BOX-PC
Fanless, Atom x5-E3940 1.6GHz
BX-U200 Series

Base Model

Wireless Model

This product is a fanless embedded PC equipped with an Intel Atom® x5-E3940 (1.6 GHz) processor. Despite the ultra-compact design about as large as two business cards, the product boasts a wide operating temperature range (-30°C to +50°C) as well as excellent performance.

The product includes a rich array of interfaces, including USB Type-C (widely used in mobile devices), DisplayPort, USB 3.2 Gen 1 (USB3.0) × 2, and LAN × 2. The wireless models are equipped with wireless LAN and Bluetooth® for easy connection to digital devices, making the BX-U200 Series ideal as an IoT gateway device for connecting to peripherals.

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.

* The contents in this document are subject to change without notice.
* Visit the CONTEC website to check the latest details in the document.
* The information in the data sheets is as of March, 2021.

Features

- Ultra-compact design about as large as two business cards
This is the smallest [110 (W) × 90 (D) × 29 (H)] and lightest PC in the series. The product can contribute significantly to the miniaturization of equipment while not hindering equipment design regardless of the installation location. VESA-compliant mounting holes (100 × 100 mm) are available, and an optional attachment enables DIN rail mounting. Choose the installation method that best suits your needs.

- USB Type-C port for improved convenience and expandability
The product includes a Type-C port, the latest USB standard. The included Type-C port supports DP Alt Mode (DisplayPort Alternate Mode) and USB PD (Power Delivery), enabling data communication, video output, and power supply simultaneously with a single cable. Connecting to a docking station also makes it possible to include various other interfaces.

- Helps reduce running costs and energy consumption
This product uses the x5-E3940 low power consumption Intel Atom processor platform to achieve low power consumption while still providing sufficient performance.

- 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.

- Wireless connections to various devices via wireless LAN and Bluetooth
The wireless model is equipped with both wireless LAN and Bluetooth. The ability to connect to various peripheral devices wirelessly makes the product ideal for use as an IoT gateway and for edge computing.

- Safety design required for embedded applications
For Windows 10 IoT Enterprise 2019 LTSC installed type, it is possible to use the WF *1 function of OS. It is designed for safety required for embedding purpose, for example, prohibiting unwanted writing to the HDD or SSD with WF function will relieve the concern about the writing limits to the HDD or SSD and prevent an unintentional system alteration.

*1 UWF (Unified Write Filter) is a function of Windows 10 IoT Enterprise 2019 LTSC. They protect the disk from being actually written by redirecting the writing to RAM.

Supported OS

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

Packing List

Name		BX-U200-NA01xxxx [Base Model] Pcs.	BX-U200-W19M01xxxx [OS Pre-install Model] Pcs.	BX-U200R-NA01xxxx [Wireless Model] Pcs.	BX-U200R-W19M01xxxx [OS Pre-install, Wireless Model] Pcs.
The Main Body		1	1	1	1
USB Removal Prevention Fitting		1	1	1	1
USB Type-C Removal Prevention Fitting		1	1	1	1
DIO Connector Complete Set	Housing	1	1	1	1
	Contact	5	5	5	5
3-pin Connector for Power Supply		1	1	1	1
Antenna		-	-	2	2
Cable Tie		2	2	2	2
SLIM HEAD Screw (M2.6 x 4)		3	3	3	3
Hexagon Head Screw with Captive Washer and Cross Recessed (M4 x 10, black)		4	4	4	4
Product Guide		1	1	1	1
IPC Precaution List		1	1	1	1
Warranty Certificate		1	1	1	1
Serial Number Label		1	1	1	1
MICROSOFT SOFTWARE LICENSE TERMS		-	1	-	1
Recovery Disk		-	1	-	1

Specifications

Function Specifications

Item		Description
CPU		Intel Atom ® x5-E3940 Processor 1.6GHz
BIOS		BIOS (mfd. by AMI)
Memory		PC3-10600 (DDR3L, 1333) ECC 4GB, On Board
Graphics Controller		Intel® HD Graphics 500 (CPU integrated)
System resolution	DisplayPort	800 × 600, 1,024 × 768, 1,152 × 864, 1,280 × 720, 1,280 × 800, 1,280 × 1,024, 1,600 × 900, 1,920 × 1,080, 2,560 × 1,440, 3,840 × 2,160, 3,840 × 2,160 (1,6770,000 colors)
	USB Type-C (DP Alt Mode)	800 × 600, 1,024 × 768, 1,152 × 864, 1,280 × 720, 1,280 × 800, 1,280 × 1,024, 1,600 × 900, 1,920 × 1,080, 2,560 × 1,440, 3,840 × 2,160, 3,840 × 2,160 (1,6770,000 colors)
M.2 card slot		1 slot, M.2 2242, SATAIII M.2 card 32GB (MLC) or 64GB (MLC) mounted
LAN		Intel® I210IT controller 1000BASE-T/100BASE-TX/10BASE-T x 2 ports RJ-45 connector (supports Wake On LAN)
USB		USB 3.2 Gen1 (USB3.0) Type-A connector x 2 ports USB 3.2 Gen1 (USB3.0) Type-C connector x 1 ports
Security (TPM)		TCG TPM2.0
Hardware monitoring		Monitoring CPU temperature, board temperature, and power voltage
Watchdog timer (WDT)		Software programmable, 255 level (1sec - 255sec), Time up allows reset, Selectable from either power OFF or external output
General Purpose I/O		Non-isolated type Three inputs and Three outputs (switchable with either remote-reset or remote power-on)
Real Time Clock		Lithium backup battery life: 10 years or more The real-time clock is accurate within ±3 minutes (at 25°C) per month (CPU integrated RTC).
Power Management		Power management setup via BIOS Power On by Ring/Wake On LAN Supports ACPI Power management
Interface	Display	DisplayPort × 1 USB Type-C (DP Alt Mode) × 1
	LAN	2-port (RJ-45 connector)
	USB	USB 3. 2 Gen1(USB3.0) Type-A connector 2 port USB 3. 2 Gen1(USB3.0) Type-C connector 1 port
	DIO	1 port (4pin connector)
	Wireless LAN *1	IEEE 802.11ac/n/b/g
	Bluetooth *1	4.2
Power supply	Rated Voltage Range	12 - 24VDC
	Input Voltage Range	6 - 37VDC
	Current Consumption (Max.)	12V 3.7A 24V 1.9A
	External device power supply capacity	USB 3.2 Gen1 (USB3.0) Type-A I/F : +5V 1.8A (900mA x 2) USB 3.2 Gen1 (USB3.0) Type-C I/F : +5V 1.5A
Physical dimensions (mm)		110(W) x 90(D) x 29(H) (Not including the attachment fitting or protrusions)
Weight		0.42kg (approx.)

*1   Wireless LAN and Bluetooth are only available on wireless models.

Environment Requirements

Item		Description
Operating temperature *2		-30 - +60°C airflow 0.7m/s -30 - +50°C no airflow -30 - +70°C no airflow (With the fan unit (an optional product))
Operating Humidity		10 - 90%RH (No condensation)
Non-operating ambient temperature		-30 - +70°C
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 (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	Sweep resistance	10 - 57Hz /semi-amplitude vibration 0.375mm, 57 - 500Hz/5.0G 60minutes each in X, Y, and Z directions (JIS C60068-2-6-compliant, IEC60068-2-6-compliant)
Impact resistance	Fixed to VESA holes	100G half-sine shock for 6ms in X, Y, and Z directions (JIS C 60068-2-27-compliant, IEC 60068-2-27-compliant)
	Mounted on DIN rail	15G 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) *3 TELEC (set with the certified wireless module) *4

*2   Derating conditions exist.
*3   The wireless model is excluded from CE Standard.
*4   The wireless module is set only in the wireless model.

List of Options

AC adapter
PWA-65AWD9   Switching AC adapter 19VDC 3.42A

Antenna extension cable
IPC-RPSMA-2   RP-SMA connector coaxial cable

Din rail adapter
BX-DIN-05   Expansion adapter for mounting on a DIN rail

Fan unit
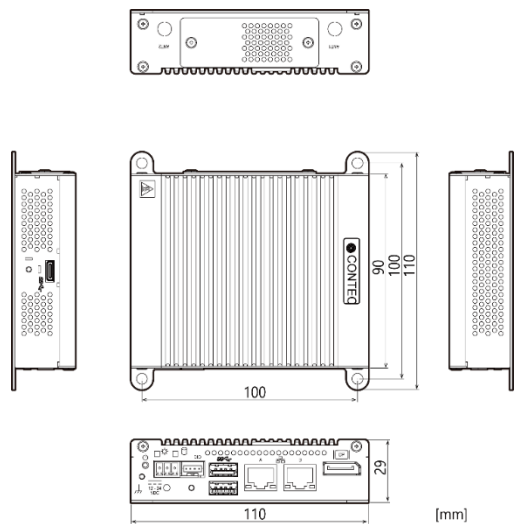BX-FAN-05   External fan for forced air cooling

CAUTION
If a product other than our optional one is used, the normal operation may be impaired or the functions may be limited.
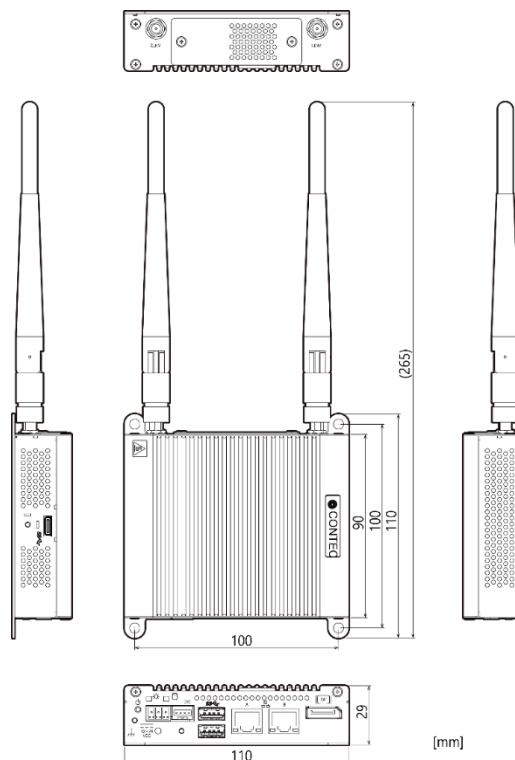*   Visit the CONTEC website for the latest optional products.
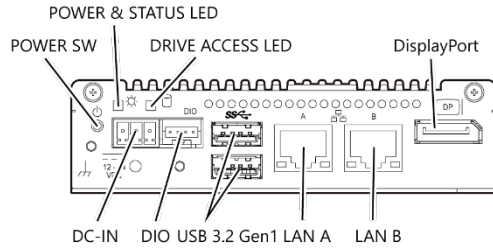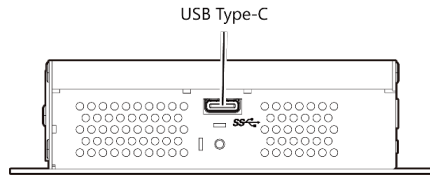
Physical Dimension

BX-U200-xxxxxxxx

[mm]

BX-U200R-xxxxxxxx

[mm]

Nomenclature of Product Components

Front

Side

Rear

Base Model   Wireless Model

Product Lineup

Model	Wreless	OS	Storage device
BX-U200-NA01M03	None	None	M.2 SSD 32GB(MLC)
BX-U200-W19M01M03		Windows 10 IoT Enterprise 2019 LTSC (Japanese / English / Chinese / Korean)	
BX-U200-W19M01M03B		Windows 10 IoT Enterprise 2019 LTSC 64bit (Japanese / English / Chinese / Korean), McAfee™ pre-install	
BX-U200R-NA01M03	IEEE 802.11ac/a/b/g/n Bluetooth 4.2	None	
BX-U200R-W19M01M03		Windows 10 IoT Enterprise 2019 LTSC (Japanese / English / Chinese / Korean)	
BX-U200R-W19M01M03B		Windows 10 IoT Enterprise 2019 LTSC 64bit (Japanese / English / Chinese / Korean), McAfee™ pre-install	
BX-U200-NA01M05	None	None	M.2 SSD 64GB(MLC)
BX-U200-W19M01M05		Windows 10 IoT Enterprise 2019 LTSC (Japanese / English / Chinese / Korean)	
BX-U200-W19M01M05B		Windows 10 IoT Enterprise 2019 LTSC 64bit (Japanese / English / Chinese / Korean), McAfee™ pre-install	
BX-U200R-NA01M05	IEEE 802.11ac/a/b/g/n Bluetooth 4.2	None	
BX-U200R-W19M01M05		Windows 10 IoT Enterprise 2019 LTSC (Japanese / English / Chinese / Korean)	
BX-U200R-W19M01M05B		Windows 10 IoT Enterprise 2019 LTSC 64bit (Japanese / English / Chinese / Korean), McAfee™ pre-install	

Component Function

Name	Function
Front	
DC-IN	DC power connector
POWER SW	PC Power switch
POWER & STATUS LED	Power ON display and status LED
DRIVE ACCESS LED	Drive access display LED
DIO	GPIO port connector (4-pin male)
USB 3.2 Gen1	USB 3.2 Gen1 (USB3.0) port connector x2
LAN A	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
LAN B	Ethernet 1000BASE-T/100BASE-TX/10BASE-T RJ-45 connector
DisplayPort	Display (20-pin female)
Side	
USB Type-C	USB 3.2 Gen1 (USB3.0) Type-C port connector
Rear	
ANT1	Antenna connector (for both wireless LAN and Bluetooth) * 1
ANT2	Antenna connector (for WiFi) * 1

*1   Antenna connectors are only available on wireless models.