Intelligent Edge Computers

Enabling Versatile Applications with Software Integration

ADVANTECH

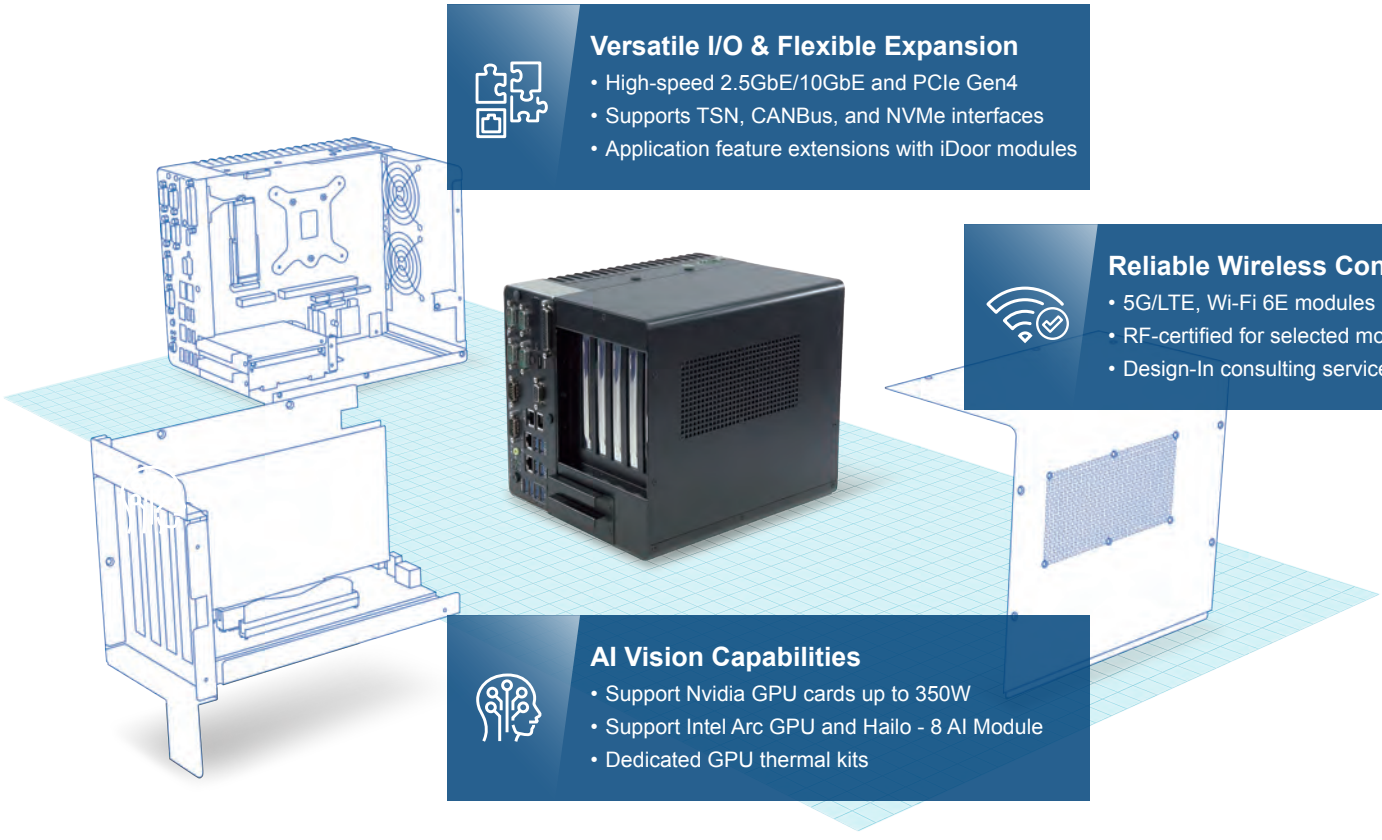
Enabling an Intelligent Planet

www.advantech.com

ARK
Brings New Technology to the Edge

According to the Gartner report, the edge market, including hardware, software and services, will grow to $450 billion by 2025. Edge computing use cases are highly diverse, driving the need for an ecosystem of technology, integration, implementation, and operational capabilities.

Advantech's ARK Intelligent Edge Computers provide software and hardware integrated solutions that support multiple I/O connectivity with expansion including AI analytics, wireless connections, and peripheral devices, as well as domain-focused software to address AIoT applications such as factory automation, self-service kiosks, equipment connectivity, and computer vision applications.



Versatile I/O & Flexible Expansion
- High-speed 2.5GbE/10GbE and PCIe Gen4
- Supports TSN, CANBus, and NVMe interfaces
- Application feature extensions with iDoor modules

Reliable Wireless Connectivity
- 5G/LTE, Wi-Fi 6E modules
- RF-certified for selected models
- Design-In consulting services

AI Vision Capabilities
- Support Nvidia GPU cards up to 350W
- Support Intel Arc GPU and Hailo - 8 AI Module
- Dedicated GPU thermal kits

DeviceOn

IoT Device Management
- Remote device management
- Software OTA & container management
- Device security & recovery

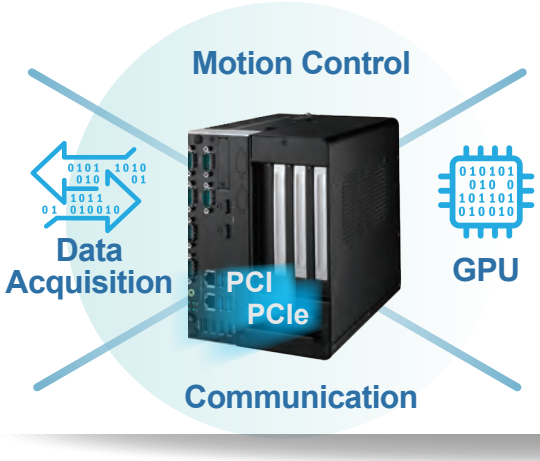
Robotic Suite

Robotic Development Suite
- Ready-to-integrate ROS nodes and containers
- Cross-platform support
- Compatible with popular AI SDKs & development utilities

EdgeAI SDK

AI Development Toolkit
- Remote device management
- Software OTA & container management
- Device security & recovery

Comprehensive Offerings



Performance

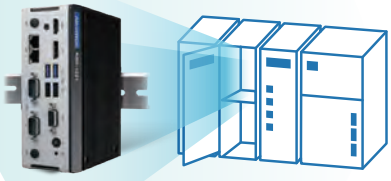
ARK-3000 Series

- **High performance:** 12th, 13th & 14th Gen Intel® Core™ i
- **Multifunction:** flexible PCI/PCIe/IO expansion
- **Remote management:** iAMT, DeviceOn

Modular

ARK-2000 Series

- **Medium-to-high performance:** Intel® Atom® and up to 13th Gen Intel® Core™ i Mobile CPU
- **Multiple expansion:** external I/O customization flexibility with support for 10+ iDoor modules
- **Designed for harsh environments:** supports wide operating temperature and IP4X ingress protection



DIN-Rail

ARK-1200 Series

- **Easy installation:** supports DIN-Rail mounting with easy access
- **Abundant I/O:** sufficient interfaces on one side (LAN, USB, and more)
- **Multi-functional:** internal expansion with mPCIe and M.2

Compact

ARK-1100 Series

- **Palm-sized:** ultra-small and low-power design
- **Essential I/O:** support for up to 10 I/O ports
- **Various wireless connectivity:** RF-integrated and certified with multi-level security

Certification & Security

6+ Certifications in 30+ Countries

Advantech ARK series fanless embedded systems have various safety certifications, including CE, FCC, CCC, UL, CB, and BSMI in more than 30 countries. All the systems support extended operational temperature range with 0.7m/s air-flow, can withstand vibration of up to 3 Grms, and are certified with IEC 60068-2-64 (random, 5 ~ 500 Hz, 1 hr/axis) and IEC 60068-2-27 (half-sine, 11 ms duration), ensuring stable and reliable operation under challenging environmental conditions.

IEC-62443 Certified Cyber Security

In order to achieve compliance with ISA/IEC 62443-4-2 and strengthen the security of industrial control systems, it is essential to leverage advanced technologies and solutions. Advantech ARK series fanless embedded systems, with their pre-integrated security features, are well able to meet the requirements of the standard and ensure robust cybersecurity. To provide a more cohesive understanding of the security requirements and their alignment with Advantech Embedded Systems, a set of security primitives (SP) has been identified. These security primitives serve as common nomenclature across standards, enabling a clearer mapping of security features in IoT systems to the ISA/IEC 62443-4-2 security requirements.

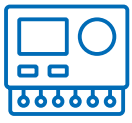
Software Value Add-On Package

Automation, robotics, and AOI are fields that leverage the power of technology to enhance various industrial processes. Software plays a pivotal role in making these automated systems more efficient and intelligent. As technology continues to evolve, the integration of AI technology will continue to drive innovation and redefine the capabilities of technology within these fields.

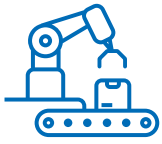
The essence of AI-driven software in Automation, Robotics, and AOI Applications:

- Flexibility and Adaptability
- Predictive Maintenance
- Connectivity and Control
- Process Optimization

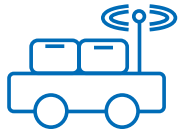
The Advantech value-add software package provides a quick start for application developers to evaluate the hardware and software together for efficiency and a substantial savings in development time and cost.



Factory Automation



Robotic Arms



AMR / AGV

AOI

Real-Time Control

- Real-time extension for Windows & Linux
- Intel TCC/TSN support

Industrial Protocol

- CANBus, Modbus, OPC UA
- Codesys & Acontis EtherCAT master stack

OT/IT Quick Integration

- OT environment security
- Data collection & processing
- Data visualization

AI Development

- AI Benchmark with various Vision AI models (Yolo, SSD, MobileNet, ResNet)
- Cross-platform integration & model translation
- Bridge Interface to Azure, AWS, Nvidia, Intel Video Recognition solutions

AI Deployment & Management

- Edge to Cloud management plan
- End point inference model updates

Intel® Edge Insights for Industrial

Intel® Edge Controls for Industrial

Intel® OpenVINO™ Toolkit

Intel® Geti™

Advantech Edge AI SDK

Intel & Advantech Robotic SDK

Advantech DeviceOn

AI Vision

AI vision has two major applications in the manufacturing industry — quality inspection and safety monitoring. High-performance computing capabilities and data transmission bandwidth are required.

- AOI defect inspection
- Object detection
- Logistics text & barcode recognition
- Safety zone definition

Advantech ARK systems deliver high-performance computing power and support up to four PCIe/PCI slots that support GPU, data acquisition, and communication cards for multi-function and AI vision computing.

Key Features

Powerful On-Premise Training

Up to 10 cores + 20 threads of CPU computing, and up to 350W PCIe x16 GPU card

Scalable AI Inference Capabilities

Intel® Atom® and Core™ i platforms with integrated GPU/discrete GPU/M.2 AI modules

Compatible and Validated Vision AI Applications

Validated with Intel® Geti™ and NVIDIA TensorRT / Intel® OpenVINO™ / Hailo AI Suite

Recommended Offerings

Object Detection

ARK-1250L

EAI-M100

- Up to 250 FPS* with 21W power consumption
- Hailo-8 AI module integrated
- 3 x USB 3.2 and 3 GbE for high resolution cameras

Defect Inspection

ARK-3534

EAI-3100

- Up to 1,300 FPS** with 100W power consumption
- 13 Gen Intel® Core™ i + Arc™ A370M with DeepLink technology
- PCIe/PCI and various I/O interfaces for motion and I/O control
- Supports multiple storage and RAID

Software Tools and Services

HAILO intel. EdgeAI SDK Ubuntu

Software Services

Edge AI SDK

AI Benchmarks

- Popular Model performance (SSD_ MobileNet, Yolox, Yolov8n-seg, & ResNet 50)
- FP16/INT8 performance for power consumption & latency
- Comparison between Intel, Nvidia, & Hailo solutions

AI SDK

- SDK: JetPack, OneAPI, Hailo AI Suite
- Runtime: Intel® OpenVINO™, Nvidia TensorRT, Hailo RT
- Framework: TensorFLow, TensorFlow Lite, ONNX, Pytorch, XGBoost, Scikit-learn, JAX, Paddle, Mxnet, Matlab, Keras,

intel GETi™

Vision AI Training

Cloud/On-Premise Vision AI Software

- PyTorch/TensorFlow frameworks for training purposes
- Trained models in the original framework or as an optimized model for the OpenVINO™ toolkit to run inference or to export models into ONNX format with quantization into an FP16 and INT8 inference system.
- Vision tasks supported: object detection, segmentation, classification, and anomaly-based

Add-On Cards for AI Acceleration and Cameras

EAI-3100

- Intel® Arc™ A370M with 8 Xe-cores with 4GB GDDR6 memory
- Intel® Deep Link Technology and OpenVINO™ support
- PCIe x16 GPU card design

EAI-M100

- Hailo-8 AI processor with up to 26 TOPS and best-in-class power efficiency
- Comprehensive software with Hailo AI Suite
- M.2 factor module, with Key M, Key B+M & Key A+E

PCIE-1672/1674

- 2-/4-port PCI Express PoE+ GigE Vision Frame Grab
- 48_{VDC} PoE Power output, total Max. 25.4W (1 port) (total Max. 60W (2 ports)
- Powered Device (PD) auto detection and classification

Robotics

Robotics solutions cover a wide range of applications, from AMR/AGV to robotic arms used in manufacturing plants. These solutions typically consist of a powerful control system with various sensors, actuators, cameras, and motors to perform specific tasks.

- AGVs/AMRs
- Collaborative Robots
- Robot Arms
- Patrol Robots
- Agricultural Robots

Advantech provides edge computing solutions that feature higher computing and processing power, real-time control, security, and flexibility for peripheral integration. Advantech also offers alternative software configurations to accelerate robot applications development.

Key Features

Various I/O for Multiple Peripherals Connections

Up to 4 x GbE, 8 x USB, 8 x COM, 2 x CANBus, and 16-bit DIO

Real-Time Motion Control

Supports CANBus, EtherCAT, TSN with CODESYS/Acontis, and Real-Time OS

Secure OS with LTS

10-year long-term support for Ubuntu and Windows IoT

Recommended Offerings

Expandable Robotic Arm Controller

ARK-3534

- 12th/13th Gen Intel® Core™ i Desktop CPU
- PCIe x16, PCIe x4, and PCI slots for GPU and I/O cards
- Real-time levels & EtherCAT

Compact AGV/AMR Controller

ARK-2251

- 13th Gen Intel® Core™ i Mobile CPU with 100+ FPS object detection
- 6 x USB 3.1, 3 x GbE, & 2 x CANBus, for peripheral integration
- 12-24$_{VDC}$ input with 50W power consumption

Software Tools and Services

Robotic Suite · CODESYS · acontis technologies · Ubuntu · Windows 10 IoT

Factory Automation

The Factory Automation market holds immense potential as industries seek to enhance productivity, reduce operational costs, and ensure consistent product quality through the integration of robotics, AI, IoT, and smart manufacturing technologies, driving substantial growth and innovation.

- CNC Controllers
- Industrial Equipment
- HMI Control PCs

Advantech offers advanced Factory Automation solutions including industrial PCs, IoT devices, and software for real-time data analysis. Our integrated approach optimizes production processes, quality control, and predictive maintenance, enabling businesses to excel in Industry 4.0-driven manufacturing.

Key Features

Industrial Protocol Support

Modbus RTU/TCP, OPC UA, CANopen, EtherCAT

I/O Connection with Factory Equipment

RS232/422/485, multi-LAN, USB, display with DIN-rail and wall-mount support

Data Processing & Visualization

Built-in Grafana dashboard with various data sources from cloudWatch, elastic-search, graphite, and influxDB

Recommended Offerings

IoT Gateway

ARK-1221L

- Fanless, rugged, with DIN-rail mounting
- 2 x USB 3.2, 2 x USB 2.0, 2 x GbE & 2 x RS-232/422/485 for data collection and transmission
- Optional TPM and 1 x internal USB 2.0 for KeyPro dongle

Data Processing & Visualization

ARK-3533

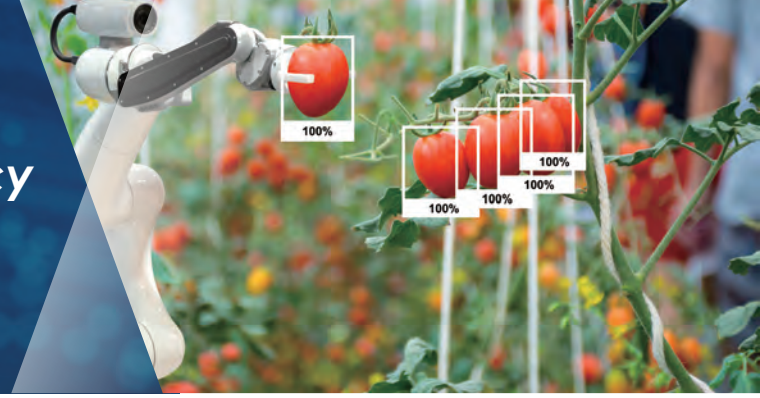
- 12th/13th Gen Intel® Core i Desktop for high-speed data processing
- 4 x GbE, 8 x USB, 8 x COM, 16-bit DIO, 2 x CANBus, TPM 2.0 for various data connections
- Optional 2 x PCI and 2 x 2.5” HDD storage

Software Tools and Services

DeviceOn Ubuntu Windows

Use Case

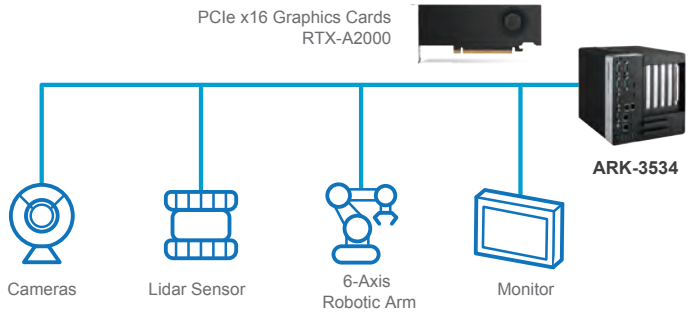
Optimizing Production Efficiency with Agricultural Robots



AI-based agricultural robots increase selectivity precision and robustness within modern agriculture. These unmanned, automated machines are capable of analyzing crops for maturity, harvest logistics, and adaptation to various operating environments. ARK-3534 was chosen for its powerful CPU and GPU computing power that enables quick and accurate image processing and analysis. The system features 4 x PCIe/PCI slots, diverse I/O, and flexible expansion options for multiple device connections.

Benefits

- Built-in power supply and optimized thermal solution for CPU + GPU system integration.
- Real-time control with built-in TSN and TCC.
- Industrial-grade ruggedized design.



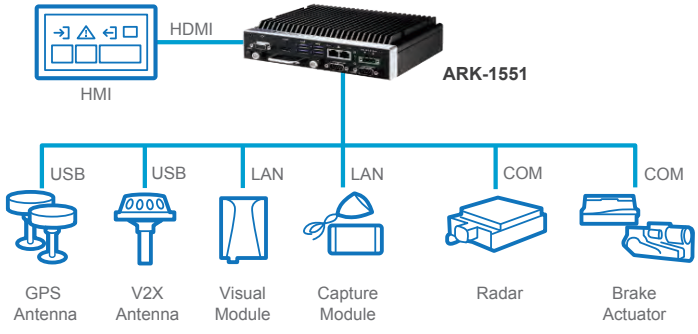
Use Case

Data and Video Capture for Unmanned Mining Vehicles

The Advantech ARK-1551 industrial computer is employed in conjunction with radar, antennas, and data acquisition modules to fulfill data and video capture requirements during the autonomous driving testing phase. Together with an inertial navigation module and brake actuator, it controls the unmanned driving of the vehicle, and in emergency situations, it can also manage vehicle deceleration or braking.

Benefits

- Compact size with wide power input range and anti-vibration design.
- Removable 2.5” hard drive bay to store and swap system and sensor data.
- Supports 4G/5G wireless module integration.



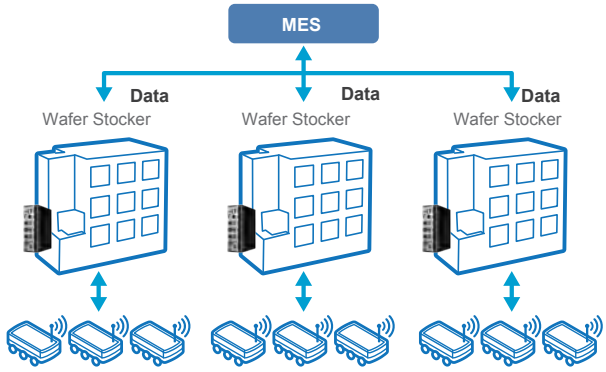
Use Case

Realizing Transportation Automation in Semiconductor Fabs

Stockers and AGVs facilitate wafer storage and movement across factory floors. Advantech ARK-1124 and ARK-1250 DIN-rail systems act as gateways installed in transport systems and support the E84 protocol to help collect and process data, and communicate between stockers, AMRs and OHT to ensure seamless carrier transfer. Built with DeviceOn, these compact systems enable remote management services and provide software updates/patches via OTA.

Benefits

- Fanless DIN-rail design with scalable Intel ATOM®/Core™ i CPU.
- 4 x RS-232/422/485, 2-3 x Gbe LAN, and USB 3.0 support.
- Provide an Internal USB 2.0 for KeyPro dongle with security usage.

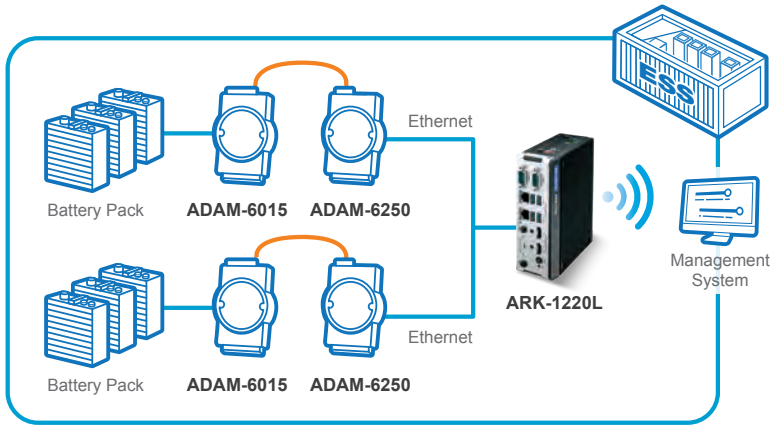


Energy Storage System Monitoring and Control

Energy Storage Systems play a fundamental role in helping with the intermittent nature of renewable energy produced by wind or solar power and providing a reliable energy supply. ARK-1220L was adapted to collect and monitor data such as charging and discharging current and the temperature of each battery via Modbus protocols. Its fanless design, wide operating temperature range, and rapid heat dissipation capabilities make it suitable for operation in harsh industrial environments.

Benefits

- Supports data collection via ADAM I/O modules and data transmission and communication via Wi-Fi/LTE/Ethernet.
- Rugged and fanless designs.
- Compact with DIN-rail mounting for easy installation.



Edge Computers




Model Name		ARK-1124C	ARK-1124U	ARK-1124H	ARK-1125C
CPU	CPU	Intel® Celeron® DC N3350	Intel® Celeron® DC N3350	Intel® Atom® QC E3940	Intel® Atom® X7211E
	Frequency	1.1 GHz, turbo burst 2.4 GHz	1.1 GHz, turbo burst 2.4 GHz	1.6 GHz, turbo burst 1.8 GHz	1.0 GHz, Max Turbo Frequency up to 3.2 GHz
	Core Number	2	2	4	2
	BIOS	AMI EFI 64-bit	AMI EFI 64-bit	AMI EFI 64-bit	AMI EFI 256 Mbit
Memory	Technology	DDR3L 1600 MHz	DDR3L 1600 Mhz	DDR3L 1600 Mhz	DDR5 4800 MHz
	Max. Capacity	8 GB	8 GB	8 GB	16 GB
	Socket	1 x 204-pin SODIMM	1 x 204-pin SODIMM	1 x 204-pin SODIMM	1 x 262-pin SODIMM
Display	Chipset	Intel® HD Graphics 500	Intel® HD Graphics 500	Intel® HD Graphics 500	Intel® UHD Graphics
	VGA	1 x VGA, up to 2048 x 1280 @ 60Hz	1 x VGA, up to 2048 x 1280 @ 60Hz	-	-
	DDI	-	-	2 x Lockable HDMI, up to 3840 x 2160 @ 30Hz	1 x HDMI: 4096 x 2160 @ 60Hz
	Multiple Displays	-	-	Dual (HDMI)	Single (HDMI)
Expansion Interface	Mini PCIe	1 x full-size MiniPCIe	1 x full-size MiniPCIe w/ SIM	1 x full-size MiniPCIe w/ SIM	-
	M.2	-	1, 2230 E-Key for Wi-Fi	1, 2230 E-Key for Wi-Fi	3 (1 x E-Key 2230, 1 x B-Key 2280, 1 x M-Key 2242)
	SIM Socket	-	1 (standard size)	1 (micro SIM)	1 (nano SIM)
	i Door	Yes	Yes	Yes	-
Ethernet	Controller	GbE 1: Intel i210	GbE 1: Intel i210 GbE 2: Intel i210	GbE 1: Intel i210 GbE 2: Intel i210	GbE1: Intel i226LM
	Wake on LAN	Yes	Yes	Yes	Yes
Audio	Audio Interface	HD Audio	HD Audio	HD Audio	HD Audio
	CODEC	ALC-888S-VD2-GR	ALC-888S-VD2-GR	ALC-888S-VD2-GR	ALC-888S-VD2-GR
	Connector	Line-in, Line-out	Line-in, Line-out	Line-in, Line-out	Mic-in, Line-out
Watchdog Timer		Yes	Yes	Yes	Yes
Storage	SATA	1 x 2.5" SATA drive bay (Max 9.5mm height only)	1 x 2.5" SATA drive bay (Max 9.5mm height only)	1 x 2.5" SATA drive bay (Max 9.5mm height only)	1 x M.2 B-Key, 1 x M.2 M-Key
	mSATA	1 x half-size mSATA	-	1 x half-size mSATA	-
	M.2	-	-	-	1 x M.2 B-Key, 1 x M.2 E-Key, 1 x M.2 M-Key
I/O	USB 3.1/3.2	-	-	-	2
	USB 3.0	2	4	4	-
	USB 2.0	-	-	-	2
	GPIO	-	-	-	8-bit Programmable DIO
	COM Port	4 x RS-232/422/485	2 x RS-232/422/485	1 x RS-232/422/485	4 x RS232/422/485
	Others				Optional 1 x CANBus, by replacing DIO
Power	Power Type	ATX	ATX	ATX	AT/ATX
	Power Supply Voltage	Default: 12 V_{DC}, ± 10%; Optional: 12 V_{DC} - 24V_{DC} by power module	Default: 12 V_{DC}, ± 10%; Optional: 12 V_{DC} - 24V_{DC} by power module	Default: 12 V_{DC}, ± 10%; Optional: 12 V_{DC} - 24V_{DC} by power module	12 V_{DC}
	Connector	Default: Lockable DC Jack; Optional: 2-pin Phoenix connector via power module AMO-P011	Default: Lockable DC Jack; Optional: 2-pin Phoenix connector via power module AMO-P011	Default: Lockable DC Jack; Optional: 2-pin Phoenix connector via power module AMO-P011	Lockable DC Jack
	Power Consumption(Idle)	5.5W	5W	6.02W	10.05W
	Power consumption(Full loading)	9.8W	15.7W	15.8W	19.72W
	Power Adapter	Lockable AC to DC, DC 12V/3A, 36W	Lockable AC to DC, DC 12V/5A, 60W	Lockable AC to DC, DC 12V/5A, 60W	Lockable AC to DC, DC 12V/5A, 60W
Environment	Operating Temperature (air-flow 0.7 m/s)	With extended temperature peripherals: -20 ~ 60 °C	With extended temperature peripherals: -20 ~ 60 °C	With extended temperature peripherals: -20 ~ 60 °C	With extended temperature peripherals: -30 ~ 60 °C
	Non-Operating Temperature	-40~ 85 °C and 40 °C @ 95% RH Non-Condensing	-40~ 85 °C and 40 °C @ 95% RH Non-Condensing	-40~ 85 °C and 40 °C @ 95% RH Non-Condensing	-40~ 85 °C and 40 °C @ 95% RH Non-Condensing
	Relative Humidity	95% @ 40° C Non-Condensing	95% @ 40° C Non-Condensing	95% @ 40° C Non-Condensing	95% @ 40° C Non-Condensing
	Vibration Resistance	With mSATA/SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis	With mSATA/SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis	With mSATA/SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis	3 Grms, IEC60068-2-64, random, 5~500 Hz, 1hr/axis (with wall mount)
	Shock Protection	With mSATA/SSD: 30 G, IEC 60068-2-27, half sine, 11 ms duration	With mSATA/SSD: 30 G, IEC 60068-2-27, half sine, 11 ms duration	With mSATA/SSD: 30 G, IEC 60068-2-27, half sine, 11 ms duration	30 G, IEC-60068-2-27, half sine, 11 ms duration (with wall mount)
Physical Characteristics	Dimensions (W x H x D mm)	Single Layer: 133 x 46.4 x 94.2mm Dual Layer: 133 x 83.6 x 94.2mm	Single Layer: 133 x 46.4 x 94.2mm Dual Layer: 133 x 83.6 x 94.2mm	Single Layer: 133 x 46.4 x 94.2mm Dual Layer: 133 x 83.6 x 94.2mm	133 x 46.4 x 94.2mm (5.24" x 1.83" x 3.71")
	Weight	0.7 kg (1.55 lb)	0.7 kg (1.55 lb)	0.7 kg (1.55 lb)	0.7 kg (1.55 lb)
	Mounting	Optional DIN-rail / VESA / wall mount	Optional DIN-rail / VESA / wall mount	Optional DIN-rail / VESA / wall mount	Optional DIN-rail / VESA / wall mount
Operating System	Microsoft Windows	Windows 10 64-bit	Windows 10 64-bit	Windows 10 64-bit	Win 10 64-bit
	Linux	Yes (by project inquiry)	Yes (by project inquiry)	Yes (by project inquiry)	Yes (by project inquiry)
Software	DeviceOn	Yes	Yes	Yes	Yes
	Other	Trellix, Acronis	Trellix, Acronis	Trellix, Acronis	Trellix, Acronis
Certifications	EMC	CE/FCC Class B, CCC, BSMI, UKCA	CE/FCC Class B, CCC, BSMI, UKCA	CE/FCC Class B, CCC, BSMI, UKCA	CE, FCC Class B, CCC, BSMI, UKCA
	Safety Certifications	UL, CCC, BSMI, CB, UKCA	UL, CCC, BSMI, CB, UKCA	UL, CCC, BSMI, CB, UKCA	UL, CCC, BSMI, CB, Energy Star, UKCA

Note: "-" means Not Applicable (N/A).





ARK-1125H	ARK-1221L	ARK-1250L	ARK-2250L	ARK-2251
Intel® N200	Intel® Atom® x6413E Intel® Celeron® N6210	Intel® Core™ i3-1115G4E Intel® Core™ i5-1145G7E Intel® Core™ i7-1185G7E (by project)	Core™ i7-6600U/i3-6100U/i7-7100U	Intel® Core™ i3-1315UE/i5-1335UE/ i7-1365UE
1.0 GHz, Max Turbo Frequency up to 3.7GHz	1.50 GHz, turbo burst up to 3.00 GHz 1.20 GHz, turbo burst up to 2.60 GHz	2.2/1.5/1.8 GHz	2.6/2.3/2.4 GHz	1.2/1.3/1.7 GHz
4	4/2	2/4/4	2	2P+4E/2P+8E/2P+8E
AMI EFI 256 Mbit	AMI EFI 256 Mbit	AMI EFI 256 Mbit	AMI UEFI 128 Mbit	AMI EFI 256 Mbit
DDR5 4800 MHz	DDR4 3200 MHz	DDR4 3200 MHz	DDR4 2133 MHz	DDR5 4800MHz
16 GB	32 GB	64 GB	16 GB	64 GB
1 x 262-pin SODIMM	2 x 260-pin SO-DIMM	2 x 260-pin SODIMM	1 x 260-pin SODIMM	2 x 262-pin SODIMM
Intel® UHD Graphics	Intel® UHD Graphics	11th Gen Intel® UHD Graphics for Core™ i3 Intel® Iris® Xe for Core™ i5/i7	Intel® HD Graphics 520	Intel® Iris® Xe Graphics eligible
-	-	1 x VGA, up to 1920 x 1080 @ 60Hz	Up to 1920 x 1200 @ 60Hz	-
2 x HDMI: 4096 x 2160 @ 60Hz	HDMI + DP (Up to 4096 x 2160 @ 60 Hz)	1 (2 supported by A2) x HDMI 2.0 port, 4096 x 2160 @ 60Hz	HDMI: 4096 x 2160 @ 24Hz; Optional: DP and HDMI	2 x HDMI, 4096 x 2304 @ 60Hz
Dual (HDMI)	Dual	Dual	Dual / Triple (Option)	Dual
-	1 x full-size mPCIe	1 x full-size mPCIe	2 x full-size Mini-PCIe (one with SIM holder, one supporting mSATA)	1 x full-size Mini-PCIe (supports mSATA)
2 (1 x E-Key 2230, 1 x B-Key 2280)	2 (1 x E-Key 2230, 1 x B-Key 2280)	2 (1 x E-Key 2230, 1 x B-Key 2280)	-	2 (1 x E-Key, 1 x M-Key)
1 (nano SIM)	1	1	1	1
-	-	Yes	Supported	Supported
GbE1: Intel i226LM GbE2: Intel i226LM	GbE 1: Intel i225-LM GbE 2: Intel i225-LM	GbE1/3: Intel i225 GbE2: Intel i219 GbE4: Intel i225 supported by A2 version	GbE1: Intel i219 GbE2: Intel i210	GbE1: Intel i219 GbE2: Intel i226 GbE 3: Intel i226
Yes	-	-	-	-
HD Audio	HD Audio	HD Audio	HD Audio	HD Audio
ALC-888S-VD2-GR	ALC-888S	ALC-888S	Realtek ALC888S	Realtek ALC888S
Mic-in, Line-out	Line-out/Mic-in (switch)	Line-out/Mic-in (switch)	Line-out, Mic-in	Line-out, Mic-in
Yes	Yes	Yes	Yes	Yes
1 x M.2 B-Key	1 x 2.5" SATA III (9mm height HDD bays)	1 x 2.5" SATA III (9mm height HDD bays)	1 x 2.5" SATA III HDD bay (Max 12.5mm in height)	-
-	1 x full-size mSATA (*shared with mPCIe slot)	1 x full-size mSATA (*shared with mPCIe slot)	1 x full-size mSATA share with miniPCIe	1 x full-size mSATA share with main mPCIe
1 x M.2 B-Key, 1 x M.2 E-Key	1 (E-Key), 1 (B-Key)	1 (E-Key), 1 (B-Key)	-	-
2	2	3	-	6 (Gen1)
-	-	-	4	-
2	2	3	2	-
8-bit Programmable DIO	8-bit Programmable DIO	8-bit Programmable DIO	8-bit programmable DIO	8-bit programmable DIO
2 x RS232/ 422/ 485	2 x RS-232/422/485	4 x RS-232/422/485	4 x RS232/ 422/ 485	6 x RS232/ 422/ 485
2 x CANBus				
AT/ATX	AT/ATX	AT/ATX	ATX	AT/ATX
12 V_{DC}	12 ~ 28 V_{DC}	12~24 V_{DC}	Default: 12 V_{DC}, ± 10%; Optional : 9-36 V_{DC}	12 ~ 24 V_{DC}
Lockable DC Jack	3-pin terminal block AC to DC, 60W (Optional)	3-pin terminal block AC to DC, 90W adaptor built-in	Default: Lockable DC Jack	3-pin terminal block
10.54W	12.66W (Atom™ x6413E) 9.6W (Celeron™ N6210)	18W (Intel® Core™ i3-1115G4E) 19.8 W (Intel® Core™ i5-1145G7E)	6.92W (i3-6100U)/ 7.96W (i7-6600U)	19.05W(i3-1315UE)/19.30W(i5-1335UE)/19.47W(i7-1365UE)
28.19W	21.89W (Atom x6413E) 18.96W (Celeron N6210)	30.6W (Intel® Core™ i3-1115G4E) 35.1W (Intel® Core™ i5-1145G7E)	41.72W(i3-6100U) / 43.28W(i7-6600U)	38.21W(i3-1315UE)/41.23W(i5-1335UE)/42.13W(i7-1365UE)
Lockable AC to DC, DC 12V/5A, 60W	Lockable AC to DC, DC 24V/2.5A, 60W (Optional)	AC to DC, 90W adapter by default	Lockable AC to DC, DC 12V/5A, 60W (Optional)	120W
With extended temperature peripherals: -30 ~ 60°C	With extended temperature peripherals: -40 ~ 60°C	With extended temperature peripherals: -40 ~ 60°C	With extended temperature peripherals: -20 ~ 60°C	With extended temperature peripherals: -20 ~ 60°C
-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing
95% @ 40°C Non-Condensing	-	-	-	-
3 Grms, IEC60068-2-64, random, 5~500 Hz, 1hr/axis (with Wall Mount)	With SSD: 3 Grms, IEC60068-2-64, random, 5~500 Hz, 1hr/axis (with Wall Mount)	With SSD: 3 Grms, IEC60068-2-64, random, 5~500 Hz, 1hr/axis (with Wall Mount)	With SSD: 3 Grms, random, 5 ~ 500 Hz, 1 hr/axis.	With SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.
30 G, IEC-60068-2-27, half sine, 11ms duration (with Wall Mount)	With SSD: 30 G, IEC-60068-2-27, half sine, 11ms duration (with Wall Mount)	With SSD: 30 G, IEC-60068-2-27, half sine, 11ms duration (with Wall Mount)	With SSD: 30 G, half-sine, 11ms duration	With SSD: 30 G, IEC 60068-2-27, half-sine, 11ms
133 x 46.4 x 94.2 mm (5.24" x 1.83" x 3.71")	60 x 158 x 114 mm (2.34" x 6.22" x 4.49")	60 x 173 x 141 mm (2.36" x 6.73" x 5.55 in)	260 x 54 x 140.2 mm(10.24 x 2.13 x 5.52 in)	260 x 54 x 140.2 mm (10.24 x 2.13 x 5.52 in)
0.7 kg (1.55 lb)	1.05 kg (2.31 lb)	1.5 kg (3.3 lb)	2.3 kg (5.07 lb)	2.3 kg (5.07 lb)
Optional DIN-Rail/ VESA / Wall Mount	DIN-Rail Mount (standard) Optional VESA / Wall Mount	DIN-Rail Mounting (standard) Optional VESA / Wall Mount	Desk / Wall / VESA / DIN-Rail Mount	Wall Mount
Win 10 64-bit	Yes	Yes	Windows 7, Windows 8.1, Windows 10	Windows 10
Yes (by project inquiry)	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes
Trellix, Acronis	Trellix, Acronis	Trellix, Acronis	Trellix, Acronis	Trellix, Acronis
CE, FCC Class B, CCC, BSMI, UKCA	CE/FCC Class B, CCC, BSMI, UKCA	CE/FCC Class B, CCC, BSMI, UKCA	CE/FCC class B, CCC, BSMI, UKCA	CE/FCC class B, CCC, BSMI, UKCA
UL, CCC, BSMI, CB, UKCA	CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA

Edge Computers

Model Name		ARK-3532B/C/D	ARK-3533
CPU	CPU	10th Gen Intel® Xeon® W and Core™ i3/i5/i7/i9 processor	12th/13th/14th Gen Intel® Core™ i3/i5/i7/i9 processor
	Frequency	by Processor	by Processor
	Core Number	by Processor	by Processor
	BIOS	AMI EFI 256 Mbit	AMI EFI 256 Mbit
	Chipset	Intel W480E	Intel H610E
Memory	Technology	DDR4 2933 MHz	DDR5 4800 MHz
	Max. Capacity	64GB	64GB
	Socket	2 x 260-pin SODIMM	2 x 262-pin SODIMM
Display	Chipset	Intel® UHD Graphics 630	Intel® UHD Graphics 770
	VGA	1920 x 1200 @ 60Hz	-
	DDI	1 x HDMI port, HDMI 1.4 for HD video playback, 4096 x 2160 @ 30Hz; 3rd Display Module Optional	2 x HDMI ports, HDMI 2.0 for HD video playback, 4096 x 2160 @ 60Hz, (DP by project)
	Multiple Displays	3rd Display Module Optional	Dual
Expansion Interface	Mini PCIe	1 x full-size Mini PCIe (1 x supported mSATA, 1 x supported SIM holder) #1	-
	M.2	1 (E-Key)	2 (1 x B-Key and 1 x E-Key)
	SIM Socket	1	1
	PCIe + PCI	1 x PCIe x4, 1 x PCIe x16 for ARK-3532B 1 x PCIe x4, 2 x PCI for ARK-3532C 1 x PCIe x4, 2 x PCI, 1 x PCIe x16 for ARK-3532D	2 x PCI (optional AMO-3510)
	i Door	-	-
Ethernet	Controller	GbE1: Intel i219-LM GbE; GbE2/3/4: Intel i210 GbE	GbE1: Intel i219-LM GbE GbE2/3/4: Intel i226-V GbE
Audio	Audio Interface	HD Audio	HD Audio
	CODEC	ALC888S	ALC888S
	Connector	Line-out/Mic-in (switch)	Line-out/Mic-in (switch)
Watchdog Timer		Yes	Yes
Storage	SATA	2 x 2.5" SATA III 15mm height HDD bay supporting Intel SW RAID (Up to 4 x 2.5" SATA III HDD bays optional with AMK-A0035)	2 x 2.5" SATA III (9mm height HDD bays)
	M.2	-	1 x PCIe x2 (via M.2 2280 B-Key)
	mSATA	1 x mSATA socket (Shared with Mini PCIe)	-
I/O	USB 3.1/3.2	4	4
	USB 3.0	4	-
	USB 2.0	-	4
	GPIO	16-bit	16-bit
	COM Port	4 x RS-232/422/485; 2 x RS-232	4 x RS-232/422/485; 4 x RS-232
Power	Power Type	AT/ATX	AT/ATX
	Power Supply Voltage	12-36 V_{DC}	9~36 V_{DC}
	Connector	4-pin phoenix head	4-pin phoenix head
	Power Consumption(Idle)	30W	21.2W
	Power consumption(Full loading)	64.8W	40.4W
	Power Adapter	230W (Optional)	150W/230W (Optional)
Environment	Operating Temperature (air-flow 0.7 m/s)	Up to 65W processor with extended temp peripherals: -20 ~ 60°C	Up to 35W processor with extended temp peripherals: -20 ~ 60°C
	Non-Operating Temperature	--40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing
	Vibration Resistance	With SSD: 3 Grms, random, 5 ~ 500 Hz, 1 hr/axis.	With SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.
	Shock Protection	With SSD: 30 G, half-sine, 11ms duration	With SSD: 30 G, IEC 60068-2-27, half-sine, 11ms duration
Physical Characteristics	Dimensions (W x H x D mm)	156 x 204 x 230 mm (6.14 x 8.03 x 9.05 in) for ARK-3532B/C 197.2 x 204 x 230 mm (7.63 x 8.03 x 9.05 in) for ARK-3532D	200 x 75 x 215 mm (7.87 x 2.95 x 8.46 in)
	Weight	5.7 kg (12.5 lb) for ARK-3532B/C 6.1 kg (14.1 lb) for ARK-3532D	3.2 kg (7.06 lb)
	Mounting	Desk Mount	Wall Mount
Operating System	Microsoft Windows	Windows 10	Windows 10
	Linux	Yes (by project inquiry)	Yes (by project inquiry)
Software	DeviceOn	DeviceOn, DeviceOn/iEdge	DeviceOn, DeviceOn/iEdge
	Other	Trellix, Acronis	Trellix, Acronis
Certifications	EMC	CE/FCC class B, CCC, BSMI, UKCA	CE/FCC class B, CCC, BSMI, UKCA
	Safety Certifications	CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA

Note: "-" means Not Applicable (N/A).

ARK-3534B	ARK-3534C	ARK-3534D
12th/13th/14th Gen Intel® Core™ i3/i5/i7/i9 processor	12th/13th/14th Gen Intel® Core™ i3/i5/i7/i9 processor	12th/13th/14th Gen Intel® Core™ i3/i5/i7/i9 processor
by Processor	by Processor	by Processor
by Processor	by Processor	by Processor
AMI EFI 256 Mbit	AMI EFI 256 Mbit	AMI EFI 256 Mbit
Intel H610E (R680E by project)	Intel H610E (R680E by project)	Intel R680E
DDR5 4800 MHz	DDR5 4800 MHz	DDR5 4800 MHz
64GB	64GB	64GB
2 x 262-pin SODIMM	2 x 262-pin SODIMM	2 x 262-pin SODIMM
Intel® UHD Graphics 770	Intel® UHD Graphics 770	Intel® UHD Graphics 770
-	-	-
2 x HDMI ports, HDMI 2.0 for HD video playback, 4096 x 2160 @ 60Hz	2 x HDMI ports, HDMI 2.0 for HD video playback, 4096 x 2160 @ 60Hz	2 x HDMI ports, HDMI 2.0 for HD video playback, 4096 x 2160 @ 60Hz
3rd Display Module by Option	3rd optional display module	3rd optional display module
-	-	-
2 (1 x B-Key and 1 x E-Key)	2,2 (1 x B-Key and 1 x E-Key)	2 (1 x B-Key and 1 x E-Key)
1	1	1
1 x PCIe x4, 1 x PCIe x16	2 x PCI, 1 x PCIe x16	2 x PCI, 1 x PCIe x4, 1 x PCIe x16
-	-	-
GbE1: Intel i219-LM GbE GbE2: Intel i225-V GbE	GbE1: Intel i219-LM GbE GbE2: Intel i225-V GbE	GbE1: Intel i219-LM GbE GbE2/3/4: Intel i225-LM GbE
HD Audio	HD Audio	HD Audio
ALC888S	ALC888S	ALC888S
Line-out/Mic-in (switch)	Line-out/Mic-in (switch)	Line-out/Mic-in (switch)
Yes	Yes	Yes
2 x 2.5" SATA III 15mm height HDD bay supporting Intel SW RAID (Up to 3 x 2.5" SATA III HDD bays)	2 x 2.5" SATA III 15mm height HDD bay supporting Intel SW RAID (Up to 3 x 2.5" SATA III HDD bays)	2 x 2.5" SATA III 15mm height HDD bay supporting Intel SW RAID (Up to 3 x 2.5" SATA III HDD bays)
1 x PCIe x2 (via M.2 2280 B-Key)	1 x PCIe x2 (via M.2 2280 B-Key)	1 x PCIe x2 (via M.2 2280 B-Key)
-	-	-
4	4	8
-	-	-
4	4	-
16-bit	16-bit	16-bit
4 x RS-232/422/485; 2 up to 4 (optional) x RS-232	4 x RS-232/422/485; 2 up to 4(optional) x RS-232	4 x RS-232/422/485; 2 up to 4(optional) x RS-232
AT/ATX	AT/ATX	AT/ATX
9~36 V_{DC}	9~36 V_{DC}	9~36 V_{DC}
4-pin Phoenix head	4-pin Phoenix head	4-pin Phoenix head
56.1W	56.1W	56.1W
92.4W	92.4W	92.4W
230W (Optional)	230W (Optional)	230W (Optional)
Up to 65W processor with extended temp peripherals: -20 ~ 60°C	Up to 65W processor with extended temp peripherals: -20 ~ 60°C	Up to 65W processor with extended temp peripherals: -20 ~ 60°C
-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing	-40 ~ 85°C and 40°C @ 95% RH Non-Condensing
With SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.	With SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.	With SSD: 3 Grms, IEC 60068-2-64, random, 5 ~ 500 Hz, 1 hr/axis.
With SSD: 30 G, IEC 60068-2-27, half-sine, 11ms duration	With SSD: 30 G, IEC 60068-2-27, half-sine, 11ms duration	With SSD: 30 G, IEC 60068-2-27, half-sine, 11ms duration
156 x 204 x 230 mm (6.14 x 8.03 x 9.05 in)	156 x 204 x 230 mm (6.14 x 8.03 x 9.05 in)	197.2 x 204 x 230 mm (7.63 x 8.03 x 9.05 in)
5.705 kg (12.58 lb)	5.705 kg (12.58 lb)	6.41 kg (14.13 lb)
Desk Mount	Desk Mount	Desk Mount
Windows 10	Windows 10	Windows 10
Ubuntu 22.04, others by project inquiry	Ubuntu 22.04, others by project inquiry	Ubuntu 22.04, others by project inquiry
DeviceOn, DeviceOn/iEdge	DeviceOn, DeviceOn/iEdge	DeviceOn, DeviceOn/iEdge
Trellix, Acronis	Trellix, Acronis	Trellix, Acronis
CE/FCC class B, CCC, BSMI, UKCA	CE/FCC class B, CCC, BSMI, UKCA	CE/FCC class B, CCC, BSMI, UKCA
CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA	CB, UL, CCC, BSMI, UKCA

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