ADLINK LEADING EDGE COMPUTING

AVA-RAGX

Fanless AIoT Video Analytics Platform with NVIDIA Jetson AGX Xavier for Railway

Features

- NVIDIA Jetson AGX Xavier with 32 TOPs AI performance
- 4xM12 GbE with PoE, 1x lockable HDMI output, 4x USB 3.0
- 1x M.2 B-key for LTE/5G; 1x M.2 A/E key 2230 for Wi-Fi
- 2x CAN DB-9 CAN-FD from AGX module, with isolation
- Power with ignition control
- Nominal Voltage: 24VDC, 36VDC, 72VDC and 110VDC (EN50155 compliant)

Preliminary

Specifications

System

System on Module
NVIDIA Jetson AGX Xavier, 100x87mm

Processor
8-core NVIDIA Carmel ARM® v8.2 64-bit CPU,2.26GHz
8MB L2 + 4MB L3

GPU
512-core NVIDIA Volta GPU with 64 Tensor Cores, 1.37GHz

Memory
32GB 256b LPDDR4x on module

Storage
32GB on module

Front Interfaces

Ethernet
4x GbE connector in M12 Female X-coded connectors
Support PoE IEEE 802.3at by BOM option, PSE total max. power 40W for 4 ports
Isolation 1.5kVac (2100Vdc) include POE power

USB
2x USB 3.0 in connector with lock

Serial Ports
1x DB-9 RS-232/422/485 originated from AGX module, TX, RX, CTS, RTX

DIO
1x thermal block 4 input/4 output for 24VDC~110VDC, Isolation 1.5kVdc
Signals must be separated with a creepage and clearance distance to all other PCB tracks, components and enclosure that can withstand ≥ 1.5K Vdc
Short protection for DO
DI voltage:
Input low(0) at value < 5V
Input high(1) at Value > 12V
Max input current is 4mA
DO max. working voltage is 110V
DO max. current 250mA

CAN
1x DB-9 CAN-FD from AGX module, with isolation
1x DB-9 CAN-FD from AGX module, with isolation by pin-header

Rear Interfaces

Display
1x HDMI 2.0 with lock at rear side

USB
1x 2.0 OTG port for change environment image
2x USB 3.0 for maintenance

Power Inlet
1x 4-pin S-coded M12

USIM
1x USIM socket, external accessible, mini-SIM (25x15mm, 2FF)

Antenna
4+2x SMA antenna reserved on rear side

Internal Interfaces

Storage expansion
1x Socket 1, Key M (PCIe Gen3 x4) 2280 for Storage

SD Card
1x Micro SD

Expansion
1x M.2 B-key 3042 (reserve mechanical design for 3052 for LTE/5G) through USB 3.0
Ideally use FR1(sub-6GHz), solution can be SIMCOM SIM8202G 3042, need to reserve 4x 5G antenna.
1x M.2 A/E key 2230 for Wi-Fi (PCIe x1)/BT (USB2.0)
Wi-Fi 5:EnLiBNA2174_M2I (29-E2174-9000) (Primary)
Wi-Fi 5: Intel AC9260 (29-E9260-2020) (Secondary)

TPM
Support TPM 2.0

RTC
Real time clock (RTC) with golden cap backup (charge holds 48h)

Specifications

Power

Button
Power, Reset, and Recovery buttons on rear

Power Input
+24/36/72/110VDC with M12 4-pin S code connector
(16.8V to 137.5V, EN50155 compliant)

Ignition input
Ignition control

Compliance
Compliant to Interruptions of voltage supply according EN50155 SEC. 5.1.1.4 Class S2 &C1>=10ms
Power Consumption<160W at 100% GPU loading

GND
M6 threaded stainless steel stud for protective grounding on rear

Operating System

Operating System
Ubuntu 18.04

Mechanical

Mounting
Wall mount & Din rail

Dimensions
287.7mm x 190mm x 78.3mm (WxDxH)

IP
IP20

Weight
<=5 kg

Environmental Chamber/Shock/vibration

Operating Temperature
-25°C to 70°C, up to +85°C for 10min

Storage Temperature
-40°C to 85°C

Humidity Operating
10% to 95% relative humidity (non-condensing)

Humidity Storage
5% to 95% relative humidity (non-condensing)

Environmental
EN50155:2017
Low temperature storage test – EN50155 13.4.6 (Ref. to IEC60068-2-1)
Low temperature start-up test – EN50155 13.4.4 (Ref. to IEC60068-2-1)
Dry heat test – EN50155 13.4.5 (Ref. to IEC60068-2-2)
Cyclic damp heat test – EN50155 13.4.7 (Ref. to IEC60068-2-30)
Shock and Vibration test – EN50155 13.4.11 (Ref. to IEC61373)
Altitude test - EN50125-1:2014 (EN50125-1_4.2 (Ref. to IEC 60068-2-13)
RoHS 2.0 & REACH

Environmental EMC / Safety

EMI/EMC
EN 50155:2017 Clause 4.3.6
EMC: with reference to EN 50121-1:2017; EN 50121-3-2:2016
EN 61000-4-2:2009; EN 61000-4-3:2006 + A1:2008 + A2:2010
EN 61000-4-4:2012; EN 61000-4-5:2014 + A1: 2017
EN 61000-4-6:2014 + AC: 2015FCC 47 CFR, Part 15, Subpart B, Class A
Safety: EN50124-1:2017

Safety
EN 50124 Compliance

Fire Protection
Compliant to EN45545-2:2013+A1:2015 (HL 1-3 TBD)

Miscellaneous

LEDs
1x Power On
6x User defined LEDs on front interfaces
Green: U1, U2, U3, U6
Orange: U5
Yellow: U4

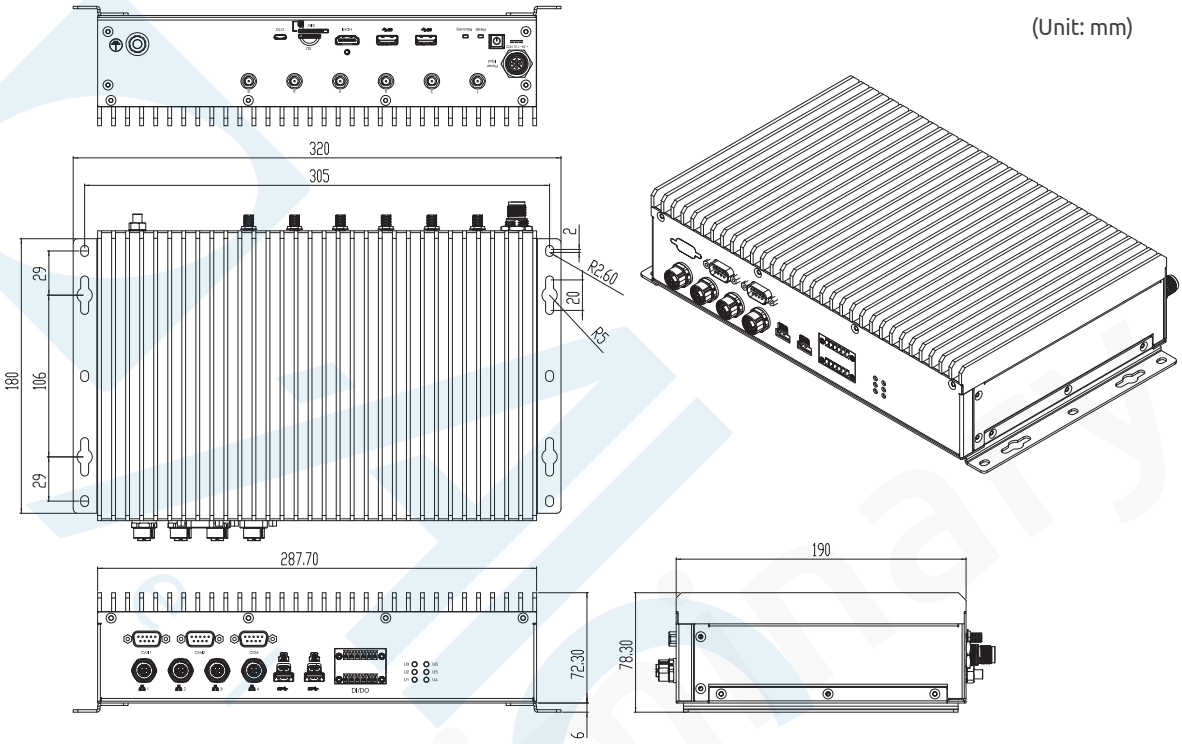
MTBF
TBD >250K Hours @25°C according to IEC/TR 62380

Conformal Coating
All PCBs conformal coated both sides – type HumiSeal 1B73 Coating (AR) Acrylic

AVA-RAGX

Mechanical Drawing

(Unit: mm)



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