

# V3200 Series

11th Gen Intel® Core™ processor railway computers with power isolation, multiple expansion slots for wireless, 2 SSD slots



## Features and Benefits

- Intel® Celeron®/Intel® Core™ i3/i5/i7 embedded computer for in-vehicle applications
- Multiple interfaces: Up to 8 GbE, 2 serial, 2 USB ports, 2 DIs, 2 DOs, and 2 M.2 B key slots for wireless (5G), 1 mPCIe slot for wireless (Wi-Fi 5 or 4G), 1 M.2 E key for wireless (Wi-Fi 6)
- Supports dual independent displays (VGA and HDMI with 4K resolution)
- Native TSN support (for models with i7-1185GRE processor)
- Onboard TPM module for enhanced cybersecurity
- Complies with all EN 50155 mandatory test items<sup>1</sup>
- Compliant with EN 50121-4
- IEC 61373 certified for shock and vibration resistance

## Certifications



## Introduction

The V3200 Series embedded computers are built around an Intel® Core™ i7/i5/i3 or Intel® Celeron® high-performance processor and come with up to 64 GB RAM, one M.2 2280 M key slot, and two 2.5" SSD slots for storage expansion. The computers are compliant with EN 50155:2017 and EN 50121-4 standards covering operating temperature, power input voltage, surge, ESD, and vibration, making them suitable for railway onboard and wayside applications.

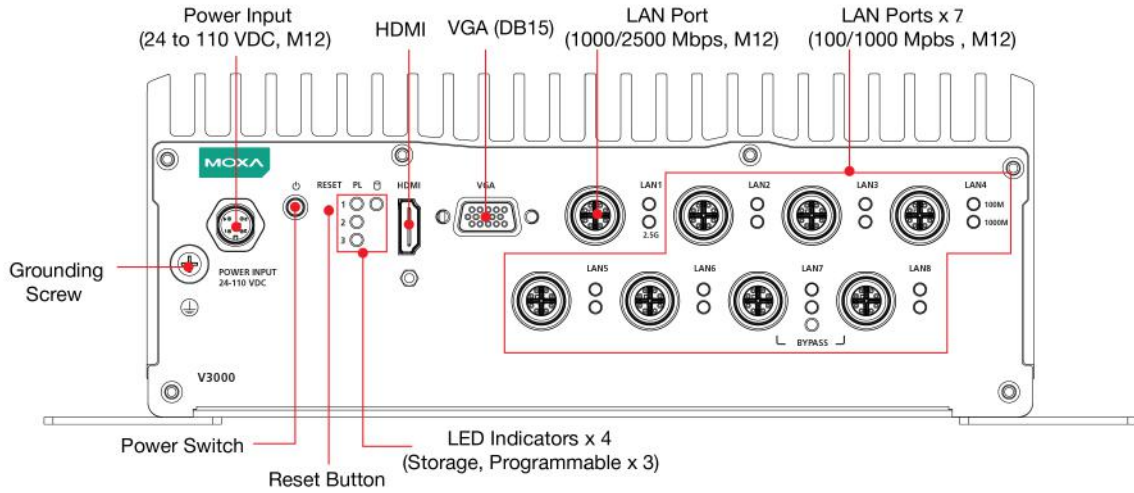
For connecting with onboard and wayside systems and devices, the V3200 computers are equipped with a rich set of interfaces including 4 Gigabit Ethernet ports (default; can go up to 8 ports) with one-pair LAN bypass function to ensure uninterrupted data transmission, 2 RS-232/422/485 serial ports, 2 DIs, 2 DOs, and 2 USB 3.0 ports. The built-in TPM 2.0 module ensures platform integrity and provides hardware-based security as well as protection from tampering.

Vehicular applications require reliable connectivity. They also require clear indicators on the device that identify the status of the software. The V3200 computers come with two 5G/one LTE and 6 SIM-card slots to help establish redundant LTE/Wi-Fi connections and three programmable LEDs that enable monitoring of the runtime status of software.

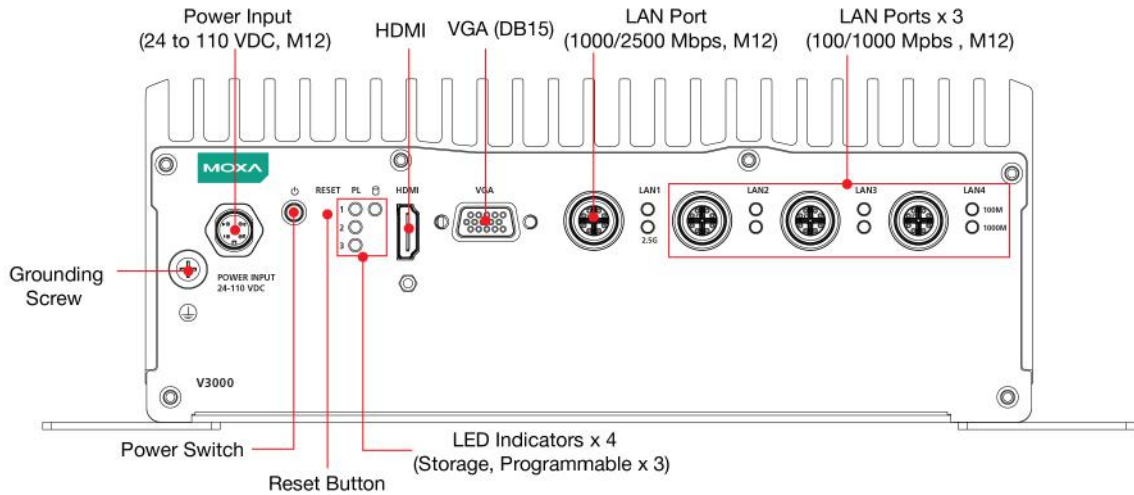
1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: [www.moxa.com/doc/specs/EN\\_50155\\_Compliance.pdf](http://www.moxa.com/doc/specs/EN_50155_Compliance.pdf)

# Appearance

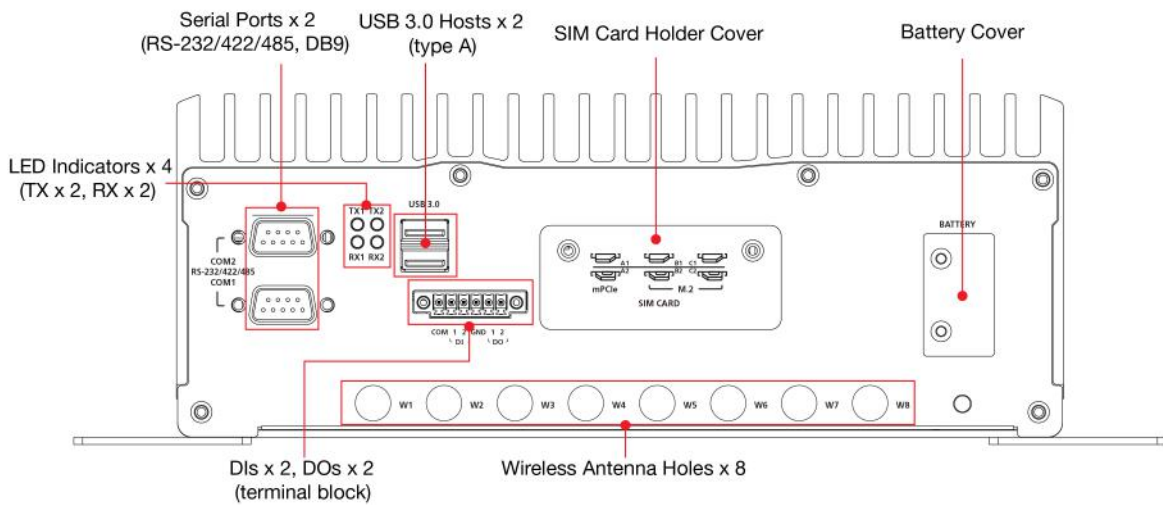
## Front View 8P Models



## Front View 4P Models



## Rear View



## Specifications

### Computer

CPU	<p>V3210-TL1-4L-T/8L-T/4L-CT-T/8L-CT-T: Intel® Celeron® 6305E processor (2C/2T, 4M cache, 1.8 GHz)</p> <p>V3210-TL3-4L-T/8L-T/4L-CT-T/8L-CT-T: Intel® Core™ i3-1115G4E processor (2C/4T, 6M cache, 2.2 GHz)</p> <p>V3210-TL5-4L-T/8L-T/4L-CT-T/8L-CT-T: Intel® Core™ i5-1145G7E processor (4C/8T, 8M cache, 1.5 GHz)</p> <p>V3210-TL7-4L-T/8L-T/4L-CT-T/8L-CT-T: Intel® Core™ i7-1185G7E processor (4C/8T, 12M cache, 1.8 GHz)</p> <p>V3210-TL7-4L-TSN-CT-T/8L-TSN-CT-T: Intel® Core™ i7-1185GRE processor (4C/8T, 12M cache, 1.8 GHz)</p>
System Memory Slot	SODIMM DDR4 slots x 2 (64 GB max)
System Memory Pre-installed	16 GB DDR4
Storage Slot	2.5-inch SSD slots x 2 M.2 M key 2280 slot x 1 (NVMe; 128 GB preinstalled)
Supported OS	Windows 10 Embedded IoT Ent 2021 LTSC 64-bit Linux Debian 11/Ubuntu 20.04/CentOS 7.9 (driver)
Graphics Controller	Intel® Celeron®/Core™ i3 Models: Intel® UHD Graphics Intel® Core™ i5/i7 Models: Intel® Iris® Xe Graphics

### Computer Interface

Ethernet Ports	<p>Default: 4 ports (2.5 GbE x 1 and GbE x 3), can go up to 8 ports Auto-sensing 1000/2500 Mbps x 1 Auto-sensing 10/100/1000 Mbps x up to 7</p> <p>LAN1: Intel® Ethernet Network Adapter I225 with Intel® AMT support</p>
Serial Ports	RS-232/422/485 ports x 2, software selectable (DB9 male)
Digital Input	DIs x 2
Digital Output	DOs x 2
USB 3.0	USB 3.0 hosts x 2, type-A connectors
Video Output	VGA x 1, 15-pin D-sub connector (female) HDMI x 1, HDMI connector (type A)
Wi-Fi Antenna Connector	QMA x 8 (optional with accessory kit)
Expansion Slots	M.2 B key 3052/3050 slots x 2 (for 5G; 4 Micro SIMs) M.2 E key slots x 1 (for Wi-Fi 6) mPCIe slots x 1 (for cellular with 2 Micro SIMs, Wi-Fi 5, or I/O expansion)
SIM Format	Micro
Number of SIMs	6
TPM	TPM v2.0

### Digital Inputs

Connector	Screw-fastened Euroblock terminal
Isolation	3k VDC
Sensor Type	Dry contact Wet contact (NPN)

Dry Contact	Logic 0: Close to GND Logic 1: Open
Wet Contact (COM to DI)	Logic 0: 10 to 30 VDC Logic 1: 0 to 3 VDC

#### Digital Outputs

Connector	Screw-fastened Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	0 to 30 VDC
Isolation	3k VDC

#### LED Indicators

System	Power x 1 Storage x 1
LAN	2 per port (LAN1: 1000/2500 Mbps, LAN2 to LAN8: 100/1000 Mbps) 1 per LAN bypass pair (LAN7 - LAN8)
Serial	2 per port (Tx, Rx)
User Programmable	3

#### Serial Interface

Baudrate	50 bps to 115.2 kbps
Connector	DB9 male
ESD	Contact: 6 kV; Air: 8 kV (level 3)
Isolation	2 kV
Data Bits	5, 6, 7, 8
Stop Bits	1, 1.5, 2
Parity	None, Even, Odd, Space, Mark
Flow Control	RTS/CTS, XON/XOFF Automatic Data Direction Control (ADDC) for RS-485 RTS Toggle (RS-232 only)

#### 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

#### Power Parameters

Input Voltage	24 to 110 VDC
Power Connector	M12 A-coded male connector
Power Consumption	100 W (max.)

## Physical Characteristics

Housing	Aluminum
Dimensions (without ears)	249 x 88.9 x 180 mm (9.80 x 3.50 x 7.09 in)
Weight	Product Only: 3.86 kg (8.51 lb) Product With Package: 5.10 kg (11.24 lb)
IP Rating	IP30
Installation	Wall mounting
Protection	PCB conformal coating Available on request

## Environmental Limits

Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

## Standards and Certifications

EMC	EN 55032/35
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV IEC 61000-4-5 Surge: Power: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Safety	EN 62368-1 IEC 62368-1 UL 62368-1
Railway Fire Protection	EN 45545-2:2020
Railway	EN 50121-4 EN 50121-3-2 EN 50155:2017
Shock	IEC 60068-2-27, IEC 61373
Vibration	IEC 60068-2-64, IEC 61373

## Declaration

Green Product	RoHS, CRoHS, WEEE
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## MTBF

Time	4L Models: 382,624 hrs 8L Models: 305,836 hrs
Standards	Telcordia (Bellcore), GB

## Warranty

Warranty Period	3 years
Details	See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a>

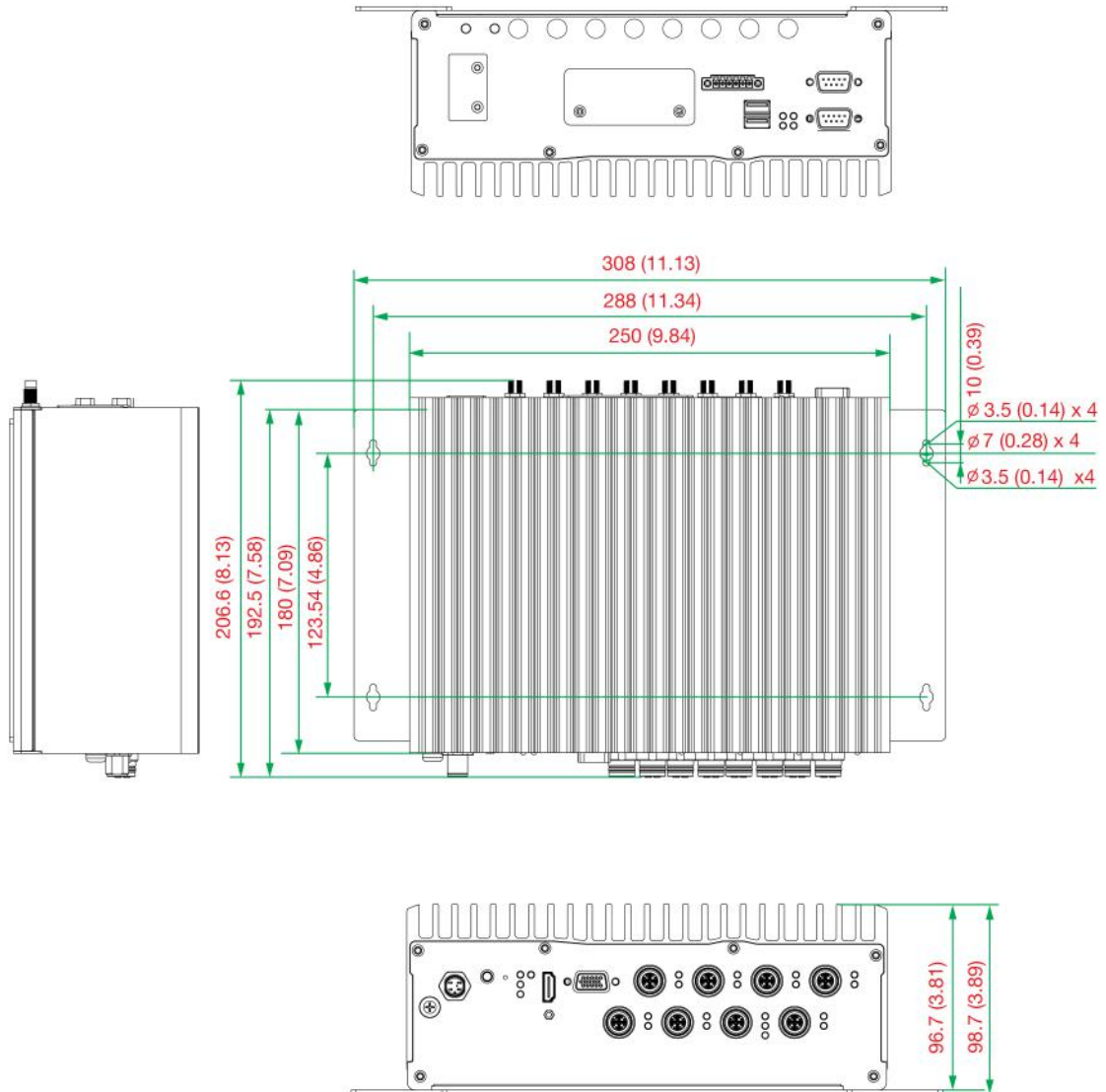
## Package Contents

Device	1 x V3200 Series computer
Installation Kit	4 x SSD/HDD brackets 1 x wall-mounting kit
Documentation	1 x quick installation guide 1 x warranty card

## Dimensions

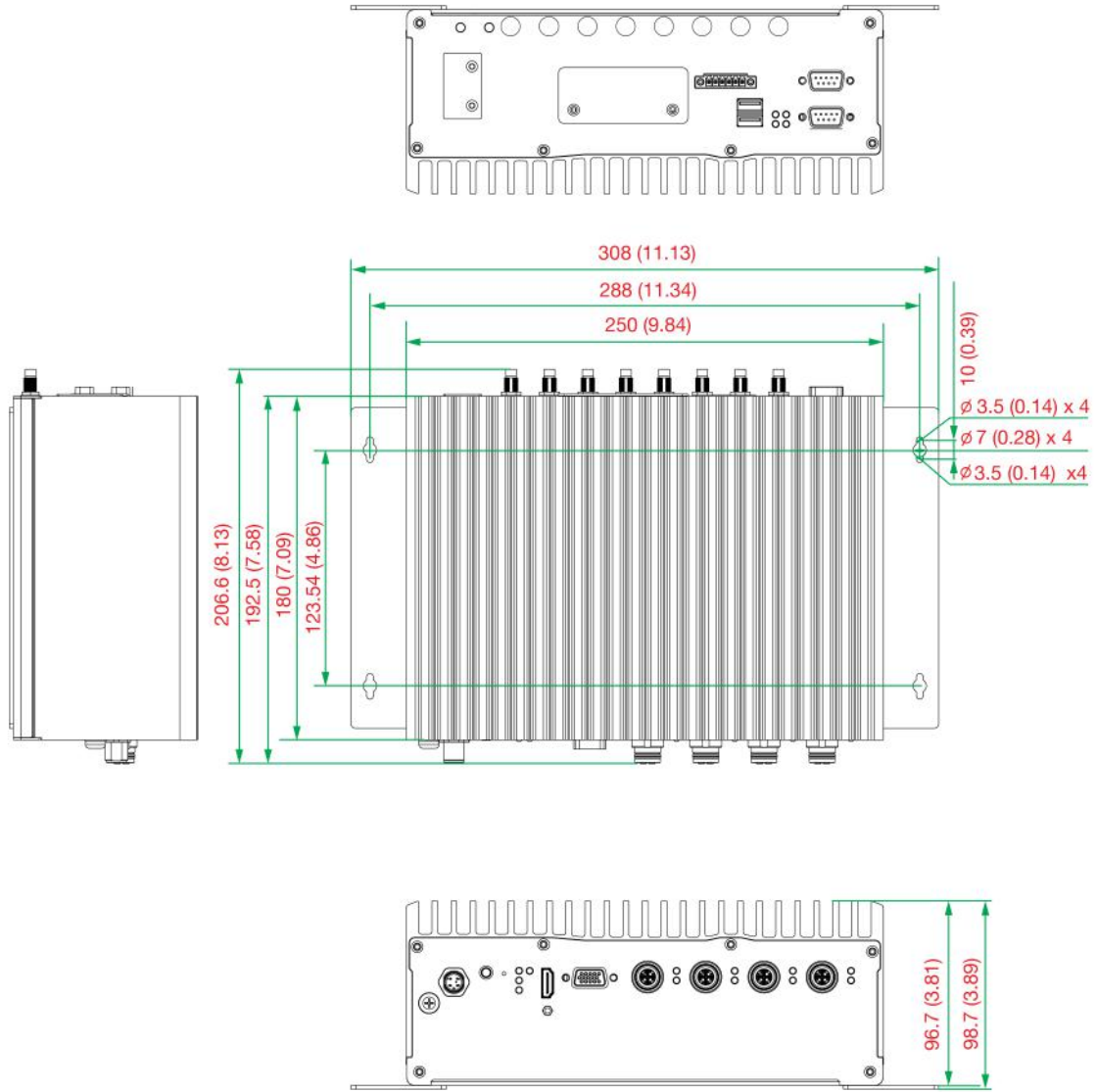
### 8P Models

Unit: mm (inch)



## 4P Models

Unit: mm (inch)



## Ordering Information

Model Name	CPU	Memory	OS Storage (M.2 M Key)	2.5" SSD Slots (2)	GbE Ports	TPM 2.0	Native TSN Enhancement	Power Input	Operating Temp.	Conformal Coating
V3210-TL1-4L-T	Celeron 6305E	16 GB	128 GB	Optional	4	✓	-	24-110 VDC	-40 to 70° C	-
V3210-TL3-4L-T	i3-1115G4E	16 GB	128 GB	Optional	4	✓	-	24-110 VDC	-40 to 70° C	-
V3210-TL3-4L-CT-T	i3-1115G4E	16 GB	128 GB	Optional	4	✓	-	24-110 VDC	-40 to 70° C	✓
V3210-TL7-4L-T	i7-1185G7E	16 GB	128 GB	Optional	4	✓	-	24-110 VDC	-40 to 70° C	-
V3210-TL1-8L-CT-T	Celeron 6305E	16 GB	128 GB	Optional	8	✓	-	24-110 VDC	-40 to 70° C	✓
V3210-TL5-8L-CT-T	i5-1145G7E	16 GB	128 GB	Optional	8	✓	-	24-110 VDC	-40 to 85° C	✓

Model Name	CPU	Memory	OS Storage (M.2 M Key)	2.5" SSD Slots (2)	GbE Ports	TPM 2.0	Native TSN Enhancement	Power Input	Operating Temp.	Conformal Coating
V3210-TL7-8L-CT-T	i7-1185G7E	16 GB	128 GB	Optional	8	✓	–	24-110 VDC	-40 to 70° C	✓
V3210-TL7-8L-TSN-CT-T	i7-1185GRE	16 GB	128 GB	Optional	8	✓	✓	24-110 VDC	-40 to 70° C	✓

## Accessories (sold separately)

### Cables

CBL-M12(FF5P)/OPEN-100 IP67	A-coded M12-to-5-pin power cable, IP67-rated 5-pin female M12 connector, 1 m
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