

nROK 6222-GCIoT

Google Cloud AI Edge Rolling Stock Solution
with Intel Atom® E3950



Main Features

- Built-in Google Edge TPU ML accelerator coprocessor
- Intel Atom® processor quad core E3950, up to 2.0GHz
- 4 x PoE (802.3af/at, max. 60W)
- Built-in u-blox-M8N GPS
- Three video outputs, one VGA and two HDMI
- EN50155 conformity
- 3 x mini-PCIe socket expansion
- Dual external storage (compatible with 15mm disk)
- 1 x USB DOM to run OS
- 1 x SD card for exporting and backing up data
- Optional power isolation kit support

Product Overview

nROK 6222-GCIoT, based on Intel Atom® quad core processor E3950 (up to 2.0GHz), is specifically comply with stringent EN50155 standard in rugged, fanless and compact mechanism. nROK 6222-GCIoT provides complete communication capability between train and computer with build-in CAN BUS 2.0B interface. Equipped with intelligent power management, nROK 6222-GCIoT can be waked on by ignition, RTC timer or SMS message remotely. nROK 6222-GCIoT supports 4 x 802.3at/3af (Max. 60W) PoE ports to connect with IP cameras. The design of 2.5" removable SSD and SD memory card helps to access storage easily. nROK 6222-GCIoT keeps the flexibility to meet the demand for video surveillance in train application. Moreover, nROK 6222-GCIoT is protected against sudden power surges through an attachable VTK6222-PK power isolation kit.

Specifications

CPU

- Intel Atom® processor quad core E3950, up to 2.0GHz, 12W, 4 core

Memory

- 1 x 204-pin DDR3L SO-DIMM socket support 1866MHz up to 8GB. default 4GB

Google Edge TPU (Coral ML Accelerator Card)

- Hardware interface: mini-PCIe (half size)
- Serial interface: PCIe Gen2 x1
- Performance: 4TOPS @2Watt
- Operating voltage: 3.3V +/- 10 %
- Dimensions: 30mm x 26.8mm x 2.5 mm

Video Output

- Chipset Intel® HD graphics 505
- 2 x HDMI 1.4b up to 4096 x 2160 @30Hz
- 1 x VGA up to 1920 x 1200 @60Hz
- Google Edge TPU (Coral ML Accelerator Card)

Storage

- 2 x 2.5" SATA 3.0 external SSD (compatible with 15mm drive)
- 1 x SD memory card 3.0 (externally accessible)
- 1x USB EDC for USB DOM

Expansion

- 1 x Full size mini-PCIe socket (USB 2.0), BOM optional M.2 Key B (USB2.0 + USB 3.0) with 2 x external SIM

- 1 x Full size mini-PCIe socket (USB 2.0 + PCIe 2.0)
- 1 x Half size mini-PCIe socket (USB 2.0 + PCIe 2.0)

GNSS and On Board Sensor

- 1 x Default U-blox NEO-M8N GNSS for GPS/Glonass/QZSS/Galileo/Beidou
- G Sensor (3-axis, 10-bit resolution)
- TPM 2.0 (optional)

LAN and Power over Ethernet

- 4-Port LAN, 10/100/1000 Mbps I210-IT GbE, PoE 802.3af/at, max. 60W
- 1-Port LAN, 10/100/1000 Mbps I210-IT GbE

I/O Interface-Front

- 12 x LED indicators (including 3 x programmable LED)
- 2 x externally accessible SIM card socket with cover
- 2 x 2.5" removable SSD tray
- 1 x externally accessible SD card socket with cover
- 1 x reset button
- 1 x power button
- 1 x USB 3.0 type A (5V/0.9A)
- 2 x HDMI 1.4b
- 1 x M8 (6-pin) for 1 x Mic-in (mono), 1 x Line-out (Stereo)
- 2 x SMA antenna

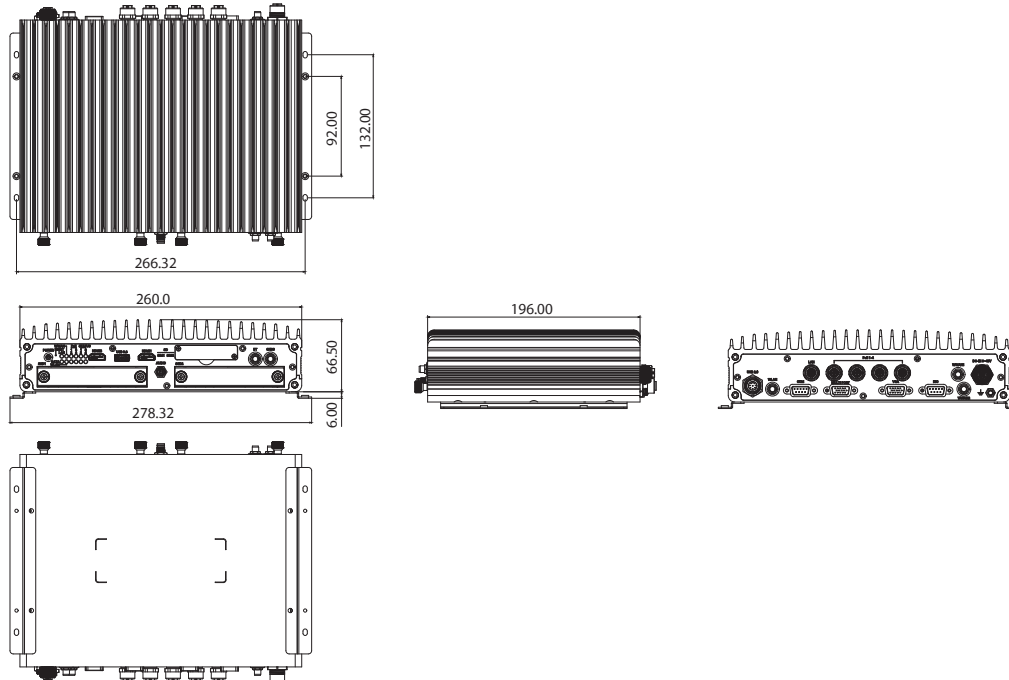
I/O Interface-Rear

- 1 x M12 (5-pin) DC input with ignition
 - 24 / 36 VDC (9~48V), non-isolation
- 1 x M12 X-coded LAN port, 10/100/1000 Mbps
- 4 x M12 X-coded PoE 802.3af/at (max. 60W)

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Dimension Drawing



- 1 x VGA
- 1 x M12 with two USB 2.0
- 1 x DB9 Full RS-232 (isolation)
- 3 x SMA antenna
- 1 x DB15 (DIO)
 - 4 x DI with isolation
 - 4 x DO with isolation
 - Vin, GND for GPIO
- 1 x DB15 (MULTI PORT)
 - 1 x RS422/RS485
 - 1 x RS232 (TX/RX)
 - 1 x CAN 2.0B

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

- Debian Linux and other variants

Dimensions

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

Weight

- 3.4kg

Environment

- -20°C~60°C (w/ Google Edge TPU & industrial SSD) with air flow
- Storage temperatures: -40°C to 80°C
- Relative humidity: 10% to 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

Standards/Certifications

- CE
- FCC Class A
- EN 50155:2017
 - Ambient temperature EN 50155, class OT4 (-40 ~ 70°C)
 - Shock and vibration IEC 61373 class B
 - Interruptions of voltage supply class S1,S2
 - Supply change over class C1,C2
 - EMC EN 50121-3-2:2016

Ordering Information

• nROK 6222-GC IoT-AC4S (P/N: TBD)

Intel Atom® processor E3950 up to 2.0GHz CPU, 4GB DDR3L SO-DIMM, Google Edge TPU, DC input 24/36 VDC w/o isolation, 1 x VGA, 2 x HDMI, 1 x LAN, 4 x PoE, 2 x RS-232, 1 x RS-422/485, 8 x GPIO, 1 x USB 3.0, 2 x USB 2.0

• VTK6222-APK (P/N: 10VK0622200X0)

Attachable power kit for power isolation, DC input 24VDC

• VTK6222-FPK (P/N: 10VK0622201X0)

Attachable power kit for power isolation, DC input 110VDC

Assured Systems

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