



Artificial Intelligence Radio Transceiver (AIR-T) Embedded Series Product Family, AIR7311

Enhanced sensor inputs for the broadest set of RF use cases, coupled with deep learning.



Product

Deepwave Digital's AI Radio Transceiver product line enables AI supercomputing at the edge in a compact and tightly integrated software-defined radio.

The AIR7311 integrates the NVIDIA Jetson Orin NX 16GB system-on-chip with the compute capability of the NVIDIA Ampere GPU architecture to enable the most recent deep learning methods, including generative AI at the edge.

Use Cases

Provides ultra-low latency RF data intelligence at the edge to drive workflow automation and critical decision-making:

- Air, land, maritime, & space navigation
- Environmental and workplace safety
- Local network optimization
- Physical infrastructure monitoring
- Satellite communications

Highlights

Purpose-Built

Integrated RF, AI, and edge computing platform built on patented, best-in-breed technologies that address RF and AI computing bottlenecks.

Practical and Flexible

Tuned for high-traffic RF spectrum covering high- and low-SNR signals while also supporting phase-coherent or independent channel operation.

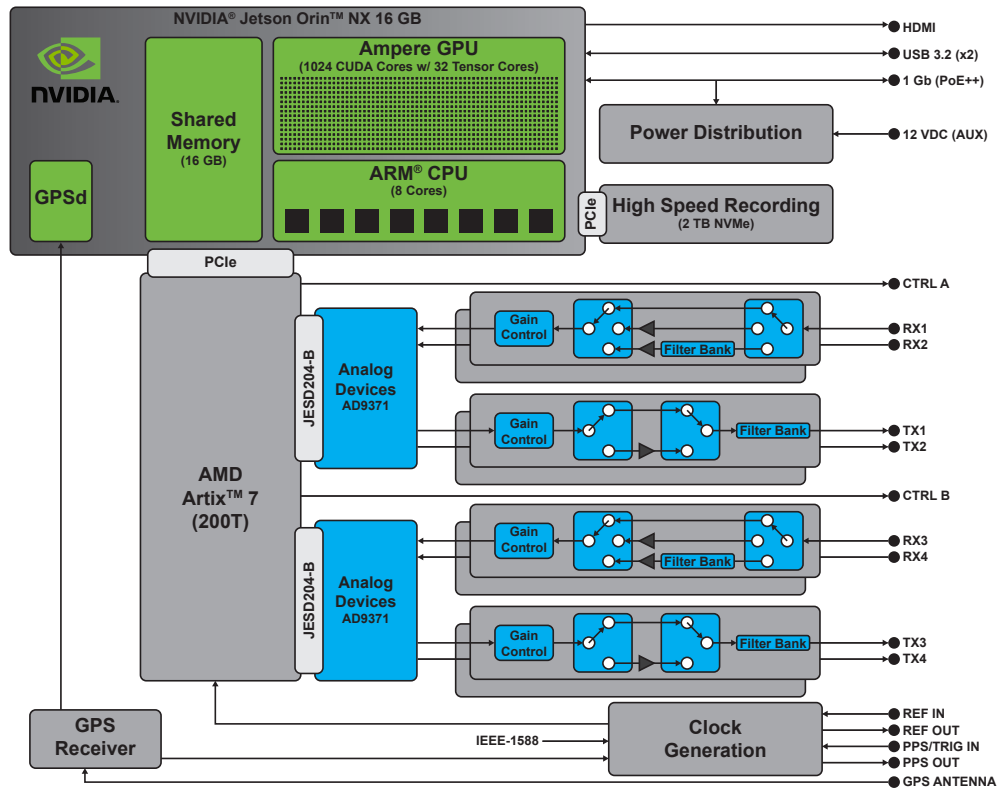
Simple Deployments

Small form factor, low-power, and modular unit that can be easily mounted to standard server racks (1U) or custom deployments. Just plug it in and go.

Developer Friendly

Platform enabled by flexible, open-source software for managing hardware, software deployments, and real-time AI model inference.





Key Specifications

General Purpose Processor

NVIDIA® Jetson Orin™ NX 16 GB

Ampere GPU

1024 NVIDIA® CUDA® cores
32 Tensor cores

ARM® CPU

8-core Cortex® v8.2 64-bit

Shared Memory

16 GB 128-bit LPDDR5 DRAM

AMD® FPGA

Artix™ 7 FPGA - XC7A200T-2FFG1156C

Networking

1 GbE RJ45 port
Precision Timing Protocol (IEEE-1588)

Data Storage

2TB NVMe storage (4 GB/s read/write)

Digital Connectivity

Dual USB-A 3.2
HDMI 2.1 (Micro HDMI connector)
Control of external RF systems (GPIO)
On board sensor reporting

Power

PoE++ or 12 VDC
30 Watts Typical (60 Watts Max)

Mechanical

18.7 x 23.0 x 4.4 cm (7.3 x 9.1 x 1.7 in)
1,653 grams (3.64 lbs)

Environmental

Commercial Grade (0 - 50°C)

RF Specifications

Dual transceiver daughtercards
4x4 MIMO or dual 2x2 MIMO
112.5 MHz IBW (125 MSPS)
300 MHz to 6 GHz
14 bit ADC / 16 bit DAC

Transceiver Performance

63 dB receiver gain
3.0 dB receiver noise figure
+20 dBm max transmit output power

GNSS / GPS Performance

5 ns (1-sigma) to UTC

Signal Connectivity

10 MHz reference input/output
1PPS clock input/output
Trigger input

