nROK 6232

Fanless 4-CH PoE Rolling Stock Computer
with Intel Atom® x7433RE

Main Features

- Intel Atom® processor quad core x7433RE, 1.5GHz
- 4 x PoE (802.3 bt/af/at, max. total 90W)
- Built-in u-blox-M9N GPS
- Built-in CAN FD
- EN 50155, class OT4 conformity
- 3 x expansion slot
- Dual external storage (compatible with 15mm disk)
- 1 x eMMC to run OS
- Two video outputs, one VGA, and one HDMI®

Product Overview

nROK 6232, based on the Intel Atom® quad-core processor x7433RE (up to 1.5GHz), specifically complies with the stringent EN50155 standard in a rugged, fanless, and compact mechanism. nROK 6232 provides complete communication capability between the train and the computer with a built-in CAN FD interface. Equipped with intelligent power management, nROK 6232 can be woken up by ignition, RTC timer, or remotely through SMS message. nROK 6232 supports four 802.3bt/af/at PoE ports (maximum total 90W) to connect with IP cameras. The design with a 2.5" removable SSD and eMMC facilitates easy storage access. nROK 6232 maintains the flexibility to meet the demands of video surveillance in train applications.

Specifications

CPU

- Intel Atom® processor x7433RE 4 cores/1.5GHz (embedded)

Memory

- 1 x DDR5 4800 SO-DIMM, default 8GB

Video Output

- 1 x HDMI® 2.0, up to 4096 x 2160@60Hz
- 1 x VGA, up to 1920 x 1200@60Hz

Storage

- 2 x 2.5” SATA 3.0 HDD/SSD tray, removable, 15mm
- 1 x 64GB eMMC default for OS

Expansion

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

GNSS and Onboard Sensor

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

LAN and Power over Ethernet

- 4 x 2.5GbE M12 X-coded PoE connector, Intel® I226-IT (2 x 802.3 bt + 2 x 802.3 af/at), total up to 90W (PoE++1, PoE++2, PoE+3, PoE+4)
- 1 x 2.5GbE M12 X-coded connector, I226-IT

Security

- TPM 2.0, Infineon SLB9672VU2.0

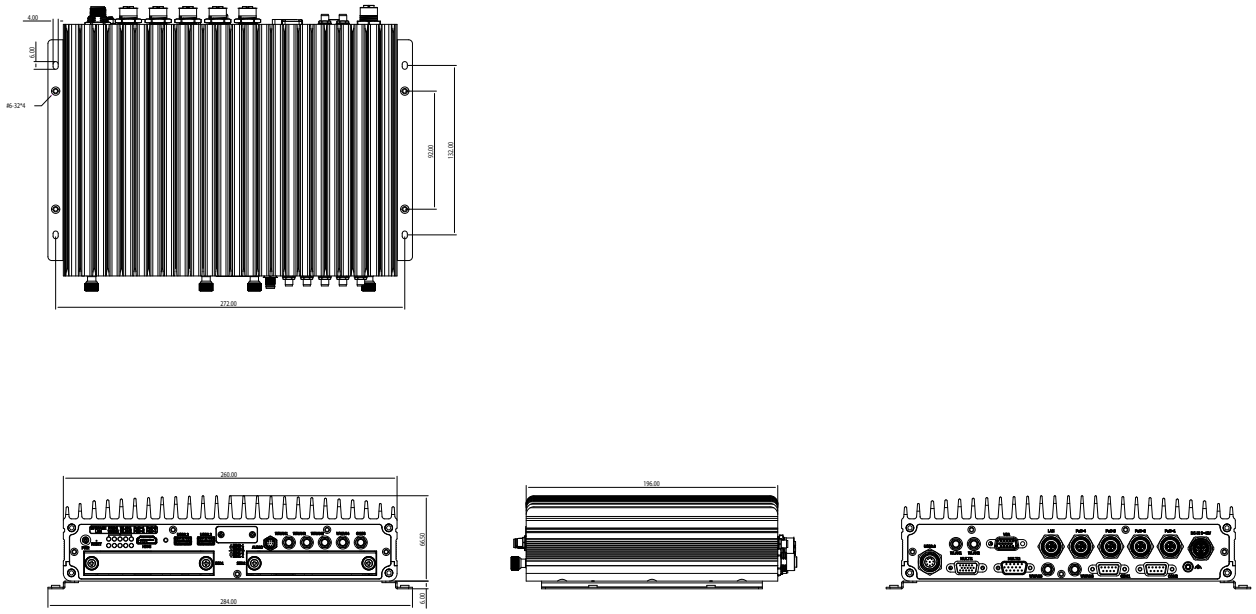
I/O Interface-Front

- 10 x LED indicator (including 1 x programmable LED)
- 4 x Externally accessible nano-SIM card socket with cover
- 2 x 2.5” removable SSD tray, removable, 15mm
- 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 for Mic in, 1 x Line out, 1 x Line in
- 5 x SMA antenna

I/O Interface-Rear

- 1 x M12 K-coded (5-pin) for DC input with ignition
  - 24/36V DC (9~48V), non-isolation
- 1 x 2.5GbE M12 X-coded connector, 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), total up to 90W (PoE++1, PoE++2, PoE+3, PoE+4)
- 1 x VGA, up to 1920 x 1200@60Hz

Dimension Drawing



- 2 x COM port (DB9), supports RS-232/422/485
- 4 x SMA antenna
- 1 x M12 A-coded for 2 x USB 2.0
- 1 x DB15 (Multi1 Port)
  - 4 x DI with isolation
  - 4 x DO with isolation
  - 1 x GNSS Speed/Direction
  - Vin, GND for GPIO
- 1 x DB15 (Multi2 Port)
  - 1 x RS-422/485
  - 1 x RS-232 (TX/RX)
  - 1 x CAN FD
  - 1 x 12V DC, 2A output (Vout, GND)

Power Management & Software Support

- Power input 24/36 VDC w/o 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
- 10~255 seconds WDT support, setup by software
- SDK (Windows/Linux) including utility and sample code

Operating System

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

Dimensions

- 260mm (W) x 196mm (D) x 66.5mm (H)

Weight

- 3.4kg

Environment

- Operating temperatures
  - EN 50155, class OT4 (-40~70°C), 85°C for 10 minutes (w/industrial SSD) with air flow
- Relative humidity: 10% to 90% (non-condensing)
- Vibration (random)
  - 2g@5~500Hz (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

Standards/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® processor x7433RE 1.5GHz CPU, 8GB DDR5 SO-DIMM, DC input 24/36 VDC w/o isolation, 1 x VGA, 1 x HDMI®, 1 x LAN, 4 x PoE, 2 x full RS-232/422/485, 1 x RS-422/485, 8 x GPIO, 2 x USB 3.2, 2 x USB 2.0