nROK 1040-A/-AC2

Intel Atom® x7213RE Processor
Fanless Rolling Stock Computer





Main Features

- Compact and fanless design
- 1 x Built-in CAN FD
- u-blox NEO-M9N onboard
- 4 x SIM card for WWAN modules
- Smart power management with ignition on/off delay via software control and low voltage protection
- 2 x PoE 802.3af/at, up to total 30W (nROK 1040-AC2)
- Certified by CE, FCC, and EN 50155 Class OT4

Product Overview

The nROK 1040-A/-AC2 features next-generation Intel Atom® x7213RE processor, with powerful graphic and multimedia enhancement. It offers an onboard CAN FD for vehicle diagnostics & driver behavior management, an advanced GNSS receiver supporting GPS+QZSS/GLONASS/Galileo/Beidou. Moreover, for connectivity, it provides WLAN (Wi-Fi 5/6/6E) and WWAN (LTE/5G NR) wireless data. In consideration for convenience, there are four nano-SIMs with an external access design, allowing users to easily access the nano-SIM cards. With a rugged, fanless, and compact enclosure, this fanless computer can be easily installed.

The nROK 1040-AC2 provides dual IEEE 802.3af/at PoE functions and is suited for most PoE devices. This includes connecting with wireless access points and IP cameras. Furthermore, an additional DC 12V output can be provided for external display via easy power wire arrangement. The nROK 1040-A/-AC2 is a flexible fanless rolling stock computer that meets the various demands for applications, such as wireless gateway, infotainment, AI edge computing, and mobile video surveillance.

Specifications

Processor
- Intel Atom® x7213RE processor, TDP 9W

Memory
- 1 x DDR5 4800 SO-DIMM, up to 32GB, default 8GB

Storage
- 1 x mSATA (occupies one Mini PCIe slot)
- 1 x 2.5" SATA 3.0 SSD (9.5mm)

Expansion Slot
- 1 x Mini PCIe slot (USB 2.0, PCIe 3.0/SATA 3.0)
  - BIOS selectable (USB 2.0 only) for LTE with 2 x external nano-SIM
- 1 x M.2 Key B 3042/3050/3052 (USB 2.0, USB 3.2 Gen 2)
  - Support an LTE/5G NR module with 2 x external nano-SIM
- 1 x M.2 Key E 2230 (USB 2.0, PCIe 3.0) for a Wi-Fi module

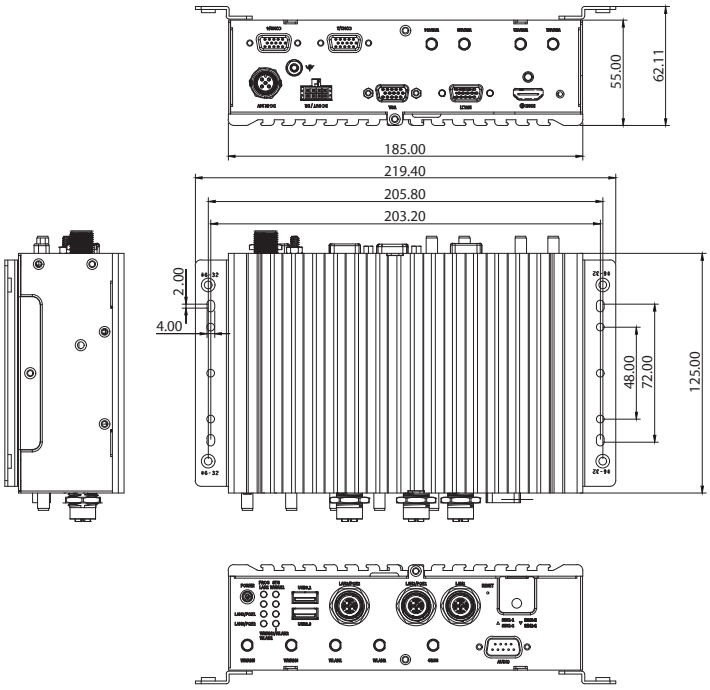
Sensor
- 1 x u-blox NEO-M9N onboard
  - Support GPS+QZSS/GLONASS/Galileo/BeiDou
- Built-in 3D accelerometer and 3D gyroscope

System Capabilities
- TPM 2.0: Infineon SLB 9672VU2.0

I/O Interface Front
- 1 x Power button with LED
- 1 x Reset button
- 8 x LED for WWAN, Wi-Fi, storage, LAN, and PoE
- 4 x nano-SIM slot with cover
- nROK 1040-A:
  - 3 x 2.5GbE M12 X-coded connector
- nROK 1040-AC2:
  - 1 x 2.5GbE M12 X-coded connector
  - 2 x 2.5GbE M12 X-coded PoE connector, 802.3af/at, up to total 30W
- 1 x AUDIO port (DB9 female) for 1 x Mic in, 1 x Line out
- 1 x USB 3.2, 1 x USB 2.0
- 1 x SMA connector for GNSS
- 2 x RP-SMA connector hole for WLAN
- 2 x SMA connector hole for WWAN

I/O Interface Rear
- 1 x M12 A-coded connector for DC 24V power input (w/ ignition, non-isolation)
- 1 x VGA, up to 1920x1200@60Hz
- 1 x HDMI® 1.4b, up to 3840x2160@30Hz
- 1 x COM port (DB15 female, COM1/2)
  - 1 x RS-232 (full)/422/485
  - 1 x RS-232 Tx/Rx
- 1 x COM port (DB15 female, COM3/4)
  - 1 x RS-232 (full)/422/485
  - 1 x RS-232 Tx/Rx

Dimension Drawing



- 1 x MULTI port (DB15 female)
  - 1 x CAN FD (w/ isolation)
  - 4 x DI, 4 x DO
- 1 x 8-pin (4x2) connector
  - DC 12V/2A output
  - Reset button
  - Power button
  - GPS 1PPS
  - GPS DIR
  - GPS ODO
- 4 x SMA connector hole for WWAN

Operating System

- Windows 11
- Windows 10, 64bit
- Linux 4.x

Mechanical

- Dimensions: 185mm (W) x 125mm (D) x 55mm (H)
- Weight
  - nROK 1040-A: 1.36kg
  - nROK 1040-AC2: 1.39kg

Environment

- Temperature:
  - Operating temperature (nROK 1040-A): -40°C~70°C (w/ 9W TDP CPU, 30W PoE, 8GB memory, industrial SSD) with air flow
  - Operating temperature (nROK 1040-AC2): -40°C~60°C (w/ 9W TDP CPU, 30W PoE, 8GB memory, industrial SSD) with air flow
  - Storage temperature: -40°C~85°C
- Humidity: IEC 60068-2-78 (Damp heat steady state test, 40°C/95%/48Hrs)
- Vibration:
  - IEC 60068-2-64, 2G
  - Operating: MIL-STD-810H, 514.8C Procedure 1, Category 4
  - Storage: MIL-STD-810H, 514.8E Procedure 1, Category 24
- Shock
  - MIL-STD-810H, 516.8 Procedure I, trucks and semi-trailers=40g
  - Crash hazard: Procedure V, ground equipment=75g

Certifications

- CE, UKCA, FCC Class A
- EN 50155:2021
  - Ambient temperature: EN 50155, Class OT4
  - 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

- **nROK 1040-A (P/N: 10A00104000X0)**
  Intel Atom® x7213RE processor, 8GB DDR5 SO-DIMM, u-blox M9N GPS onboard, 1 x VGA, 1 x HDMI®, 3 x LAN, 2 x RS-232 (full)/422/485, 2 x RS-232 (Tx/Rx), 1 x CAN FD, 4 x DI, 4 x DO, 1 x USB 3.2, 1 x USB 2.0, 1 x Mic in, 1 x Line out
- **nROK 1040-AC2 (P/N: 10A00104001X0)**
  Intel Atom® x7213RE processor, 8GB DDR5 SO-DIMM, u-blox M9N GPS onboard, 1 x VGA, 1 x HDMI®, 1 x LAN, 2 x PoE, 2 x RS-232 (full)/422/485, 2 x RS-232 (Tx/Rx), 1 x CAN FD, 4 x DI, 4 x DO, 1 x USB 3.2, 1 x USB 2.0, 1 x Mic in, 1 x Line out

We reserve the right to change specifications and product descriptions at any time without prior notice.