

rROK 5520 Series

High-Performance Rolling Stock Edge AI Computer
Powered by Intel® Core™ Processor (Series 2)



rROK 5520-WI



rROK 5520-WI7CS



Main Features

- Powered by Intel® Core™ Processor (Series 2)
- Support NVIDIA RTX™ 2000/3500 Ada MXM
- 1 × IEEE 802.3af/at/bt + 6 × IEEE 802.3af/at PoE, total 80W (rROK 5520-WIC7S)
- Up to 8 × 2.5" SSD, high-capacity edge storage (rROK 5520-WIC7S)
- Wide-range DC 24V~110V power input with ignition control
- EN 50155 (OT4), EN 45545-2, CE/FCC certified
- Flexible expansion: PCIe/M.2/Mini PCIe
- Optional expansion module for 4 × PoE M12 or 2 × 10GbE SFP+
- Fanless rackmount design for harsh railway environments
- Designed for AI, video analytics, and railway applications

Product Overview

The rROK 5520 Series is a high-performance rolling stock edge AI computer designed for railway, transportation industrial applications. Powered by Intel® Core™ Processors (Series 2) with support for advanced NVIDIA RTX™ Ada MXM options, the platform delivers exceptional computing power for AI inference, video analytics, communication gateways, and intelligent transportation systems. Its rugged 19-inch 2U rackmount design is engineered for harsh environments, offering fanless models with EN 50155, EN 45545-2, CE, and FCC certifications. The rROK 5520-WIC7S features extensive I/O integration, including up to seven PoE ports, 2.5GbE LAN, CAN FD, serial communication, GNSS, DI/DO, and up to four 5G/LTE modules for flexible connectivity. With support for up to eight removable SSDs, PCIe Gen 4 expansion, wide-range DC 24V to 110V isolated power input, and intelligent ignition control, it ensures reliable operation in demanding railway deployments. Combining AI-ready performance, scalable storage, and railway-grade durability, the rROK 5520 Series is purpose-built to accelerate next-generation smart rail, surveillance, and edge computing solutions.

Specifications

Processor

- Intel® Core™ 9/7/5/3 processor (Series 2), PBP up to 65W

Chipset

- Intel® R680E

Memory

- 2 × DDR5 SO-DIMM, supports ECC & dual-channel, up to 96GB

Dedicated GPU

- Optional NVIDIA RTX™ 2000/3500 Ada MXM (fan kit required for NVIDIA RTX™ 3500)

Display Interface

- 2 × HDMI® 1.4, up to 3840x2160@30Hz
- 1 × VGA, up to 1920x1200@60Hz (reserved)

Storage

- 4 × 2.5" SATA SSD (9mm height, removable), supports RAID 0/1/5/10 (rROK 5520-WI)
- 8 × 2.5" SATA SSD (9mm height, removable), supports RAID 0/1/5/10 (rROK 5520-WIC7S)
- 1 × M.2 Key M 2240/2280 NVMe SSD (PCIe 4.0 x4)

Expansion Slot

- 2 × Full-size Mini PCIe slot (USB 2.0, PCIe 3.0)
- 4 × M.2 Key B 3042/3050/3052 slot (USB 2.0, USB 3.2 Gen 2) for LTE/5G NR module with 2 × external dual nano-SIMs and 2 × internal dual nano-SIMs
- 1 × M.2 Key E 2230/3052 slot (USB 2.0, PCIe 3.0 x2)
- 1 × PCIe 4.0 x16 for MXM module

Sensor

- 1 × Default u-blox NEO-M9N GNSS module for GPS+QZSS/GLONASS/Galileo/Beidou
- 1 × 3D accelerometer and 3D gyroscope

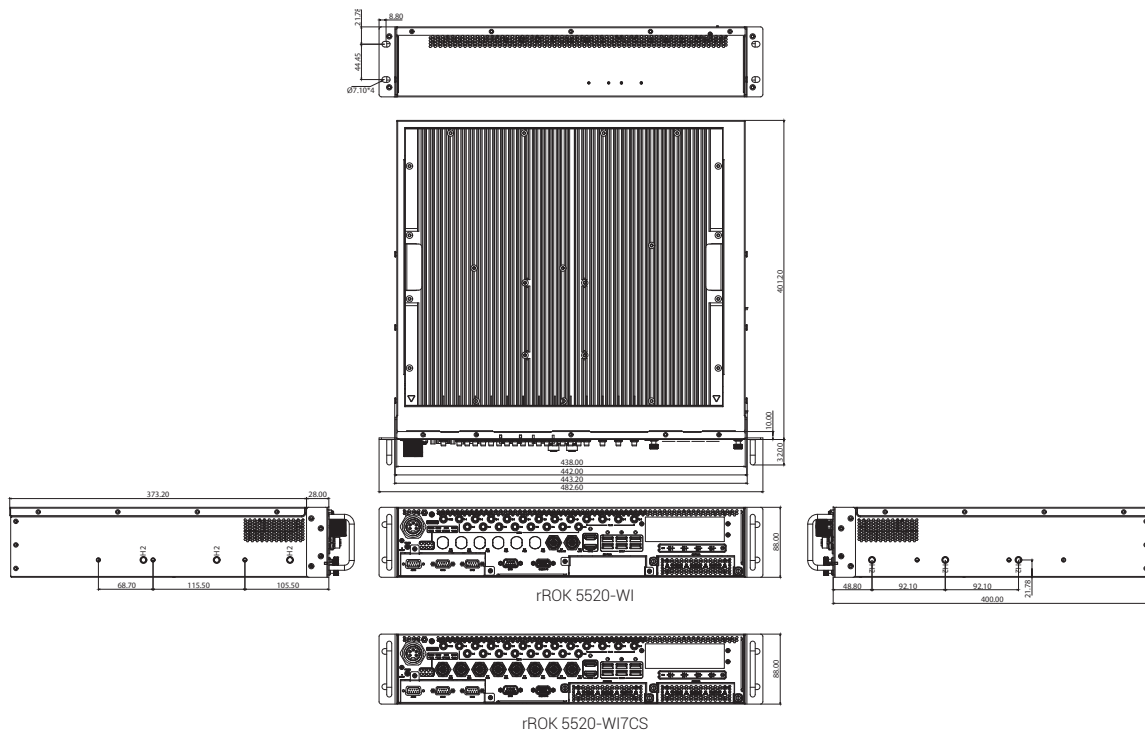
System Capabilities

- TPM 2.0: Infineon SLB 9672XU2.0 FW16.24

I/O Interface Front

- 8 × LED indicator (status/storage/WWAN/WLAN/programmable/GNSS)
- 1 × Power button
- 1 × Reset button
- 6 × USB 3.2 Gen 2, Type-A (5V/0.9A)
- 3 × COM port (DB9, COM1~3) for RS-232 (full)/422/485 (isolation)
- 1 × AUDIO port (DB9) for 1 × Line in, 1 × Line out, 1 × Mic in
- 1 × DIO/CAN FD port (DB15 female)
 - 2 × Isolated CAN FD, compatible with CAN 2.0A/2.0B
 - 4 × DI and 4 × DO (isolation), power in source for DIO isolation, DC 9V~36V
- 2 × HDMI® 1.4
- 1 × M23 connector for power input and ignition
- 1 × SMA connector for GNSS
- 4 × RP-SMA connector hole for WLAN
- 16 × SMA connector hole for WWAN
- 4 × Externally accessible dual nano-SIM with cover
- 1 × Expansion slot for an optional dual-port 10GbE SFP+ module or an optional 4-port M12 X-coded LAN module
- rROK 5520-WI
 - 1 × Removable SSD tray for 4 × 2.5" SSD
 - 1 × 2.5GbE M12 X-coded connector, Intel® I226, supports WoL
 - 1 × 2.5GbE M12 X-coded connector, Intel® I226
- rROK 5520-WIC7S
 - 2 × Removable SSD tray for 8 × 2.5" SSD
 - 1 × 2.5GbE M12 X-coded connector, Intel® I226, supports WoL
 - 7 × 1GbE M12 X-coded PoE connector (1 × IEEE 802.3af/at/bt + 6 × IEEE 802.3af/at), switching, total up to 80W (non-isolated)

Dimension Drawing



Power Management

- DC 24V~110V power input w/ isolation
- Power budget:
 - rROK 5520-WI: 180W
 - rROK 5520-WI7CS: 360W
- Selectable boot-up & shut-down voltage for low power protection by software
- Setting 8-level power on/off delay time by software
- Support S3/S4 suspend mode
- Support 10~255 seconds WDT, setup by software
- SDK (Windows/Linux) including utility and sample code

Operating System

- Windows 11
- Linux 4.x

Mechanical

- Dimensions: 482.6mm (W) x 401.2mm (D) x 88.0mm (H)
- Weight:
 - rROK 5520-WI: 13.1kg
 - rROK 5520-WI7CS: 14.9kg

Environment

- Operating temperature:
 - -40°C~70°C, 85°C for 10 minutes (w/ 35W/45W Core™ 9/7/5/3 processor, PoE (80W+60W))
- Storage temperature: -40°C~80°C
- Relative humidity: 90% (non-condensing)
- Vibration (SSD):
 - Operating: IEC 60068-2-64, Random 2g@5Hz~500Hz
 - Operating: MIL-STD-810H, Method 514.8C, Procedure 1, Category 4, common carrier US highway truck vibration exposure
 - Storage: MIL-STD-810H, Method 514.8E, Procedure 1, Category 24, minimum integrity test
- Shock (SSD):
 - Operating: MIL-STD-810H, Method 516.8, Procedure I, functional shock=40g
 - Non-operating: MIL-STD-810H, Method 516.8, Procedure V, crash hazard shock test=75g

Certifications

- CE, UKCA, FCC Class A
- EN 50155:2021
 - Ambient temperature EN 50155, Class OT4 without MXM module
 - Interruptions of voltage supply class S1
 - Supply change over Class C1
 - EMC EN 50121-1:2017, EN 50121-3-2:2016+A1:2019
 - Environment EN 60068-2-1, EN 60068-2-2, EN 60068-2-30
 - Shock and vibration IEC 61373 Class B
 - Protective coating class PC1 (PC2 by request)
- EN 45545-2:2020+A1:2023

Ordering Information

- **rROK 5520-WI (P/N: 10A40552000X0)**
System barebone, Intel® Core™ processor (Series 2) with DDR5, DC 24V~110V input (w/ isolation), 2 x M12 X-coded LAN, 4 x SSD tray, 2 x CAN FD
- **rROK 5520-WI7CS (P/N: 10A40552001X0)**
System barebone, Intel® Core™ processor (Series 2) with DDR5, DC 24V~110V input (w/ isolation), 1 x M12 X-coded LAN, 7 x M12 X-coded PoE, 8 x SSD tray, 2 x CAN FD
- **Dual-port 10GbE SFP+ module (P/N: 88A40552000X0)**
Dual-port SFP+ module (VIOD-10G2-SFP-01), 10/1GbE
- **4-Port LAN M12 X-coded module (P/N: 88A40552001X0)**
4-Port M12 X-coded LAN module (VIOD-POE4M-02), 1GbE, PoE 802.3af/at, up to 60W, isolation
- **RTX™ 2000 Ada MXM commercial-grade kit (P/N: 88A40552002X0)**
RTX™ 2000 Ada MXM, 8GB GDDR6, 3 x DP, 35W, 0°C~55°C
- **RTX™ 2000 Ada MXM industrial-grade kit (P/N: 88A40552005X0)**
RTX™ 2000 Ada MXM, 8GB GDDR6, 3 x DP, 35W, -40°C~85°C
- **RTX™ 3500 Ada MXM commercial-grade kit (P/N: 88A40552003X0)**
RTX™ 3500 Ada MXM, 12GB GDDR6, 1 x DP, 80W, 0°C~55°C
- **RTX™ 3500 Ada MXM industrial-grade kit (P/N: 88A40552006X0)**
RTX™ 3500 Ada MXM, 12GB GDDR6, 1 x DP, 80W, -40°C~70°C
- **Fan kit (P/N: 88A40552004X0)**
Fan kit required for RTX™ 3500 Ada MXM