS.
WDT during Boot of the OS	Disabled / Enabled	Configure WDT function upon booting of the OS. Installing Contec Manager is necessary to use WDT function. (For the product without OS model only) (Refer to WDT during Boot of the OS Configuration).
Win10 Boot 2019 WDT	Disabled / Enabled	This watchdog timer monitors Window10 2019 booting. Set this to "Enabled" only when using Window10 2019 However, set this to "Disabled" when copying a disk during the recovery. Set this to "Disabled" if not using the indicated OS.

WDT during Boot of the OS Configuration (Only Available When "Enabled" of WDT during Boot of the OS Is Selected)

Item	Options	Description
WDT Value (Seconds)	254	Configure the time-up time of WDT functions. Unit: [Seconds]
WDT Time-up Function	None / Reset / Shutdown	Configure the operations at the time-up of WDT functions.

9. SMART Settings

Use this menu to check the SMART settings.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
 Advanced

  SMART Settings

  SMART Self Test                    [Disabled]



                                                        →←:Select Screen
                                                        ↑ ↓ :Select Item
                                                        Enter:Select
                                                        +/-:Change Opt.
                                                        F1:General Help
                                                        F2:Previous Values
                                                        F3:Optimized Defaults
                                                        F4:Save & Exit
                                                        ESC:Exit



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```
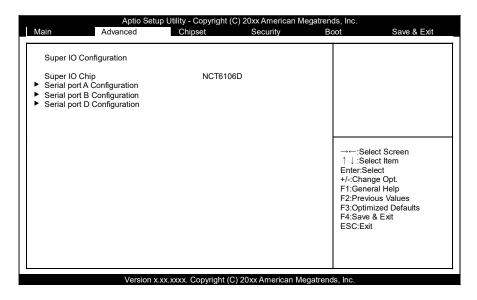
SMART Settings

Item	Options	Description
SMART Self-Test	Disabled / Enabled	Do not change this setting.

10. Super IO Configuration

Use this menu to configure the operation settings for Super IO.

```
                      Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Main          Advanced          Chipset          Security          Boot          Save & Exit


        Super IO Configuration

        Super IO Chip                          NCT6106D
     ▶  Serial port A Configuration
     ▶  Serial port B Configuration
     ▶  Serial port D Configuration


                                                              →←:Select Screen
                                                              ↑ ↓ :Select Item
                                                              Enter:Select
                                                              +/-:Change Opt.
                                                              F1:General Help
                                                              F2:Previous Values
                                                              F3:Optimized Defaults
                                                              F4:Save & Exit
                                                              ESC:Exit




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```

Super IO Configuration

Item	Options	Description
Serial Port A Configuration	Refer to "Serial Port A Configuration"	-
Serial Port B Configuration	Refer to "Serial Port B Configuration"	-
Serial Port D Configuration	Refer to "Serial Port D Configuration"	-

Serial Port A Configuration

Item	Options	Description
Serial Port	Disabled / Enabled	Configure the operation settings for serial port A.
Device Settings	IO=3F8h; IRQ=4;	Display the device settings.

Serial Port B Configuration
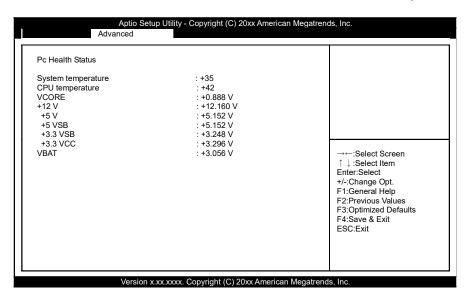
Item	Options	Description
Serial Port	Disabled / Enabled	Configure the operation settings for serial port B.
Device Settings	IO=2F8h; IRQ=3;	Display the device settings.

Serial Port D Configuration

Item	Options	Description
Serial Port	Disabled / Enabled	Configure the operation settings for serial port D.
Device Settings	IO=2E8h; IRQ=7;	Display the device settings.

11. H/W Monitor
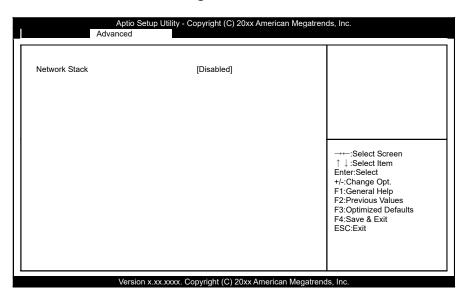
Use this menu to check hardware monitor information such as the CPU temperature.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
   Advanced

   Pc Health Status

   System temperature              : +35
   CPU temperature                 : +42
   VCORE                           : +0.888 V
   +12 V                           : +12.160 V
    +5 V                           : +5.152 V
    +5 VSB                         : +5.152 V
    +3.3 VSB                       : +3.248 V
    +3.3 VCC                       : +3.296 V
   VBAT                            : +3.056 V
                                                    →←:Select Screen
                                                    ↑↓:Select Item
                                                    Enter:Select
                                                    +/-:Change Opt.
                                                    F1:General Help
                                                    F2:Previous Values
                                                    F3:Optimized Defaults
                                                    F4:Save & Exit
                                                    ESC:Exit




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```

(Actual display may differ)

12. Network Stack Configuration

Configure the UEFI network function settings.

```
                 Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
         Advanced


       Network Stack                    [Disabled]




                                                      →←:Select Screen
                                                      ↑ ↓ :Select Item
                                                      Enter:Select
                                                      +/-:Change Opt.
                                                      F1:General Help
                                                      F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit



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```

Network Stack Configuration
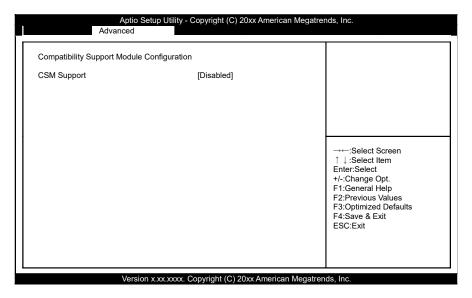
Item	Options	Description
Network Stack	Disabled / Enabled	Configure network functions on UEFI.
Ipv4 PXE Support	Disabled / Enabled	Configure IPv4 PXE.
Ipv4 HTTP Support	Disabled / Enabled	Configure IPv4 HTTP.

13. CSM Configuration

Use this menu to check the CSM (Compatibility Support Module) settings.

```
                    Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
         Advanced

     Compatibility Support Module Configuration

     CSM Support                          [Disabled]




                                                          →←:Select Screen
                                                          ↑↓:Select Item
                                                          Enter:Select
                                                          +/-:Change Opt.
                                                          F1:General Help
                                                          F2:Previous Values
                                                          F3:Optimized Defaults
                                                          F4:Save & Exit
                                                          ESC:Exit



                    Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```
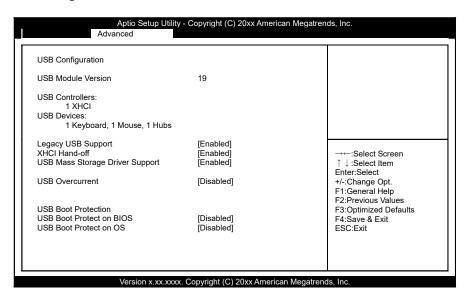
CSM Configuration

Item	Options	Description
CSM Support	Disabled / Enabled	Do not change this setting.

14. USB Configuration

Use this menu to configure the USB controllers.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
      Advanced

      USB Configuration

      USB Module Version              19

      USB Controllers:
            1 XHCI
      USB Devices:
            1 Keyboard, 1 Mouse, 1 Hubs

      Legacy USB Support              [Enabled]
      XHCI Hand-off                   [Enabled]          →←:Select Screen
      USB Mass Storage Driver Support [Enabled]          ↑↓:Select Item
                                                         Enter:Select
      USB Overcurrent                 [Disabled]         +/-:Change Opt.
                                                         F1:General Help
                                                         F2:Previous Values
      USB Boot Protection                                F3:Optimized Defaults
      USB Boot Protect on BIOS        [Disabled]         F4:Save & Exit
      USB Boot Protect on OS          [Disabled]         ESC:Exit




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```

(Actual display may differ)

USB Configuration

Item	Options	Description
Legacy USB Support	Disabled / Enabled / Auto	Configure whether USB keyboards and similar devices will be usable with legacy operating systems (such as MS-DOS).
XHCI Hand-off	Disabled / Enabled	Do not change this setting.
USB Mass Storage Driver Support	Disabled / Enabled	Configure the USB storage support settings with BIOS.
USB Overcurrent	Disabled / Enabled	Configure the behavior of the overcurrent detention of USB port power.
USB Boot Protect on BIOS / OS	Disabled / Enabled	Selecting Enabled stores the information of the USB device connected at the time onto NVRAM.　When entering BIOS setup menu or OS, the stored information and the information of the USB device currently connected will be compared. Processing stops if they are not the same.

(Only available when "USB Boot Protect on BIOS / OS" is selecting Enabled)

Item	Options	Description
Protect by Vendor / Product / S/N	Disabled / Enabled	Select which USB information should be compared. Vendor : Compare vendor names. Product : Compare product names. S/N : Compare serial numbers.
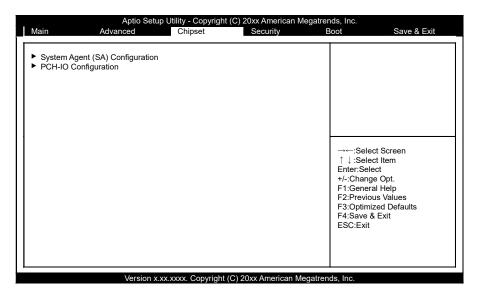
Item	Options	Description
XXXXXXXXXXX (USB Device name) (Vendor name)	Disabled / Ignored / Enabled	Set whether the information should be compared per device stored in NVRAM. Enabled : The information should be compared. Disabled : The information should not be compared. *When this device is found, it indicates the information is not the same. Ignored : Even when this device cannot be found, the comparison will be ignored.

⚠ CAUTION

Do not forget USB configuration you stored. If you cannot recover it, contact your retailer.

5.Chipset

Specify the detailed chipset functions. The following items are available.

```
                   Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Main            Advanced          Chipset          Security          Boot          Save & Exit

      ▶ System Agent (SA) Configuration
      ▶ PCH-IO Configuration




                                                                  →←:Select Screen
                                                                  ↑↓:Select Item
                                                                  Enter:Select
                                                                  +/-:Change Opt.
                                                                  F1:General Help
                                                                  F2:Previous Values
                                                                  F3:Optimized Defaults
                                                                  F4:Save & Exit
                                                                  ESC:Exit



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```

System Agent (SA) Configuration
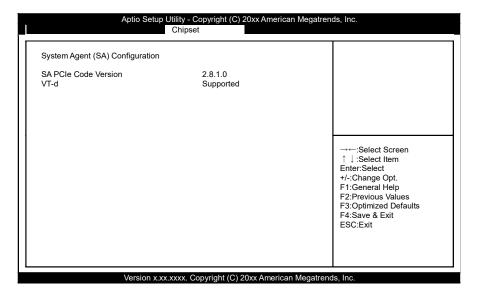
Use this menu to check the System Agent configuration.

PCH-IO Configuration

Use this menu to specify the PCH-IO configuration.
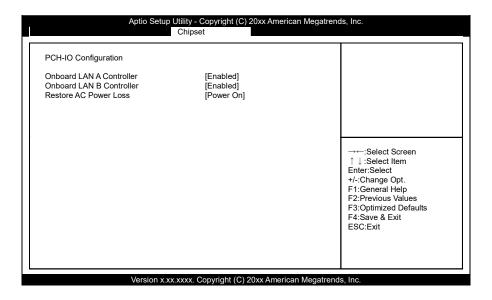
1. System Agent (SA) Configuration

Use this menu to check the System Agent configuration.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
          Chipset

System Agent (SA) Configuration

SA PCIe Code Version              2.8.1.0
VT-d                              Supported


                                                →←:Select Screen
                                                ↑↓:Select Item
                                                Enter:Select
                                                +/-:Change Opt.
                                                F1:General Help
                                                F2:Previous Values
                                                F3:Optimized Defaults
                                                F4:Save & Exit
                                                ESC:Exit



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```

2. PCH-IO Configuration

Use this menu to configure the operation settings for PCH-IO.

```
                Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
                          Chipset

       PCH-IO Configuration

       Onboard LAN A Controller          [Enabled]
       Onboard LAN B Controller          [Enabled]
       Restore AC Power Loss             [Power On]



                                                      →←:Select Screen
                                                      ↑↓:Select Item
                                                      Enter:Select
                                                      +/-:Change Opt.
                                                      F1:General Help
                                                      F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit



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```

PCH-IO Configuration
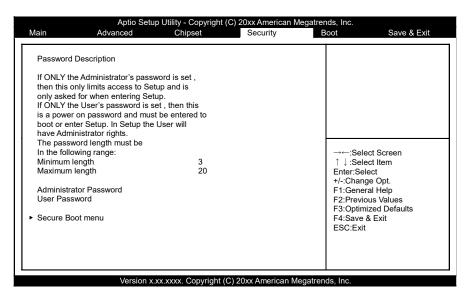
Item	Options	Description
Onboard LAN A Controller	Disabled / Enabled	Configure the controller settings for LAN A.
Onboard LAN B Controller	Disabled / Enabled	Configure the controller settings for LAN B.
Restore AC Power Loss	Power On / Power Off	Set whether to start the system at the same time the power supply starts. Power On: The system will start at the same time the power supply starts. Power Off: Press the power button to start the system. The system does not start at the same time the power supply starts.

6.Security

Configure the security of the system settings. The following items are available.

```
                 Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Main           Advanced        Chipset         Security        Boot         Save & Exit

       Password Description

       If ONLY the Administrator's password is set ,
       then this only limits access to Setup and is
       only asked for when entering Setup.
       If ONLY the User's password is set , then this
       is a power on password and must be entered to
       boot or enter Setup. In Setup the User will
       have Administrator rights.
       The password length must be
       In the following range:                          →←:Select Screen
       Minimum length                    3              ↑↓:Select Item
       Maximum length                    20             Enter:Select
                                                        +/-:Change Opt.
       Administrator Password                           F1:General Help
       User Password                                    F2:Previous Values
                                                        F3:Optimized Defaults
    ▶ Secure Boot menu                                  F4:Save & Exit
                                                        ESC:Exit



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```

Administrator Password

Set the Administrator Password.

Press Enter to display the following screen for entering the password.

Administrator Password		
Create New Password	[****	]
Confirm New Password	[****	]

Enter a password at least 3 characters long twice.

To disable the password, enter the Administrator Password entry screen again.

User Password

Set the user password.

Press Enter to display the following screen for entering the password.

User Password		
Create New Password	[****	]
Confirm New Password	[****	]

Enter a password at least 3 characters long twice.

To disable the password, enter the User Password entry screen again.

⚠ CAUTION
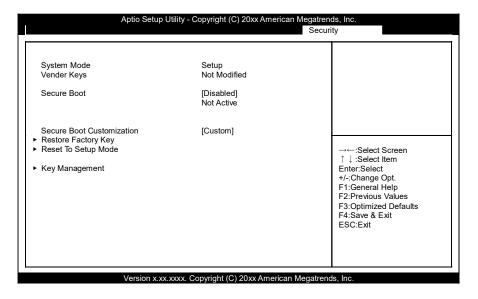
Be careful to not forget the password. If you forget the password, the product will have to be repaired at an extra cost.

1. Secure Boot menu

Configure the Secure Boot settings.

Leave these settings as configured before shipment.

```
                    Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
                                                        Security


        System Mode                      Setup
        Vender Keys                      Not Modified

        Secure Boot                      [Disabled]
                                         Not Active


        Secure Boot Customization        [Custom]
      ▸ Restore Factory Key
      ▸ Reset To Setup Mode                                        →←:Select Screen
                                                                   ↑ ↓ :Select Item
      ▸ Key Management                                             Enter:Select
                                                                   +/-:Change Opt.
                                                                   F1:General Help
                                                                   F2:Previous Values
                                                                   F3:Optimized Defaults
                                                                   F4:Save & Exit
                                                                   ESC:Exit




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```

Secure Boot menu

Item	Options	Description
Secure Boot	Disabled / Enabled	Do not change this setting.
Secure Boot Customization	Standard / Custom	Do not change this setting.
Restore Factory Key	-	Do not change this setting.
Reset To Setup Mode	-	Do not change this setting.
Key Management	-	Do not change this setting.

7.Boot Configuration

Configure the settings boot devices and other devices.

```
                       Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
       Main            Advanced         Chipset          Security         Boot         Save & Exit

            Boot Configuration
            Setup Prompt Timeout                  1
            Bootup NumLock State                  [On]
            Quiet Boot                            [Disabled]
            CONTEC Fast Boot                      [Disabled]
            Fast Boot                             [Disabled]

            New Boot Option Policy                [Default]
            Boot mode select                      [UEFI]

            Boot Option Priorities                           →←:Select Screen
            Boot Option #1                        [xxxxxxxx]  ↑↓:Select Item
                                                             Enter:Select
                                                             +/-:Change Opt.
                                                             F1:General Help
                                                             F2:Previous Values
                                                             F3:Optimized Defaults
                                                             F4:Save & Exit
                                                             ESC:Exit




                       Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```
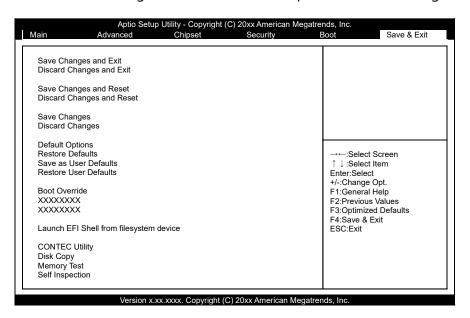
Boot Configuration

Item	Options	Description
Setup Prompt Timeout	1	Set the standby time for BIOS Setup <DEL> or <F2> input. Unit : [second]
Bootup NumLock State	On / Off	Set the NumLock status when the system starts.
Quiet Boot	Disabled / Enabled	Do not change this setting.
CONTEC Fast Boot	Disabled / Enabled	Configure this setting for faster startup times. When this function is enabled, Network Stack and SMART Self Test on BIOS cannot be used.
Boot Option #x	XXXXXXXX (Specify the arbitrary device)	Set the start order of the connected devices.
Fast Boot	Disabled / Enabled	Do not change this setting.
New Boot Option Policy	Default / Place First / Place Last	Do not change this setting.

8.Save & Exit

Use this menu to load/save setting items, and exit the setup menu. The following items are available.

```
                  Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Main          Advanced        Chipset        Security        Boot          Save & Exit

      Save Changes and Exit
      Discard Changes and Exit

      Save Changes and Reset
      Discard Changes and Reset

      Save Changes
      Discard Changes

      Default Options
      Restore Defaults                              →←:Select Screen
      Save as User Defaults                         ↑↓:Select Item
      Restore User Defaults                         Enter:Select
                                                    +/-:Change Opt.
      Boot Override                                 F1:General Help
      XXXXXXXX                                      F2:Previous Values
      XXXXXXXX                                      F3:Optimized Defaults
                                                    F4:Save & Exit
      Launch EFI Shell from filesystem device       ESC:Exit

      CONTEC Utility
      Disk Copy
      Memory Test
      Self Inspection

                  Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

Save Changes and Exit

Save the changed settings and exit.

Discard Changes and Exit

Exit without saving the changed settings.

Save Changes and Reset

Save the changed settings and restart.

Discard Changes and Reset

Restart without saving the changed settings.

Save Changes

Save the changed settings.

Discard Changes

Discard the changed settings.

Restore Defaults

Return the settings to the default values.

Save as User Defaults

Save the settings as the user default values.

Restore User Defaults

Return the settings to the user default values.

Boot Override

Specify this setting when you want to temporarily start the system from a connected device other than those that have been set with the Boot Configuration menu.

In place of XXX, the bootable devices are displayed.

CONTEC Utility

Use utilities that operate in the UEFI environment. See the next section for details and usage methods.

9.CONTEC Utility

Utility that runs on the UEFI environment can be used. The following items are available.

Disk Copy

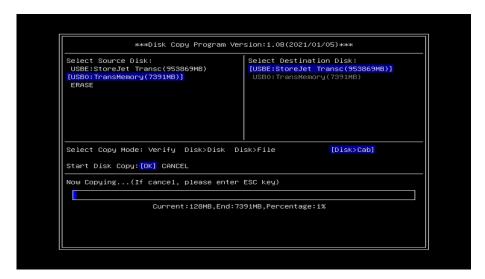Copy the disk and perform such functions as backup and restore..

Memory Test y

Execute the Memory Test of the PASSMARK..

Self Inspection

Execute the Self Inspection.

1. Disk Copy

Copy the disk and perform such functions as backup and restore. Available only when two or more storage devices are connected.

```
             ***Disk Copy Program Version:1.08(2021/01/05)***
  Select Source Disk:                 Select Destination Disk:
   USBE:StoreJet Transc(953869MB)     [USBE:StoreJet Transc(953869MB)]
  [USB0:TransMemory(7391MB)]           USB0:TransMemory(7391MB)
   ERASE



  Select Copy Mode: Verify  Disk>Disk  Disk>File        [Disk>Cab]

  Start Disk Copy:[OK] CANCEL

  Now Copying...(If cancel, please enter ESC key)

  |
              Current:128MB,End:7391MB,Percentage:1%
```

Disk Copy

Item	Options	Description
Select Source Disk	Disk Slotx: xxx M.2: xxx USBx: xxx Erase	Displays the names of the connected USB and SATA devices. Select the copy source disk. When Erase is selected, the entire disk selected as the copy destination is filled with 0x00.
Select Destination Disk	Disk Slotx: xxx M.2: xxx USBx:xxx	Displays the names of the connected USB and SATA devices. Select the copy source disk.
Select Copy Mode	Verify Disk to Disk Disk to File File to Disk Disk to Cab Cab to Disk	Select the copy mode. Verify: The disks are only compared. Disk to Disk: The copy source disk data is completely copied to the copy destination disk. The size of the data being copied will be that of the smaller disk. Disk to File: The copy source disk data is copied as a file to the copy destination disk. The file is saved with the name "conback_x" (where "x" is a sequential number). The copy destination disk must be in FAT32 format. Copying ends when the size limit for the copy destination disk is reached, even if the copy has not yet been completed.

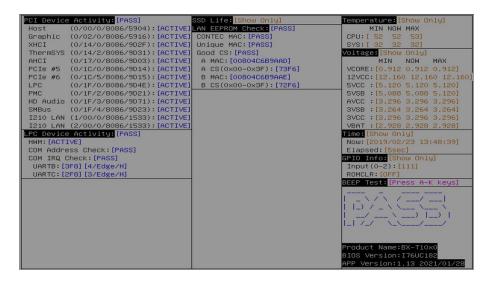| Item	Options	Description
		File to Disk: The copy source disk file data is copied to the copy destination disk. The file must be saved with the name "conback_x" (where "x" is a sequential number). The copy source disk must be in FAT32 format. Copying ends when the size limit for the copy destination disk is reached, even if the copy has not yet been completed. **Disk to Cab:** The copy source disk data is copied to the copy destination disk as a compressed file. The file is saved with the name "concab_x" (where "x" is a sequential number). The copy source disk must be in FAT32 format. Copying ends when the size limit for the copy destination disk is reached, even if the copy has not yet been completed. **Cab to Disk:** The compressed file data from the copy source disk is decompressed and copied to the copy destination disk. The file must be saved with the name "concab_x" (where "x" is a sequential number). The copy destination disk must be in FAT32 format. Copying ends when the size limit for the copy destination disk is reached, even if the copy has not yet been completed.
Data Verification	No Yes	If Yes is selected, the data is compared with the source data to see if the data was copied correctly every time a unit block is copied. If a mismatch occurs, the operation ends with an error. This option is not available when the copy mode is [Disk to Cab] or [Cab to Disk].

⚠ CAUTION

- Because copying is performed according to the capacity of the smaller disk with [Disk to Disk], booting the OS as is cannot be guaranteed.
  To boot the OS directly after copying with [Disk to Disk], copy only between disks with the same capacity, or copy to a disk with a larger capacity before writing back to the source disk.
- After the backup is complete, turn OFF the power and remove one of the storage devices from the product.

2. Self Inspection

Use this menu item to perform self-inspection.

Self Inspection

Item	Options	Description
PCI Device Activity	PASS FAIL	Checks whether the expected PCI devices are present. [PASS] is displayed if all devices are present. [FAIL] is displayed if even one expected device cannot be confirmed.
Host	ACTIVE INACTV	Checks whether the expected PCI devices are present. [ACTIVE] is displayed if the device is confirmed as present. [INACTV] is displayed if the device cannot be confirmed.
Graphic		
XHCI		
ThermSYS		
AHCI		
PCIe #5		
PCIe #6		
LPC		
PMC		
HD Audio		
SMBus		
I210		
LPC Device Activity	PASS FAIL	Check the operations of LPC devices. [PASS] is displayed if all devices are present. [FAIL] is displayed if even one expected device cannot be confirmed or resources are inappropriate.
HWM	ACTIVE INACTV	Checks whether the expected HWM devices are present. [ACTIVE] is displayed if the device is confirmed as present.

Item	Options	Description
		[INACTV] is displayed if the device cannot be confirmed.
COM Address Check	PASS FAIL	Check whether the address for COM resource is correctly set.
COM IRQ Check	PASS FAIL	Check whether the IRQ for COM resource is correctly set.
UARTx	xxx x/x/x	Display the address and the IRQ for each COM.
SSD Life	Display only	Displays the SATA drive service life information. Information will be displayed correctly only for the M.2 SATA drive equipped as standard.
LAN EEPROM Check	PASS FAIL	Check whether the LAN EEPROM data is correct. Checking will not be possible if no LAN device is found.
CONTEC MAC	PASS FAIL	Check whether the MAC data from CONTEC has been written.
Unique MAC	PASS FAIL	Check whether the MAC data is unique in the actual device.
Good CS	PASS FAIL	Check whether the checksum is correct.
x MAC	xxxxxxxxxxxx	Displays the MAC data for each port.
x CS (0x00-0x3F)	xxxx	Displays the checksum for each port.
Temprature	MIN NOW MAX	Displays the minimum, maximum, and current CPU temperature and system temperature values during self-diagnosis.
Voltage	MIN NOW MAX	Displays the minimum, maximum, and current voltage values during self-diagnosis.
Time	Now Elapsed	Displays the current time and the elapsed self-diagnosis run time.
GPIO Info		Displays the GPIO information.
Input (0-2)	Xxx	Displays the signal level of GPIO pins 0 to 2.
ROMCLR	OFF ON	Displays the ROM clear switch status.
BEEP Test	A-K	Press the keys from A to K to check the BEEP tone of each scale.
The overall Pass or Fail	PASS FAIL	[PASS] is displayed if all PCI Device Activity and LAN EEPROM Check items pass. [FAIL] is displayed if even one item fails.

Software RAID Setup

This section describes software mirroring (RAID1) setup procedure.

1.Outline

This section describes software mirroring (RAID1) setup.

The CONTEC only supports mirroring. We do not support operation for other RAIDs. Be aware that functions not supported are outside the scope of the warranty.

Software RAIDs are not hot-swappable.

Refer to **"BIOS Setup (page47)"** for details on how to display the BIOS setup screen and the operation.

⚠ CAUTION

A RAID volume can be created in SATA disk. It cannot be created in the disk connected externally (such as HDD and SSD connected with USB, or USB memory).

2.Create RAID Volume (RAID1(Mirror))

Describe the procedure for creating RAID volume.

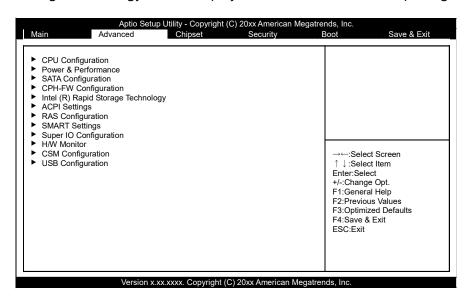Follow the steps below on the BIOS setup screen.

⚠ CAUTION

- If RAID settings are changed, all data on SATA disk that configures RAID will be erased. Back up necessary data in advance.
- Make sure to create RAID volume first, then install operating system. If you create a RAID volume after installing OS, data will be erased and it cannot start OS.
- The CONTEC only supports mirroring. If you intend to create RAID volume other than mirroring, we leave it as user's option.

◆ Setup

1 Go to Advanced> SATA Configuration> SATA Mode Selection. Set Intel RST (RAID) for SATA Mode Selection.

2 Press [F4] key, select [Save & Exit Setup]. Please select [Yes] and press [ENTER] key to save the setting.
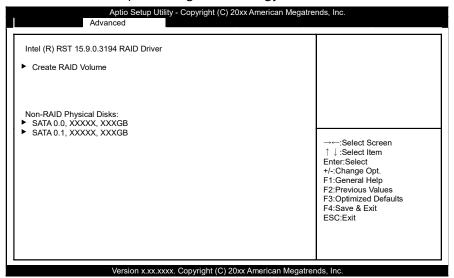
You have now finished the setup.

Intel(R) Rapid Storage Technology will be displayed in Advanced after completing the setup.

```
            Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
   Main        Advanced        Chipset        Security        Boot        Save & Exit

    ▶ CPU Configuration
    ▶ Power & Performance
    ▶ SATA Configuration
    ▶ CPH-FW Configuration
    ▶ Intel (R) Rapid Storage Technology
    ▶ ACPI Settings
    ▶ RAS Configuration
    ▶ SMART Settings
    ▶ Super IO Configuration
    ▶ H/W Monitor
    ▶ CSM Configuration                      →←:Select Screen
    ▶ USB Configuration                      ↑↓:Select Item
                                             Enter:Select
                                             +/-:Change Opt.
                                             F1:General Help
                                             F2:Previous Values
                                             F3:Optimized Defaults
                                             F4:Save & Exit
                                             ESC:Exit



            Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

◆ Create RAID volume

1 Go to Advanced> Intel(R) Rapid Storage Technology> Create RAID Volume.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Advanced

    Intel (R) RST 15.9.0.3194 RAID Driver
    ▶ Create RAID Volume



    Non-RAID Physical Disks:
    ▶ SATA 0.0, XXXXX, XXXGB
    ▶ SATA 0.1, XXXXX, XXXGB
                                              →←:Select Screen
                                              ↑↓ :Select Item
                                              Enter:Select
                                              +/-:Change Opt.
                                              F1:General Help
                                              F2:Previous Values
                                              F3:Optimized Defaults
                                              F4:Save & Exit
                                              ESC:Exit



            Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

2 Set RAID Level for <RAID1 (Mirror)>.

3 In Select Disks, set <x> in [ ] for two of SATA disks that configure RAID.

4 Select <Create Volume> to create RAID volume.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Advanced

    Create RAID Volume

    Name:                       xxxxx
    RAID Level:                 [RAID1 (Mirror)]

    Select Disks:
    SATA 0.0, XXXXX, XXXGB      [  ]
    SATA 0.1, XXXXX, XXXGB      [  ]

    Strip Size:                 [16KB]
    Capacity (MB):              xxx.xx               →←:Select Screen
                                                     ↑↓ :Select Item
    ▶ Create Volume                                  Enter:Select
                                                     +/-:Change Opt.
    Select two disk                                  F1:General Help
                                                     F2:Previous Values
                                                     F3:Optimized Defaults
                                                     F4:Save & Exit
                                                     ESC:Exit



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```

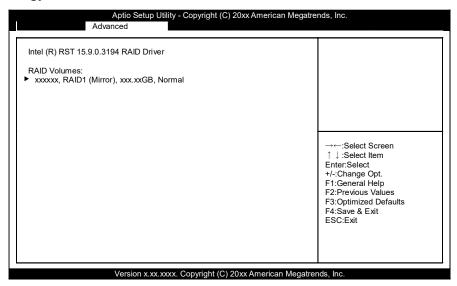**5** Press [F4] key, select [Save & Exit Setup]. Please select [Yes] and press [ENTER] key.

You have now finished creating RAID volume.

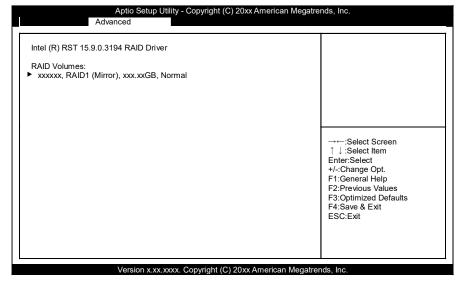After RAID volume has been created, the volume will be displayed in Advanced> Intel(R) Rapid Storage Technology> RAID Volumes.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Advanced

    Intel (R) RST 15.9.0.3194 RAID Driver

    RAID Volumes:
 ▶  xxxxxx, RAID1 (Mirror), xxx.xxGB, Normal



                                            →←:Select Screen
                                            ↑ ↓ :Select Item
                                            Enter:Select
                                            +/-:Change Opt.
                                            F1:General Help
                                            F2:Previous Values
                                            F3:Optimized Defaults
                                            F4:Save & Exit
                                            ESC:Exit

    Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

* Actual display may differ depending on the storage used

When RAID volume has already been created
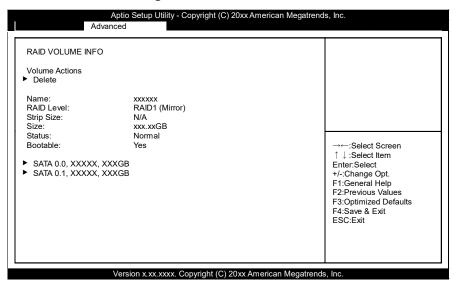
The following screen will be displayed for the product with RAID function.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
    Advanced

    Intel (R) RST 15.9.0.3194 RAID Driver

    RAID Volumes:
 ▶  xxxxxx, RAID1 (Mirror), xxx.xxGB, Normal



                                            →←:Select Screen
                                            ↑ ↓ :Select Item
                                            Enter:Select
                                            +/-:Change Opt.
                                            F1:General Help
                                            F2:Previous Values
                                            F3:Optimized Defaults
                                            F4:Save & Exit
                                            ESC:Exit

    Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

RAID Volume

The state of RAID volume can be checked and deleted.

Also, the state of SATA disk that configures RAID volume can be checked.

```
                   Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
          Advanced

   RAID VOLUME INFO

   Volume Actions
  ▶ Delete

   Name:                    xxxxxx
   RAID Level:              RAID1 (Mirror)
   Strip Size:              N/A
   Size:                    xxx.xxGB
   Status:                  Normal
   Bootable:                Yes                      →←:Select Screen
                                                     ↑↓:Select Item
  ▶ SATA 0.0, XXXXX, XXXGB                           Enter:Select
  ▶ SATA 0.1, XXXXX, XXXGB                           +/-:Change Opt.
                                                     F1:General Help
                                                     F2:Previous Values
                                                     F3:Optimized Defaults
                                                     F4:Save & Exit
                                                     ESC:Exit




                   Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

RAID VOLUME INFO

Item	Options	Description
▶ Delete	-	Delete RAID volume.
SATA 0.0, XXXXX, XXXGB	Refer to PHYSICAL DISK INFO	The state of SATA disk that configures RAID can be checked and RAID settings can be reset.
SATA 0.1, XXXXX, XXXGB	Refer to PHYSICAL DISK INFO	The state of SATA disk that configures RAID can be checked and RAID settings can be reset.

PHYSICAL DISK INFO

Item	Options	Description
Reset to non-RAID	Yes/No	Reset RAID configuration.

3.Delete RAID Volume (RAID1(Mirror))
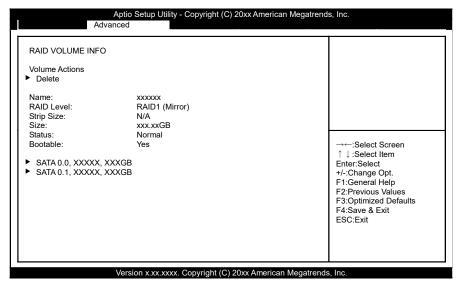
Describe the procedure for deleting RAID volume.
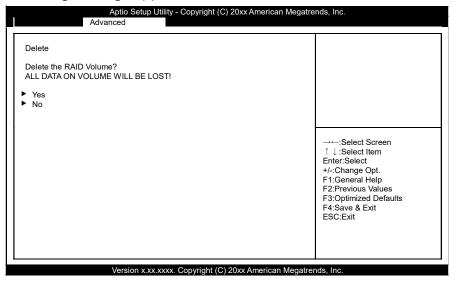
Follow the steps below on the BIOS setup screen.

⚠ CAUTION

Data may be lost if an existing RAID volume is deleted. Back up the data on a RAID volume before deleting it if the data is important.

1 Go to Advanced> Intel(R) Rapid Storage Technology> RAID Volumes. Select the RAID volume you intend to delete.
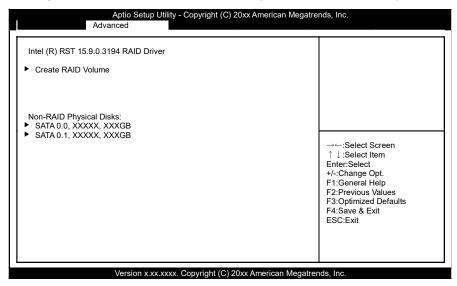
2 Select <Delete> from Volume Actions.

```
              Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
        Advanced

    RAID VOLUME INFO

    Volume Actions
  ▶  Delete

    Name:                  xxxxxx
    RAID Level:            RAID1 (Mirror)
    Strip Size:            N/A
    Size:                  xxx.xxGB
    Status:                Normal
    Bootable:              Yes                          →←:Select Screen
                                                        ↑↓:Select Item
  ▶  SATA 0.0, XXXXX, XXXGB                             Enter:Select
  ▶  SATA 0.1, XXXXX, XXXGB                             +/-:Change Opt.
                                                        F1:General Help
                                                        F2:Previous Values
                                                        F3:Optimized Defaults
                                                        F4:Save & Exit
                                                        ESC:Exit


              Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

3 When the following message appears, select <Yes>.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
  Advanced

  Delete

  Delete the RAID Volume?
  ALL DATA ON VOLUME WILL BE LOST!

  ▶  Yes
  ▶  No
                                                    →←:Select Screen
                                                    ↑ ↓ :Select Item
                                                    Enter:Select
                                                    +/-:Change Opt.
                                                    F1:General Help
                                                    F2:Previous Values
                                                    F3:Optimized Defaults
                                                    F4:Save & Exit
                                                    ESC:Exit



      Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

4 Press [F4] key, select [Save & Exit Setup]. Please select [Yes] and press [ENTER] key to save the setting.

You have now finished deleting RAID volume.

The volume will be deleted from Advanced> Intel(R) Rapid Storage Technology> RAID Volume.

SATA disk that configured RAID volume will be displayed in "Non-RAID Physical Disks".

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
             Advanced

    Intel (R) RST 15.9.0.3194 RAID Driver

  ▶  Create RAID Volume



    Non-RAID Physical Disks:
  ▶  SATA 0.0, XXXXX, XXXGB
  ▶  SATA 0.1, XXXXX, XXXGB
                                                    →←:Select Screen
                                                    ↑ ↓ :Select Item
                                                    Enter:Select
                                                    +/-:Change Opt.
                                                    F1:General Help
                                                    F2:Previous Values
                                                    F3:Optimized Defaults
                                                    F4:Save & Exit
                                                    ESC:Exit



      Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

* Actual display may differ depending on the storage used
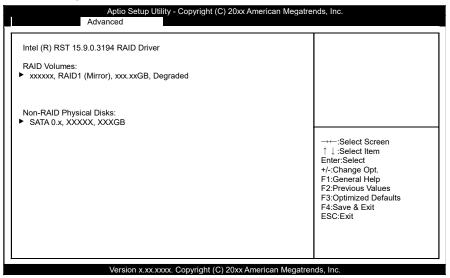
4.RAID Setup When Replacing SATA Disk

If you replace SATA disk while setting the software mirroring (RAID1), you need to rebuild the mirroring RAID drive.
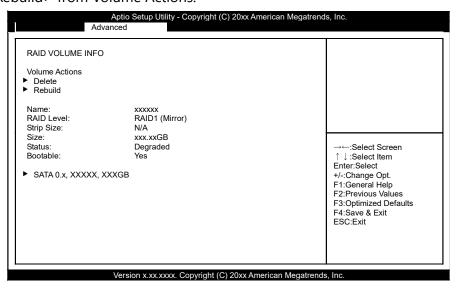
After replacing SATA disk, follow the steps below on the BIOS setup screen.

⚠CAUTION
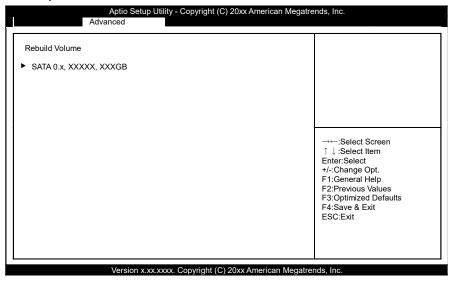
- RAIDs in this product are not hot-swappable. Always turn off the power before replacing SATA disk.
- Data may be lost if RAID settings are changed. Back up the data on RAID volume before deleting it if the data is important.

1 Replace SATA disk.

2 Go to Advanced> Intel(R) Rapid Storage Technology> RAID Volumes.　Select RAID volume you intend to reconfigure.

```
Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
   Advanced

   Intel (R) RST 15.9.0.3194 RAID Driver

   RAID Volumes:
 ▶ xxxxxx, RAID1 (Mirror), xxx.xxGB, Degraded


   Non-RAID Physical Disks:
 ▶ SATA 0.x, XXXXX, XXXGB
                                          →←:Select Screen
                                          ↑↓:Select Item
                                          Enter:Select
                                          +/-:Change Opt.
                                          F1:General Help
                                          F2:Previous Values
                                          F3:Optimized Defaults
                                          F4:Save & Exit
                                          ESC:Exit



      Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

3 Select <Rebuild> from Volume Actions.

```
           Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
               Advanced

        RAID VOLUME INFO

        Volume Actions
        ▶  Delete
        ▶  Rebuild

         Name:                  xxxxxx
         RAID Level:            RAID1 (Mirror)
         Strip Size:            N/A
         Size:                  xxx.xxGB
         Status:                Degraded              →←:Select Screen
         Bootable:              Yes                   ↑ ↓ :Select Item
                                                      Enter:Select
        ▶  SATA 0.x, XXXXX, XXXGB                     +/-:Change Opt.
                                                      F1:General Help
                                                      F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit




           Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

4 Select SATA disk you intend to rebuild.

```
           Aptio Setup Utility - Copyright (C) 20xx American Megatrends, Inc.
               Advanced

        Rebuild Volume

        ▶  SATA 0.x, XXXXX, XXXGB




                                                      →←:Select Screen
                                                      ↑ ↓ :Select Item
                                                      Enter:Select
                                                      +/-:Change Opt.
                                                      F1:General Help
                                                      F2:Previous Values
                                                      F3:Optimized Defaults
                                                      F4:Save & Exit
                                                      ESC:Exit




           Version x.xx.xxxx. Copyright (C) 20xx American Megatrends, Inc.
```

5 Press [F4] key, select [Save & Exit Setup]. Please select [Yes] and press [ENTER] key to save the setting.

You have now finished replacing SATA disk device.

Appendix

This section lists the specifications and the physical dimensions of the product, and the details of model name.

1.System Reference

1. Specifications

Function Specifications

Item		Description
CPU		XPT-T1000xxx : Intel® Core™ i7 Processor 7600U (2.80GHz) XPT-T1010xxx : Intel® Core™ i5 Processor 7300U (2.60GHz)
BIOS		BIOS (mfd. by AMI)
Memory		8GB (260-pin SO-DIMM), PC4-17000 (DDR4-2133)
Graphics Controller		Intel® HD Graphics 620 (CPU integrated)
LCD type	LCD	XPT-T10x0xxx :12.1-inch TFT color LCD, XGA (1024 x 768), 16,770,000 colors XPT-T10x0Hxxx : 15-inch TFT color LCD, XGA (1024 x 768), 16,770,000 colors
	Backlight	LED method, The ON/OFF can be controlled by software command.
Touch-screen *1 *2	Resolution	4096×4096 (emulated in 1024 x 768 mode)
	Detection method	Five-wire resistive film analog method
	Connection	Internal serial port
System resolution	DVI-D	800 x 600, 1,024 x 768, 1,152 x 864, 1,280 x 600, 1,280 x 720, 1,280 x 800, 1,280 x 960, 1,280 x 1,024, 1,360 x 768, 1,366 x 768, 1,400 x 1,050, 1,440 x 900, 1,600 x 900, 1,600 x 1,200, 1,920 x 1,080, 1,920 x 1,200 (16,770,000 colors)
	DisplayPort	800 x 600, 1,024 x 768, 1,152 x 864, 1,280 x 600, 1,280 x 720, 1,280 x 800, 1,280 x 960, 1,280 x 1,024, 1,360 x 768, 1,366 x 768, 1,400 x 1,050, 1,440 x 900, 1,600 x 900, 1,600 x 1,200, 1,680 x 1,050, 1,790 x 1,344, 1,856 x 1,392, 1,920 x 1,080, 1,920 x 1,200, 1,920 x 1,440, 2,048 x 1,152, 2,048 x 1,536, 2,560 x 1,440, 2,560 x 1,600, 2,560 x 1,920, 2,560 x 2,048, 3,840 x 2,160 (16,770,000 colors)
Audio		HD Audio compliant, LINE OUT x 1, LINE IN x 1, MIKE IN x 1
SATA *3		2.5 inches S-ATA disk　Slot-in x 2 Serial ATA 3.0 compliant support
LAN		Intel I210IT controller　1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector x 2 (supports Wake On LAN)
USB		USB 3.0-compliant x 4 ports USB 2.0-compliant x 2 ports
Serial		RS-232C 3 ports (one of the ports is used for touch-screen), Baud rate: 50 - 115,200bps
Hardware monitoring		Monitoring CPU temperature, board temperature, power voltage
Watchdog timer (WDT)		Software programmable, 255 level (1sec - 255sec) Time up allows reset shutdown or external output.
Real Time Clock		Lithium backup battery life: 10 years or longer The real-time clock is accurate within ±3 minutes (at 25°C) per month (CPU built-in RTC).
Power Management		Power management setup via BIOS Power On by Ring/Wake On LAN

Item		Description
		Supports ACPI Power management
Interface	Display	DVI-D x 1 (25-pin DVI-D connector), Display Port x 1
	Audio	LINE OUT: 3.5φ Stereo mini jack, Full-scale output level 1.2Vrms (Typ.) LINE IN: 3.5φ Stereo mini jack, Full-scale output level 1.4Vrms (Typ.) MIC IN: 3.5φ Stereo mini jack, Full-scale input level 1.4Vrms (Typ.)
	Serial ATA slot	Slot-in 2.5 inches SATA hard disk x 2
	LAN	2-port (RJ-45 connector)
	USB	USB3.0 compliant 4port (TYPE-A connector) USB2.0 compliant 2port (TYPE-A connector)
	RS-232C	2-port (9pin D-SUB connector [male])
Power supply	Rated input voltage	12 - 24VDC *4
	Input voltage range	10.8 - 31.2VDC
	Current consumption	XPT-T10x0LXx : 12V 4.9A, 24V 2.6A XPT-T1000HX : 12V 4.6A, 24V 2.3A
	External device power supply capacity	SATA slot: +5V 2A (1,000mA x 2 per slot) USB3.0 I/F: +5V 3.6A (900mA x 4 per port) USB2.0 I/F: +5V 1.0A (500mA x 2 per port)
Waterproofing and dust-proofing		Front part conforming to IP65 (Use the packing supplied.)
Cutting dimensions of the screen (mm)		XPT-T1000LX : 303(W) x 243(H) XPT-T1000HX : 358(W) x 289(H) XPT-T1010LXC : 331(W)x272(H)
Physical dimensions (mm)		XPT-T1000LX : 316(W) x 73(D) x 256(H) XPT-T1000HX : 373(W) x 73(D) x 304(H) XPT-T1010LXC : 346(W)×73(D)×287(H) (Not including the attachment fittings or protrusions)
Weight		XPT-T1000LX : 4.2kg (approx.) XPT-T1000HX : 5.1kg (approx.) XPT-T1010LXC : 4.8kg (approx.) (Not including the attachment fittings)

*1   Accuracy is within the error of 1.5% for the periphery of the touchable area, and the other areas are within 1%.

*2   When using Windows 10, the mouse cursor is not displayed if the mouse device is not connected. The virtual mouse driver is required to display the cursor.   Please download it from the CONTEC website.

*3   The capacity of storage device in the OS pre-installed type is a value when 1GB is calculated by 1 billion bytes. The capacity that can be recognized from OS might be displayed less than the actual value.

*4   Use a power cable shorter than 3m.

Environment Requirements

Item		Description
Operating temperature		0 - 45°C
Operating Humidity		-10 - +60°C
Non-operating ambient temperature		10 - 90%RH (No condensation)
Non-operating ambient 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	Touch /±4kV (IEC61000-4-2 Level 2, EN61000-4-2 Level 2) Air /±8kV (IEC61000-4-2 Level 3, EN61000-4-2 Level 3)
Vibration resistance (The product alone)	Sweep resistance	(1) HDD built-in type (when current is applied): 10 - 50Hz/0.5G 25minutes each in X, Y, and Z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant) (2) HDD built-in type (when current is not applied) and other types: 10 - 57Hz /semi-amplitude vibration 0.075mm, 57 - 150Hz/1.0G 40minutes each in X, Y, and Z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
Impact resistance		10G half-sine shock for 11ms in X, Y, and Z directions (JIS C 60068-2-27-compliant, IEC 60068-2-27-compliant)
Grounding		Class D grounding, SG-FG / continuity
Standard		VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

*5 When AC adapter "PWA-90AWD1" is used.

Display Optical Specifications

XPT-T1000LX / XPT-T1010LXC
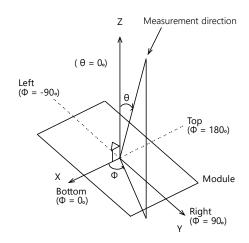
Parameter	Condition			Min.	Typ.
Visual angle (vertical)	CR ≥ 10	Φ = 180°	Display. Monochrome	70deg	80deg
		Φ = 0°		70deg	80deg
Visual angle (horizontal)		Φ = +90°		60deg	70deg
		Φ = -90°		60deg	70deg
Surface brightness (at center)	Display in white			240cd/m^2	300cd/m^2

XPT-T1000HX

Parameter	Condition			Min.	Typ.
Visual angle (vertical)	CR ≥ 10	Φ = 180°	Display. Monochrome	80deg	88deg
		Φ = 0°		80deg	88deg
Visual angle (horizontal)		Φ = +90°		80deg	88deg
		Φ = -90°		80deg	88deg
Surface brightness (at center)	Display in white			240cd/m^2	300cd/m^2

*"Surface brightness" represents a numerical value per display. The expected brightness through a touch screen is about 80% lower than the above value.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness at screen center with white displayed}}{\text{Brightness at screen center with black displayed}}$$

⚠ CAUTION

The above optical specification data shows optical characteristics of the liquid crystal in the display; the data does not represent the actual view on the display or its viewing angles.

2. Power Management Features

Support both ACPI (Advanced Configuration and Power Interface).

● ACPI v2.0 compliant

● Hardware automatic wake-up

3. Power Requirements

System requires a clean, steady power source for reliable performance of the high frequency CPU on the product, the quality of the power supply is even more important.

For the best performance makes sure your power supply provides a range of 10.8 V minimum to 31.2 V maximum DC power source.

Power Consumption

For typical configurations, this product is designed to operate with at least 65W power supply. In addition, the power supply must meet the following requirements.
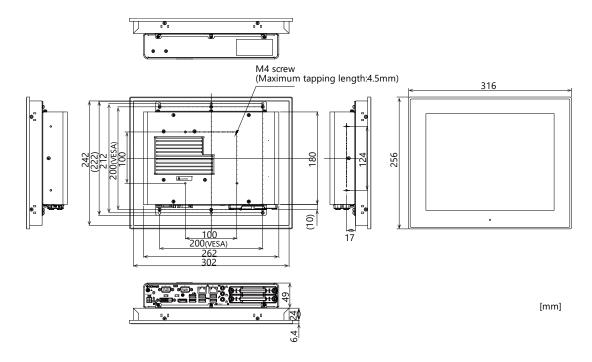
- Rising time for power supply: 2ms - 30ms

The following table lists the power supply's tolerances for DC voltages:
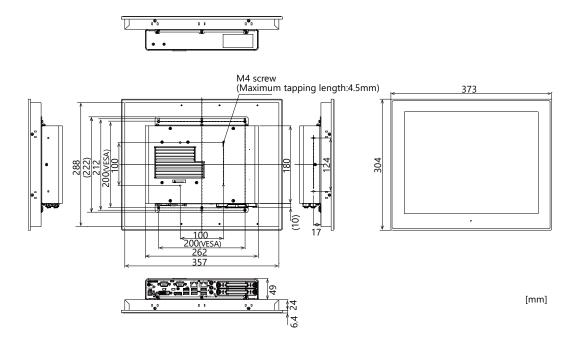
DC Voltage	Acceptable Tolerance
+ 12 - 24VDC	+ 10.8 - 31.2VDC

2.Physical Dimensions
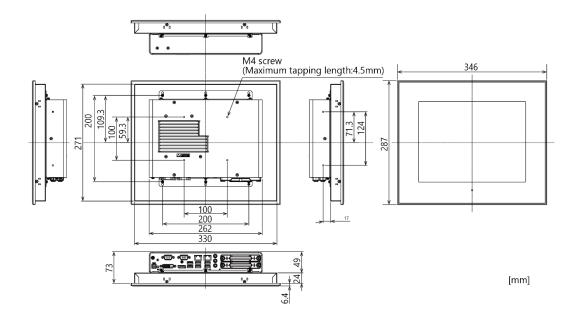
XPT-T1000LX [12.1-inch model]

M4 screw
(Maximum tapping length:4.5mm)

[mm]

XPT-T1000HX [15-inch model]

M4 screw
(Maximum tapping length:4.5mm)

[mm]

XPT-T1010LXC [12.1inch(PT-955LXC compatible) model]

M4 screw
(Maximum tapping length:4.5mm)

[mm]

3.POST Codes

POST (hex)	Description
< Security (SEC) phase >	
1h	Power on. Reset type detection (software / hardware)
2h	AP initialization before microcode loading
3h	North Bridge initialization before microcode loading
4h	South Bridge initialization before microcode loading
5h	OEM initialization before microcode loading
6h	Microcode load
7h	AP initialization after microcode loading
8h	North Bridge initialization after microcode loading
9h	South Bridge initialization after microcode loading
Ah	OEM initialization after microcode loading
Bh	Cache initialization
< Pre-EFI Initialization (PEI) phase >	
10h	PEI Core is started
11h	Pre-memory CPU initialization is started
12h - 14h	Pre-memory CPU initialization (CPU module specific)
15h	Pre-memory North Bridge initialization is started
16h - 18h	Pre-Memory North Bridge initialization (North Bridge module specific)
19h	Pre-memory South Bridge initialization is started
1Ah - 1Ch	Pre-memory South Bridge initialization (South Bridge module specific)
1Dh - 2Ah	OEM, PRI memory initialization codes
2Bh	Memory initialization : Serial Presence Detect(SPD) Data reading
2Ch	Memory initialization : Memory presence detection
2Dh	Memory initialization : Programming memory timing information
2Eh	Memory initialization : Configuration memory
2Fh	Memory initialization : Other
30h	ASL for reserved (See ACPI/ASL Checkpoints)
31h	Memory installed
32h	CPU post-memory initialization starts
33h	CPU post-memory initialization : Cache initialization
34h	CPU post-memory initialization : Application Processor(s)(AP) initialization
35h	CPU post-memory initialization : Boot Strap Processor(BSP) selection
37h	CPU post-memory initialization : System Management Mode(SMM) initialization
38h	Post-memory, North Bridge initialization is started
39h - 3Ah	Post-memory, North Bridge initialization (North Bridge module specific)
3Bh	Post-memory, South Bridge initialization starts

POST (hex)	Description
3Ch - 3Eh	Post-memory, South Bridge initialization (South Bridge module specific)
3Fh - 4Eh	OEM post memory initialization codes
4Fh	DXE IPL is started
< Driver Execution Environment (DXE) phase >	
60h	DXE Core start is started
61h	NVRAM initialization
62h	Installation of the South Bridge Runtime Services
63h	CPU DXE installation is started
64h - 67h	CPU DXE installation is started (CPU module specific)
68h	PCI host bridge installation
69h	North Bridge DXE initialization is started
6Ah	North Bridge DXE SMM initialization is started
6Bh - 6Fh	North Bridge DXE initialization (North Bridge module specific)
70h	South Bridge DXE initialization is started
71h	South Bridge DXE SMM initialization is started
72h	South Bridge device initialization
73h - 77h	South Bridge DXE Initialization (South Bridge module specific)
78h	ACPI module initialization
79h	CSM initialization
7Ah - 7Fh	Reserve for future AMI DXE codes
80h - 8Fh	OEM DXE initialization codes
90h	Boot Device Selection (BDS) phase
91h	Driver connection is started
92h	PCI Bus initialization is started
93h	PCI Bus Hot Plug Controller Initialization
94h	PCI Bus Enumeration
95h	PCI Bus Request Resources
96h	PCI Bus Assign Resources
97h	Console Output devices connect
98h	Console Input devices connect
99h	Super IO Initialization
9Ah	USB initialization is started
9Bh	USB Reset
9Ch	USB Detect
9Dh	USB Enable
9Eh - 9Fh	Reserved for future AMI codes
A0h	IDE initialization is started
A1h	IDE Reset
A2h	IDE Detect
A3h	IDE Enable

POST (hex)	Description
A4h	SCSI initialization is started
A5h	SCSI Reset
A6h	SCSI Detect
A7h	SCSI Enable
A8h	Setup Verifying Password
A9h	Start of Setup
AAh	Reserved for ASL (see ASL Status Codes section below)
ABh	Setup Input Wait
ACh	Reserved for ASL (see ASL Status Codes section below)
ADh	Ready To Boot event
AEh	Legacy Boot event
AFh	Exit Boot Services event
B0h	Runtime Set Virtual Address MAP Begin
B1h	Runtime Set Virtual Address MAP End
B2h	Legacy Option ROM Initialization
B3h	System Reset
B4h	USB hotplug
B5h	PCI bus hot plug
B6h	Clean-up of NVRAM
B7h	Configuration Reset (reset of NVRAM settings)
B8h - BFh	Reserved for future AMI codes
C0h - CFh	OEM BDS initialization codes
ACPI/ASL Checkpoints	
01h	System is entering S1 sleep state
02h	System is entering S2 sleep state
03h	System is entering S3 sleep state
04h	System is entering S4 sleep state
05h	System is entering S5 sleep state
10h	System is waking up from the S1 sleep state
20h	System is waking up from the S2 sleep state
30h	System is waking up from the S3 sleep state
40h	System is waking up from the S4 sleep state
ACh	System has transitioned into ACPI mode. Interrupt controller is in PIC mode.
AAh	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

4.SERIAL I/O Address and Register Function

◆ I/O Port Addresses
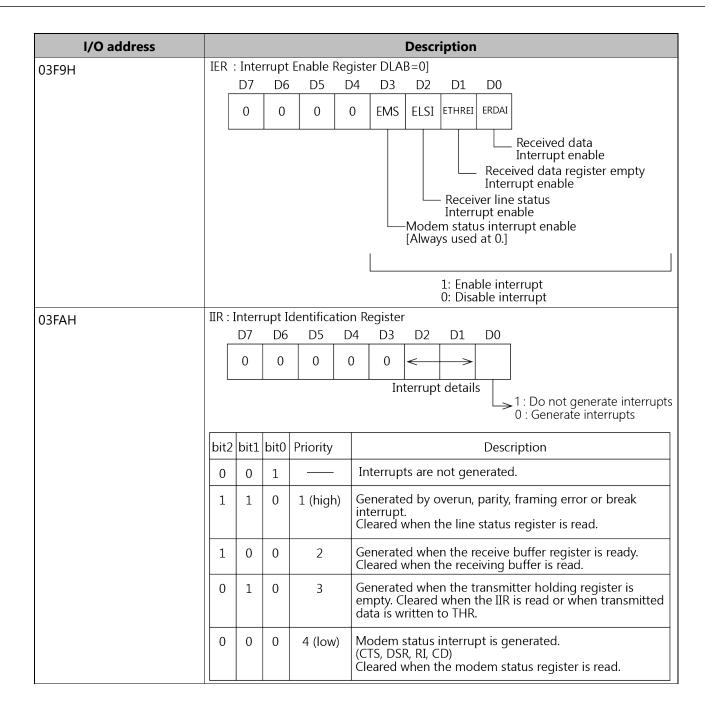
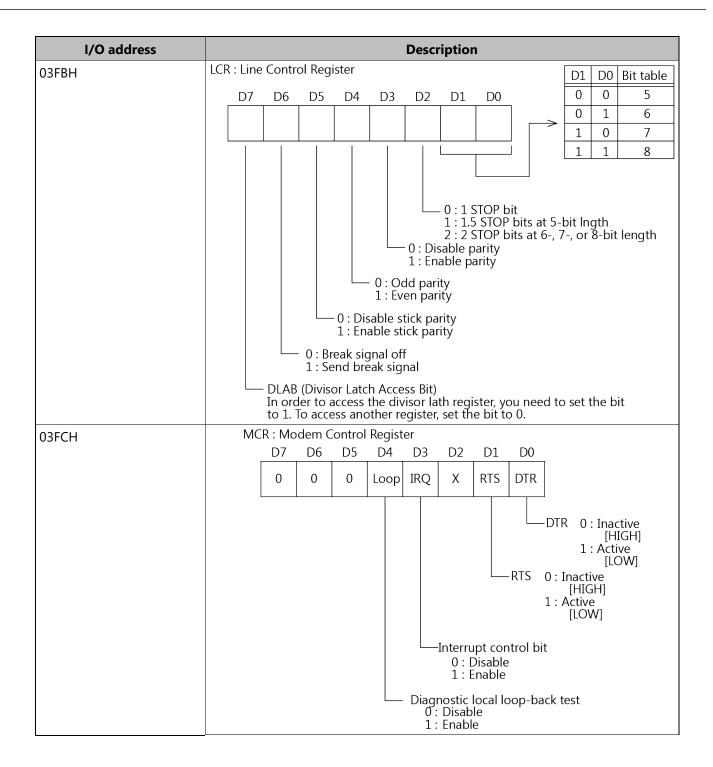The following table lists the I/O addresses in case of SERIAL A.

I/O address	DLAB	Read/Write	Register	
03F8H	0	W	Transmitter holding register	THR
		R	Receive buffer register	RBR
	1	W	Divisor latch register (LSB)	DLL
03F9H	1	W	Divisor latch register (MSB)	DLM
	0	W	Interrupt enable register	IER
03FAH	X	R	Interrupt ID register	IIR
03FBH	X	W	Line control register	LCR
03FCH	X	W	Modem control register	MCR
03FDH	X	R	Line status register	LSR
03FEH	X	R	Modem status register	MSR
03FFH	X	R/W	Scratch register	SCR
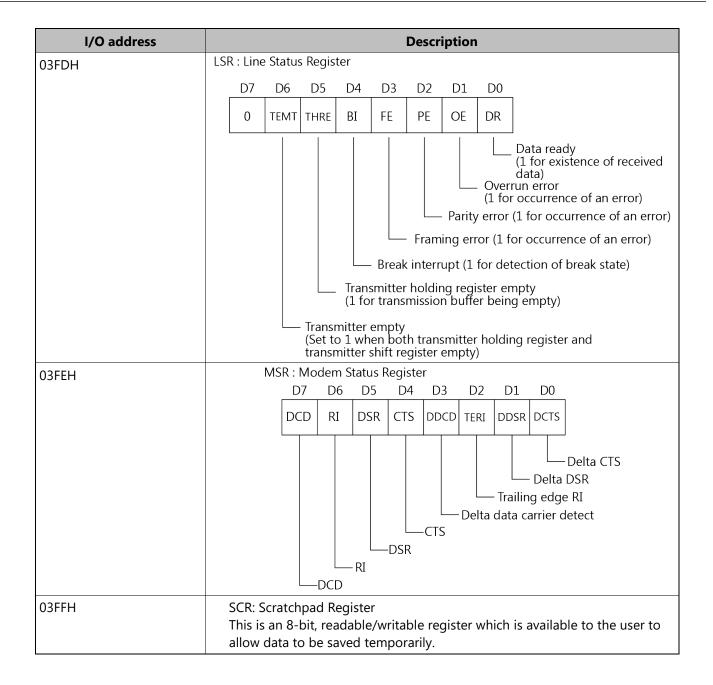
DLAB (Divisor Latch Access Bit) :　The value in bit 7 of the line control register.

Function of Each Register

I/O address	Description
03F8H	THR : Transmitter Holding Register [DLAB=0] D7　D6　D5　D4　D3　D2　D1　D0 bit7 MSB ← → bit0 LSB Register dedicated to write transmitted data to
03F8H	RBR : Reciever Buffer Register [DLAB=0] D7　D6　D5　D4　D3　D2　D1　D0 bit7 MSB ← → bit0 LSB Register dedicated to read recceived data from
03F8H	DLL : Divisor Latch (LSB) [DLAB=1] D7　D6　D5　D4　D3　D2　D1　D0 bit7 MSB ← → bit0 LSB Baud rate setting register (LSB)
03F9H	DLH : Divisor Latch (MSB) [DLAB=1] D7　D6　D5　D4　D3　D2　D1　D0 bit7 MSB ← → bit0 LSB Baud rate setting register (MSB)

I/O address	Description
03F9H	IER : Interrupt Enable Register DLAB=0] D7 D6 D5 D4 D3 D2 D1 D0 0 0 0 0 EMS ELSI ETHREI ERDAI Received data Interrupt enable Received data register empty Interrupt enable Receiver line status Interrupt enable Modem status interrupt enable [Always used at 0.] 1: Enable interrupt 0: Disable interrupt
03FAH	IIR : Interrupt Identification Register D7 D6 D5 D4 D3 D2 D1 D0 0 0 0 0 0 Interrupt details 1 : Do not generate interrupts 0 : Generate interrupts

<div></div>

bit2	bit1	bit0	Priority	Description
0	0	1	——	Interrupts are not generated.
1	1	0	1 (high)	Generated by overun, parity, framing error or break interrupt. Cleared when the line status register is read.
1	0	0	2	Generated when the receive buffer register is ready. Cleared when the receiving buffer is read.
0	1	0	3	Generated when the transmitter holding register is empty. Cleared when the IIR is read or when transmitted data is written to THR.
0	0	0	4 (low)	Modem status interrupt is generated. (CTS, DSR, RI, CD) Cleared when the modem status register is read.

I/O address	Description
03FBH	LCR : Line Control Register
03FCH	MCR : Modem Control Register

03FBH — LCR : Line Control Register

D7 D6 D5 D4 D3 D2 D1 D0

D1	D0	Bit table
0	0	5
0	1	6
1	0	7
1	1	8

D2:
0 : 1 STOP bit
1 : 1.5 STOP bits at 5-bit lngth
2 : 2 STOP bits at 6-, 7-, or 8-bit length

D3:
0 : Disable parity
1 : Enable parity

D4:
0 : Odd parity
1 : Even parity

D5:
0 : Disable stick parity
1 : Enable stick parity

D6:
0 : Break signal off
1 : Send break signal

D7:
DLAB (Divisor Latch Access Bit)
In order to access the divisor lath register, you need to set the bit to 1. To access another register, set the bit to 0.

03FCH — MCR : Modem Control Register

D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	Loop	IRQ	X	RTS	DTR

DTR 0 : Inactive [HIGH]
     1 : Active [LOW]

RTS 0 : Inactive [HIGH]
     1 : Active [LOW]

IRQ: Interrupt control bit
0 : Disable
1 : Enable

Loop: Diagnostic local loop-back test
0 : Disable
1 : Enable

I/O address	Description
03FDH	LSR : Line Status Register D7 D6 D5 D4 D3 D2 D1 D0 | 0 | TEMT | THRE | BI | FE | PE | OE | DR | Data ready (1 for existence of received data) Overrun error (1 for occurrence of an error) Parity error (1 for occurrence of an error) Framing error (1 for occurrence of an error) Break interrupt (1 for detection of break state) Transmitter holding register empty (1 for transmission buffer being empty) Transmitter empty (Set to 1 when both transmitter holding register and transmitter shift register empty)
03FEH	MSR : Modem Status Register D7 D6 D5 D4 D3 D2 D1 D0 | DCD | RI | DSR | CTS | DDCD | TERI | DDSR | DCTS | Delta CTS Delta DSR Trailing edge RI Delta data carrier detect CTS DSR RI DCD
03FFH	SCR: Scratchpad Register This is an 8-bit, readable/writable register which is available to the user to allow data to be saved temporarily.

Baud Rate Settings

A baud rate is set by software by dividing the clock input (1.8461MHz). The baud rate in terms of hardware can be set to a maximum of 115,200 bps for SERIALA and B. The baud rates available in practice depend on the operating environment (cable, software, etc.). The table below lists typical baud rates and their respective values to be written to the divisor latch register (LSB, MSB).

Baud Rate Settings

Baud rate to be set	SERIAL A, B Clock input (1.8461MHz)	
	Value to be set in the divisor register (Decimal)	Setting error (%)
50	2304	---
75	1536	---
110	1047	0.18
134.5	857	0.099
150	768	---
300	384	---
600	192	---
1200	96	---
1800	64	---
2000	58	0.53
2400	48	---
3600	32	---
4800	24	---
7200	16	---
9600	12	---
14400	8	---
19200	6	---
28800	4	---
38400	3	---
57600	2	---
76800	---	---
115200	1	---
153600	---	---
230400	---	---

Example : To set SERIAL A at 9,600 bps, write "00" to the (MSB) divisor latch register and "12 (decimal)" to the (LSB) divisor latch register.

5.Watch-Dog-Timer

The watchdog timer serves as a safeguard against possible system lock-up in your industrial computer system. In most industrial environments, there are heavy equipment, generators, high-voltage power lines, or power drops that have adverse effects on your computer system. For instance, when a power drop occurs, it could cause the CPU to come to a halt state or enter into an infinite loop, resulting in a system lock-up.

The application software created by user with the watchdog timer enabled, a RESET automatically generated unless the software periodically triggers the timer within the setting time-out interval. That is, while the system gets hung up, the running program can't trigger the timer periodically. The timer will generate a reset signal to reboot the system.
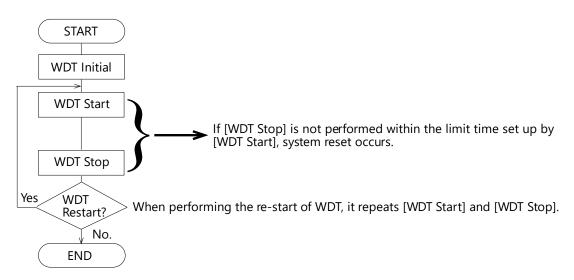
With this function, running programs can be restarted in the usual way even if an abnormal state occurs.

The software can be configured using 255 levels (1 to 255 seconds) of timeout intervals for the watchdog timer. There is also a 2-second tolerance for timeout intervals. To maintain normal system operation, trigger the watchdog timer again using a user-written program with the tolerance in mind.

Ex.) If the time-out interval is set to 30 seconds, the user-created program must retrigger the watchdog timer before 28 seconds will have elapsed in consideration of the tolerance. If the program failed to retrigger the timer (if 28 - 32 seconds have elapsed), the system will automatically reboot.

Here is an example for flow chart and programming how to use the watch-dog-timer.

(1) Example flow chart

```
        ┌─────────┐
        │  START  │
        └─────────┘
             │
      ┌────────────┐
      │ WDT Initial│
      └────────────┘
             │
      ┌────────────┐
      │ WDT Start  │ ──┐
      └────────────┘   ⎫
             │          ⎬──→ If [WDT Stop] is not performed within the limit time set up by
      ┌────────────┐   ⎭     [WDT Start], system reset occurs.
      │  WDT Stop  │ ──┘
      └────────────┘
             │
   Yes    ╱ WDT  ╲
   ◄─────◄ Restart?►   When performing the re-start of WDT, it repeats [WDT Start] and [WDT Stop].
          ╲      ╱
             │ No.
        ┌─────────┐
        │   END   │
        └─────────┘
```

* It is also possible not to perform [WDT Stop] instead of performing [WDT Stop] to [WDT Start], but to perform [WDT Start] continuously at the time of a re-start.

The watchdog timer can be used with dedicated API.
Contact your retailer for more detailed information on API.

⚠ CAUTION

The timer's intervals have a tolerance of ±2 seconds.

6.Battery

1. Battery Specification

The product contains one battery, and the details are as follows:

Item	Description
Type	Lithium primary battery
Model	BR-1/2AA
Maker	Panasonic
Nominal Voltage	3V
Nominal capacity	1,000mAh
Lithium content	1g or less

2. Dispose of the Battery
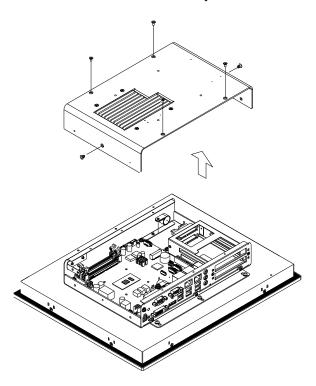
⚠ WARNING

- For battery replacement, contact your retailer as it must be performed as a process of repair.
- Do not attempt to replace the battery as inappropriate battery replacement poses a risk of explosion.
- When disposing of a used battery, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.
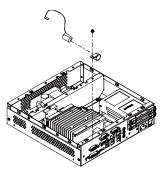
Removing the battery

Follow the steps described below to remove the battery.

1 Remove the screws from the cover of the main body, and then remove the body cover.

2 Remove the screw and take the fixing bracket off. Then, remove the connector to take the battery out.

7.Life of SSD

1. About Write Endurance

SSD contained in product has a write endurance which limits the number of times each memory may be written, due to the characteristic of the memory that is used. Write endurance can be calculated by the following formula as a reference value:

MLC type

Write endurance (Times) =

((Total capacity (KB)) × NAND Flash memory life span (cycles))/ (The size of write data (KB))

Example :

If a 4 MB file is created on the SSD-256GS-2M and is rewritten once every 10 seconds:

Write endurance = ((268,435,456 × 3,000)/4,096) = 196,608,000 (cycles)

Life = 196,608,000 / ((60 / 10) × 60 × 24 × 365) ≈ 62.3 (years)

TLC type

Write endurance (years) =

Total capacity (cycles) / (The number of annual consumed blocks / The total number of blocks)

Example :

If a 4 MB file is created on the SSD-256GS-2TP and is rewritten once every 10 seconds:

The number of annual consumed blocks = (4 x (60 / 10) x 60 x 24 x 365) / 18 = 700,800 (blocks)

Life = 3,000 / (700,800 / 14,400) ≈ 61.64 (years)

The life endurance is reference values under a certain condition. For the actual life, install the dedicated software (*) and write with the estimated actual operation, and check the SMART value.

2. About S.M.A.R.T.

Life endurance can be estimated by installing the self-diagnosis program that can obtain the S.M.A.R.T. information of SSD.

* Ask your retailer for details.

List of Optional Products

This section lists optional items that can be used along
with the product.

1.Optional Products

Optional product items are as follows:

Acquire them as required.

Item	Model	Description
AC adapter	PWA-90AWD1	Switching AC Adapter (12VDC 7.5A)
Storage	PC-HDD100GS-2 *1	2.5-inch SATA HDD 100GB
	SSD-256GS-2M	2.5-inch SATA SSD 256GB (MCL)
	SSD-256GS-2TP	2.5-inch SATA SSD 256GB (TCL)
Screen protective sheets	IPC-CV12	12.1-inch screen protective sheets (10 sheets)
	IPC-CV15	15-inch screen protective sheets (10 sheets)

*1 Not available for XPT-T1010LXC-1230010.

⚠CAUTION

If a product other than our optional one is used, the normal operation may be impaired or the functions may be limited.
Note that the sheets may not protect the screen because it is a few millimeters smaller than the screen size.

Protective sheets		XPT-T1000xX Series	
Model	Sheet size (mm)	Model	Screen size (mm)
IPC-CV12	250.0 x 188.0	XPT-T1000LX	249.0 x 187.5
IPC-CV15	308.0 x 232.0	XPT-T1000HX	307.4 x 231.3

Visit the CONTEC website for the latest optional products.

Web Site   https://www.contec.com/

Customer Support and Inquiry

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

1.Services

CONTEC offers the useful information including product manuals that can be downloaded through the CONTEC website.

Download

https://www.contec.com/download/

You can download updated device driver, firmware, and differential manuals in several languages. Membership registration (myCONTEC) is required to use the services.

Revision History

MONTH YEAR	Summary of Changes
March 2019	The First Edition
July 2019	AC adapter was added due to the product lineup change.　Contents in the "About the Product" and items in the "Specification" were added.
October 2022	Changes due to reduction of bundled products. Additional product lineups.
September 2023	Additional product lineups.

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