



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.

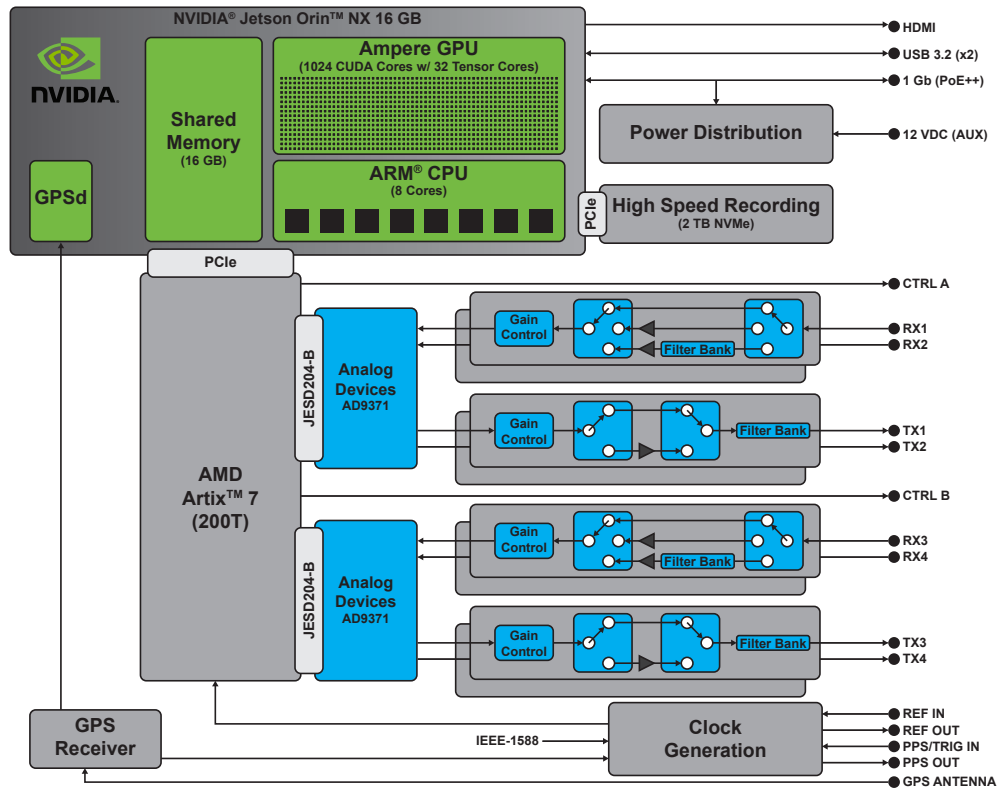
Simple Deployments

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 W Typ., 60 W Max)

Mechanical

18.7 x 23.0 x 4.4 cm (7.3 x 9.1 x 1.7 in)
1,65 kg (3.6 lbs)

Environmental

Commercial Grade (0 - 50°C)
Convection Cooled

RF Specifications

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

Transceiver Performance

+35 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

