

# 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

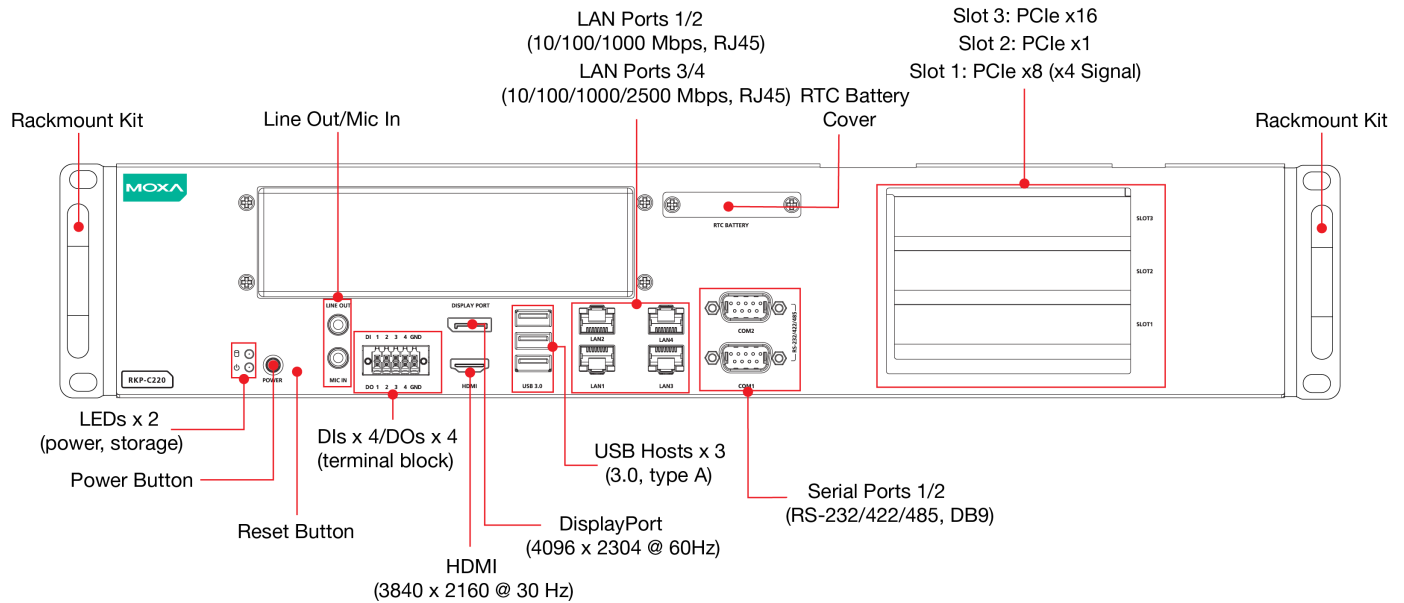
The RKP-C220 Series rugged fanless rackmount computers powered by a 13th Gen Intel® Core™ i3, i5, i7, or i9 processor with up to 24 cores and 32 threads, and a rich set of interface options can easily extend the potential of your industrial applications. The computer models come with a rich set of interfaces 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 DI 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.

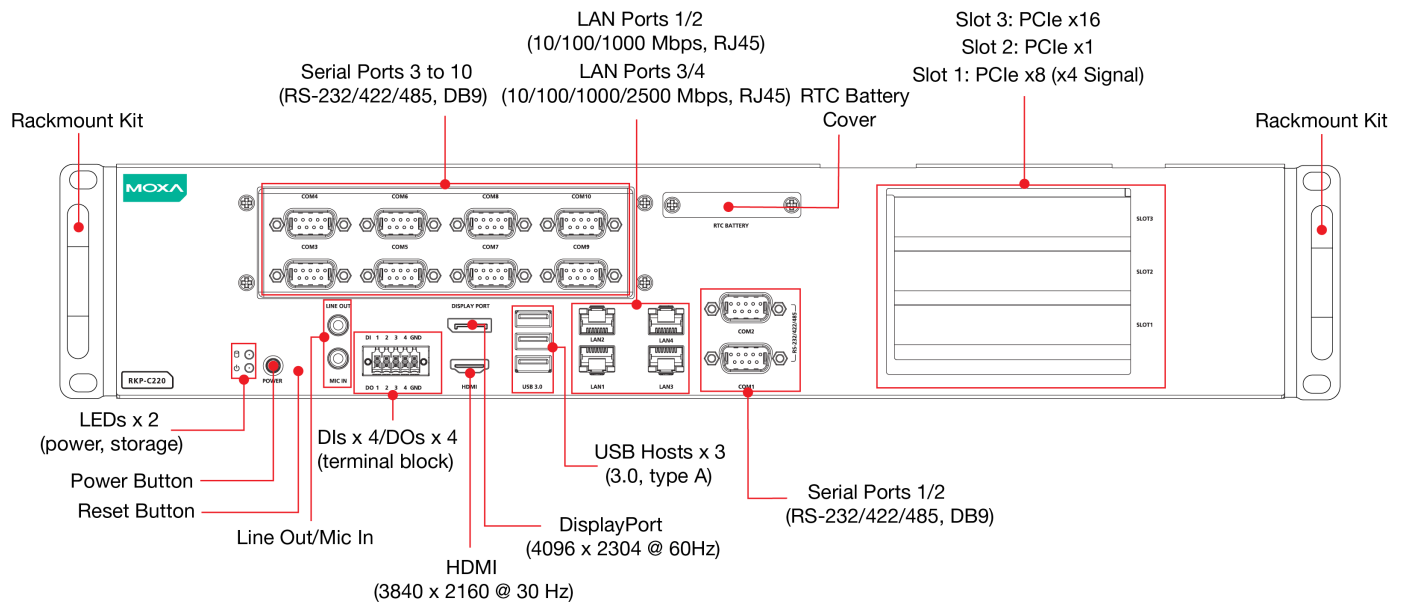
## Appearance

### Front View

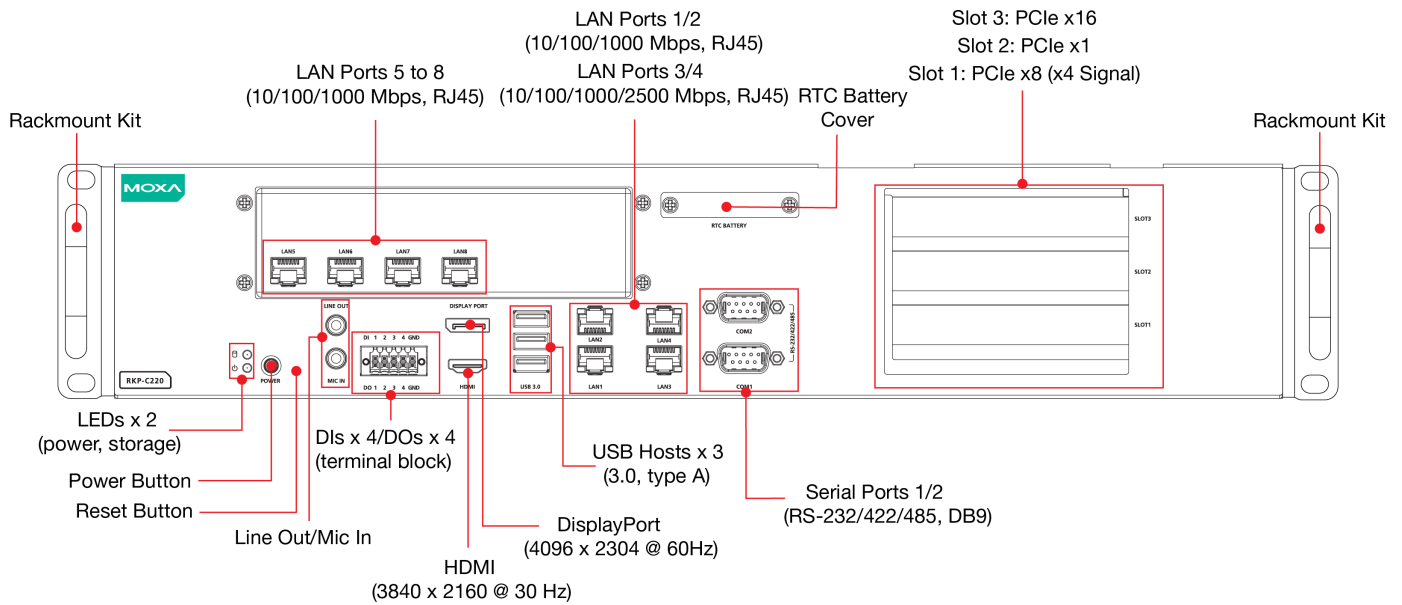
#### RKP-C220-C3-T/ RKP-C220-C5-T/ RKP-C220-C7-T/ RKP-C220-C9-T Models



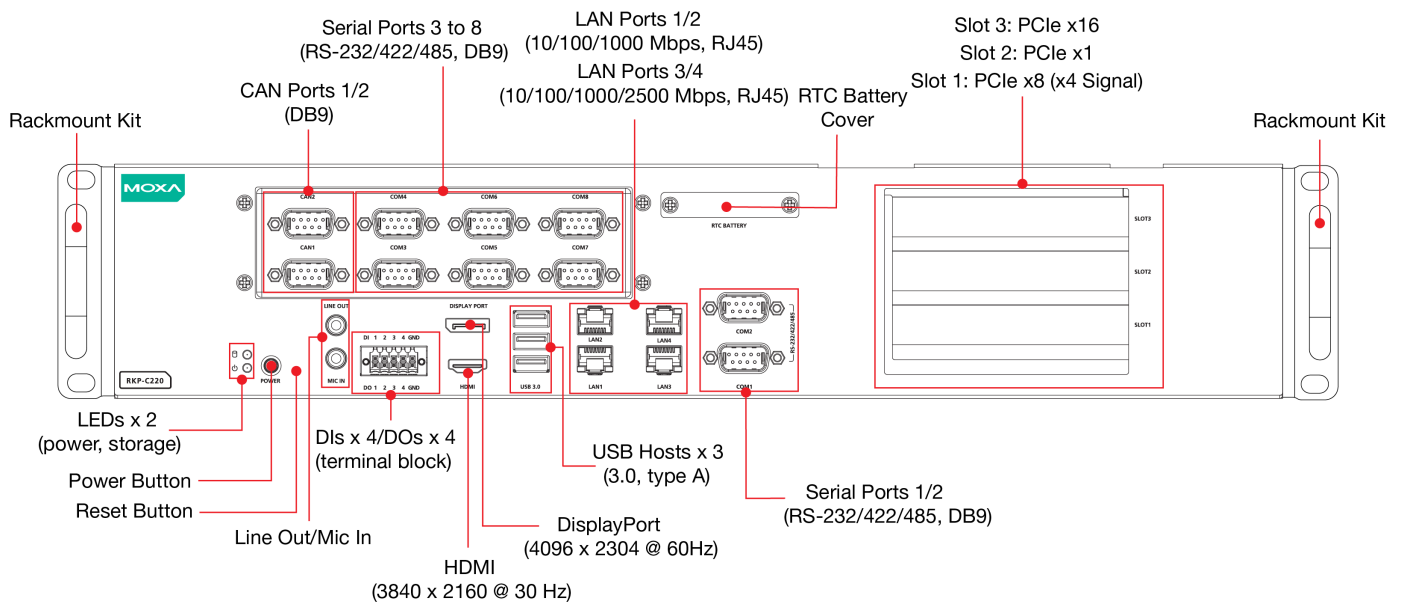
#### RKP-C220-C3-8C-T/ RKP-C220-C5-8C-T/ RKP-C220-C7-8C-T/ RKP-C220-C9-8C-T Models



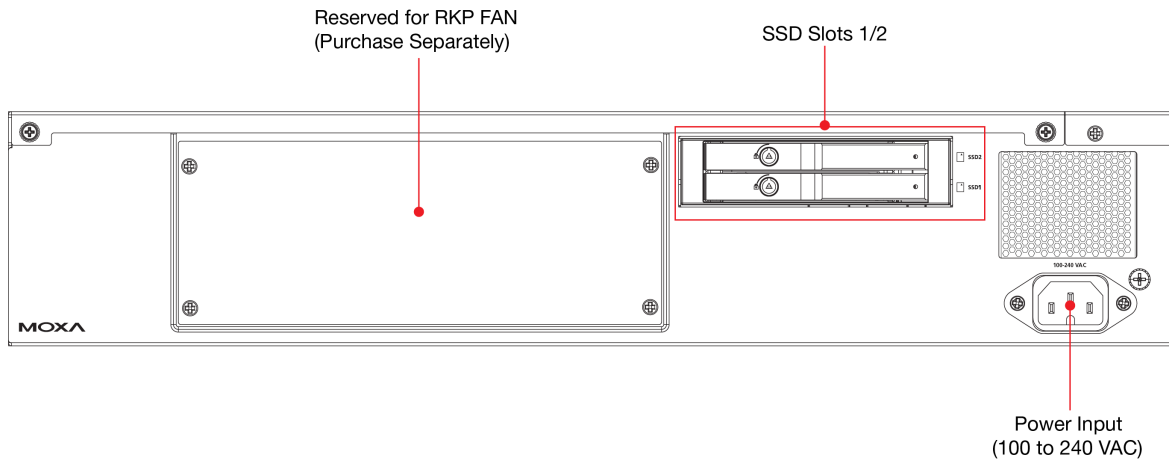
## RKP-C220-C3-4L-T/ RKP-C220-C5-4L-T/ RKP-C220-C7-4L-T/ RKP-C220-C9-4L-T Models



## 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<br>RKP-C220-C7 models: Intel® Core™ i7-13700TE<br>RKP-C220-C5 models: Intel® Core™ i5-13500TE<br>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)<br>M.2 M Key 2280 socket x 1 (PCIe interface, NVMe support)<br>M.2 M Key 2242 socket x 2 (PCIe interface, NVMe support, RAID 0/1 support)                                                                                                                                                                                                                                                                 |
| Supported OS                | OS images:<br>- Windows 10 IoT Enterprise LTSC 2021 64-bit<br>- Windows 11 IoT Enterprise LTSC 2024 64-bit<br>- Windows 11 Professional 64-bit<br>Windows drivers supported:<br>- Windows 10 IoT Enterprise LTSC 2021 64-bit<br>- Windows 11 IoT Enterprise LTSC 2024 64-bit<br>- Windows 11 Professional 64-bit<br>- Windows Server 2022<br>Linux driver supported:<br>- Debian 12 (kernel 6.10)<br>- Ubuntu 22.04 LTS/ HWE (kernel 5.15)<br>- RHEL 9.0 (kernel 5.14) |
| Graphics Controller         | i9, i7, and i5 processor: Intel® UHD Graphics 770<br>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:<br>Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2<br>Auto-sensing 10/100/1000/2500 Mbps ports (RJ45 connector) x 2<br>RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T:<br>Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 6<br>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:<br>RS-232/RS-422/RS-485-2W/RS-485-4W ports x 2, software selectable (DB9 male)<br>RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T:<br>RS-232/RS-422/RS-485-2W/RS-485-4W ports x 10, software selectable (DB9 male)                                                                                            |

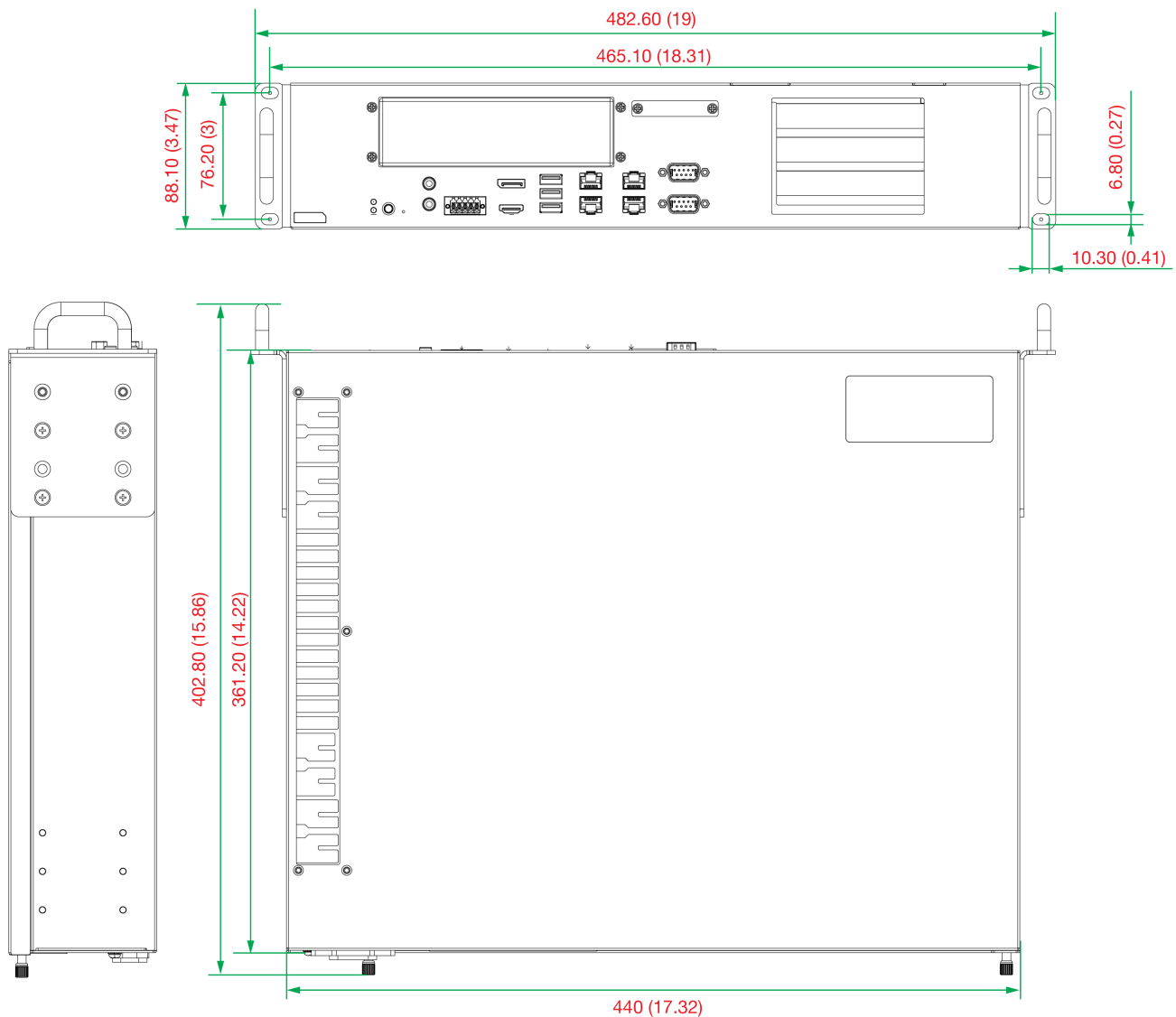
|                               |                                                                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                               | RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T:<br>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:<br>CAN Ports x 2                                                               |
| Expansion Slots               | PCIe x16 (Gen 4) slot x 1<br>PCIe x8 (4-lane, Gen 4) slot x 1<br>PCIe x1 (Gen 4) slot x 1                                            |
| USB 3.0                       | External: USB 3.0 hosts x 3, type-A connector<br>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<br>Line-out x 1, 3.5 mm audio jack                                                                     |
| Video Output                  | HDMI 2.0b x 1, (type-A connector)<br>DisplayPort 1.2 x 1                                                                             |
| Buttons                       | Reset button<br>Power button                                                                                                         |
| TPM                           | TPM v2.0                                                                                                                             |
| <b>Ethernet Interface</b>     |                                                                                                                                      |
| Magnetic Isolation Protection | 1.5 kV (built-in)                                                                                                                    |
| <b>Serial Interface</b>       |                                                                                                                                      |
| 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                                                                                                                    |
| <b>Serial Signals</b>         |                                                                                                                                      |
| 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                                                                                                              |
| <b>Digital Inputs</b>         |                                                                                                                                      |
| Connector                     | Spring-type Euroblock terminal                                                                                                       |
| Sensor Type                   | Dry contact                                                                                                                          |
| Dry Contact                   | Logic 0: Short to GND<br>Logic 1: Open                                                                                               |
| <b>Digital Outputs</b>        |                                                                                                                                      |
| Connector                     | Spring-type Euroblock terminal                                                                                                       |
| I/O Type                      | Sink                                                                                                                                 |

|                                     |                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Current Rating                      | 200 mA per channel                                                                                                                                                                                                                                                                               |
| Voltage                             | 0 to 24 VDC                                                                                                                                                                                                                                                                                      |
| <b>CAN Interface</b>                |                                                                                                                                                                                                                                                                                                  |
| Connector                           | DB9 male                                                                                                                                                                                                                                                                                         |
| Protocols                           | CAN 2.0A<br>CAN 2.0B                                                                                                                                                                                                                                                                             |
| Signals                             | CAN_H, CAN_L, CAN_GND                                                                                                                                                                                                                                                                            |
| Isolation                           | 2 kV (built-in)                                                                                                                                                                                                                                                                                  |
| <b>Power Parameters</b>             |                                                                                                                                                                                                                                                                                                  |
| Input Voltage                       | 100 to 240 VAC                                                                                                                                                                                                                                                                                   |
| Power Consumption                   | 90 W<br>(without graphics card)                                                                                                                                                                                                                                                                  |
| Power Connector                     | IEC 60320 C16 inlet                                                                                                                                                                                                                                                                              |
| <b>Physical Characteristics</b>     |                                                                                                                                                                                                                                                                                                  |
| 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:<br>8,913 g (19.65 lb)<br>RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T:<br>8,914 g (19.65 lb)<br>RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T:<br>9,196 g (20.27 lb)<br>RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T models:<br>9,062 g (19.98 lb)                  |
| Installation                        | Rack mounting (standard 2U)                                                                                                                                                                                                                                                                      |
| <b>Environmental Limits</b>         |                                                                                                                                                                                                                                                                                                  |
| Operating Temperature               | -30 to 60°C (-22 to 140°F)<br>(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)                                                                                                                                                                                                                                                                        |
| <b>Standards and Certifications</b> |                                                                                                                                                                                                                                                                                                  |
| EMC                                 | EN 55032/35                                                                                                                                                                                                                                                                                      |
| EMI                                 | CISPR 32, FCC Part 15B Class A<br>BSMI                                                                                                                                                                                                                                                           |
| EMS                                 | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV<br>IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m<br>IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV<br>IEC 61000-4-5 Surge: Power: Line-to-PE: 2 kV; Line-to-Line: 1 kV, Signal: 1 kV<br>IEC 61000-4-6 CS: 3 V<br>IEC 61000-4-8 PFMF: 1 A/m at 50 to 60 Hz |
| Safety                              | UL 62368-1 (CB)<br>BSMI                                                                                                                                                                                                                                                                          |

|                          |                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shock                    | IEC 60068-2-27                                                                                                                                                                                                                       |
| Vibration                | IEC 60068-2-64                                                                                                                                                                                                                       |
| Package Drop Test        | ISTA 1A                                                                                                                                                                                                                              |
| Package Vibration Test   | ISTA 1A                                                                                                                                                                                                                              |
| <b>Declaration</b>       |                                                                                                                                                                                                                                      |
| Green Product            | RoHS, CRoHS, WEEE                                                                                                                                                                                                                    |
| <b>Reliability</b>       |                                                                                                                                                                                                                                      |
| Time Source              | Built-in RTC (real-time clock) with lithium-battery backup                                                                                                                                                                           |
| Automatic Reboot Trigger | Built-in WDT                                                                                                                                                                                                                         |
| <b>MTBF</b>              |                                                                                                                                                                                                                                      |
| Time                     | RKP-C220-C9-T/C7-T/C5-T/C3-T: 1,168,494 hrs<br>RKP-C220-C9-8C-T/C7-8C-T/C5-8C-T/C3-8C-T: 993,182 hrs<br>RKP-C220-C9-4L-T/C7-4L-T/C5-4L-T/C3-4L-T: 1,101,194 hrs<br>RKP-C220-C9-2CB6C-T/C7-2CB6C-T/C5-2CB6C-T/C3-2CB6C-T: 995,157 hrs |
| Standards                | Telcordia (Bellcore), GB                                                                                                                                                                                                             |
| <b>Warranty</b>          |                                                                                                                                                                                                                                      |
| Warranty Period          | 3 years                                                                                                                                                                                                                              |
| Details                  | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>                                                                                                                                                                 |
| <b>Package Contents</b>  |                                                                                                                                                                                                                                      |
| Device                   | 1 x RKP-C220 Series computer                                                                                                                                                                                                         |
| Installation Kit         | 2 x rack-mounting ears (with 12 screws)<br>1 x C15-to-C13 power cord<br>1 x 10-pin terminal block for DI/DO<br>2 x 2.5" SSD door keys<br>1 x memory thermal pad<br>2 x M.2 screws for mounting the SSDs                              |
| Documentation            | 1 x quick installation guide<br>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<br>1 x M.2 M Key 2280<br>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<br>1 x M.2 M Key 2280<br>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<br>1 x M.2 M Key 2280<br>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<br>1 x M.2 M Key 2280<br>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<br>1 x M.2 M Key 2280<br>2 X M.2 M Key 2242 | 4/2        | –         | 3       | 100 to 240 VAC |
| RKP-C220-C5-4L-T    | Intel® Core™ i5-13500TE | 8 GB                  | 2 x 2.5" SSD<br>1 x M.2 M Key 2280<br>2 X M.2 M Key 2242 | 8/2        | –         | 3       | 100 to 240 VAC |

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