# nROK 1020

Intel® Atom™ x5-E3930 processor Fanless Railway Computer
with EN50155 Conformity

## Main Features

- Compact and fanless design
- Built-in GPS receiver with optional dead reckoning function
- Variety of wireless communication options
- Smart power management with Ignition on/off delay via software control and low voltage protection
- Wide range DC input from 9~36V
- EN50155 Class TX conformity
- Compliance to EN45545-2
- 5 x RS232 and 2 x RS485

## Product Overview

nROK 1020, a compact, rugged and entry-level railway computer with Intel® Atom™ x5-E3930 processor dual core 1.8GHz, is designed for the harsh railway related applications. Because of the compact design, it is easy to be located without compromising its features.

Adopting lock concept, LAN, Power-in and Audio, are all designed against vibration and shock impact. An advanced GPS receiver supports GPS/Gloness/QZSS/Galileo/Beidou and optional dead reckoning module is also available. Thanks to 2 mini-PCIe socket, nROK 1020 is perfectly suited for wireless applications, such as WLAN and WWAN data and voice transmission. With external SIM socket, it allows users to access SIM card conveniently. 12VDC output can be provided for external display with easy power wire arrangement. nROK 1020 is very suitable for Passenger Information System, Automatic Fare Collections and digital radio data/voice transmission applications.

## Specifications

### CPU
- Intel® Atom™ x5-E3930 processor dual core 1.8GHz

### Memory
- 1 x 204-pin DDR3L SO-DIMM socket support 1867MHz up to 16GB. Default 4GB

### Expansion
- 1 x mini-PCIe socket (USB)
- 1 x mini-PCIe socket (PCIe + USB + mSATA)

### Function
- 1 x u-blox NEO-M8N module (support GPS/Gloness/QZSS/Galileo/Beidou) or optional module with Dead Reckoning
- Built-in G-sensor
- Built-in TPM

### I/O Interface-Front
- 1 x power button
- 4 x LED indicators for Status (programmable), Storage, WLAN and WWAN
- 1 x system reset button
- 2 x type A USB 3.0 compliant host, supporting system boot up
- 1 x DB-15 VGA
- 1 x HDMI
- 1 x SIM card socket

- 1 x circular connector for 9~36VDC input with ignition and 20W typical power consumption
- 1 x circular connector for Audio-In and Audio-Out
- 1 x M12 connector for 10/100/1000Mbps Ethernet

### I/O Interface-Rear
- 1 x 12V/2A DC output, SMBus, power button
- 1 x DB15 COM port for 4 x RS232 Tx/Rx and 2 x RS485
- 1 x DB15 for multi port
  - 1 x CAN2.0
  - 1 x RS232 Tx/Rx
  - 1 x Odometer and direction for optional DR
  - 5 x Programmable DIO
    Input voltage (internal type): 5VDC TTL (default)
    Input voltage (source type): 3~24VDC
    Digital output (sink type): 5VDC TTL (default), max current: 20mA
    Digital output (source type): 3~24VDC
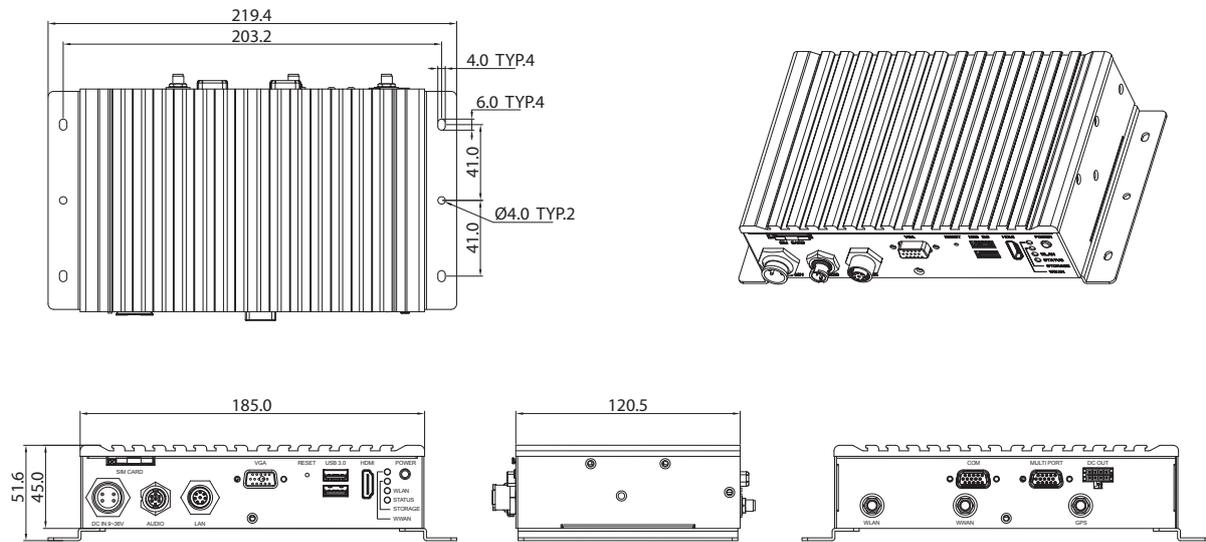- 3 x Antenna hole for SMA-type antenna (WWAN/WLAN/GPS)

### Expandable Storage
- 1 x 2.5" SSD SATA 3.0
- 1 x mSATA

### Operating System
- Windows 10
- Linux YOCTO (by request)

NEXCOM

## Dimension Drawing



## Power Management
- Selectable boot-up & shut-down voltage for low power protection
- HW design ready for 8-level delay time on/off at user's self configuration
- Power on/off ignition, software detectable
- Support S3, S4 suspend mode

## Dimensions
- 185mm (W) x 120mm (D) x 45mm (H) (7.3" x 4.7" x 1.8")
- 1 Kg (2.20 Lb)

## Construction
- Aluminum top case with sheet metal

## Environment
- -40°C to 70°C (w/ industrial SSD) with air flow
- Storage temperatures: -40°C to 85°C
- Relative humidity: 10% to 90% (non-condensing)
- Vibration:
  Vibration (random): 2g @5~500 Hz
  Operating: MIL-STD-810F, Method 514.5, Category 20, Ground Vehicle – Highway Truck
  Storage: MIL-STD-810F, Method 514.5, Category 24, Integrity Test

- Shock:
  Operating: MIL-STD-810F, Method 516.5, Procedure I, Trucks and semi-trailers=20g
  Crash hazard: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=75g

## Standards/Certifications
- CE approval
- FCC Class B
- E13 mark
- EN50155 Class TX conformity
- Compliance to EN45545-2

## Ordering Information
- **nROK 1020-A (P/N: 10V00102002X0)**
  Intel® Atom™ x5-E3930 processor 1.8GHz with 4GB DDR3L, U-blox GPS module, GPS antenna, EN50155 Class TX (24VDC w/o isolation)