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AAEON IOT
INTRODUCTION

AAEON Technology Inc. is a professional developer and manufacturer of IoT intelligent solutions, established in 1992. The company develops, manufactures, and markets IoT and AI edge computing solutions globally. Additionally, it provides embedded computer motherboards and systems, industrial LCD displays, rugged tablet PCs, industrial control systems, network security devices, and related accessories. AAEON offers comprehensive and professional hardware and software solutions for OEM/ODM clients and system integrators.

AAEON Technology Inc. has a dedicated team that provides customized services, assisting clients from the initial development concept through product creation, mass production, and after-sales service, delivering consistent professional consultation and service to tailor high-quality products to your needs. AAEON currently offers a wide range of AI edge computing products and system integration solutions for smart cities, smart retail, and smart manufacturing.

AAEON IOT

INTRODUCTION

AAEON AI

AAEON works closely with premier chip designers to deliver stable, reliable platforms, and is recognized as a Titanium member of the Intel® Internet of Things Solutions Alliance.

intel partner Titanium IoT Solutions

intel.

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02

INDUSTRIAL EQUIPMENT MONITORING

INDUSTRIAL INSPECTION DRONE

DESIGN ALIGNMENT

COLLISION-TOLERANT

ABLE TO NAVIGATE WITHOUT GPS

DESIGNED FOR CONFINED SPACES

REAL-TIME DATA TRANSMISSION

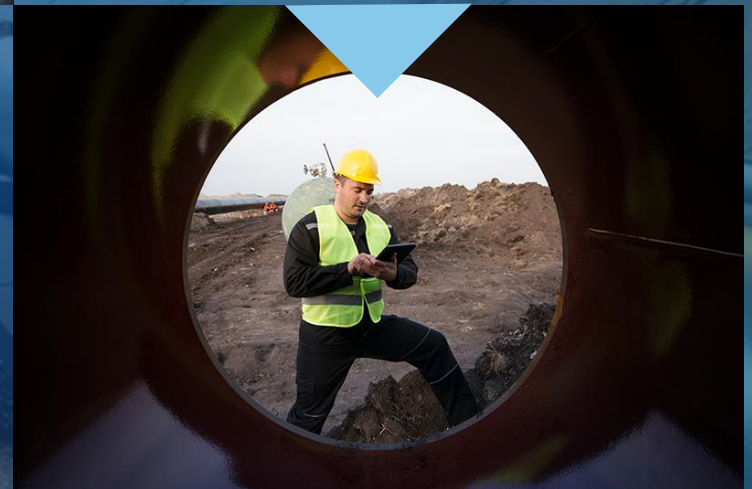# INDUSTRIAL INSPECTION DRONE

DESIGN ALIGNMENT

Can enter narrow areas, such as dark sewers or underground pipelines, for inspection.

Can enter hazardous areas with dust or methane gas, avoiding health risks.

Replace inspectors climbing to high places to check equipment, reducing risk to personnel.
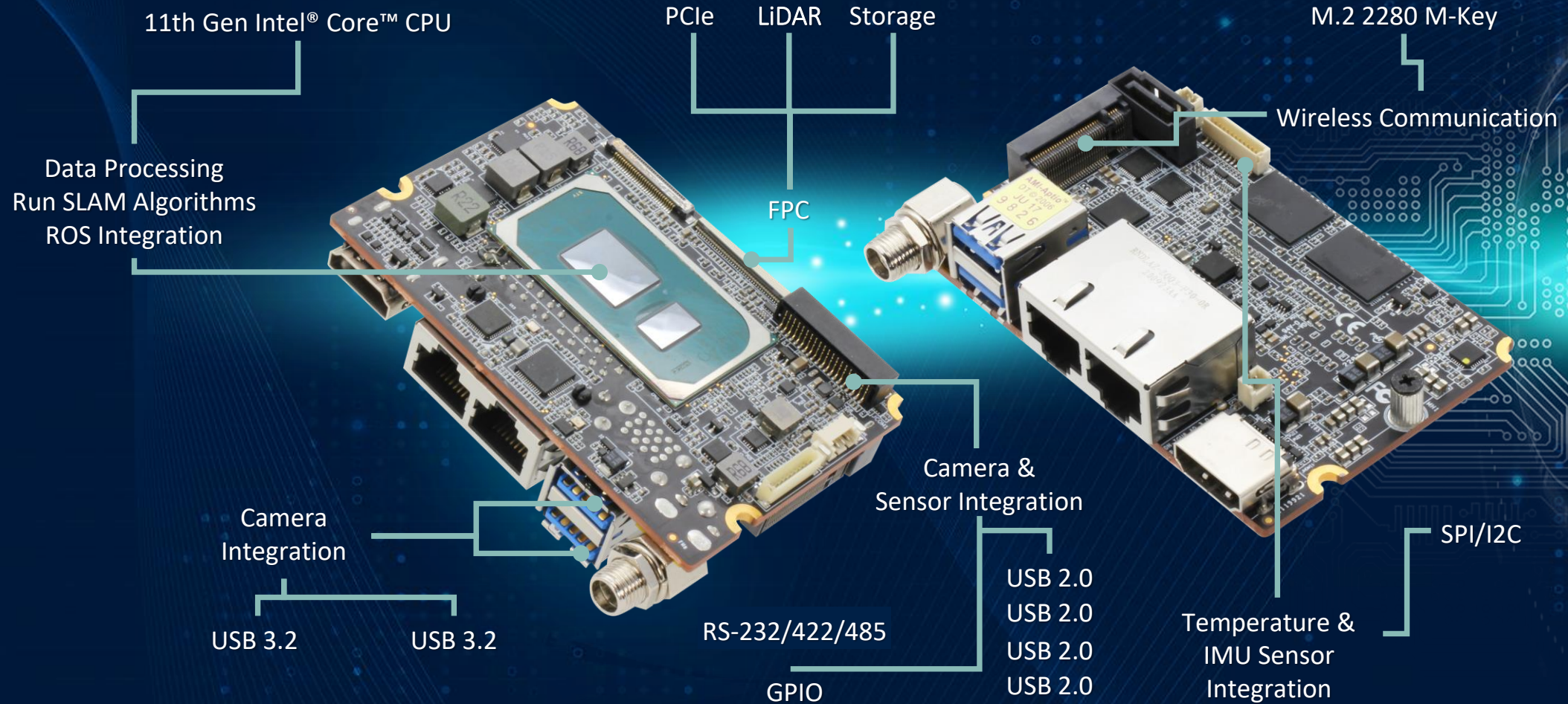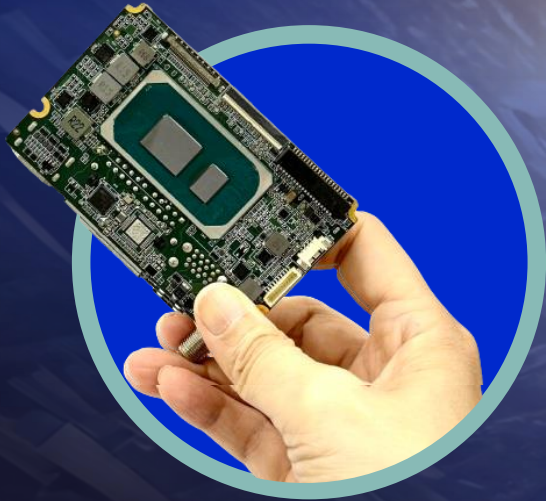
INDUSTRIAL EQUIPMENT MONITORING

Powered by an AAEON single-board computer, drones can play a pivotal role in industrial monitoring and equipment inspection, particularly in heavy industries such as power utilities. These drones, utilizing the de next-TGU8, can be operated remotely in confined, inaccessible spaces such as underground, with high-resolution cameras and thermal imaging able to capture detailed data and imagery. With a CPU capable of running SLAM algorithms and process data from IMU sensors, the drones are even able to navigate without GPS and perform collision-avoidance actions.

This capability enables them to detect potential issues like corrosion, wear, leaks, or vegetation encroachment. In spotting anomalies, drones enable preemptive maintenance to be undertaken, reducing downtime and operational costs.

de next

de next-TGU8 ▶

CORE DRONE INTERFACES AND SENSORS

de next

11th Gen Intel® Core™ CPU

PCIe   LiDAR   Storage

M.2 2280 M-Key

Wireless Communication

Data Processing
Run SLAM Algorithms
ROS Integration

FPC

Camera
Integration

Camera &
Sensor Integration

USB 3.2   USB 3.2

RS-232/422/485

GPIO

USB 2.0
USB 2.0
USB 2.0
USB 2.0

Temperature &
IMU Sensor
Integration

SPI/I2C

INDUSTRIAL INSPECTION DRONE

FUNCTIONALITY

de next

de next-TGU8

- Embedded CPU
- Processes sensor data
- Controls overall operation
- Communicates with peripherals
- Run SLAM algorithms to create a real-time map of the environment

WIRELESS CONNECTIVITY

- Image cloud storage
- Emergency report to humans
- Remote monitoring

CAMERA & SENSOR PERIPHERALS

- SLAM
- Heat detection
- Collision avoidance
- Image acquisition
- GPS-free navigation

DESIGN

- Fanless heat dissipation
- -40°C ~ 85°C
- 86mm x 55mm
- Lightweight

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03

EMERGENCY RESPONSE UAVS

MISSION-CRITICAL UNMANNED AERIAL VEHICLES

The modular and customizable nature of AAEON's COM Express Modules make them uniquely suitable for deployment in unmanned aerial vehicles (UAVs) solutions, designed for emergency response, search and rescue, and a whole host of other operations. Advanced computing modules provide both high processing power and energy-efficiency, enabling real-time data processing, high-resolution video acquisition, and the execution of complex control tasks.
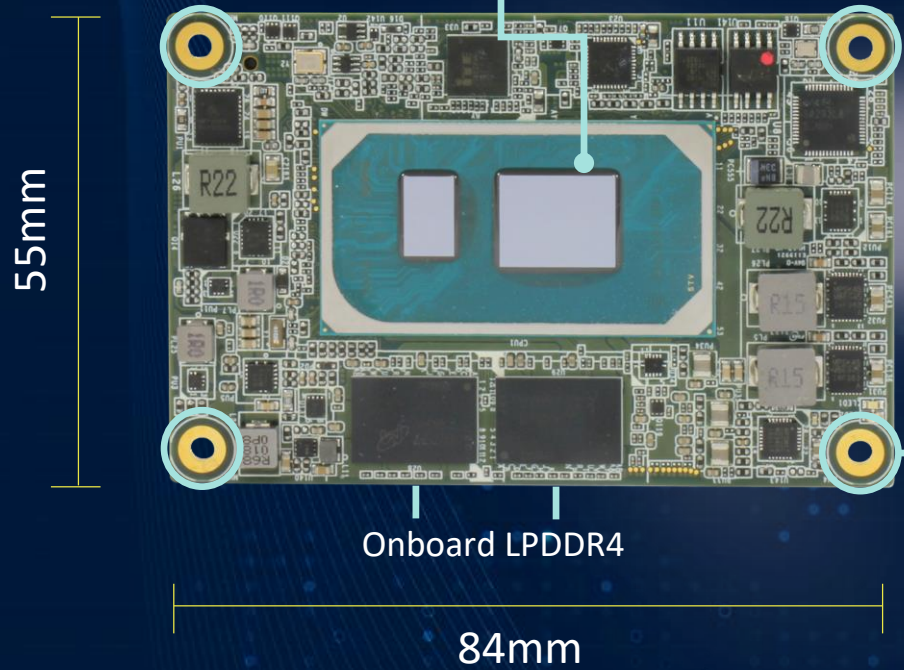
With a compact 84mm x 55mm form factor, low power consumption, and robust interface selection, AAEON's COM Express Type 10 modules enable seamless integration with the various sensors and communication systems used by UAVs, ensuring swift and accurate data transmission to ground control stations. Environmental durability and security features further enhance the UAV's reliability and safety in harsh conditions, along with the convenience of modules being easily detachable from application components, making maintenance fast and cost-effective.

NANOCOM-TGU ▶

CORE UAV INTERFACES AND SENSORS

11th Generation Intel® Core™ Processors

Multi-core processing power with low power consumption

55mm

84mm

Onboard LPDDR4
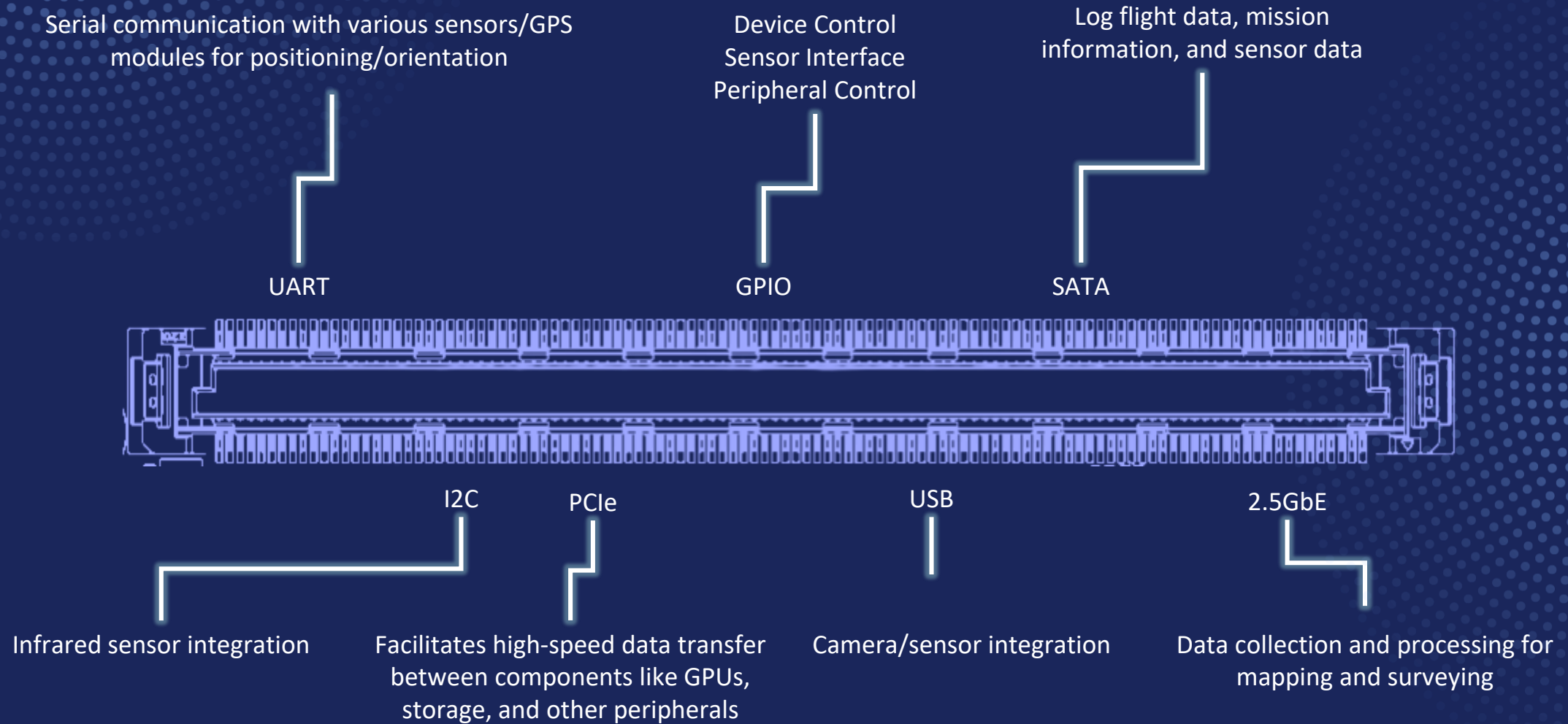
Easily modified, detached with just 4 screws

-40°F ~ 185°F (-40°C ~ 85°C)

0.15 lb. (70 Grams)

COMe Type Support:Type 10
NANOCOM-TGU
REV:A0.2_0_0
P/N:1907NATU01
MADE IN TAIWAN

220-pin Connector

NANOCOM-TGU
VERSATILE PINOUT INTERFACES

Serial communication with various sensors/GPS modules for positioning/orientation

Device Control
Sensor Interface
Peripheral Control

Log flight data, mission information, and sensor data

UART

GPIO

SATA

I2C

PCIe

USB

2.5GbE

Infrared sensor integration

Facilitates high-speed data transfer between components like GPUs, storage, and other peripherals

Camera/sensor integration

Data collection and processing for mapping and surveying

UAV FOR SURVEYING, SEARCH & RESCUE, AND SECURITY MONITORING

FUNCTIONALITY

NANOCOM-TGU

WIRELESS CONNECTIVITY

- Real-time data transmission to ground control stations (GCS)
- Secure, encrypted communication channels to protect sensitive data
- Dynamically change mission parameters, such as flight paths, based on real-time data

LOW POWER, HIGH-PERFORMANCE PROCESSING

- Extended battery life
- Reduced heat generation
- Compact, but with broad -40°C ~ 85°C temperature tolerance

SMALL, LIGHTWEIGHT FORM FACTOR

- Easy integration via 4 screws
- Increased payload capacity
- Extended flight time
- Easily customized and integrated when upgrading or changing components

DEPLOYMENT SCENARIOS

UAVs equipped with the NanoCOM-TGU can be deployed in a wide range of scenarios due the module's compact 84mm x 55mm dimensions, lightweight form, and support for low-power processors.

SURVEILLANCE AND SECURITY

01

BORDER PATROL:
UAVs can monitor borders for illegal activities or intrusions.

CRITICAL INFRASTRUCTURE MONITORING:
Surveillance of critical infrastructure such as power plants, pipelines, and communication towers.

CROWD MONITORING:
Used during large events to monitor crowd behavior and ensure public safety.

DISASTER RESPONSE AND MANAGEMENT

02

SEARCH AND RESCUE:
Locating missing persons in underground, remote, or hard-to-reach areas.

DAMAGE ASSESSMENT:
Surveying areas affected by natural disasters like earthquakes, floods, and hurricanes.

AID DELIVERY:
Transporting medical supplies and food to disaster-stricken areas.

MAPPING AND SURVEYING

03

TOPOGRAPHIC MAPPING:
Creating detailed maps of terrains for construction, mining, and archaeological sites.

URBAN PLANNING:
Surveying urban areas for planning and development purposes.

INFRASTRUCTURE INSPECTION:
Inspecting roads, bridges, and railways for maintenance needs.

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04

INTELLIGENT CROP MANAGEMENT

INTELLIGENT CROP MANAGEMENT

The de next-V2K8 single-board computer stands as a versatile solution for advanced agricultural applications, offering powerful processing capabilities through its AMD Ryzen™ Embedded V2000 series processor.

With a compact form factor and equipped with interfaces such as multiple USB and serial port connectors, the board can integrate high-resolution cameras and multispectral sensors to monitor and manage crops. 4G support via M.2 expansion enables real-time wireless data transmission to a central management hub, crucial for monitoring crop health and environmental conditions.

The board's powerful CPU and advanced graphics package optimize the analysis of the data collected via the drone's cameras and sensors. This combination supports enhanced agricultural productivity and sustainability efforts through efficient data processing and real-time analytics.

de next-V2K8 ▶

CORE DRONE INTERFACES AND SENSORS

de next

- AMD Ryzen™ Embedded V2000 Series Processor
- Radeon™ Graphics
- PCIe Storage
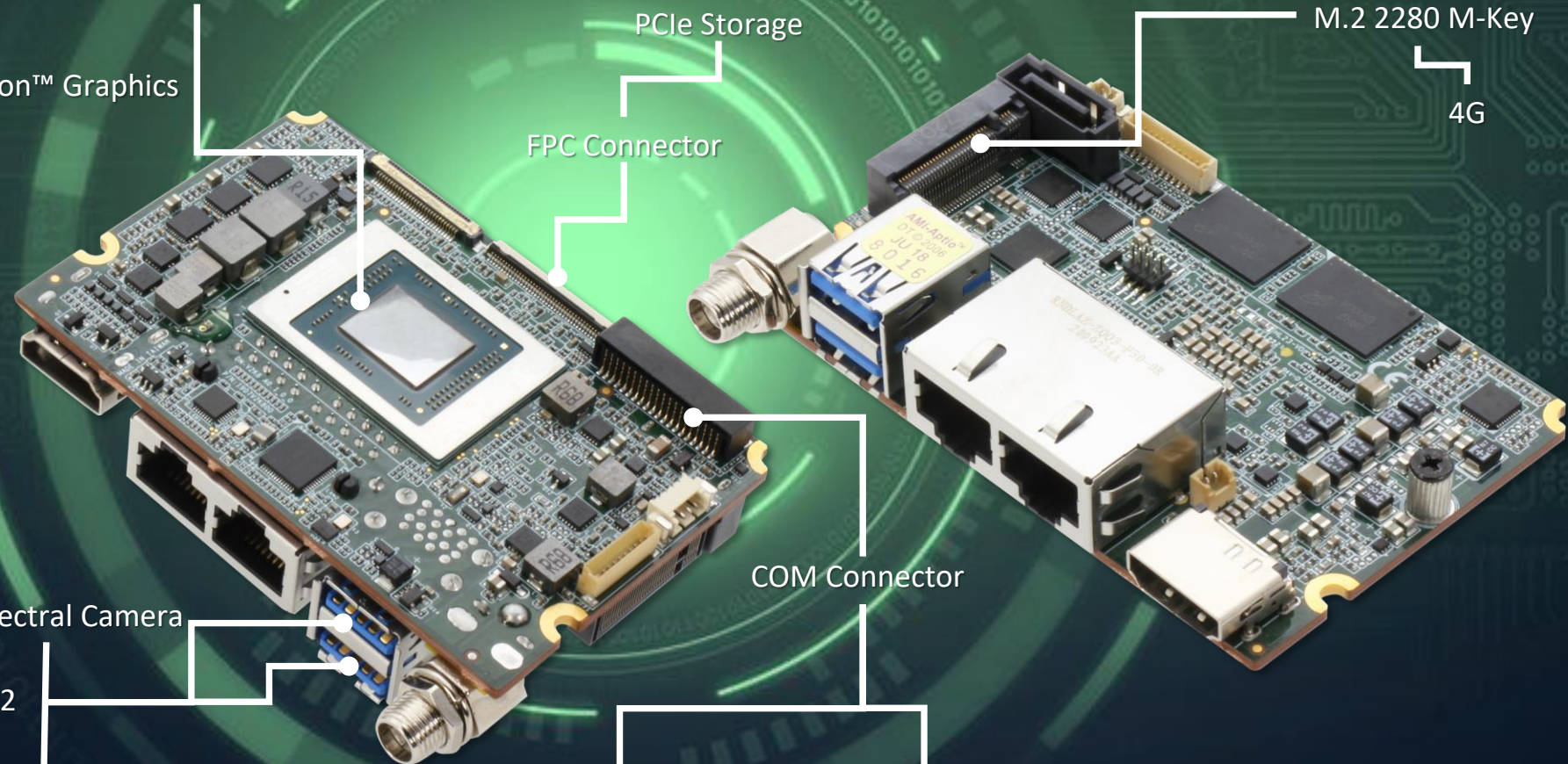- FPC Connector
- M.2 2280 M-Key
- 4G
- Multispectral Camera
- USB 3.2
- Visible Light Camera
- COM Connector
- GPS Module
- Light Intensity Sensor via USB 2.0

INTELLIGENT CROP MANAGEMENT
FUNCTIONALITY

de next

de next-V2K8

USB 3.2 GEN 2 X 2

Integration of multispectral and visible light imaging systems for visual data collection

AMD RYZEN™ EMBEDDED V2000 SERIES CPU WITH RADEON™ GRAPHICS

Handle intensive tasks such as image processing, AI algorithms for crop analysis, and real-time data analytics.

SERIAL INTERFACE

Offers USB 2.0, COM, and GPIO interface for light intensity, GPS module integration, as well as temperature and humidity sensor support

4G

Enables remote data access, real-time monitoring, and efficient management of agricultural operations

PROJECTS TAKE FLIGHT WITH AAEON

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