



RAC 1000/1100

NVIDIA® Jetson AGX Orin™ Rugged AI Computing System

RAC-1000



- Advanced NVIDIA® Jetson AGX Orin™ platform delivers up to 275 TOPS AI performance
- Latest NVIDIA Ampere™ architecture with 2048 NVIDIA® CUDA® cores and 64 Tensor cores
- Supports 8 GMSL 1/2 automotive cameras with Fakra-Z connectors
- IP67 anti-dust and waterproof chassis design
PCIe Gen3 x8 expansion slot supports optional multiple 10GigE/PoE LAN/USB connections
- 2 isolated CAN-FD, 2 COM RS-232/422/285
- 6 GigE LAN with 4 PoE+, 2 USB 3.1, 1 digital display supporting 4K60
- DC 9V to 50V wide range power input with software ignition power

High-Performance AI Inference Platform | Advanced Integration
Flexible Configuration | Industrial Optimization

The Rugged Science RAC-1000, powered by the NVIDIA® Jetson AGX Orin™ platform, boasts 2048 cores utilizing the NVIDIA Ampere™ architecture GPU, 64 Tensor cores, and a 12-core Arm® Cortex®-A78AE CPU. This rugged system achieves 275 TOPS in AI performance and supports high-speed interfaces for numerous sensors, including 8 GMSL 1/2 automotive cameras with Fakra-Z connectors, 1 M12 isolated CAN-FD, and 2 M12 COM RS-232/422/485. With its IP67-rated protection design, the RAC-1000 is perfectly suited for demanding environments such as automated agricultural machinery, outdoor robotics, construction automation, and other edge AI applications.



Specifications

System

CPU	R32 : 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU R64 : 12-core Arm® Cortex®-A78AE v8.2 64-bit CPU
GPU	R32 : 1792-core NVIDIA Ampere™ architecture GPU with 56 Tensor Cores R64 : 2048-core NVIDIA Ampere™ architecture GPU with 64 Tensor Cores
DL Accelerator	2x NVDLA Engines
Memory	R32 : 1 32GB LPDDR5 DRAM R64 : 1 64GB LPDDR5 DRAM
OS	- Linux - NVIDIA JetPack SDK

I/O Interface

USB	2 USB 3.1 (M12)
Serial	2 COM RS-232/422/485 (M12 A-coded)
LAN	2 GigE LAN (M12 X-coded)
HDMI	1 HDMI 2.1 (M12)
CAN Bus	2 Isolated CAN Bus support CAN FD (M12 A-coded)
Flash	1 Micro USB OS flash port
Button	1 Power Button with LED, 1 Recovery button

Expansion

PCIe	1 PCIe x8 Slot (by request)
M.2	- 1 M.2 Key B Socket (3042/3052) - 1 M.2 Key E Socket (2230)

Graphics

Interface	1 Digital Display, up to 4K60
Video Encode	R32 : 1x 4K @60, 3x 4K @30, 6x 1080p @60 (HEVC) R64 : 2x 4K @60, 4x 4K @30, 8x 1080p @60 (HEVC)
Video Decode	R32 : 1x 8K @30, 4x 4K @30, 9x 1080p @60 (HEVC) R64 : 1x 8K @30, 7x 4K @30, 11x 1080p @60 (HEVC)

Camera (RAC-1000)

GMSL	8 Fakra-Z connectors for GMSL 1/2 automotive cameras
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Storage

M.2	2 M.2 Key M socket (2280)
eMMC	1 eMMC 5.1, 64GB

Ethernet

LAN 1	10/100/1000 Base-T Ethernet GigE LAN, X-coded M12 Connector
LAN 2	10/100/1000 Base-T Ethernet GigE LAN, X-coded M12 Connector

PoE (RAC-1100)

LAN 3 to LAN 6	IEEE 802.3at (25.5W/48V) GigE PoE+ LAN, X-coded M12 Connector
Total PoE power budget support up to 60W at 25°C, 30W at 70°C	

Power

Power Input	DC 9V to 50V
Power Interface	4-pin K-Code M12 connector
Ignition Control	16-mode Software Ignition Control

Mechanical

Dimensions	260 mm x 330 mm x 80 mm (10.23" x 13" x 3.14")
Weight	7 kg (15.43 lb)
Mounting	Wallmount

Environment

Operating Temperature	30W TDP Mode : -25°C to 70°C (-13°F to 158°F), with 0.63 m/s air flow 50W TDP Mode : -25°C to 55°C (-13°F to 131°F), with 0.63 m/s air flow
Storage Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	5% to 95% Humidity, non-condensing
Relative Humidity	95% @70°C
Shock	Operating, MIL-STD-810G, Method 516.7, Procedure I
Vibration	Operating, MIL-STD-810G, Method 514.6, Procedure I, Category 4
EMC	CE, FCC, EN50155, EN50121-3-2, IP67

*Environmental ratings for base system only

Order Information

RS-07242024

Model Name	Platform	RAM	LAN	USB 3.1	Serial	Iso. CAN	Iso. DIO	PCIe Slot	GMSL	PoE+	M.2
RAC-1000-R32	Jetson AGX Orin	32GB	2	2	2	2	16	1	8	-	4
RAC-1000-R64		64GB									
RAC-1100-R32		32GB	6	2	2	2	16	1	-	4	4
RAC-1100-R64		64GB									

Dimensions & Drawing

Unit : mm (inch)

RAC-1000



RAC-1100

