*Entry for the 2022 Electronics Industry Awards: Internet of Things Product of the Year*

**Advantech: Nvidia Jetson AIR-020 series**

In an increasing number of applications, real-time edge computing means much more than just data. Increasingly, the use of artificial intelligence is required.

In applications such as traffic monitoring, defect/quality inspection, people counting, medical imaging, or autonomous mobile robots (AMRs), the demand for edge AI brings with it requirements for low latency, minimal power consumption, and sufficient thermal dissipation – without compromising on performance.

The new Advantech AIR-020 series edge AI boxes deliver this by offering an ultra-compact scalable hardware portfolio based on the NVIDIA Jetson hardware ecosystem.

The AIR-020 series delivers low power computing with powerful AI inferencing capabilities utilising NVIDIA Jetson Nano, TX2 NX, and Xavier NX SoM.

Delivering scalable and powerful AI performance, AIR-020X is powered by the NVIDIA Xavier NX SoM, AIR-020T by Jetson TX2 NX, and AIR-020N by Jetson Nano, allowing the range to meet diverse AI application and performance needs.

AIR-020X supports up to 21 TOPS (Tera Operations per Second) and 1058 frames per second (FPS) targeting high resolution imaging processes.

AIR-020T and AIR-020N support 1.33/0.5 TFLOPS and up to 109/48 frames per second (FPS). The AIR-020 series supports wide-range 12-24V DC input, a wide operating range of -10 to 55°C, and outstanding vibration and humidity resistance.

Artificial intelligence is used in a great variety of applications meaning the requirement for peripheral connections can vary considerably. The AIR-020 series is equipped with extensive I/O ports including 2 x USB 3.2 Type A, USB 3.2 Type C, 1 or 2 x GbE, 1 or 2 x RS-232/422/485, 8-bit DIO, and CANBus for data acquisition and communication.

The ultra-compact AI boxes are pre-installed with 4GB/8GB LPDDR4 and 16GB eMMC 5.1. Moreover, AIR-020 series provides 128GB of M.2 storage as the data storage default setting for AI usage. This allows larger AI models and data sets to be accessed by the processor at will.

On the software side, the platforms run a long-term support version of Ubuntu 18, which plays host to development using version 4.5.1 of the JetPack SDK and Advantech’s Edge AI Suite. The no-code, GUI-based Edge AI Suite includes an inferencing engine and support for the OpenVINO toolkit, pre-trained AI models, and a deployment wizard, while the JetPack SDK includes CUDA X-accelerated libraries and deep learning, computer vision, and multimedia APIs.

The AIR-020 series bundles with Ubuntu 18.04 LTS OS environment, Advantech Edge AI Suite and JetPack SDK 4.5.1. Developers can easily develop AI models to deploy their applications. For data security, AIR-020 uses the TPM 2.0 trusted platform module and secure boot, which opens the door for computing-intensive industrial applications and optimised system security at the edge.

Boasting a compact footprint of just 139 x 110 x 44.5 mm (5.47" x 4.33" x 1.75"), each unit can be easily integrated into a broad range of applications.

Ref: ADV326A