

nROK 6232 Series

Powered by Intel Atom® x7433RE Processor
Fanless 4-CH PoE Rolling Stock Computer



nROK 6232-AC4S

nROK 6232-WIC4S

Main Features

- Intel Atom® x7433RE processor
- 4 x PoE (802.3 bt/af/at, up to 90W total)
- Built-in u-blox-M9N GPS
- Built-in CAN FD
- EN 50155, class OT4 conformity
- 3 x Expansion slot
- Dual external storage (nROK 6232-AC4S)
- 1 x eMMC to run OS
- Two video outputs, one VGA, and one HDMI®

Product Overview

The nROK 6232, based on the Intel Atom® x7433RE processor, specifically complies with the stringent EN 50155 standard in a rugged, fanless, and compact mechanism. The nROK 6232 provides complete communication capability between the train and the computer with a built-in CAN FD interface. Equipped with intelligent power management, the nROK 6232 can be woken up by ignition, RTC timer, or remotely through SMS message. The nROK 6232 supports four 802.3bt/af/at PoE ports (maximum total 90W) to connect with IP cameras. Its design with a 2.5" removable SSD and eMMC facilitates easy storage access. The nROK 6232 maintains the flexibility to meet the demands of video surveillance in train applications.

Specifications

Processor

- Intel Atom® x7433RE processor (embedded)

Memory

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

Display Interface

- 1 x HDMI® 2.0, up to 4096x2160@60Hz
- 1 x VGA, up to 1920x1200@60Hz

Storage

- 2 x 2.5" SATA 3.0 HDD/SSD tray, removable, 15mm (nROK 6232-AC4S)
- 1 x 2.5" SATA 3.0 HDD/SSD tray, removable, 15mm, 1 x M.2 Key B 2242 SATA (nROK 6232-WIC4S)
- 1 x 64GB eMMC default for OS

Expansion Slot

- 1 x Mini PCIe slot (PCIe 3.0, USB 2.0), BOM optional M.2 Key B 3052 (USB 3.2, USB 2.0)
 - Support an LTE/5G NR module with 2 x external SIM
- 1 x M.2 Key B 3042/3052 (USB 3.2, USB 2.0)
 - Support an LTE/5G module
- 1 x M.2 Key E 2230 (PCIe 3.0, USB 2.0), BOM optional Mini PCIe (PCIe 3.0, USB 2.0)
 - Support Hailo module

Sensor

- 1 x u-blox NEO-M9N GNSS for GPS/GLONASS/QZSS/Galileo/Beidou
- 3D accelerometer and 3D gyroscope

System Capabilities

- TPM 2.0: Infineon SLB 9672VU2.0

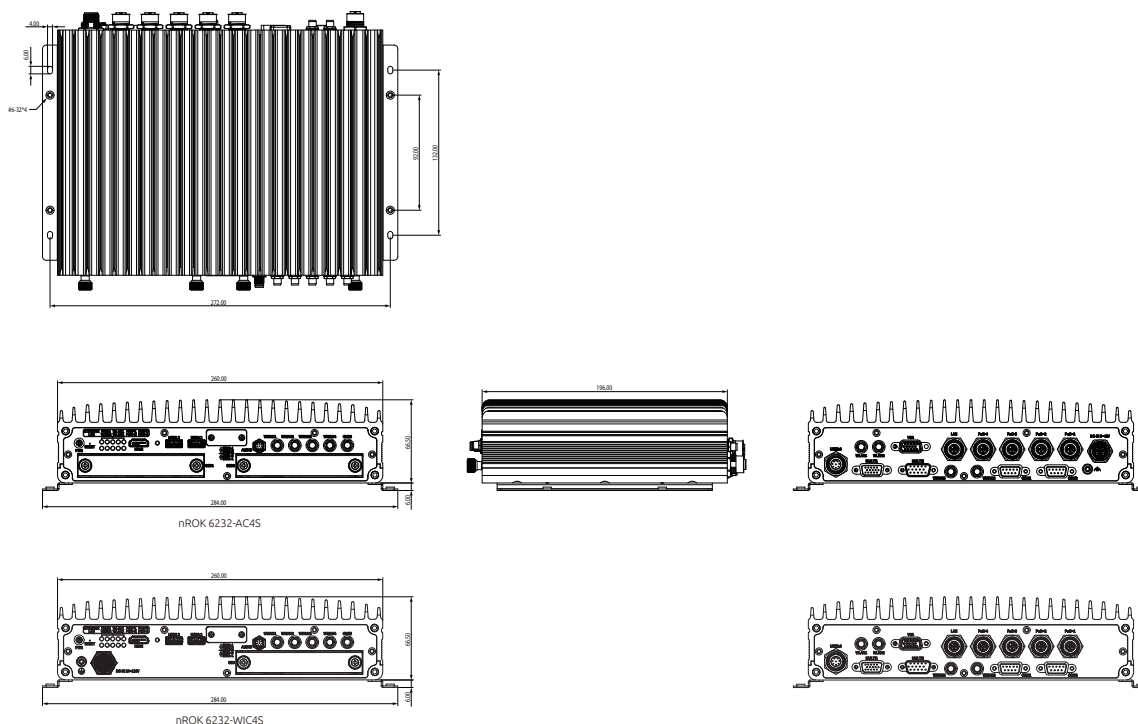
I/O Interface Front

- 10 x LED indicator (including 1 x programmable LED)
- 4 x Externally accessible nano-SIM card slot with cover
- 2 x 2.5" removable SSD tray, removable, 15mm (nROK 6232-AC4S)
- 1 x 2.5" removable SSD tray, removable, 15mm (nROK 6232-WIC4S)
- 1 x Reset button
- 1 x Power button
- 2 x USB 3.2 Gen 2, Type-A
- 1 x HDMI® 2.0
- 1 x M8 A-coded connector for mic in, 1 x Line out, 1 x Line in
- 5 x SMA antenna
- 1 x M12 K-coded connector for power input with ignition (nROK 6232-WIC4S)
 - DC 24V~110V w/ isolation

I/O Interface Rear

- 1 x M12 K-coded connector for power input with ignition (nROK 6232-AC4S)
 - DC 24V/36V (9V~48V), w/o isolation
- 1 x 2.5GbE M12 X-coded connector, Intel® I226-IT
- 4 x 2.5GbE M12 X-coded PoE connector, Intel® I226-IT (2 x 802.3 bt + 2 x 802.3 af/at), up to 90W total (PoE++1, PoE++2, PoE+3, PoE+4)
- 1 x VGA, up to 1920x1200@60Hz
- 2 x COM port (DB9), supports RS-232/422/485
- 4 x SMA antenna
- 1 x M12 A-coded connector for 2 x USB 2.0
- 1 x MULTI1 port (DB15)
 - 4 x DI with isolation
 - 4 x DO with isolation
 - 1 x GNSS Speed/Direction
 - Vin, GND for GPIO

Dimension Drawing



- 1 x MULTI2 port (DB15)
 - 1 x RS-422/485
 - 1 x RS-232 (Tx/Rx)
 - 1 x CAN FD
 - 1 x DC 12V, 2A output (Vout, GND)

Power Management

- DC 24V/36V power input w/o isolation (nROK 6232-AC4S)
- DC 24V~110V power input w/ isolation (nROK 6232-WIC4S)
- 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
- 10~255 seconds WDT support, setup by software
- SDK (Windows/Linux) including utility and sample code

Operating System

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

Mechanical

- Dimensions: 260mm (W) x 196mm (D) x 66.5mm (H)
- Weight: 3.4kg

Environment

- Operating temperature
 - EN 50155, class OT4 (-40°C~70°C), 85°C for 10 minutes (w/ industrial SSD) with air flow
- Relative humidity: 10%~90% (non-condensing)
- Vibration (random)
 - 2g@5Hz~500Hz (in operation, SSD)
- Vibration (SSD)
 - Operating: MIL-STD-810H, Method 514.8C, Category 4, common carrier US highway truck vibration exposure
 - Storage: MIL-STD-810H, Method 514.8E, 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, FCC Class A
- EN 50155:2021
 - Ambient temperature EN 50155, Class OT4 (-40~70°C), 85°C for 10 minutes
 - Interruptions of voltage supply class S1
 - Supply change over class C1, C2
- 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 6232-AC4S (P/N: 10A00623200X0)

Intel Atom® x7433RE processor, 8GB DDR5 SO-DIMM, DC 24V/36V power input w/o isolation, 1 x VGA, 1 x HDMI®, 1 x LAN, 4 x PoE, 2 x RS-232 (full)/422/485, 1 x RS-422/485, 8 x GPIO, 2 x USB 3.2, 2 x USB 2.0

• nROK 6232-WIC4S (P/N: 10A00623201X0)

Intel Atom® x7433RE processor, 8GB DDR5 SO-DIMM, DC 24V~110V power input w/ isolation, 1 x VGA, 1 x HDMI®, 1 x LAN, 4 x PoE, 2 x RS-232 (full)/422/485, 1 x RS-422/485, 8 x GPIO, 2 x USB 3.2, 2 x USB 2.0