Smart Transportation Solutions

AI-enabled Real-time Remote Fleet Management Computers

TS In-vehicle Series
Roadside Surveillance Series
Rugged Railway Series
Stackable Extension Series

WISE-DeviceOn

TS-300 Rolling Stock Series  TS-200  In-vehicle Series  TS-100 Surveillance Series
Intelligent Transportation Solutions

Advantech provides transportation fanless systems for in-vehicle, rolling stock, and roadside surveillance applications. These products adhere to in-vehicle/rolling stock certifications (EMark/EN50155), and feature high extension capabilities for communication interfaces, as well as rugged, wide operating temperature designs. Advantech meets customers' requests, enables transportation applications, and reduces time-to-market using flexible hardware designs. When paired with WISE-DeviceOn — an IoT device operation management software — our intelligent transportation systems ease equipment management.

Solid Certifications
- Railway: EN50155
- Vehicle: EMARK, ISO 7637-2
- Surveillance: NEMA TS2

Numerous Extensions
- 3G/4G LTE connections
- Support CanBus/GPS function
- Provide AI modules solution (VEGA320 / VEGA330)

Ruggedized Designs
- -40 ~ 70 °C (-40 ~ 158 °F) wide operating temperature
- Anti-vibration / Shock

Remote Monitoring and Control
- Real-time vehicle monitoring and tracking
- Remote vehicle diagnostics analysis
- Power delay control
**Recommended Applications**

- Driver behavior detection
- Vehicle health diagnostics
- Fleet management
- Onboard surveillance
- Bus infotainment
- Passenger information systems

**ARK-2121V**
- Intel Atom® E3845 / E3825
- 12/24 VDC with power ignition management
- -30 ~ 60 °C/-22 ~ 140 °F (E3845) / 30 ~ 70 °C/86 ~ 158 °F (E3825) operating temp.

**ARK-2250V**
- Intel® Core™ i7-6822EQ/i5-6442EQ
- 12/24 VDC with power ignition management
- -20 ~ 70 °C (-4 ~ 158 °F) operating temp.

**TS-206**
- Intel® Core™ i7-6600U/i5-6300U
- EMARK, ISO 7637-2 certified
- -20 ~ 60 °C (-4 ~ 140 °F) operating temp.

**ARK-2121S**
- Intel Atom E3845 with 4 x PoE
- 9 ~ 36 VDC with 1.5KV isolation
- -30 ~ 60 °C (-22 ~ 140 °F) operating temp.

**ARK-2151S**
- Intel Core i5 4300U with 4 x PoE
- 9 ~ 36 VDC with 1.5KV isolation
- -20 ~ 60 °C (-4 ~ 140 °F) operating temp.

**ARK-2250S**
- Intel Core i7-6822EQ/i5-6442EQ
- 12~24VDC with 1.5KV isolation
- -20 ~ 70 °C (-4 ~ 158 °F) operating temp.
- NEMA TS2 environmental certified
Rugged Railway Series

- Adheres to EN50155, EN50121-3-2, EN50121-4, IEC61373 certifications
- Compatible with VEGA edge AI modules
- Lockable and rugged I/O designs
- Optional extension layers for PoE, storage

Recommended Applications

- Safety monitoring
- BYOD infotainment
- Alarm system
- Cabin environment monitoring
- Traveler information system

ARK-2231R

- Intel Atom® E3845
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155 TX
- 24VDC EN50155 S2/C1 compliant

ARK-2250R

- Intel Core™ i7-6822EQ/i5-6442EQ
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155 TX
- 24VDC EN50155 S2/C1 compliant

ARK-2250R High Voltage

- Intel Core™ i7-6822EQ / i5-6442EQ
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155 TX
- 72V/110VDC EN50155 S2/C1 compliant

Stackable Extension Series

- Extension with rugged railway series
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155 certified

AMK-R100E

- 8 x GbE PoE+ (X-coded)
- 1 x anti-vibration 2.5” drive bay
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155

AMK-R101E

- 4 x GbE PoE+ (X-coded)
- 1 x anti-vibration 2.5” drive bay
- -40~70 °C (-40 ~ 158 °F) EN50155

AMK-R104E

- 8 x 10/100M PoE+ (D-coded)
- 1 x anti-vibration 2.5” drive bay
- -40~70 °C (-40 ~ 158 °F) EN50155

AMK-R105E

- 4 x 10/100M PoE+ (D-coded)
- 1 x anti-vibration 2.5” drive bay
- -40 ~ 70 °C (-40 ~ 158 °F) EN50155
Application Requirement

Driver behavior has direct effects on traffic safety. Presently, AI can effectively track and monitor driver behavior and vehicle statuses to avoid accidents. Systems used for AI-based driver safety detection require ruggedized designs and multiple I/O to fit in-vehicle environments. Likewise, they require advanced computing/graphics performance, and wireless connectivity.

**TS-206**

AI-driven Smart Fleet Management System

- Adheres to E-Mark, ISO 7637-2, and IEC 60721-3-5 certifications
- High performance powered by Intel Core i7-6600U
- Ruggedized design with -20 ~ 60 °C (-4 ~ 140 °F) operating temp.
- Peripheral integration services (Wi-Fi/4G/touchscreen)

**ARK-2250R**

Ruggedized Transportation System

- Adheres to EN50155, EN50121, IEC61373 certifications
- Up to 8ch x 1080p @30fps IP camera connection for video surveillance
- Supports dual LTE Cat6 300/50Mbps bandwidth
- Supports dual Wi-Fi extension as hot spot point
- Ultra wide operating temp. -40 ~70 °C (-40 ~ 158 °F)
<table>
<thead>
<tr>
<th>Application</th>
<th>Outdoor NVR</th>
<th>In-Vehicle</th>
</tr>
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<tbody>
<tr>
<td><strong>Model Name</strong></td>
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<td><strong>ARK-2151S</strong></td>
</tr>
<tr>
<td><strong>Processor System</strong></td>
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<tr>
<td>CPU</td>
<td>Intel Atom® E3845</td>
<td>4th Gen Intel® Core™ i5 4300U</td>
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<td>Frequency</td>
<td>1.91 GHz</td>
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<td>Core Number</td>
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<tr>
<td>BIOS</td>
<td>AMI EFI 64 Mbit</td>
<td>AMI EFI 128 Mbit</td>
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<tr>
<td>Chipset</td>
<td>SoC</td>
<td>SoC</td>
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<tr>
<td><strong>Memory</strong></td>
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<td></td>
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<tr>
<td>Technology</td>
<td>DDR3L 1333 MHz</td>
<td>DDR3L 1600 MHz</td>
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<tr>
<td>Max. Capacity</td>
<td>8 GB</td>
<td>8 GB</td>
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<tr>
<td>Socket</td>
<td>1 x 204-pin SO-DIMM</td>
<td>1 x 204-pin SO-DIMM</td>
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<td>Display</td>
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<td>VGA</td>
<td>1 (up to 1600 x 1200)</td>
<td>1 (up to 1920 x 1200)</td>
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<td>DDI (HDMI/DVI/DisplayPort)</td>
<td>1 x lockable HDMI, up to 1080P</td>
<td>1 x lockable HDMI, up to 4K at 24 Hz</td>
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<tr>
<td>Multiple Display</td>
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<td><strong>Expansion Interface</strong></td>
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<td>1 x Full-size Mini PCIe</td>
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<td><strong>Other</strong></td>
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<td>G-Sensor</td>
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<tr>
<td>PoE</td>
<td>4 x 10/100 Mbps PoE</td>
<td>4 x 10/100 Mbps PoE</td>
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<td>CANBus</td>
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<td>Controller</td>
<td>GbE 1: Intel I210-IT</td>
<td>GbE 2: Intel i219</td>
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<td>HD Audio</td>
<td>HD Audio</td>
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<td>3G Voice</td>
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<td><strong>WatchDog Timer</strong></td>
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<td>SATA</td>
<td>1 x 2.5&quot; removable drive bay</td>
<td>1 x 2.5&quot; removable drive bay</td>
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<td>1 x Full-size mSATA</td>
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<td>6 x DI &amp; 2 x DO with isolation</td>
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<td>LAN</td>
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<td>2 x RJ45</td>
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<td><strong>Power</strong></td>
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<td>Power Supply Voltage</td>
<td>9 – 36 Vdc w/ isolation</td>
<td>9 – 36 Vdc w/ isolation</td>
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<td>Connector</td>
<td>3-pin Phoenix</td>
<td>3-pin Phoenix</td>
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<td>Power Adaptor</td>
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<td>AC to DC, 19 Vdc, 120W</td>
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<td><strong>Environment</strong></td>
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<tr>
<td>Operating Temperature (air flow 0.7 m/sec)</td>
<td>-30 ~ 60 °C (-22 ~ 140 °F)</td>
<td>-20 ~ 70 °C (-4 ~ 158 °F)</td>
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<td><strong>Physical Characteristics</strong></td>
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<td>Dimensions (W x H x D)</td>
<td>264 x 69.2 x 133 mm (10.3 x 2.7 x 5.2 in)</td>
<td>264 x 75.1 x 133 mm (10.3 x 2.95 x 5.2 in)</td>
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<td>Operating System</td>
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<td>Yes (Win7, 10)</td>
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<td>APIs</td>
<td>WISE-PaaS/DeviceOn</td>
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Note: "-" means Not Applicable (N/A)
<table>
<thead>
<tr>
<th>ARK-2151V</th>
<th>ARK-2250V</th>
<th>TS-206</th>
<th>ARK-2231R</th>
<th>ARK-2250R</th>
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<tbody>
<tr>
<td>4th Gen Intel® Core™ i5-6300U/ Core i5-4300U</td>
<td>6th Gen Intel® Core™ i5-6442EQ/ 6470U</td>
<td>6th Gen Intel® Core™ i5-6300U/ Core i5-4300U</td>
<td>6th Gen Intel® Core™ i5-6442EQ/ 6470U</td>
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<td>DDR4L, 1600MHz</td>
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<td>DDR4, 2133MHz</td>
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<td>1 (up to 1920 x 1200)</td>
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<tr>
<td>1 x lockable HDMI, up to 4K at 24 Hz</td>
<td>1 x lockable HDMI, up to 1080P</td>
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<td>2 x lockable HDMI, up to 1080P</td>
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<td>1 x Half-size Mini PCIe</td>
<td>1 x Full-size Mini PCIe w/SIM holders</td>
<td>2 x Full-size Mini PCIe</td>
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<td>2 x Full-size Mini PCIe w/SIM holder</td>
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<td>2 x Full-size Mini PCIe w/SIM holder</td>
<td>1 x M.2 (2230 E Key)</td>
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<td>Optional</td>
<td>Optional extended modules</td>
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<td>HD Audio</td>
<td>HD Audio</td>
<td>HD Audio</td>
<td>HD Audio</td>
<td>HD Audio</td>
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<tr>
<td>1 x Line-out, 1 x Mic-in</td>
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<td>1 x Full-size mSATA</td>
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<td>9 ~ 36 Vdc, w/power ignition management</td>
<td>9 ~ 36 Vdc, w/power ignition management</td>
<td>12/24 Vdc, w/power ignition management</td>
<td>24 Vdc, (48 Vdc, 72 Vdc, 110 Vdc, optional)</td>
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<td>M12-A Coded</td>
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<td>Ac to DC, 19 Vdc, 120W</td>
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<td>EN50155 S2/C1</td>
<td>EN50155 S2/C1</td>
<td>EN50155 S2/C1</td>
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<td>-20 ~ 60 °C (-4 ~ 140 °F)</td>
<td>-20 ~ 60 °C (-4 ~ 140 °F)</td>
<td>-40 ~ 70 °C (-40 ~ 158 °F)</td>
<td>-40 ~ 70 °C (-40 ~ 158 °F)</td>
<td>-40 ~ 70 °C (-40 ~ 158 °F)</td>
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<td>IEC 60721-3-5 Class 5M3</td>
<td>IEC 60721-3-5 Class 5M3</td>
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<td>IEC 60721-3-5 Class 5M3</td>
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<td>260 x 73 x 160 mm (10.2 x 2.8 x 6.29 in)</td>
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<td>Ce/FCC Class A, BSMI</td>
<td>Ce/FCC Class A, BSMI</td>
<td>Ce/FCC Class A, BSMI</td>
<td>Ce/FCC Class A, BSMI</td>
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<td>UL, CCC, CB, LE-Mark</td>
<td>UL, CCC, CB, LE-Mark</td>
<td>UL, CCC, CB, LE-Mark</td>
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</tbody>
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Regional Service and Customization Centers

China  Kunshan  86-512-5777-5666
Taiwan  Taipei  886-2-2792-7818
Netherlands  Eindhoven  31-40-267-7000
Poland  Warsaw  08000-24268-0800
USA  Milpitas, CA  1-408-519-3898

Worldwide Offices

Asia Pacific

Taiwan
- Toll Free  0800-777-111
- Taipei & IoT Campus  886-2-2792-7818
- Taichung  886-4-2372-5058
- Kaohsiung  886-7-392-3600

China
- Toll Free  800-810-0345
- Beijing  86-10-6289-4346
- Shanghai  86-21-3632-1616
- Shenzhen  86-755-8212-4222
- Chengdu  86-28-8545-0198
- Hong Kong  852-2720-5118

Japan
- Toll Free  0800-500-1055
- Osaka  81-6-6597-9301
- Nagoya  81-053-734-0101
- Nagasaki  81-95-655-2200

Korea
- Toll Free  080-363-9494/5
- Seoul  82-2-3660-9255

Singapore
- Singapore  65-6442-1000

Malaysia
- Kuala Lumpur  60-3-7725-4188
- Penang  60-4-537-9188

Thailand
- Bangkok  66-2-2488306-9

Vietnam
- Hanoi  84-4-3399-1155
- Hochiminh  84-28-3636-5856

Indonesia
- Jakarta  62-2-751-1939

Australia
- Toll Free  1300-308-531
- Melbourne  61-3-9797-0100

India
- Bangalore  91-94-4839-7300
- Pune  91-94-2286-2349

Europe

Netherlands
- Eindhoven  31-40-267-7000
- Breda  31-76-522-3100

Germany
- Toll Free
- Munich  49-89-12599-0
- Düsseldorf  49-2103-97-855-0

France
- Paris  33-1-4119-4666

Italy
- Milan  39-02-9544-961

UK
- Newcastle  44-0-122-262-4844
- London  44-0-870-493-1433

Spain
- Madrid  34-91-668-86-76

Sweden
- Stockholm  46-0-864-60-500

Poland
- Warsaw  48-22-31-51-00

Russia
- Moscow  8-800-555-01-50
- St. Petersburg  8-812-332-57-27

Czech Republic
- Ústí nad Orlicí  420-465-524-421

Ireland
- Galway  353-91-792444

Americas

North America
- Toll Free  1-888-576-9668
- Cincinnati  1-513-742-8895
- Milpitas  1-408-519-3898
- Irvine  1-949-420-2500
- Chicago  1-888-576-9668

Brazil
- Toll Free  0800-770-5355
- São Paulo  55-11-5592-5367

Mexico
- Toll Free  1-800-467-2415
- Mexico City  52-55-6275-2777

Middle East and Africa

Israel  072-2410527
Turkey  90-212-222-0422
Turkey-Bursa  90-224-413-3134

www.advantech.com

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