

AI Rugged Computer

## COMPACT AI Rugged Vehicle Series

Computer Vision Edge Unit with NVIDIA Jetson AGX Xavier

LTE / GNSS / Wi-Fi



Dual nanoSIM  
CFast  
microSD  
DisplayPort  
USB



image similar

DC supply  
2 x CAN  
M12 a-coded  
4 x GBE w/PoE  
M12 x-coded  
2 x LAN  
M12 x-coded

## RPC/COMPACT RML A3 Series

This fanless RPC COMPACT-A3 generation is based on the NVIDIA Jetson AGX Xavier processor module and offers a wide range of highly integrated interface options. The ultra rugged and uncompromising design allows the use in the most demanding AI applications on mobile systems as well as in outdoor applications with harsh environmental conditions and guarantees long-term availability.

- 24/7 continuous operation
- Power Over Ethernet (PoE+), 48VDC out
- IP67 Protection
- Shock and vibration resistant
- Milled aluminium housing



Linux for Tegra (L4T)



### Product Highlights

Ultra rugged  
Sealed housing, protection class IP67 & IP69  
Maintenance free  
Power Ignition controller  
No moving parts / passively cooled  
Pressure equalization membrane  
Resistance to chemicals  
Long term availability (fixed BOM)

### 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: NVMe M.2 2280 & CFast  
PoE+ Power over Ethernet  
Ethernet, USB, Passive or Active CAN  
Rugged M12 connectors

### Industries

Agriculture  
Construction  
Transportation  
Off-Highway Vehicles  
Heavy Industry  
Autonomous Mobile Robots (AMRs)  
Outdoor applications

**Processor module / Performance**

NVIDIA Jetson AGX Xavier (JAX) | 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 32 TOPs

**Memory / Storage**

Data L3 Cache Size 4MB 4MB 4MB

256-Bit LPDDR4x RAM soldered on board 32GB 32GB 32GB

eMMC 5.1 Flash Storage on board 32GB 32GB 32GB

microSD Card socket 1 1 1

M.2 2280 Key M socket (for NVMe SSD)<sup>2</sup> 1 1 1CFast socket with retention frame<sup>2</sup> 1 1 1**Features**

Real time clock (RTC) with battery backup Renata CR2477 (950 mAh) • • •

Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR on request on request on request

**Communication Interfaces**Graphic interface<sup>behind the cover</sup> DisplayPort 1.2 DisplayPort 1.2 DisplayPort 1.2Internal USB version 2.0 OTG<sup>behind the cover</sup> (micro USB Type AB) 1 1 1USB version 2.0<sup>behind the cover</sup> (Type A) 2 2 2

Ethernet 10/100/1000 BASE-T (M12 female x-coded) 2 2 2

CAN 2.0A / CAN 2.0B (active/passive), CAN FD supported, isolated (M12 female a-coded) none 2 2

Power over Ethernet - IEEE802.3at 10/100/1000Mbit (M12 female x-coded) 4 4 4

PSE - Power sourcing equipment, producing 48VDC out (total max power: 39W) (total max power: 39W) (total max power: 39W)

USB version 2.0 (M12 female a-coded) on request on request on request

Serial RS232 / RS422/RS485 (M12 female a-coded) on request on request on request

Digital I/O's, 24VDC (up to 4in &amp; 4out) on request on request on request

Analog input1, 0-20mA or -10...+10V / 0... 30V<sup>(16bit resolution Accuracy: +/- 0.1%)</sup> (4 inputs) on request on request on requestMini PCIe socket<sup>2</sup> - used for extensions depending on configuration 1 full-size / 1 half-size 1 full-size / 1 half-size 1 full-size / 1 half-size**Wireless Connectivity**Cellular 4G Module (LTE/UMTS/GSM) with built-in GNSS Teitit LE910C4-WWX<sup>6</sup> (Dual nano SIM support) 3x SMA 3x SMA noneWireless LAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO & Bluetooth 5.0 Emwicon WMX6218<sup>6</sup> 2x RP-SMA 2x RP-SMA noneHigh Accuracy GNSS Positioning Module w/ RTK & optional heading support<sup>1</sup> u-blox ZED F9R / F9P on request on request on request

Cellular 5G Module (4G/3G fallback) with GNSS on request on request on request

Wireless LAN (Wi-Fi 6) 802.11ax/ac/a/b/g/n 2T2R on request on request on request

**Technical Data**

Dimensions mm (housing, excl. mounting) w250 x h105 x d170 w250 x h105 x d170 w250 x h105 x d170

Net weight in gram ~3750 ~3750 ~3700

Non isolated input voltage, with Ignition controller, reverse polarity protected (M12 5P male a-coded) 9 ... 45VDC 9 ... 45VDC 9 ... 45VDC

Power consumption<sup>3</sup> depends on power mode (15W, 30W, MAXN)**Environmental Conditions**Operating temperature<sup>3</sup> -25°C ... +60°C -25°C ... +60°C -25°C ... +60°C

Storage temperature -25°C ... +80°C -25°C ... +80°C -25°C ... +80°C

Ingress protection standard according to EN60529 (ISO 20653) IP67 / IP69 IP67 / IP69 IP67 / IP69

Conformal coating<sup>4</sup> on request on request on requestRoad vehicles<sup>5</sup> on request on request on request

Shock ISO 15003 / EN60068-2-64 (designed to meet) • • •

Vibration ISO 15003 / EN60068-2-64 (designed to meet) • • •

EMI-Conformity EN55032 / EN55035 EN55032 / EN55035 EN55032 / EN55035

Safety (designed to meet) EN62368-1 EN62368-1 EN62368-1

Radio and Telecommunication (designed to meet) RED RED RED

MTBF @ 25°C ambient<sup>according to Telcordia SR-332, Environment GB, excluding battery and on request interfaces</sup> ~280 000h ~280 000h ~355 000h<sup>1</sup> Please contact factory for minimum order quantities<sup>2</sup> Internal connector<sup>3</sup> Depending on installation situation, interface connection and power mode. Please see user documentation.<sup>4</sup> On all possible components (excl. NVIDIA Xavier Module, connectors and wireless devices)<sup>5</sup> UN/ECE-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.<sup>6</sup> These LTE and Wi-Fi modules have replaced the previously used Sierra Wireless MC7455 and SparkLAN WPEB-263ACNI(BT) due to these modules going EOL (previous products: RPC/RMLA3K22-A202S, RPC/RMLA3K22-B202S)

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industrial computing

Processor module / Performance				
NVIDIA Jetson AGX Xavier Industrial   512-Core NVIDIA Volta™ GPU (ECC) with 64 Tensor Cores				
8-Core ARM v8.2 64-bit NVIDIA Carmel CPU				
Dual Arm® Cortex®-R5 in lockstep (Safety Cluster Engine)				
AI Performance (INT8)		30 TOPs	30 TOPs	30 TOPs
Memory / Storage				
Data L3 Cache Size		4MB	4MB	4MB
256-Bit LPDDR4x ECC RAM soldered on board		32GB	32GB	32GB
eMMC 5.1 Flash Storage on board		64GB	64GB	64GB
microSD Card socket		1	1	1
M.2 2280 Key M socket (for NVMe SSD) <sup>2</sup>		1	1	1
CFast socket with retention frame <sup>2</sup>		1	1	1
Features				
Real time clock (RTC) with battery backup		not possible	not possible	not possible
Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR		on request	on request	on request
Communication Interfaces				
Graphic interface <small>behind the cover</small>		DisplayPort 1.2	DisplayPort 1.2	DisplayPort 1.2
Internal USB version 2.0 OTG <small>behind the cover</small>	(micro USB Type AB)	1	1	1
USB version 2.0 <small>behind the cover</small>	(Type A)	2	2	2
Ethernet 10/100/1000 BASE-T	(M12 female x-coded)	2	2	2
CAN 2.0A / CAN 2.0B (active/passive), CAN FD supported, isolated	(M12 female a-coded)	none	2	2
Power over Ethernet - IEEE802.3at 10/100/1000Mbit	(M12 female x-coded)	4	4	4
PSE - Power sourcing equipment, producing 48VDC out		(total max power: 39W)	(total max power: 39W)	(total max power: 39W)
USB version 2.0	(M12 female a-coded)	on request	on request	on request
Serial RS232 / RS422/RS485	(M12 female a-coded)	on request	on request	on request
Digital I/O's, 24VDC	(up to 4in & 4out)	on request	on request	on request
Analog input1, 0-20mA or -10...+10V / 0... 30V <small>(16bit resolution Accuracy: +/- 0.1%)</small>	(4 inputs)	on request	on request	on request
Mini PCIe socket <sup>2</sup> - used for extensions depending on configuration		1 full-size / 1 half-size	1 full-size / 1 half-size	1 full-size / 1 half-size
I2C bus <sup>2</sup>		1	1	1
Wireless Connectivity				
Cellular 4G Module (LTE/UMTS/GSM) with built-in GNSS Telit LE910C4-WWX <sup>6</sup> (Dual nano SIM support)		3x SMA	3x SMA	none
Wireless LAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO & Bluetooth 5.0 Emwicon WMX6218 <sup>6</sup>		2x RP-SMA	2x RP-SMA	none
High Accuracy GNSS Positioning Module w/ RTK support <sup>1</sup> u-blox ZED F9R / F9P		on request	on request	on request
Cellular 5G Module (4G/3G fallback) with GNSS		on request	on request	on request
Wireless LAN (Wi-Fi 6) 802.11ax/ac/a/b/g/n 2T2R		on request	on request	on request
Technical Data				
Dimensions mm (housing, excl. mounting)		w250 x h105 x d170	w250 x h105 x d170	w250 x h105 x d170
Net weight in gram		~3750	~3750	~3700
Non isolated input voltage, with Ignition controller, reverse polarity protected	(M12 5P male a-coded)	9 ... 45VDC	9 ... 45VDC	9 ... 45VDC
Power consumption <sup>3</sup>		depends on power mode (15W, 30W, MAXN)		
Environmental Conditions				
Operating temperature <sup>3</sup>		-40°C ... +65°C	-40°C ... +65°C	-40°C ... +65°C
Storage temperature		-40°C ... +85°C	-40°C ... +85°C	-40°C ... +85°C
Ingress protection standard according to EN60529 (ISO 20653)		IP67 / IP69	IP67 / IP69	IP67 / IP69
Conformal coating <sup>4</sup>		on request	on request	on request
Road vehicles UN/ECE R10 (E-mark) <sup>5</sup>		on request	on request	on request
Shock ISO 15003 / EN60068-2-64 (designed to meet)		•	•	•
Vibration ISO 15003 / EN60068-2-64 (desigend to meet)		•	•	•
EMI-Conformity		EN55032 / EN55035	EN55032 / EN55035	EN55032 / EN55035
Safety (designed to meet)		EN62368-1	EN62368-1	EN62368-1
Radio and Telecommunication (designed to meet)		RED	RED	RED
MTBF @ 25°C ambient <small>according to Telcordia SR-332, Environment GB, excluding battery and on request interfaces</small>		~270 000h	~270 000h	~340 000h

<sup>1</sup> Please contact factory for minimum order quantities<sup>2</sup> Internal connector<sup>3</sup> Depending on installation situation, interface connection and power mode. Please see user documentation.<sup>4</sup> On all possible components (excl. NVIDIA Xavier Module, connectors and wireless devices)<sup>5</sup> UN/ECE-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.<sup>6</sup> These LTE and Wi-Fi modules have replaced the previously used Sierra Wireless MC7455 and SparkLAN WPEB-263ACNI(BT) due to these modules going EOL (previous products: RPC/RMLA3K21-A202E, RPC/RMLA3K21-B202E)

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