RKP-C220 Series

2U rackmount computers with Raptor Lake-S 13th Gen Intel® Core™ processor base model and rich interface models

Features and Benefits

- 13th Gen Intel® Core™ Raptor Lake-S processor and Intel® Q670E chipset
- 2U rackmount computers with fanless design
- Supports NVIDIA RTX Series FLFH GPU card up to 200 W TDP
- 2 SODIMM sockets support up to 64 GB
- 3 PCIe slots for expansion modules: x16 (with GPU support), x8 (4-lane), and x1 PCIe slots
- Rich set of interfaces: Up to 8 LAN ports, up to 10 serial ports, and 2 CAN ports
- 2 lockable 2.5" SATA SSD slots and 3 extendable M.2 M key SSD slots for supporting 2 sets of Intel® RST RAID 0/1
- -30 to 60°C operating temperature range

Certifications

Introduction

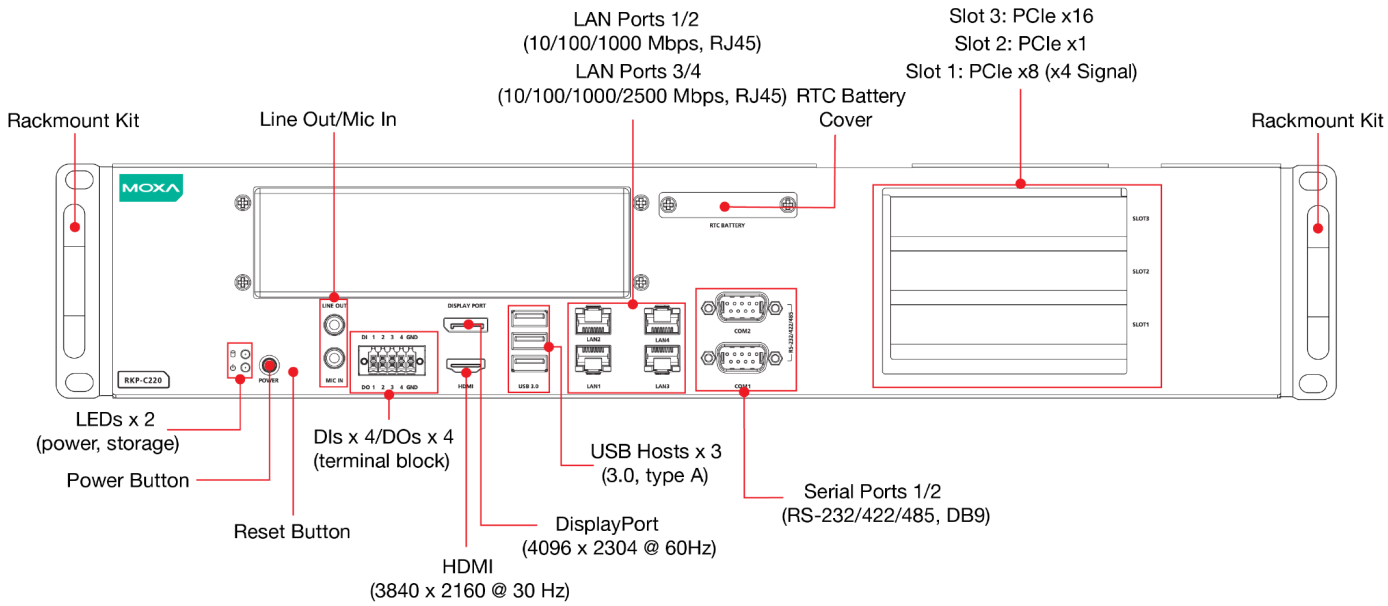
The RKP-C220 Series rugged fanless rackmount computers powered by a 13th Gen Intel® Core™ i3, i5, i7, or i9 processor with up to 24 cores and 32 threads, and a rich set of interface options can easily extend the potential of your industrial applications. The computer models come with a rich set of interfaces including up to 8 Gigabit Ethernet ports, 10 software-selectable RS-232/422/485 serial ports (Moxa in-house IC design), up to 2 CAN ports, and 4 DIs and 4 DOs. Expansion modules can be installed via 3 PCIe slots, including a x16 slot that supports full-length discrete GPU cards for AI-accelerated performance, a x8 (4-lane) slot, and a x1 slot. Two lockable 2.5” SSD storage slots and three M.2 M key SSD extension slots support two sets of Intel® RST RAID 0/1. All interfaces are located on one side of the product for convenient access and wire stripping while an external RTC battery slot simplifies battery replacement.

A 2U standard form factor with a rackmount chassis, fanless design, a wide temperature range of -30 to 60°C, an additional fan module to increase performance, and a built-in TPM 2.0 module, make the computers reliable, durable, versatile yet user-friendly industrial platforms in harsh operating environments. The RKP-C220 Series is an intelligent computing platform that is a perfect fit for your industrial applications.

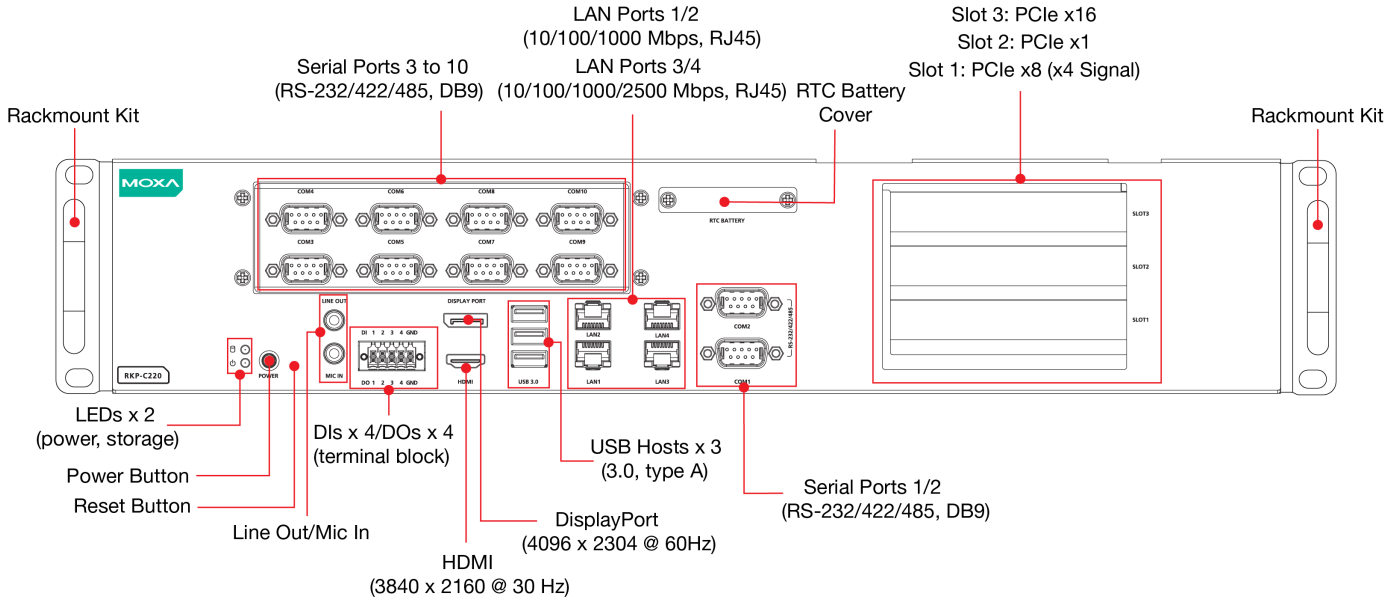
Appearance

Front View

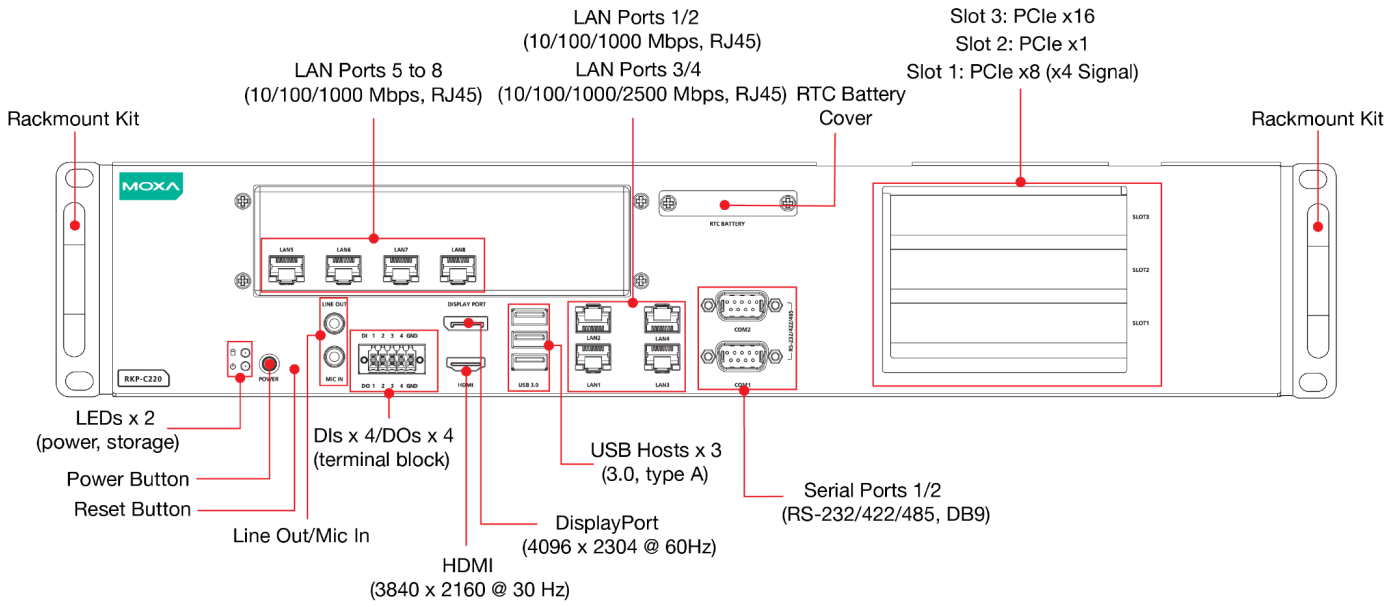
RKP-C220-C3-T/ RKP-C220-C5-T/ RKP-C220-C7-T/ RKP-C220-C9-T Models



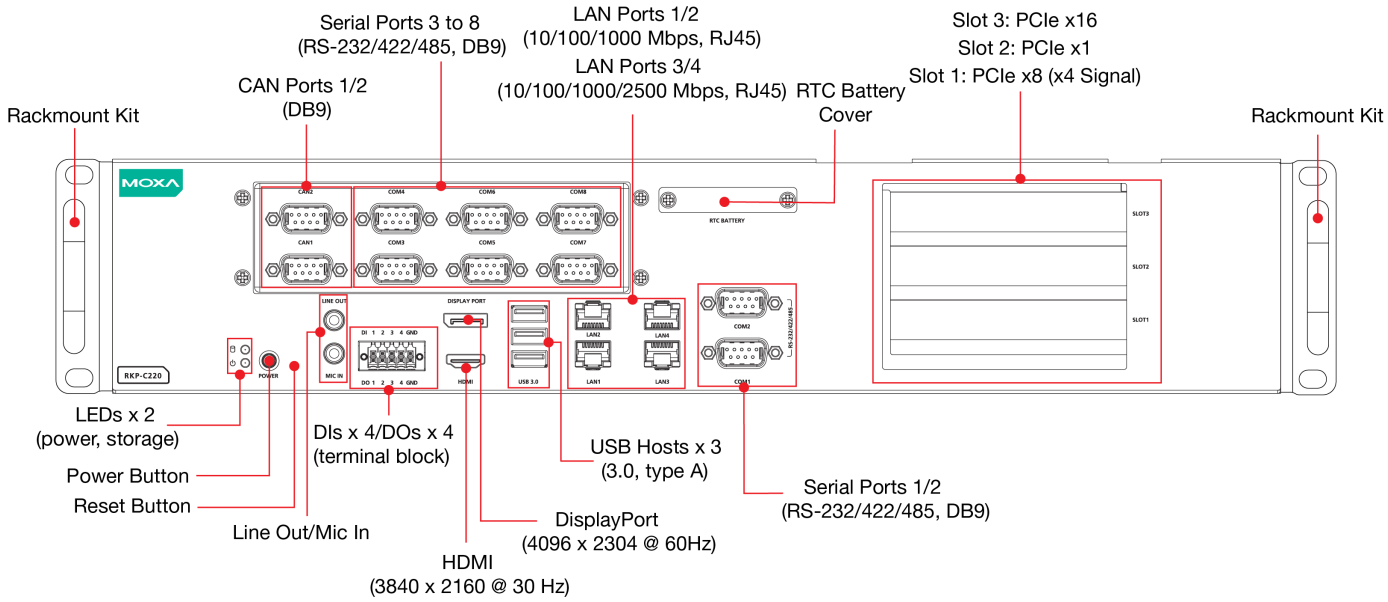
RKP-C220-C3-8C-T/ RKP-C220-C5-8C-T/ RKP-C220-C7-8C-T/ RKP-C220-C9-8C-T Models



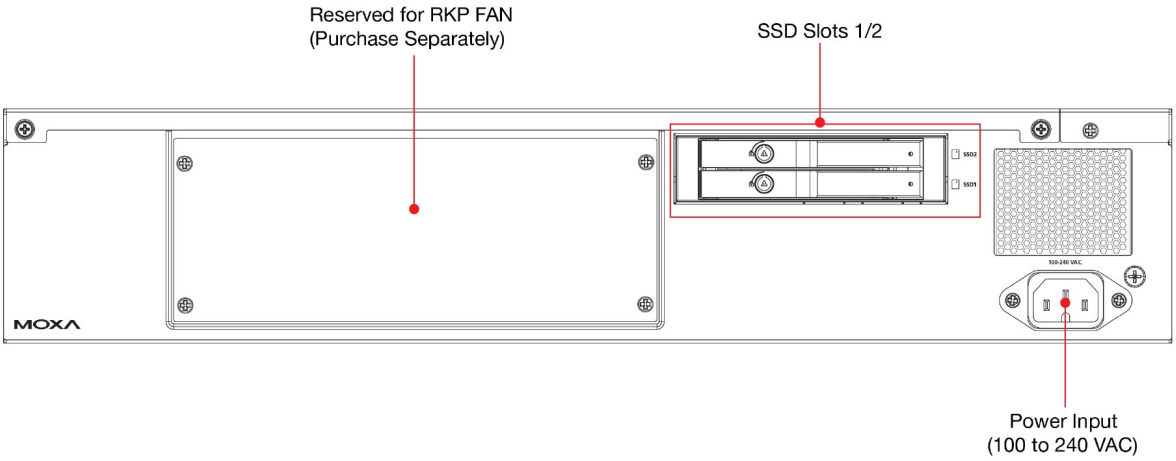
RKP-C220-C3-4L-T/ RKP-C220-C5-4L-T/ RKP-C220-C7-4L-T/ RKP-C220-C9-4L-T Models



RKP-C220-C3-2CB6C-T/ RKP-C220-C5-2CB6C-T/ RKP-C220-C7-2CB6C-T/ RKP-C220-C9-2CB6C-T Models



RearView



Specifications

Computer

CPU	RKP-C220-C9 models: Intel® Core™ i9-13900TE RKP-C220-C7 models: Intel® Core™ i7-13700TE RKP-C220-C5 models: Intel® Core™ i5-13500TE RKP-C220-C3 models: Intel® Core™ i3-13100TE
Chipset	Intel® Q670E
System Memory Slot	SODIMM DDR4 slots x 2, up to 64 GB max.
System Memory Pre-installed	8 GB DDR4
Storage Slot	2.5-inch SSD slot x 2 (SATA III interface, RAID 0/1 support) M.2 M Key 2280 socket x 1 (PCIe interface, NVMe support) M.2 M Key 2242 socket x 2 (PCIe interface, NVMe support, RAID 0/1 support)
Supported OS	OS images: - Windows 10 IoT Enterprise LTSC 2021 64-bit - Windows 11 IoT Enterprise LTSC 2024 64–bit - Windows 11 Professional 64-bit Windows drivers supported: - Windows 10 IoT Enterprise LTSC 2021 64-bit - Windows 11 IoT Enterprise LTSC 2024 64–bit - Windows 11 Professional 64-bit - Windows Server 2022 Linux driver supported: - Debian 12 (kernel 6.10) - Ubuntu 22.04 LTS/ HWE (kernel 5.15) - RHEL 9.0 (kernel 5.14)
Graphics Controller	i9. i7, and i5 processor: Intel® UHD Graphics 770 i3 processor: Intel® UHD Graphics 730

Computer Interface

Ethernet Ports	RKP-C220-C9-T/ RKP-C220-C7-T/ RKP-C220-C5-T/ RKP-C220-C3-T: Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2 Auto-sensing 10/100/1000/2500 Mbps ports (RJ45 connector) x 2 RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T: Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 6 Auto-sensing 10/100/1000/2500 Mbps ports (RJ45 connector) x 2
Serial Channels	RKP-C220-C9-T/ RKP-C220-C7-T/ RKP-C220-C5-T/ RKP-C220-C3-T: RS-232/RS-422/RS-485-2W/RS-485-4W ports x 2, software selectable (DB9 male) RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T: RS-232/RS-422/RS-485-2W/RS-485-4W ports x 10, software selectable (DB9 male)

	RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T: RS-232/RS-422/RS-485-2W/RS-485-4W ports x 8, software selectable (DB9 male)
CAN Ports	RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T: CAN Ports x 2
Expansion Slots	PCIe x16 (Gen 4) slot x 1 PCIe x8 (4-lane, Gen 4) slot x 1 PCIe x1 (Gen 4) slot x 1
USB 3.0	External: USB 3.0 hosts x 3, type-A connector Internal: USB 3.0 hosts x 1, type-A connector
Digital Input	DIs x 4
Digital Output	DOs x 4
Audio Input/Output	Mic-in x 1, 3.5 mm audio jack Line-out x 1, 3.5 mm audio jack
Video Output	HDMI 2.0b x 1, (type-A connector) DisplayPort 1.2 x 1
Buttons	Reset button Power button
TPM	TPM v2.0

Ethernet Interface

Magnetic Isolation Protection	1.5 kV (built-in)

Serial Interface

Baudrate	50 bps to 115.2 kbps
Connector	DB9 male
Data Bits	5, 6, 7, 8
Parity	None, Even, Odd, Space, Mark
Stop Bits	1, 1.5, 2
Flow Control	RTS/CTS, XON/XOFF

Serial Signals

RS-232	TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422	Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w	Data+, Data-, GND
RS-485-4w	Tx+, Tx-, Rx+, Rx-, GND

Digital Inputs

Connector	Spring-type Euroblock terminal
Sensor Type	Dry contact
Dry Contact	Logic 0: Short to GND Logic 1: Open

Digital Outputs

Connector	Spring-type Euroblock terminal
I/O Type	Sink

Current Rating	200 mA per channel
Voltage	0 to 24 VDC

CAN Interface

Connector	DB9 male
Protocols	CAN 2.0A CAN 2.0B
Signals	CAN_H, CAN_L, CAN_GND
Isolation	2 kV (built-in)

Power Parameters

Input Voltage	100 to 240 VAC
Power Consumption	90 W (without graphics card)
Power Connector	IEC 60320 C16 inlet

Physical Characteristics

Housing	Metal
IP Rating	IP20
Dimensions	440 x 360 x 88.1 mm (17.32 x 14.17 x 3.47 in)
Weight	RKP-C220-C9-T/C7-T/C5-T/C3-T: 8,913 g (19.65 lb) RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T: 8,914 g (19.65 lb) RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T: 9,196 g (20.27 lb) RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T models: 9,062 g (19.98 lb)
Installation	Rack mounting (standard 2U)

Environmental Limits

Operating Temperature	-30 to 60°C (-22 to 140°F) (without graphics card; refer to the graphics card operating temperature specification if applicable)
Storage Temperature	-40 to 70°C (-40 to 158°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A BSMI
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV IEC 61000-4-5 Surge: Power: Line-to-PE: 2 kV; Line-to-Line: 1 kV, Signal: 1 kV IEC 61000-4-6 CS: 3 V IEC 61000-4-8 PFMF: 1 A/m at 50 to 60 Hz
Safety	UL 62368-1 (CB) BSMI

Shock	IEC 60068-2-27
Vibration	IEC 60068-2-64
Package Drop Test	ISTA 1A
Package Vibration Test	ISTA 1A

Declaration

Green Product	RoHS, CRoHS, WEEE

Reliability

Time Source	Built-in RTC (real-time clock) with lithium-battery backup
Automatic Reboot Trigger	Built-in WDT

MTBF

Time	RKP-C220-C9-T/C7-T/C5-T/C3-T: 1,168,494 hrs RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T: 993,182 hrs RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T: 1,101,194 hrs RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T: 995,157 hrs hrs
Standards	Telcordia (Bellcore), GB

Warranty

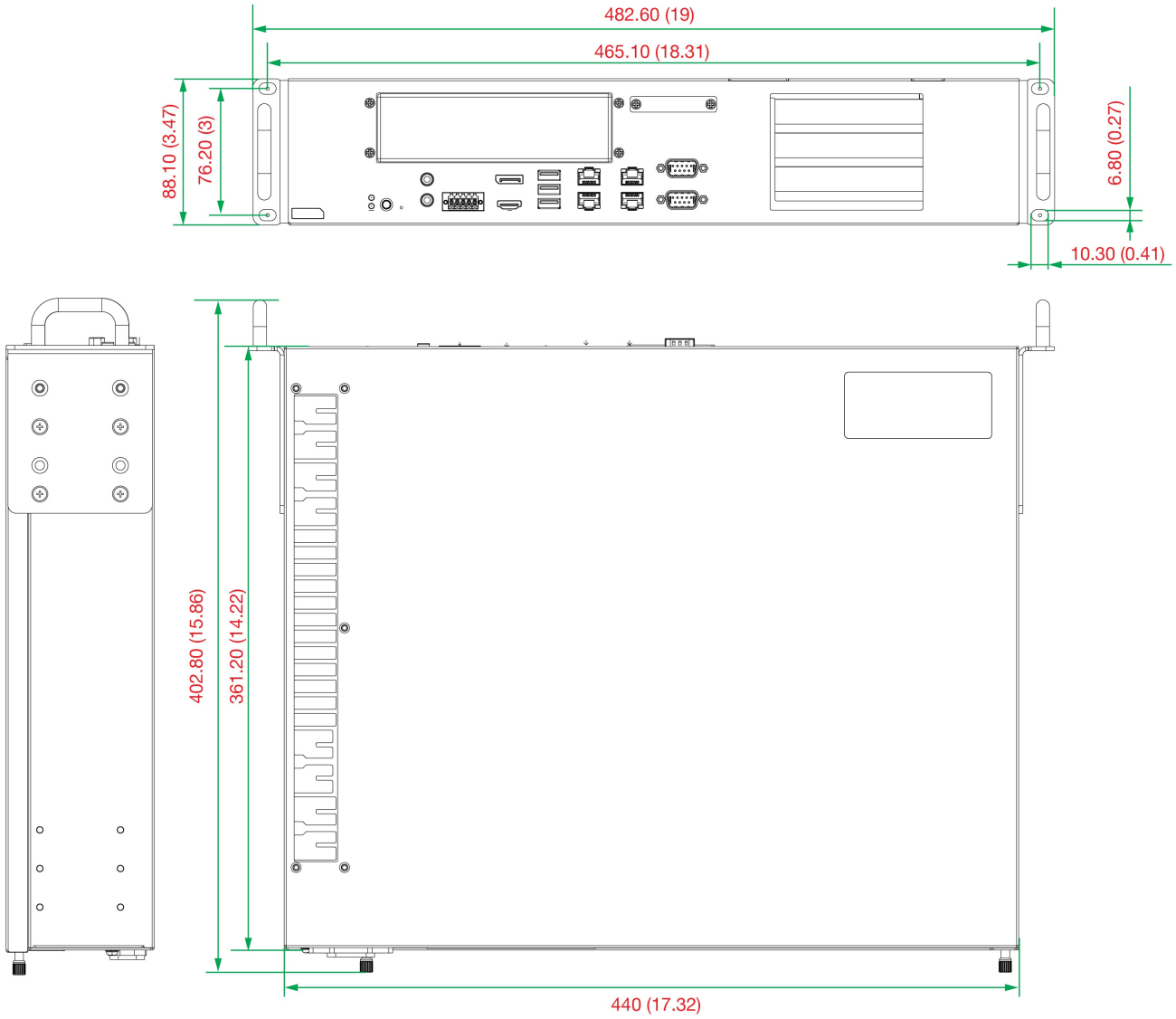
Warranty Period	3 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x RKP-C220 Series computer
Installation Kit	2 x rack-mounting ears (with 12 screws) 1 x C15-to-C13 power cord 1 x 10-pin terminal block for DI/DO 2 x 2.5” SSD door keys 1 x memory thermal pad 2 x M.2 screws for mounting the SSDs
Documentation	1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	CPU	Memory (preinstalled)	Storage Slots	LAN/Serial	CAN Ports	USB 3.0	Power Input
RKP-C220-C3-T	Intel® Core™ i3-13100TE	8 GB	2 x 2.5” SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/2	–	3	100 to 240 VAC
RKP-C220-C3-4L-T	Intel® Core™ i3-13100TE	8 GB	2 x 2.5” SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	8/2	–	3	100 to 240 VAC
RKP-C220-C3-8C-T	Intel® Core™ i3-13100TE	8 GB	2 x 2.5” SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/10	–	3	100 to 240 VAC
RKP-C220-C3-2CB6C-T	Intel® Core™ i3-13100TE	8 GB	2 x 2.5” SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/8	2	3	100 to 240 VAC
RKP-C220-C5-T	Intel® Core™ i5-13500TE	8 GB	2 x 2.5” SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/2	–	3	100 to 240 VAC
RKP-C220-C5-4L-T	Intel® Core™	8 GB	2 x 2.5” SSD	8/2	–	3	100 to 240 VAC

Model Name	CPU	Memory (preinstalled)	Storage Slots	LAN/Serial	CAN Ports	USB 3.0	Power Input
	i5-13500TE		1 x M.2 M Key 2280 2 X M.2 M Key 2242				
RKP-C220-C5-8C-T	Intel® Core™ i5-13500TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/10	–	3	100 to 240 VAC
RKP-C220-C5-2CB6C-T	Intel® Core™ i5-13500TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/8	2	3	100 to 240 VAC
RKP-C220-C7-T	Intel® Core™ i7-13700TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/2	–	3	100 to 240 VAC
RKP-C220-C7-4L-T	Intel® Core™ i7-13700TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	8/2	–	3	100 to 240 VAC
RKP-C220-C7-8C-T	Intel® Core™ i7-13700TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/10	–	3	100 to 240 VAC
RKP-C220-C7-2CB6C-T	Intel® Core™ i7-13700TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/8	2	3	100 to 240 VAC
RKP-C220-C9-T	Intel® Core™ i9-13900TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/2	–	3	100 to 240 VAC
RKP-C220-C9-4L-T	Intel® Core™ i9-13900TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	8/2	–	3	100 to 240 VAC
RKP-C220-C9-8C-T	Intel® Core™ i9-13900TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/10	–	3	100 to 240 VAC
RKP-C220-C9-2CB6C-T	Intel® Core™ i9-13900TE	8 GB	2 x 2.5" SSD 1 x M.2 M Key 2280 2 X M.2 M Key 2242	4/8	2	3	100 to 240 VAC

Accessories (sold separately)

Thermal Kits

HS-M.2 2280-RKP-C220	M.2 2280 heatsink for the RKP-C220 Series

Fan Modules

RKP-FAN	Fan module for the RKP-C220 Series

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