

COMPACT AI Vehicle Series

Intelligent Machine Learning Unit with NVIDIA Jetson AGX Xavier

LTE / GNSS / Wi-Fi



Dual nanoSIM
CFast
microSD



DC supply

2x CAN

4x PoE LAN
RJ45

2x LAN
M12 x-coded

2x USB 3.1

DP

IPC/COMPACT A3 - RML

This fanless RML COMPACT-A3 generation is based on the Jetson AGX Xavier processor module and offers a wide range of interface options.

The robust and uncompromising industrial design allows the implementation in the most demanding mobile AI applications and guarantees long term availability.

- Power over Ethernet (PoE+), 48VDC out
- 24/7 continuous operation
- Extended AI Computing
- Passively cooled, no moving parts
- Long term availability with fixed BOM



Linux for Tegra (L4T)



Product Highlights

UNECE-R10 (E-mark) certified
Positioning capabilities with dead reckoning
Power ignition controller
Each LAN interface has its own dedicated NIC
Shock and vibration resistant
LTE and Wi-Fi connectivity options
No moving parts / passively cooled

Product Features

512-Core NVIDIA Volta™ GPU
with 64 Tensor Cores
8-Core ARM v8.2 64-bit NVIDIA Carmel CPU
32GB 256-Bit LPDDR4x RAM soldered on board
Storage options: M.2 2280 & CFast
Ethernet, USB, CAN (J1939)
LTE, GNSS and WiFi
Aluminum & stainless steel housing

Industries

Automotive
Automated Guided Vehicles (AGV)
Transportation
Robotics
Off-highway vehicles

Processor module / Performance

NVIDIA Jetson AGX Xavier (32GB) | 512-Core NVIDIA Volta™ GPU with 64 Tensor Cores
8-Core ARM v8.2 64-bit NVIDIA Carmel CPU

AI Performance 32 TOPs 32 TOPs

Memory / Storage

| | | |
|--|------|------|
| Data L3 Cache Size | 4MB | 4MB |
| 256-Bit LPDDR4x RAM soldered on board | 32GB | 32GB |
| eMMC 5.1 Flash Storage on board | 32GB | 32GB |
| microSD Card socket | 1 | 1 |
| M.2 socket ² | 1 | 1 |
| CFast socket with retention frame ² | 1 | 1 |

Features

| | | |
|---|----------|----------|
| Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR | • | • |
| Real time clock (RTC) with battery backup Renata CR2477 (950 mAh) | • | • |
| Real time clock (RTC) with goldcap backup (charge holds 48h) | optional | optional |
| Hardware Watchdog & Temperature supervisor | • | • |
| Buzzer | • | • |

Communication Interfaces

| | | | |
|--|--|------------------------|------------------------|
| Graphic interface | | DisplayPort 1.2 | DisplayPort 1.2 |
| USB version 3.1 (Type A) | | 2 | 2 |
| Internal USB version 2.0 OTG <small>behind the cover</small> (micro USB Type AB) | | 1 | 1 |
| Ethernet 10/100/1000Mbit (M12 female x-coded) | | 2 | 2 |
| Active/passive-CAN ESD protected, isolated (DSUB9) | | 2 | 2 |
| Power over Ethernet - IEEE802.3at 10/100/1000Mbit (RJ45) | | 4 | 4 |
| PSE - Power sourcing equipment, producing 48VDC out | | (total max power: 39W) | (total max power: 39W) |
| Serial RS232 / RS422/RS485 (DSUB9) | | optional | none |
| Digital I/O's, 24VDC (up to 4 inputs & 4 outputs) | | optional | none |
| Analog input, 16bit resolution, voltage input: -10 ... +10V / 0 ... 30V <small>Accuracy: +/- 0.1%</small> (4 inputs) | | optional | none |
| Analog input, 16bit resolution, current: 0-20mA (4 inputs) | | optional | none |
| I2C bus ² | | 1 | 1 |
| MIPI CSI-2 / GMSL2 / FPDLinkIII Camera interface ¹ | | on request | on request |

Wireless Connectivity

| | | | |
|--|--|-----------|------|
| Cellular 4G Module (LTE/UMTS/GSM) Sierra Wireless MC7455- M2M only! <small>(full size miniPCIe Slot)</small> | | 2x SMA | none |
| GNSS Positioning module (GPS, Galileo, Glonass, Beidou) u-blox NEO-M8U module incl. acceleration sensor and gyroscope | | 1x SMA | none |
| Wireless LAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO Sparklan WPEB 263ACNI(BT) <small>(half size MiniPCIe Slot)</small> | | 2x RP-SMA | none |
| High precision GNSS module ¹ u-blox ZED-F9P module | | optional | none |

Technical Data

| | | | |
|---|--|--|--------------------|
| Dimensions [mm] (housing, incl. mounting plate) | | w255 x h103 x d125 | w255 x h103 x d125 |
| Net weight [gram] | | ~2300 | ~2300 |
| Non isolated input voltage with ignition controller and reverse polarity protection (M12 5P male a-coded) | | 9 ... 36VDC | 9 ... 36VDC |
| Power consumption ³ | | depends on power mode (15W, 30W, MAXN) | |

Environmental Conditions

| | | | |
|---|--|--------------------|--------------------|
| Operating temperature ³ | | -25°C ... +60°C | -25°C ... +60°C |
| Storage temperature | | -25°C ... +80°C | -25°C ... +80°C |
| Ingress protection standard according to EN60529 (ISO 20653) | | IP20 | IP20 |
| Conformal coating ⁴ | | on request | on request |
| Road vehicles ⁵ | | UNECE-R10 (E-mark) | UNECE-R10 (E-mark) |
| Shock | | EN60068-2-27 | EN60068-2-27 |
| Vibration | | EN60068-2-64 | EN60068-2-64 |
| EMI-Conformity | | EN55032 / EN55035 | EN55032 / EN55035 |
| Safety (designed to meet) | | EN62368-1 | EN62368-1 |
| Radio and Telecommunication (designed to meet) | | RED | RED |
| MTBF @ 25°C ambient <small>according to Telcordia SR-332, Environment GB, excluding battery</small> | | ~325 000h | ~435 000h |

¹ Please contact factory for minimum order quantities² Internal connector³ Depending on installation situation, interface connection and power mode. Please see user documentation.⁴ On all possible components (excl. NVIDIA Xavier Module, connectors and wireless devices)⁵ UNECE-R10 is the type-approval test for European automotive electronics. It includes a variety of testing including RF immunity and emissions, transient immunity and emissions. It also includes a requirement for burst, surge, harmonics & flicker and provides advice and requirements for electrical vehicles.

Product specifications subject to change without notice. | All data is for information purposes only and not guaranteed for legal purposes. Information in this data sheet has been carefully checked and is believed to be accurate. However, no responsibility is assumed for inaccuracies. Please refer to the user documentation for additional product specification.

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Version 1.1 | April 2021

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industrial computing