AI Railway Computer

COMPACT AI Railway Series

Computer Vision Edge Unit with NVIDIA Jetson AGX Xavier

LTE / GNSS / Wi-Fi

Dual nanoSIM
CFast
microSD

image similar

DC supply

2x CAN

2x LAN
M12 x-coded

2x USB 3.1

DP

IPC/COMPACT A3 - RSL

This fanless RSL 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 AI railway and rolling stock applications and guarantees long term availability.

- 24/7 continuous operation
- Extended AI Computing
- Railway approved EN50155
- Passively cooled, no moving parts
- Long term availability with fixed BOM

NVIDIA. Linux for Tegra (L4T)

Product Highlights

No moving parts / passively cooled
Shock and vibration resistant
Galvanically isolated railway power supply
Long term availability (fixed BOM)
Maintenance free
Inertial measurement unit (IMU)
Goldcap instead of battery backup for RTC

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
Ethernet, USB, Passive or Active CAN
LTE, GNSS and WiFi options
Aluminum & Stainless steel housing

Markets

Railway (rolling stock)
Transportation

CE

Your partner for reliable embedded computer solutions.

	Order Code	IPC/RSLA3K22-A105S[1]	IPC/RSLA3K22-C101S[1]
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
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 2280 Key M socket (for NVMe SSD) [2]		1	1
CFast socket with retention frame [2]		1	1
Features			
Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR		on request	on request
Real time clock (RTC) with goldcap backup (charge holds typ. 48h)		•	•
Communication Interfaces			
Graphic interface		DisplayPort 1.2	DisplayPort 1.2
USB version 3.1 (10 Gbit/s)	(Type A)	2	2
Internal USB version 2.0 OTG behind the cover	(micro USB Type AB)	1	1
Ethernet 10/100/1000 BASE-T	(M12 female x-coded)	2	2
CAN 2.0A / CAN 2.0B (active/passive), CAN FD supported, isolated	(DSUB9)	2	2
Power over Ethernet - IEEE802.3at 10/100/1000Mbit requires taller housing: h95mm	(RJ45 / M12 female x-coded)	on request	on request
Serial RS232 / RS422/RS485 requires taller housing: h103mm	(DSUB9)	on request	on request
Digital I/O's, 24VDC requires taller housing: h103mm	(up to 4 inputs & 4 outputs)	on request	on request
Analog input[1], 0-20mA or -10...+10V / 0... 30V (16bit resolution Accuracy: +/- 0.1%), requires taller housing: h95mm	(up to 4 inputs)	on request	on request
Mini PCIe socket [2] - used for extensions depending on configuration		1 full-size / 1 half-size	1 full-size / 1 half-size
MIPI CSI-2 / GMSL2 / FPDLinkIII Camera interface [1], requires taller housing: h95mm		on request	on request
Wireless Connectivity			
Cellular 4G Module (LTE/UMTS/GSM) with built-in GNSS Telit LE910C4-WWX [6] (Dual nano SIM support)		3x SMA	none
Wireless LAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO & Bluetooth 5.0 Emwicon WMX6218 [6]		2x RP-SMA	none
High Accuracy GNSS Positioning Module w/ RTK support [1] u-blox ZED F9R / F9P may require taller housing depending on final SKU		on request	none
Cellular 5G Module (4G/3G fallback) with GNSS		on request	on request
Wireless LAN (Wi-Fi 6) 802.11ax/ac/a/b/g/n 2T2R		on request	on request
Technical Data			
Dimensions [mm] (housing, incl. mounting plate)		w256 x h67.5 x d127	w256 x h67.5 x d127
Net weight [gram]		~2300	~2250
Isolated input voltage with ignition controller and reverse polarity protection	(M12 5P male a-coded)	16.8 ... 45VDC	16.8 ... 45VDC
Interruption of voltage supply time: EN50155 Class S2		>10ms	>10ms
Power consumption [3]		depends on power mode (15W, 30W, MAXN)	
Environmental Conditions			
Operating temperature [3]		−25°C ... +65°C	−25°C ... +65°C
Storage temperature		−25°C ... +80°C	−25°C ... +80°C
Ingress protection standard according to EN60529		IP20	IP20
Conformal coating [4]		PCX	PCX
UN/ECE R10 (E-mark) certification [5]		on request	on request
Shock		IEC/EN 61373	IEC/EN 61373
Vibration		IEC/EN 61373	IEC/EN 61373
EMC-Conformity		EN 50121-3-2	EN 50121-3-2
Safety (designed to meet)		EN 50121-3-2(IEC 62236-3-2)	EN 50121-3-2(IEC 62236-3-2)
Fire protection		EN 45545-2 HL3	EN 45545-2 HL3
Radio and Telecommunication (designed to meet)		RED	none
MTBF @ 25°C ambient according to Telcordia SR-332, Environment GB, excluding battery		~325 000h	~435 000h

choose one

[1] Please contact factory for minimum order quantities
[2] Internal connector
[3] 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] 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.
[6] 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: IPC/RSLA3K22-A101S)

syslogic
industrial computing

	Order Code	IPC/RSLA3K21-A105E[1]	IPC/RSLA3K21-C101E[1]
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
Memory / Storage			
Data L3 Cache Size		4MB	4MB
256-Bit LPDDR4x ECC RAM soldered on board		32GB	32GB
eMMC 5.1 Flash Storage on board		64GB	64GB
microSD Card socket		1	1
M.2 2280 Key M socket (for NVMe SSD) [2]		1	1
CFast socket with retention frame [2]		1	1
Features			
Inertial measurement unit (IMU) STMicroelectronics ISM330DHCXTR		on request	on request
Real time clock (RTC) with goldcap backup (charge holds typ. 48h)		not possible	not posible
Communication Interfaces			
Graphic interface		DisplayPort 1.2	DisplayPort 1.2
USB version 3.1 (10 Gbit/s)	(Type A)	2	2
Internal USB version 2.0 OTG behind the cover	(micro USB Type AB)	1	1
Ethernet 10/100/1000 BASE-T	(M12 female x-coded)	2	2
CAN 2.0A / CAN 2.0B (active/passive), CAN FD supported, isolated	(DSUB9)	2	2
Power over Ethernet - IEEE802.3at 10/100/1000Mbit requires taller housing: h95mm	(RJ45 / M12 female x-coded)	on request	on request
Serial RS232 / RS422/RS485 requires taller housing: h103mm	(DSUB9)	on request	on request
Digital I/O's, 24VDC requires taller housing: h103mm	(up to 4 inputs & 4 outputs)	on request	on request
Analog input[1], 0-20mA or -10...+10V / 0... 30V (16bit resolution Accuracy: +/- 0.1%), requires taller housing: h95mm	(up to 4 inputs)	on request	on request
Mini PCIe socket [2] - used for extensions depending on configuration		1 full-size / 1 half-size	1 full-size / 1 half-size
MIPI CSI-2 / GMSL2 / FPDLinkIII Camera interface [1], requires taller housing: h95mm		on request	on request
Wireless Connectivity			
Cellular 4G Module (LTE/UMTS/GSM) with built-in GNSS Telit LE910C4-WWX [6] (Dual nano SIM support)		3x SMA	none
Wireless LAN IEEE 802.11a/b/g/n/ac dual-band 2x2 MIMO & Bluetooth 5.0 Emwicon WMX6218 [6]		2x RP-SMA	none
High Accuracy GNSS Positioning Module w/ RTK support [1] u-blox ZED F9R / F9P may require taller housing depending on final SKU		on request	none
Cellular 5G Module (4G/3G fallback) with GNSS		on request	on request
Wireless LAN (Wi-Fi 6) 802.11ax/ac/a/b/g/n 2T2R		on request	on request
Technical Data			
Dimensions [mm] (housing, incl. mounting plate)		w256 x h67.5 x d127	w256 x h67.5 x d127
Net weight [gram]		~2300	~2250
Isolated input voltage with ignition controller and reverse polarity protection	(M12 5P male a-coded)	16.8 ... 45VDC	16.8 ... 45VDC
Interruption of voltage supply time: EN50155 Class S2		>10ms	>10ms
Power consumption [3]		depends on power mode (15W, 30W, MAXN)	
Environmental Conditions			
Operating temperature, complies with EN50155 class OT4 [3]		–40°C ... +70°C	–40°C ... +70°C
Storage temperature		–40°C ... +85°C	–40°C ... +85°C
Ingress protection standard according to EN60529		IP20	IP20
Conformal coating [4]		PCX	PCX
UN/ECE R10 (E-mark) certification [5]		on request	on request
Shock		IEC/EN 61373	IEC/EN 61373
Vibration		IEC/EN 61373	IEC/EN 61373
EMC-Conformity		EN 50121-3-2	EN 50121-3-2
Safety (designed to meet)		EN 50121-3-2(IEC 62236-3-2)	EN 50121-3-2(IEC 62236-3-2)
Fire protection		EN 45545-2 HL3	EN 45545-2 HL3
Radio and Telecommunication (designed to meet)		RED	none
MTBF @ 25°C ambient according to Telcordia SR-332, Environment GB, excluding battery		~313 000h	~415 000h

[1] Please contact factory for minimum order quantities
[2] Internal connector
[3] 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] 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.
[6] 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: IPC/RSLA3K21-A101E)

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