aROK 5510

Intel® Core™ 8/9th Gen./Xeon® CPU with Rich Storage

Powerful Platform for AI Application and Storage Server

Main Features

- Intel® Coffee Lake S/Refresh 8th/9th-Gen Core™/Xeon® LGA1151 socket-type CPU
- 100W power consumption graphics card support
- Eight SIM cards + four WWAN modules support
- LTE/5G WWAN module support
- 6 x External SSD for RAID 0, 1, 5, 10

- PCIe 3.0 x4 NVMe 1.3 high performance SSD support
- EN 50155, class OT4 conformity
- 3 x mini-PCIe + 3 x M.2 socket expansion
- Smart fan design with temperature-based RPMs
- Optional expansion module for 4 x PoE M12 or 2 x 10GbE SFP+
- Rackmount platform

Product Overview

aROK 5510, powerful and reliable Artificial Intelligent (AI) platform, is specially designed for the rolling stock applications, such as track obstacle inspection, traffic light, traffic sign recognition, pantograph inspection and highly-demanding on graphic performance. It is equipped with Intel® Coffee Lake S/Refresh 8th/9th-Gen Core™/Xeon® desktop CPU, and optional discrete graphics card guarantees the graphic performance, which satisfies with most of the Automated Intelligent (AI) requirement. With dual SIM cards per modem support, it allows eight SIM cards backup each other for a better connectivity quality by software. In addition, eight SIM cards and four WWAN modules architecture can increase the bandwidth for a faster data transmission speed. RAID 0, 1, 5, 10 guarantees the safety of video data in the six external SSD. aROK 5510 keeps the flexibility to meet the demand for different rolling stock applications, such as infotainment, dispatching system, transportation cellular router, video server, and video surveillance.

Specifications

CPU
- Support 8th/9th generation Intel® Core™ i7/i5/i3 / Xeon® LGA1151 socket
  - Intel® Core™ i7-9700TE/i7-8700T, TDP 35W
  - Intel® Core™ i5-9500TE/i5-8500T, TDP 35W
  - Intel® Core™ i3-9100TE/i3-8100T, TDP 35W
  - Intel® Xeon® E-2278GEL, TDP 35W
  - Intel® Celeron® G4900T, TDP 35W

Chipset
- Intel® C246 platform controller hub

Memory
- 4 x 260 -pin 2400MHz DDR4 SO-DMIM sockets up to 32GB/channel (128GB for four channels)

Video Output
- Chipset Intel® UHD graphics 630
- 1 x HDMI 1.4b up to 4096 x 2160 @ 30Hz
- 1 x VGA up to 1920 x 1200 @ 60Hz

Discrete Graphics Card (optional)
- NVIDIA® GEFORCE® GTX 1650 SUPER up to 100W, 1280 CUDA® cores, 4GB GDDR6

Storage
- 6 x 2.5" SATA external SSD (compatible with 9.5mm drive)
- 1 x mSATA
- 1 x M.2 Key M 2280/2242/2260 for SATA 3.0 or PCIe 3.0 x4 NVMe 1.3
- 1 x Removable SD 3.0

Expansion
- 1 x Full size mini-PCIe socket (USB 2.0, PCIe 3.0)
- 1 x Full size mini-PCIe socket (USB 2.0, PCIe 3.0), BOM optional full size mini-PCIe socket (USB 2.0) with 2 x external SIM
- 1 x Full size mini-PCIe socket (USB 2.0) with 2 x external SIM, BOM optional M.2 Key B 3042/3050/3052 (USB 2.0+USB 3.1 Gen1/PCIe 3.0 (BOM optional)+PCIe 3.0 (BOM optional)) with 2 x external SIM
- 3 x M.2 Key B 3042/3050/3052 (USB 2.0, USB 3.1 Gen 2) with 2 x external SIM

GNSS and Onboard Sensor
- 1 x Default U-blox NEO-M8N GNSS module for GPS/Glonass/QZSS/Galileo/Beidou
- Optional M8U/M8L modules with dead reckoning available
- G Sensor (3-axis, 10-bit resolution)

LAN
- 2-Port LAN M12 X-coded, 10/100/1000 Mbps Intel® I210/I219 (support iAMT) GbE
- 2-Port LAN 10GbE SFP+ (optional)
- 4-Port LAN M12 X-coded, 10/100/1000 Mbps, PoE 802.3af/at, max. 60W (optional)
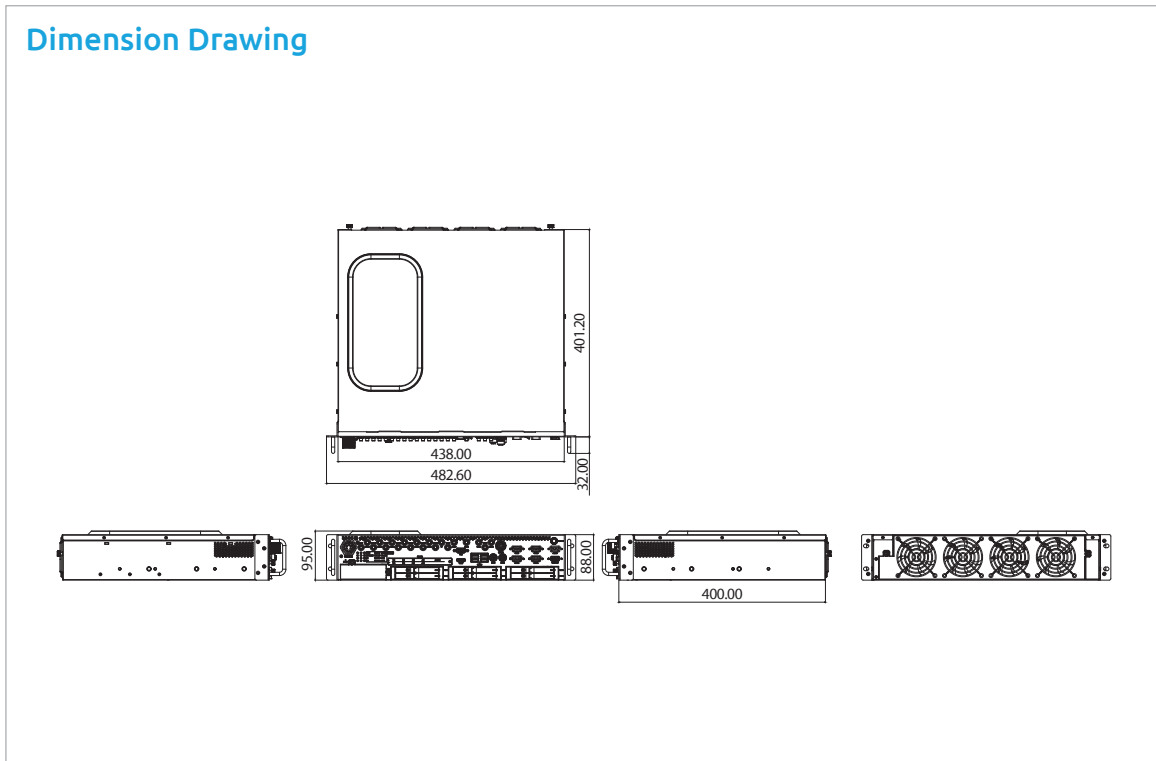
I/O Interface-Front
- 12 x LED indicators (including 2 x programmable LED)
- 1 x HDMI 1.4b
- 1 x VGA
- 1 x M12 A-coded connector for 2 x USB2.0
- 3 x USB 3.1 Gen 2 type A (5V/1A)
- 1 x USB 3.1 Gen 1 type A (5V/1A)
- 8 x Externally accessible SIM card sockets with cover

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Dimension Drawing

- 6 x 2.5" removable SSD tray (with locker)
- 1 x SD with cover
- 1 x Reset button
- 1 x Power button
- 20 x SMA antenna
- 2 x LAN M12 X-coded, Intel® I210/I219 (support iAMT) 10/100/1000 Mbps
- 1 x DB9 (AUDIO) for1 x Mic-in, 2 x Line-out
- 2 x DB9 (COM1/COM2) for full RS232 (isolation)
- 2 x DB9 (COM3/COM4) for full RS232/422/485 (isolation)
- 1 x DB15 (CAN/DIO)
  - 1 x Isolated CANBus 2.0B
  - 4 x DI and 4 x DO (isolation)
  - Power in for DIO isolation, 9~48VDC
- 1 x Waterproof DC input connector with ignition
  - 24VDC input with 2.5KVDC isolation
  - 110VDC input with 2.5KVDC isolation

I/O Interface-Rear
- 4 x Smart fan (swappable) for system cooling

Power Management
- Power input 24VDC/110VDC w/ isolation
- 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
- 0~255 seconds WDT support, setup by software
- SDK (Windows/Linux) including utility and sample code

Operating System
- Windows 10/Linux

Dimensions
- 483 x 400 x 95 (W x D x H) (mm)
  * Please reserve total 3U height for aROK 5510 in rack

Weight
- 8.5kg

Environment
- Operating temperatures: EN 50155, class OT4 (-40~70℃), 85℃ for 10 minutes (w/ 35W TDP CPU, 100W TDP GPU, industrial SSD) with air flow
- Storage temperatures: -40°C~80°C
- Relative humidity: 90% (non-condensing)
- Vibration (random)
  - 2g@5~500 Hz (in operation, SSD)
- Vibration (SSD)
  - Operating: MIL-STD-810G, Method 514.6, Category 4, common carrier US highway truck vibration exposure
  - Storage: MIL-STD-810G, Method 514.6, Category 24, minimum integrity test
- Shock (SSD)
  - Operating: MIL-STD-810G, Method 516.6, Procedure I, functional shock=40g
  - Non-operating: MIL-STD-810G, Method 516.6, Procedure V, crash hazard shock test=75g

Certifications
- CE
- FCC Class A
- EN 50121-4
- EN 50155:2017
  - Ambient temperature EN 50155, class OT4 (-40~70℃), 85℃ for 10 minutes
  - Shock and vibration IEC 61373 class B
  - Interruptions of voltage supply class S1
  - Supply change over class C1,C2
  - EMC EN 50121-3-2:2016
  - Protective coating class PC1 (PC2, by request)

Ordering Information

- **aROK 5510 (P/N: 10A20551003X0)**
  Intel® Coffee Lake S/Refresh 8th/9th-Gen Core™/Xeon® LGA1151 socket-type CPU, 4 x DDR4 SO-DMIM, DC input 24 or 110 VDC w/ isolation, 2 x LAN, 3 x mini-PCIe, 3 x M.2, 8 x SIM, 1 x VGA, 1 x HDMI, 2 x RS232, 2 x RS232/422/485, 4 x DI, 4 x DO, 4 x USB 3.1, 2 x USB 2.0

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