nROK 7271 Series

Fanless Rolling Stock Computer
Powered by 13/12th Gen Intel® Core™ i Processor

nROK 7271-WI

nROK 7271-WIC4

Main Features

- Powered by 13/12th Gen Intel® Core™ i processor
- Fanless, compact and rugged design
- Designed with DDR5, excellent memory bandwidth, lower latency
- 2 x 2.5" SSD for data integrity (compatible with 15mm disk)
- 5G/Wi-Fi, PoE, 10GbE, daughter board expansion supported
- Wide voltage input DC 24V~110V (w/ isolation)
- 4 x 2.5GbE PoE connector, 802.3af/at, total up to 60W (nROK 7271-WIC4 w/o PoE expansion board)/ 30W (nROK 7271-WIC4 w/ PoE expansion board)
- EN 50155, class OT3 conformity
- Optional up to 3-sec protection against temporary voltage dips

Specifications

CPU
- 13/12th Gen Intel® Core™ i processor, TDP 65W/35W

Chipset
- Intel® R680E

Graphics
- Intel® UHD Graphics 770

Memory
- 2 x DDR5 SO-DIMM, supports ECC & dual-channel, up to 64GB

Video Output
- 1 x HDMI® 2.0a/b, up to 3840x2160@60Hz
- 1 x VGA, up to 1920x1200@60Hz

Storage
- 2 x 2.5" SATA 3.0 external SSD (15mm height, removable)
- 1 x mSATA (occupied Mini PCIe slot)
- 2 x M.2 Key B (occupied M.2 slot)
- 1 x Micro-SD card slot, SDXC v3.01

Expansion
- 1 x Full size Mini PCIe slot (USB 2.0, PCIe 3.0/SATA 3.0)
- 2 x M.2 Key B 3042/3050/3052 slot (USB 2.0, USB 3.2 Gen 2, SATA 3.0) for LTE/5G NR module with 2 x external dual nano-SIMs
- 1 x M.2 Key E 2230 slot (USB 2.0, PCIe 3.0 x2), BOM optional M.2 Key E 2230 slot (USB 2.0, PCIe 3.0, PCIe 3.0)

GNSS and Onboard Sensor
- 1 x Default u-blox NEO-M9N GNSS module for GPS+QZSS/Glonass/ Galileo/Beidou
- 1 x 3D accelerometer and 3D gyroscope

LAN and Power over Ethernet
- nROK 7271-WIC4:
  - 1 x 2.5GbE M12 X-coded connector, Intel® I226, supports WoL
  - 4 x 2.5GbE M12 X-coded PoE connector, 802.3af/at, Intel® I226-IT, total up to 60W (non isolation) (w/o PoE expansion board)/30W (w/ PoE expansion board)
- nROK 7271-WI:
  - 2 x 2.5GbE M12 X-coded connector, Intel® I226, supports WoL

Security
- TPM 2.0: Infineon SLB 9665TT2.0 FW5.62

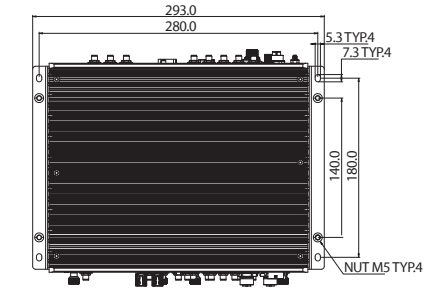
I/O Interface-Front
- 4 x LED indicator (storage/WWAN/WLAN/programmable)
- 1 x HDMI® 2.0a/b
- 2 x USB 3.2 Gen 2, Type-A (5V/0.9A)
- 2 x Externally accessible dual nano-SIM with cover
- 1 x microSD card slot with cover
- 2 x 2.5" removable SSD tray
- 1 x Reset button
- 1 x Power button
- nROK 7271-WIC4 :
  - 1 x M12 X-coded connector
  - 4 x M12 X-coded PoE connector, 802.3af/at
- nROK 7271-WI:
  - 2 x M12 X-coded connector
- 1 x Fan power connector
- 1 x SMA connector for GNSS
- 4 x SMA connector hole for WWAN
- 2 x Externally accessible dual nano-SIM card socket hole with cover, 8 x SMA connector hole for WWAN, and 2 x RP-SMA connector hole for WLAN (reserved for 5G/Wi-Fi expansion board)

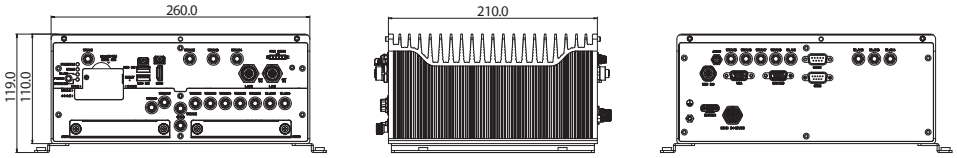
I/O Interface-Rear
- 1 x VGA
- 1 x M12 A-coded for 2 x USB 2.0
- 1 x M8 (Audio) for 1 x Mic in, 1 x Line out
- 2 x COM port 1/2 (DB9) for full RS-232/422/485 (isolation)
- 1 x CAN/DIO (DB15)
  - 2 x Isolated CAN FD, compatible with CAN 2.0A/2.0B
  - 4 x DI and 4 x DO (isolation), power in source for DIO isolation, DC 14V~48V
- 1 x M12 K-coded for power input
- 1 x 2-pin connector for ignition input
- 4 x SMA connector hole for WWAN
- 4 x RP-SMA connector hole for WLAN

Power Management & Software Support
- DC 24V~110V power input w/ isolation (occupied rear side expansion)
- Optional 2.2~3 seconds (170W~120W) protection against temporary voltage dips (w/ supercap board, occupied rear side expansion)
- 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

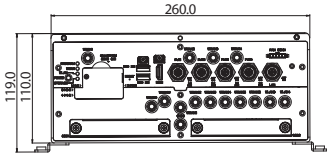
Operating System
- Windows 11/Windows 10, 64bit/Linux

Dimension Drawing





nROK 7271-WI



nROK 7271-WIC4

Dimension & Weight
- Dimensions: 260mm (W) x 210mm (D) x 110mm (H)
- Weight:
  - nROK 7271-WIC4: 6.98kg
  - nROK 7271-WI: 6.93kg

Environment
- Operating temperature:
  - -35°C~70°C, 85°C for 10 minutes (w/ 35W TDP CPU, 60W PoE, 8GB memory, industrial SSD) with air flow
- Storage temperature: -40°C~80°C
- Relative humidity: 90% (non-condensing)
- Vibration (random):
  - 2g@5Hz~500Hz (in operation, SSD)
- Vibration (SSD):
  - 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 OT3
  - Interruptions of voltage supply class S1, S2 (w/ supercap board), S3 (w/ supercap board)
  - Supply change over class C1, C2 (w/ supercap board)
  - 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

Options
- Intel® Core™ CPU:
  - i9-12900E/12900TE, TDP 65W/35W
  - i7-12700E/12700TE, TDP 65W/35W
  - i5-12500E/12500TE, TDP 65W/35W
  - i3-12100E/12100TE, TDP 60W/35W
- DDR5 4800 SO-DIMM:
  - 64GB (in the future), 32GB, 16GB, 8GB
- Fan Kit
  - Model No.: VTK FAN120-02, Description: 120mmx120mm, P/N: 10VK00FAN02X0

* Note: 65W CPU should be bundled with fan kit

Ordering Information

- **nROK 7271-WIC4 (P/N: 10A00727100X0)**
  System barebone. 13/12th Gen Intel® CPU with DDR5, DC 24V~110V input (w/ isolation), 1 x M12 X-coded LAN, 4 x M12 X-coded PoE, 2 x CAN FD
- **nROK 7271-WI (P/N: 10A00727101X0)**
  System barebone. 13/12th Gen Intel® CPU with DDR5, DC 24V~110V input (w/ isolation), 2 x M12 X-coded LAN, 2 x CAN FD
- **(Optional) VIOB-CAP-01 Supercap board kit for nROK 7271 (P/N: 88A00727103X0)**
  Supercap board for protection against temporary voltage dips
- **(Optional) VIOD-WWB4S-01 5G/Wi-Fi expansion board kit for nROK 7271 (P/N: 88A00727100X0)**
  Additional expansion:
  - 1 x Full size Mini PCIe slot (USB 2.0, PCIe 3.0), BOM optional M.2 Key E 2230 slot (USB 2.0, PCIe 3.0)
  - 2 x M.2 Key B 3042/3050/3052 slot (USB 2.0, USB 3.2 Gen 1) for LTE/5G NR module with 2 x external dual nano-SIMs
- **(Optional) VIOD-L1M8P-01 PoE expansion board kit for nROK 7271 (P/N: 88A00727101X0)**
  Additional PoE port:
  - 8 x 1GbE M12 X-coded PoE connector, 802.3af/at, total up to 30W (w/ nROK 7271-WIC4)/60W (w/ nROK 7271-WI) (isolation)
- **(Optional) VIOD-LTM2-W01 10GbE expansion board kit for nROK 7271 (P/N: 88A00727102X0)**
  Additional 10GbE port and expansion:
  - 2 x 10GbE M12 X-coded connector
  - 1 x M.2 Key B 3042/3050/3052 slot (USB 2.0, USB 3.2 Gen 1) for LTE/5G NR module with 2 x external dual nano-SIMs
  - 1 x Full size Mini PCIe slot (USB 2.0, PCIe 3.0), BOM optional 1 x M.2 Key B 3042/3050/3052 slot (USB 2.0, USB 3.2 Gen 1) for LTE/5G NR module with 2 x external dual nano-SIMs